EUROGEO SURVEYS

ANNUAL REPORT
FOR 2017-2018
37 Geological Survey Organisations from across Europe

A workforce that includes thousands of geoscientists at the service of European citizens

Pioneering research for Society’s benefit since 1971
<table>
<thead>
<tr>
<th>Contents</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive summary 2017-2018</td>
<td>4</td>
</tr>
<tr>
<td>EGS in brief</td>
<td>6</td>
</tr>
<tr>
<td>Key people 2017-2018</td>
<td>8</td>
</tr>
<tr>
<td>The shape of our business 2017</td>
<td>19</td>
</tr>
<tr>
<td>The shape of our business 2018</td>
<td>49</td>
</tr>
<tr>
<td>Key Performance Indicators 2018</td>
<td>79</td>
</tr>
<tr>
<td>EGS Secretariat activities 2017-2018</td>
<td>90</td>
</tr>
<tr>
<td>EGS Strategic developments 2017-2018</td>
<td>101</td>
</tr>
<tr>
<td>Statistics 2017</td>
<td>104</td>
</tr>
<tr>
<td>Statistics 2018</td>
<td>109</td>
</tr>
</tbody>
</table>
EXECUTIVE SUMMARY

EuroGeoSurveys (EGS) and its Secretariat made significant steps forward in the implementation of the EGS Strategy through 2017 and 2018. EuroGeoSurveys oversaw major developments in 2017 that included consolidating the Strategy while realising changes in the EGS Secretariat, followed in 2018 by further refining and implementing the EGS Strategy.

Throughout 2017 and 2018, EGS and its Secretariat followed its statutory obligations by supporting members and liaising with EU institutions, most of which were with the European Commission.

In 2018, as a result of the significant developments within the organisation over the past years, EGS ratified necessary statutory updates within its Statutes and Internal Rules. Further progress was made with regards to realisation of the EGS mission and vision, which included linking-up with the EU institutions, international cooperation, assisting members in project engagement and stabilising the Secretariat. The EGS Strategy began looking into its next steps of implementation and received continued support of the EGS members through a series of high-level workshops, with the 2017 Hannover Directors Workshop, the 2018 Kyiv Directors Workshop and strategic discussions between the EGS Executive Committee and key experts.

There was significant progress in the integration of the Strategy’s three pillars, which can be seen through the GeoERA project, the EGDI activities, and the sharing of knowledge from within Europe and indeed, from outside Europe. It is important to stress that other activities, including preparation for Horizon Europe and the inclusion of the EGS Expert Groups within the realm of strategic development, add to the Strategy implementation.

GeoERA kicked off at the beginning of 2017, launching a research programme that is expected to concretely pave the way towards the Geological Service for Europe. In mid-2018, GeoERA began funding 15 projects in the domains of geo-energy, water and raw materials.

The European Geological Data Infrastructure (EGDI) was successfully launched and supported by EGS throughout 2017 and 2018. Engineered as a web-portal giving access to a number of pan-European geological data sets created during previous data harmonization projects, it also provides open access to a very large number of national data sets from the European Geological Surveys.


The interactions and synergies among the Expert Groups increased significantly during 2017 and 2018. During 2017 the work of the Expert Groups improved considerably, as a direct response to the Cooperation Agreement between EGS and the European Commission’s Joint Research Centre, the GeoERA developments and other new projects. Other key achievements of EuroGeoSurveys in 2017 include the EMODnet-Geology Phase III project being approved for funding for a duration of two years, with the possibility to extend it by a further two years.

The Experts Groups are not only more aware of the activities of the other Groups, they also work together under cross-cutting topics and they have successfully developed pan-European projects together. Relationships have been maintained and strengthened with EU Institutions, in particular DG GROW, DG DEVCO, DG JRC, DG MARE, DG ENV, DG ENERGY and the EEA, along with other international organisations, especially the World Bank, UNESCO, UNECE, UNDP and UNECA. International ties with OAGS, ASGMI, CCOP, NRCan and USGS have also been strengthened.

The strengthening collaboration amongst EGS members, the Geological Surveys of Europe, is not only being recognised as an added value to the European Union’s Open Science strategy but continues to demonstrate how EuroGeoSurveys is the leading provider of geoscience for society in Europe.
EGS
IN
BRIEF
MISSION

EuroGeoSurveys (EGS), the leading European geological organisation, provides public Earth science knowledge to support the EU’s competitiveness, social well-being, environmental management and international commitments. By providing technical advice in the field of geoscience to the European Institutions, EuroGeoSurveys is fully committed to shape more effective policies and regulations for the benefit of society.

EGS represents 37 national Geological Surveys in Europe, an overall workforce of several thousand experts. Since 1971 we have combined and coordinated the expertise of our members to support the direct interests of the European Union and the European Free Trade Association, and today we are the leading technical advisory body to the EU Institutions in the field of geosciences.

By 2020, EGS will offer a unique gateway to unbiased and seamless subsurface data at European level. EGS aims to establish a common European Geological Knowledge Base and will jointly provide a Geological Service for Europe, as a result of the EGS Strategy action plan built around three strategic pillars:

1. Developing a joint research programme with a focus on EU policy;
2. Harmonizing, sharing and providing pan-European geological data;
3. Sharing knowledge, capacities and infrastructure.

Our strength is based on the work carried out by the EGS Expert Groups that integrate geoscientific information, knowledge and expertise deriving from the National Geological Surveys in the following fields:
Natural hazards, water, soils, energy, mineral resources, marine geology, spatial data, urban geology, carbon capture and storage, geochemistry, Earth observation and international cooperation.

As Europe is currently facing a number of grand challenges, with special regard to economic growth, climate change, safety of environment, demand for adequate water and food supplies, etc., Europe’s need for reliable scientific data on geological resources grows exponentially. Moreover, as noted by the European Parliament, there is a clear and urgent necessity for a common European Geological Service to support national and EU institutions in an effective policy- and decision-making process. Our experts answer daily questions, such as: will Europe’s industries remain dependent on imports of critical raw materials or can we supply this demand with our own resources? or, how can we mitigate the effects of climate change and develop a European strategy?

The EU is well aware that securing a sustainable supply of raw materials will be essential in maintaining and stimulating economic growth. At the same time, understanding the relationship between climate and natural hazards such as floods, droughts, land subsidence, landslides etc.. becomes more and more important. The knowledge of the subsurface is also of vital importance in reducing the release of CO2 into the atmosphere, locating where and to what extent CO2 can be safely stored in the subsurface. These are just some of the topics EGS works on through a coordinated network of European experts.

---

1 European Parliament report ‘On an effective raw materials strategy for Europe’ (2011/2056(INI))
WE ARE ACTIVE IN:

Earth Observation - GeoHazards
• Satellite, airborne and ground-based Earth observation for geoscience
• Mapping, characterising and monitoring areas exposed to geohazards
• Geoscience contributions to EC Global Monitoring for Environment & Security
• Global Earth Observing System of Systems for Disasters, Energy & Geo-resource

GeoEnergy
• Exploration and assessment of fossil energy sources
• Development of renewable geothermal energy

Climate change and Carbon Capture and Storage
• Paleoclimates and paleogeography
• Storage of CO2 in geological formations
• Impacts of climate change

Geochemistry
• Distribution of natural backgrounds and anomalies in rocks, sediments, soil and water
• Exploration for energy and mineral resources
• Support to land-use planning and public health policies

International Cooperation and Development
• International cooperation with a focus on North America and Africa: European data available for the African Geological Surveys
• Future collaboration with Latin America and Asia

Marine Geology
• Marine Geology database
• Sedimentological, geochemical, geophysical and paleontological information of the ocean floor and coastal areas
• Exploration for energy and mineral resources
• Environmental protection
• Marine geological information as a basis for marine spatial planning

Mineral Resources
• Exploration, characterisation and exploitation of mineral deposits
• Mineral economics and statistics
• Environmental protection around mining site and post-closure mitigation

Spatial Information - INSPIRE
• Provide with a clear technical strategy to guarantee the adequacy of the developments of its infrastructure in the context of global spatial information infrastructures: INSPIRE, GEOSS, One Geology...
• Focus on the global consistency of the way spatial information has to be defined, managed and delivered to provide harmonized services at the European scale.

Water Resources
• Characterisation of Groundwater bodies and their recharge area
• Groundwater resources exploration, exploitation, management and protection
• Pollution mitigation and remediation
KEY

PEOPLE

2017 - 2018

WORKING TOGETHER TO REACH OUR GOALS
## EGS SECRETARIAT 2017 & 2018

### EGS SECRETARIAT 2017

**January 2017 – December 2017:**

**STAFF COMPLEMENT**

- Luca Demicheli – Secretary General until July 2017
- Slavko Solar – Secretary General from mid-September 2017
- Céline Andrien – Office Manager
- Patrick Wall – Scientific Policy Manager
- Isabel Pino de Juana – Senior Scientific Officer
- Kim Van Zanten – Administrative Officer
- Woody Hunter – External Relations Officer
- Nancy Savall – Junior Communications Officer
- Jelena Vidovic – Scientific Officer
- Krishnan Subramani Ramakrishnan – Communications Intern

### EGS SECRETARIAT 2018

**January 2018 – December 2018:**

**STAFF COMPLEMENT**

- Slavko Solar – Secretary General
- Céline Andrien – Office Manager
- Patrick Wall – Scientific Policy Manager
- Kim Van Zanten – Administrative Officer
- Nancy Savall – Communications Officer
- Jelena Vidovic – Scientific Officer
- Krishnan Subramani Ramakrishnan – Assistant Communications Officer
KEY PERSONS OF YEAR 2017 & 2018

Expert knowledge at the disposal of all European citizens, institutions, companies, media, universities,

THE EXECUTIVE COMMITTEE is the primary decision-making body. It implements the strategy formulated by the General Assembly of Members and makes proposals for future actions. THE SECRETARY GENERAL is responsible for the day-to-day operational management and administration of EGS, contacts with the European Commission and other third parties, managing the budget and carrying out the activities agreed by all Members.

YEAR 2017

➢ President
   Teresa Ponce de Leão
   Laboratório Nacional de Energia e Geologia

➢ Vice President
   Jorge Civis Llovera
   Instituto Geologico y Minero de España – stepped down March 2017

   Sławomir Grzegorz Mazurek
   Polish Geological Institute – National Research Institute – appointed April 2017

➢ Treasurer
   Olivier Lateltin
   Swiss Geological Survey

➢ Member
   Jonas Satkunas
   Geological Survey of Lithuania

➢ Secretary General
   During the first half of the year, Luca Demicheli served as the Secretary General.
   Following the end of Mr. Demicheli’s mandate, Slavko Solar was elected as Secretary General of EuroGeoSurveys and started to serve from mid-September 2017.
   Luca Demicheli – until July 2017
   Slavko Solar – from mid-September 2017

YEAR 2018

➢ President
   Teresa Ponce de Leão
   Laboratório Nacional de Energia e Geologia

➢ Vice President
   Zdenek Venera
   Czech Geological Survey

➢ Treasurer
   Olivier Lateltin
   Swisstopo - Swiss Geological Survey

➢ Member
   Flemming Larsen
   Geological Survey of Denmark and Greenland

➢ Secretary General
   Slavko Solar
BOARD OF DIRECTORS - 2017

ALBANIA
Viktor Doda
Director General,
Albanian Geological Survey

AUSTRIA
Peter Seifert
Director, Geological Survey of
Austria

BELGIUM
Yves Vanbrabant
Director, Geological Survey of
Belgium

BOSNIA AND HERZEGOVINA
Hazim Hrvatović
Director, Geological Survey of
Federation of Bosnia and
Herzegovina

Dragan Mitrović
Director General, Geological
Survey of the Republic of Srpska

CYPRUS
Costas Constantinou
Director, Cyprus Geological Survey
Department | Ministry of
Agriculture, Rural, Development
and Environment

CZECH REPUBLIC
Zdenek Venera
Director General, Czech Geological
Survey

DENMARK
Flemming Larsen
Managing Director,
Geological Survey of Denmark and
Greenland

Estonia
Aivar Pajupuu
Director, Geological Survey of
Estonia

FRANCE
Michèle Rousseau
President, Bureau de Recherches
Géologiques et Minières

FYROM\(^2\)
Kostadin Jovanov (until July 2017)
Nawaf Baara (from August 2017)
Director, Geological Survey of
Macedonia

GERMANY
Ralph Watzel
President, Bundesanstalt für
Geowissenschaften und Rohstoffe

GERMANY – Hamburg Region
Renate Taugs
Director General, Geologisches
Landesamt Hamburg

GREECE
Mountrakis Demosthenis (until
July 2017)
President, Institute of Geology and
Mineral Exploration

Kimon Christanis (from August
2017)
President, Institute of Geology and
Mineral Exploration

HUNGARY
Tamas Fancsik (until August 2017)
President, Mining and Geological
Survey of Hungary

Gábor Zelei (from August 2017)
President, Mining and Geological
Survey of Hungary

IRELAND
Koen Verbruggen
Director, Geological Survey of
Ireland

ITALY
Stefano Laporta
President, Istituto Superiore per la
Protezione e la Ricerca

Alessandro Bratti
Director General, Istituto
Superiore per la Protezione e la
Ricerca Ambientale

2 As from 2019, FYROM has been renamed Republic of North Macedonia.
ITALY- Emilia Romagna
Gabriele Bartolini
Director, Servizio Geologico Sismico e dei Suoli -Emilia Romagna

ITALY
Claudio Campobasso
Director, Geological Survey of Italy, Istituto Superiore per la Protezione e la Ricerca Ambientale

KOSOVO
Fidaim Sahiti
Chief Executive, Kosovo Geological Survey

LATVIA
Kristaps Treimanis
Chairperson of the Board, Geological Survey of Latvia

LITHUANIA
Jonas Satkunas
Acting Director, Geological Survey of Lithuania

LUXEMBOURG
Robert Colbach
Director, Service Géologique du Luxembourg

MALTA
Albert Caruana
Director General, Continental Shelf Department
Office of the Prime Minister

THE NETHERLANDS
Mart J. van Bracht (until June 2017)
Director, Geological Survey of the Netherlands

Tirza van Daalen (from July 2017)
Director, Geological Survey of the Netherlands

NORWAY
Morten Smelror
Director General, Geological Survey of Norway

POLAND
Slawomir G. Mazurek
Director, Polish Geological Institute – National Research Institute

PORTUGAL
Teresa Ponce de Leão
President, Laboratório Nacional de Energia e Geologia

ROMANIA
Stefan Marinesca,
General director, Geological Institute of Romania

RUSSIAN FEDERATION
Oleg Petrov
Director General, A. P. Karpinsky All Russia Geological Research Institute

SERBIA
Dragoman Rabrenović
Director, Geološki zavod Srbije

SLOVAK REPUBLIC
Branislav Žec
Director, State Geological Institute of Dionyz Stur

SLOVENIA
Miloš Bavec
Director General, Geological Survey of Slovenia

SPAIN
Francisco González Lodeiro
Director, Instituto Geologico y Minero de España

SPAIN- Catalunya
Jaume Masso i Cartagena
Director, Institut Cartogràfic i Geològic de Catalunya

SWEDEN
Lena Söderberg
Director General, Sveriges Geologiska Undersökning

SWITZERLAND
Olivier Lateltin
Head, Swiss Geological Survey, Bundesamt für Landestopografie SWISSTOPO, Landesgeologie

UKRAINE
Oleg Kyrylyuk
Acting Head, State Geological and Subsurface Survey of Ukraine – SGSSU

UKRAINE
Sergii I. Prymushko
Director, Geoinform of Ukraine

UNITED KINGDOM
John Nicholas Ludden
Executive Director, British Geological Survey

---

3 This designation (of Kosovo) is without prejudice to positions on status and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.
<table>
<thead>
<tr>
<th>Country</th>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALBANIA</td>
<td>Viktor Doda</td>
<td>Director General, Albanian Geological Survey</td>
</tr>
<tr>
<td>AUSTRIA</td>
<td>Peter Seifert</td>
<td>Director, Geological Survey of Austria</td>
</tr>
<tr>
<td>BELGIUM</td>
<td>Yves Vanbrabant</td>
<td>Director, Geological Survey of Belgium</td>
</tr>
<tr>
<td>BOSNIA AND HERZEGOVINA</td>
<td>Hazim Hrvatovic</td>
<td>Director, Geological Survey of Federation of Bosnia and Herzegovina</td>
</tr>
<tr>
<td>BOSNIA AND HERZEGOVINA</td>
<td>Dragan Mitrovic</td>
<td>Director General, Geological Survey of the Republic of Srpska</td>
</tr>
<tr>
<td>CROATIA</td>
<td>Slobodan Miko</td>
<td>Director General, Hrvatski Geološki Institut - Croatian Geological Survey</td>
</tr>
<tr>
<td>CYPRUS</td>
<td>Costas Constantinou</td>
<td>Director, Cyprus Geological Survey</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Department</td>
</tr>
<tr>
<td>CZECH REPUBLIC</td>
<td>Zdenek Venera</td>
<td>Director General, Czech Geological Survey</td>
</tr>
<tr>
<td>DENMARK</td>
<td>Flemming Larsen</td>
<td>Managing Director, Geological Survey of Denmark and Greenland</td>
</tr>
<tr>
<td>ESTONIA</td>
<td>Alvar Soesoo</td>
<td>Director, Geological Survey of Estonia</td>
</tr>
<tr>
<td>FINLAND</td>
<td>Mika Nykänen</td>
<td>Director General, Geological Survey of Finland</td>
</tr>
<tr>
<td>GERMANY</td>
<td>Ralph Watzel</td>
<td>President, Bundesanstalt für Geowissenschaften und Rohstoffe</td>
</tr>
<tr>
<td>GERMANY- Hamburg Region</td>
<td>Renate Taugs</td>
<td>Director General, Geologisches Landesamt Hamburg</td>
</tr>
<tr>
<td>GREECE</td>
<td>Kimon Christanis</td>
<td>President, Hellenic Survey of Geology and Mineral Exploration H.S.G.M.E</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dimitrios Tsagkas</td>
</tr>
<tr>
<td>HUNGARY</td>
<td>Gabor Zelei (until October 2018)</td>
<td>President, Mining and Geological Survey of Hungary</td>
</tr>
<tr>
<td>IRELAND</td>
<td>Koen Verbruggen</td>
<td>Director, Geological Survey of Ireland</td>
</tr>
<tr>
<td>ITALY</td>
<td>Stefano Laporta</td>
<td>President, Istituto Superiore per la Protezione e la Ricerca</td>
</tr>
<tr>
<td></td>
<td>Alessandro Bratti</td>
<td>Director General, Istituto Superiore per la Protezione e la Ricerca Ambientale</td>
</tr>
<tr>
<td></td>
<td>Claudio Campobasso</td>
<td>Director, Geological Survey of Italy, Istituto Superiore per la Protezione e la Ricerca Ambientale</td>
</tr>
<tr>
<td></td>
<td>ITALY- Emilia Romagna</td>
<td>Gabriele Bartolini</td>
</tr>
</tbody>
</table>

As from 2019, FYROM has been renamed Republic of North Macedonia.
KOSOVO
Fidaim Sahiti
Chief Executive, Kosovo Geological Survey

LATVIA
Kristaps Treimanis
Chairperson of the Board, Geological Survey of Latvia

LITHUANIA
Jolanta Čyžienė
Acting Director, Geological Survey of Lithuania

LUXEMBOURG
Robert Colbach
Director, Service Géologique du Luxembourg

MALTA
Albert Caruana
Director General, Continental Shelf Department, Office of the Prime Minister

THE NETHERLANDS
Tirza van Daalen
Director, Geological Survey of the Netherlands

NORWAY
May Britt Myhr
Director, Geological Survey of Norway

POLAND
Agnieszka Wójcik
Director, Polish Geological Institute – National Research Institute

PORTUGAL
Teresa Ponce de Leão
President, Laboratório Nacional de Energia e Geologia

ROMANIA
Stefan Marinea,
General director, Geological Institute of Romania

RUSSIAN FEDERATION
Oleg Petrov
Director General, A. P. Karpinsky All Russia Geological Research Institute

SERBIA
Dragoman Rabrenović
Director, Geološki zavod Srbije

SLOVAK REPUBLIC
Branislav Zec
Director, State Geological Institute of Dionyz Stur

SLOVENIA
Miloš Bavec
Director General, Geological Survey of Slovenia

SPAIN
Francisco González Lodeiro
Director, Instituto Geologico y Minero de España

SPAIN - Catalunya
Jaume Masso i Cartagena
Director, Institut Cartogràfici Geològic de Catalunya

SWEDEN
Lena Söderberg
Director General, Sveriges Geologiska Undersökning

SWITZERLAND
Olivier Lateltin
Head, Swiss Geological Survey, Bundesamt für Landestopografie SWISSTOPO, Landesgeologie

UKRAINE
Oleg Kyrylyuk
Acting Head, State Geological and Subsurface Survey of Ukraine – SGSSU Sergii I. Prymushko
Director, Geoinform of Ukraine

UNITED KINGDOM
John Nicholas Ludden
Executive Director, British Geological Survey

5 This designation (of Kosovo) is without prejudice to positions on status and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.
**NATIONAL DELEGATES - 2017**

They represent the National contact points of each Geological Survey.

<table>
<thead>
<tr>
<th>Country</th>
<th>Name</th>
<th>Contact Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albania</td>
<td>Mr Sokol Marku</td>
<td>Albanian Geological Survey</td>
</tr>
<tr>
<td>Austria</td>
<td>Mr Hans-Georg Krenmayr</td>
<td>Geological Survey of Austria</td>
</tr>
<tr>
<td>Belgium</td>
<td>Mr Kris Piessens</td>
<td>Geological Survey of Belgium</td>
</tr>
<tr>
<td>Bosnia &amp; Herzegovina</td>
<td>Mr Hazim Hrvatovic</td>
<td>Geological Survey of Federation of Bosnia and Herzegovina</td>
</tr>
<tr>
<td>Bosnia &amp; Herzegovina</td>
<td>Mr Boban Jolović</td>
<td>Geological Survey of Republic of Srpska</td>
</tr>
<tr>
<td>Croatia</td>
<td>Dr Željka Brkić</td>
<td>Hrvatski Geološki Institut – Croatian Geological Survey</td>
</tr>
<tr>
<td>Cyprus</td>
<td>Mr Christodoulos Hadjigeorgiou</td>
<td>Ministry of Agriculture, Natural Resources and Environment, Geological Survey Department</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>Mrs Ivana Svojtkova</td>
<td>Czech Geological Survey</td>
</tr>
<tr>
<td>Denmark</td>
<td>Mr Jørgen Tulstrup</td>
<td>Geological Survey of Denmark and Greenland</td>
</tr>
<tr>
<td>Estonia</td>
<td>Mr Margus Raha</td>
<td>Geological Survey of Estonia</td>
</tr>
<tr>
<td>Finland</td>
<td>Dr Asko Käpyaho</td>
<td>Geological Survey of Finland</td>
</tr>
<tr>
<td>France</td>
<td>Mr Pierre Nehlig</td>
<td>Bureau de Recherches Géologiques et Minières</td>
</tr>
<tr>
<td>FYROM*</td>
<td>Mr Bojan Tasevski</td>
<td>Geological Survey of Macedonia</td>
</tr>
<tr>
<td>Germany</td>
<td>Mrs Birgit Kuhns</td>
<td>Bundesanstalt für Geowissenschaften und Rohstoffe</td>
</tr>
<tr>
<td>Germany</td>
<td>Ms Renate Taugs</td>
<td>Geologisches Landesamt Hamburg</td>
</tr>
<tr>
<td>Greece</td>
<td>Mr Kostas Laskaridis</td>
<td>Institute of Geology and Mineral Exploration</td>
</tr>
<tr>
<td>Hungary</td>
<td>Mrs Annamaria Nádor</td>
<td>Mining and Geological Survey of Hungary</td>
</tr>
<tr>
<td>Ireland</td>
<td>Ms Sophie Prétesseille</td>
<td>Geological Survey of Ireland</td>
</tr>
<tr>
<td>Italy</td>
<td>Mr Luca Guerrieri</td>
<td>Istituto Superiore per la Protezione e la Ricerca Ambientale</td>
</tr>
<tr>
<td>Italy - Emilia Romagna</td>
<td>Ms. Michela Grandi</td>
<td>Geological, Seismic and Soil Survey of Emilia-Romagna</td>
</tr>
<tr>
<td>Kosovo**</td>
<td>Fidaim Sahiti</td>
<td>Chief Executive, Kosovo Geological Survey</td>
</tr>
<tr>
<td>Latvia</td>
<td>Ms Daiga Pipira</td>
<td>Geological Survey of Latvia</td>
</tr>
<tr>
<td>Lithuania</td>
<td>Mr Jonas Satkunas</td>
<td>Geological Survey of Lithuania</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>Mr Robert Colbach</td>
<td>Service Géologique du Luxembourg</td>
</tr>
<tr>
<td>Malta</td>
<td>Dr Charles Galea</td>
<td>Continental Shelf Department, Office of the Prime Minister</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>Mr Paul Bogaard</td>
<td>Geological Survey of the Netherlands</td>
</tr>
<tr>
<td>Norway</td>
<td>Mr Jan Høst</td>
<td>Norwegian Geological Survey</td>
</tr>
<tr>
<td>Poland</td>
<td>Mr Wojciech Brochwick-Lewiński</td>
<td>Polish Geological Institute – National Research Institute</td>
</tr>
<tr>
<td>Portugal</td>
<td>Mrs Rita Caldeira</td>
<td>Laboratório Nacional de Energia e Geologia</td>
</tr>
<tr>
<td>Romania</td>
<td>Mr Marian Munteanu</td>
<td>Geological Institute of Romania</td>
</tr>
<tr>
<td>Russia Federation</td>
<td>Mr Vitaly Shatov</td>
<td>A. P. Karpinsky All Russia Geological Research Institute</td>
</tr>
<tr>
<td>Serbia</td>
<td>Mrs Aleksandra Gulan</td>
<td>Geološki zavod Srbije</td>
</tr>
<tr>
<td>Slovak Republic</td>
<td>Ms Alena Klukanová</td>
<td>State Geological Institute of Dionyz Stur</td>
</tr>
<tr>
<td>Slovenia</td>
<td>Ms Jasna Šinigoj</td>
<td>Geological Survey of Slovenia</td>
</tr>
<tr>
<td>Spain</td>
<td>Mr Manuel Regueiro y González-Barros</td>
<td>Instituto Geologico y Minero de España</td>
</tr>
<tr>
<td>Spain – Catalunya</td>
<td>Mr Joan Palau</td>
<td>Catalanian Regional Survey: Institut Cartogràfic i Geològic de Catalunya</td>
</tr>
<tr>
<td>Sweden</td>
<td>Ms Lisbeth Hildebrand</td>
<td>Sveriges Geologiska Undersökning</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Mr Peter Hayoz</td>
<td>Bundesamt für Landestopografie swisstopo Landesgeologie</td>
</tr>
<tr>
<td>Ukraine</td>
<td>Mr Boris I. Malyuk</td>
<td>GeoInform of Ukraine</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Ms Joanne Booth</td>
<td>British Geological Survey</td>
</tr>
</tbody>
</table>

*As from 2019, FYROM has been renamed Republic of North Macedonia.

** This designation (of Kosovo) is without prejudice to positions on status and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.
**As from 2019, FYROM has been renamed Republic of North Macedonia.**

**This designation (of Kosovo) is without prejudice to positions on status and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.**

**NATIONAL DELEGATES - 2018**

They represent the National contact points of each Geological Survey.

<table>
<thead>
<tr>
<th>Country</th>
<th>Contact Person</th>
<th>National Body</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albania</td>
<td>Mr Sokol Marku</td>
<td>Albanian Geological Survey</td>
</tr>
<tr>
<td>Austria</td>
<td>Mr Hans-Georg Krenmayr</td>
<td>Geological Survey of Austria</td>
</tr>
<tr>
<td>Belgium</td>
<td>Mr Kris Piessens</td>
<td>Geological Survey of Belgium</td>
</tr>
<tr>
<td>Bosnia &amp; Herzegovina</td>
<td>Mr Hazim Hrватovíc</td>
<td>Geological Survey of Federation of Bosnia and Herzegovina</td>
</tr>
<tr>
<td>Bosnia &amp; Herzegovina</td>
<td>Mr Boban Jolović</td>
<td>Geological Survey of Republic of Srpska</td>
</tr>
<tr>
<td>Croatia</td>
<td>Dr Željka Brkić</td>
<td>Hrvatski Geološki Institut – Croatian Geological Survey</td>
</tr>
<tr>
<td>Cyprus</td>
<td>Mr Christodoulos Hadjigeorgiou</td>
<td>Ministry of Agriculture, Natural Resources and Environment, Geological Survey Department</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>Mrs Ivana Svojtкова</td>
<td>Czech Geological Survey</td>
</tr>
<tr>
<td>Denmark</td>
<td>Mr Jørgen Tulstrup</td>
<td>Geological Survey of Denmark and Greenland</td>
</tr>
<tr>
<td>Estonia</td>
<td>Mr Margus Raha</td>
<td>Geological Survey of Estonia</td>
</tr>
<tr>
<td>Finland</td>
<td>Dr Asko Kápyaho</td>
<td>Geological Survey of Finland</td>
</tr>
<tr>
<td>France</td>
<td>Mr Pierre Nehlig</td>
<td>Bureau de Recherches Géologiques et Minières</td>
</tr>
<tr>
<td>FYROM*</td>
<td>Mr Bojan Tasevski</td>
<td>Geological Survey of Macedonia</td>
</tr>
<tr>
<td>Germany</td>
<td>Mrs Birgit Kuhns</td>
<td>Bundesanstalt für Geowissenschaften und Rohstoffe</td>
</tr>
<tr>
<td>Germany</td>
<td>Ms Renate Taugs</td>
<td>Geologisches Landesamt Hamburg</td>
</tr>
<tr>
<td>Greece</td>
<td>Mr Kostas Laskaridis</td>
<td>Institute of Geology and Mineral Exploration</td>
</tr>
<tr>
<td>Hungary</td>
<td>Mrs Annamaria Nádor</td>
<td>Mining and Geological Survey of Hungary</td>
</tr>
<tr>
<td>Ireland</td>
<td>Ms Sophie Prêtresseille</td>
<td>Geological Survey of Ireland</td>
</tr>
<tr>
<td>Italy</td>
<td>Mr Luca Guerrieri</td>
<td>Istituto Superiore per la Protezione e la Ricerca Ambientale</td>
</tr>
<tr>
<td>Italy - Emilia Romagna</td>
<td>Ms Michela Grandi</td>
<td>Geological, Seismic and Soil Survey of Emilia-Romagna</td>
</tr>
<tr>
<td>Kosovo**</td>
<td>Fidaim Sahiti</td>
<td>Chief Executive, Kosovo Geological Survey</td>
</tr>
<tr>
<td>Latvia</td>
<td>Ms Dajza Pipira</td>
<td>Geological Survey of Latvia</td>
</tr>
<tr>
<td>Lithuania</td>
<td>Ms Jolanta Čyžiené</td>
<td>Geological Survey of Lithuania</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>Mr Robert Colbach</td>
<td>Service Géologique du Luxembourg</td>
</tr>
<tr>
<td>Malta</td>
<td>Dr Charles Galea</td>
<td>Continental Shelf Department, Office of the Prime Minister</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>Ms Yvonne Schavemaker</td>
<td>Geological Survey of the Netherlands</td>
</tr>
<tr>
<td>Norway</td>
<td>Mr Jan Høst</td>
<td>Norwegian Geological Survey</td>
</tr>
<tr>
<td>Poland</td>
<td>Mr Wojciech Brochwicz- Lewiński</td>
<td>Polish Geological Institute – National Research Institute</td>
</tr>
<tr>
<td>Portugal</td>
<td>Mr Machado Leite</td>
<td>Laboratório Nacional de Energia e Geologia</td>
</tr>
<tr>
<td>Romania</td>
<td>Mr Marian Muntenau</td>
<td>Geological Institute of Romania</td>
</tr>
<tr>
<td>Russia Federation</td>
<td>Mr Vitaly Shatov</td>
<td>A. P. Karpinsky All Russia Geological Research Institute</td>
</tr>
<tr>
<td>Serbia</td>
<td>Mrs Aleksandra Gulan</td>
<td>Geološki zavod Srbije</td>
</tr>
<tr>
<td>Slovak Republic</td>
<td>Ms Alena Klukanová</td>
<td>State Geological Institute of Dionyz Stur</td>
</tr>
<tr>
<td>Slovenia</td>
<td>Ms Jasna Šinigoj</td>
<td>Geological Survey of Slovenia</td>
</tr>
<tr>
<td>Spain</td>
<td>Mr Manuel Regueiro y González-Barros</td>
<td>Instituto Geologico y Minero de España</td>
</tr>
<tr>
<td>Spain – Catalunya</td>
<td>Mr Joan Palau</td>
<td>Catalanian Regional Survey: Institut Cartogràfic i Geològic de Catalunya</td>
</tr>
<tr>
<td>Sweden</td>
<td>Ms Lisbeth Hildebrand</td>
<td>Sveriges Geologiska Undersökning</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Mr Peter Hayoz</td>
<td>Bundesamt für Landestopografie swisstopo Landesgeologie</td>
</tr>
<tr>
<td>Ukraine</td>
<td>Mr Boris I. Malyuk</td>
<td>Ukrainian State Geological Research Institute</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Ms Joanne Booth</td>
<td>British Geological Survey</td>
</tr>
</tbody>
</table>
CHAIRMANSHIP AND DEPUTY-CHAIRMANSHIP OF THE EGS EXPERT GROUPS - 2017

MINERAL RESOURCES EXPERT GROUP (MREG)
Chair: Daniel Oliveira (LNEG, Portugal)
Deputy-Chair: Sebastian Pfeiderer (GBA, Austria)
Deputy-Chair: Gerry Stanley (GSI, Ireland)
Deputy-Chair: Henrik Schiellerup (NGU, Norway)

GEOENERGY EXPERT GROUP (GEEG)
Chair: Serge van Gessel (TNO, Netherlands)
Deputy Chair (for CCS): Kris Piessens (GSB, Belgium)
Deputy Chair (for Fossil Fuels): Peter Britze (GEUS, Denmark)
Deputy Chair (for Geothermal Energy): Annamaria Nador (MBFSZ, Hungary)

EARTH OBSERVATION AND GEOHAZARDS EXPERT GROUP (EOEG)
Chair: Gerardo Herrera (IGME, Spain)
Deputy Chair (for GeoHazards): Eleftheria Poyiadji (IGME, Greece)
Deputy Chair (for Earth Observation): Maria Przyłucka (PGI-NRI, Poland)
Deputy Chair: Veronika Kopackova (CGS, Czech Republic)

GEOCHEMISTRY EXPERT GROUP (GEG)
Chair: Clemens Reimann (NGU, Norway)
Deputy Chair: Anna Ladenberger (SGU, Sweden)
Deputy Chair: Philippe Négrel (BRGM, France)

SPATIAL INFORMATION EXPERT GROUP (INSPIRE)
Chair: François Robida (BRGM, France)
Deputy Chair: Jørgen Tulstrup (GEUS, Denmark)
Deputy Chair: Jasna Sinigoj (GeoSZ, Slovenia)

MARINE GEOLOGY EXPERT GROUP (MGEG)
Chair: Henry Vallius (GTK, Finland)
Deputy Chair: Sytze van Heteren (TNO, Netherlands)

WATER RESOURCES EXPERT GROUP (WREG)
Chair: Klaus Hinsby (GEUS, Denmark)
Deputy Chair: Hans Peter Broers (TNO, Netherlands)
Deputy Chair: Anna Kuczynska (PGI-NRI, Poland)
Deputy Chair: Laurence Gourcy (BRGM, France)

INTERNATIONAL COOPERATION AND DEVELOPMENT TASK FORCE (ICDTF)
Deputy Chair: Diana Ponce de León (IGME, Spain)
Deputy Chair: Fabian Helms (BGR, Germany)
CHAIRMANSHIP AND DEPUTY-CHAIRMANSHIP OF THE EGS EXPERT GROUP - 2018

MINERAL RESOURCES EXPERT GROUP (MREG)

Chair: Daniel Oliveira (LNEG, Portugal)
Deputy-Chair: Sebastian Pfleiderer (GBA, Austria)
Deputy-Chair: Henrike Sievers (BGR, Germany)
Deputy-Chair: Henrik Schiellerup (NGU, Norway)

GEOENERGY EXPERT GROUP (GEEG)

Chair: Serge van Gessel (TNO, Netherlands)
Deputy Chair (for CCS): Kris Piessens (GSB, Belgium)
Deputy Chair (for Fossil Fuels): Peter Britze (GEUS, Denmark)
Deputy Chair (for Geothermal Energy): Annamária Nádor (MBFSZ, Hungary)

EARTH OBSERVATION AND GEOHAZARDS EXPERT GROUP (EOEG)

Chair: Gerardo Herrera (IGME, Spain)
Deputy Chair (for GeoHazards): Eleftheria Poyiadji (IGME, Greece)
Deputy Chair (for Earth Observation): Maria Przyłucka (PGI-NRI, Poland)
Deputy Chair: Veronika Kopackova (CGS, Czech Republic)

GEOCHEMISTRY EXPERT GROUP (GEG)

Chair: Philippe Négrel (BRGM, France)
Deputy Chair: Anna Ladenberger (SGU, Sweden)

SPATIAL INFORMATION EXPERT GROUP (INSPIRE)

Chair: François Robida (BRGM, France)
Deputy Chair: Jørgen Tulstrup (GEUS, Denmark)
Deputy Chair: Jasna Sinigoj (GeoZS, Slovenia)

MARINE GEOLOGY EXPERT GROUP (MGEG)

Chair: Henry Vallius (GTK, Finland)
Deputy Chair: Sytze van Heteren (TNO, Netherlands)

WATER RESOURCES EXPERT GROUP (WREG)

Chair: Klaus Hinsby (GEUS, Denmark)
Deputy Chair: Hans-Peter Broers (TNO, Netherlands)
Deputy Chair: Anna Kuczyńska (PGI-NRI, Poland)
Deputy Chair: Laurence Gourcy (BRGM, France)

INTERNATIONAL COOPERATION AND DEVELOPMENT TASK FORCE (ICDTF)

Deputy Chair: Diana Ponce de León (IGME, Spain)
Deputy Chair: Fabian Helms (BGR, Germany)
THE SHAPE OF OUR BUSINESS 2017
Earth Observation and Geohazards Expert Group

Chair: Gerardo Herrera (IGME, Spain)
Deputy Chair (for GeoHazards): Eleftheria Poyiadji (IGME, Greece)
Deputy Chair (for Earth Observation):
Maria Przyłucka (PGI-NRI, Poland)
Deputy Chair: Veronika Kopackova (CGS, Czech Republic)

1. Executive Summary

In 2017 EOEG participated in H2020 Geo-Cradle and PanAfGeo projects, and 12 GSs were involved in the H2020 U-Geohaz approved proposal: Geohazard impact assessment for urban areas. The work made by the Landslide working group was presented in three international conferences (EGU, WLF4, RESyLAB) and published in Landslides journal. EOEG participated in the EuroGEOSS initiative and project proposal of GEO, participated in the GEO-XIV Plenary and provided support to the Copernicus initiative for the European Ground Motion Service (EU-GMS) lead by BGR. Two meetings were hosted in Ljubljana (Slovenia) and in Madrid (Spain) where EOEG and UNESCO IHP WGLS workshops on Land Subsidence were facilitated.

2. Mission and vision

The mission and vision of EOEG are twofold: to improve geoscience knowledge exploiting the full range of Earth Observation tools; and, to evaluate the impact of geohazards in Europe through the harmonization and upgrading of national databases and the application of innovative mapping, monitoring and modeling techniques and methods.

3. Scope and focus

The scope and focus of EOEG are twofold: landslide and subsidence mapping, monitoring and modelling at different scales from local to European; and, the application of remote sensing (radar, optical, hyperspectral and thermal) for geohazards monitoring, mineral exploration and assessing the impact of mining activity.

4. Achievements 2017 - Activity report

1. EOEG activities:
   a. National Delegates forum, Brussels: 14/02/2017
   b. EOEG meeting Slovenia, Ljubljana 29th May 2017
   c. New member: The Geological Survey of Serbia (GZS): 08/06/2017
   e. EOEG presentation in the Directors’ workshop- Serbia: 11/10/2017
   f. EOEG annual meeting & workshop in Madrid: 14/11/2017
   g. EGS chairs meeting in Madrid: 15/11/2017
   h. EOEG and UNESCO IHP WGLS workshop on Land Subsidence in Madrid: 15/11/2017

2. Landslide working group activities:
   b. EGS becomes a member of the International Consortium of Landslides: 01/06/2017
   c. paper in the World Landslide Forum (WLF4), 02/06/2017: “Integration of geohazards into urban and land-use planning. Towards a landslide directive. The EuroGeoSurveys questionnaire”.
   f. JRC Meeting, ISPRA, 15 – 16 November 2017: Pan-European and nationwide landslide susceptibility mapping
3. EOEG Projects:

a. H2020 GEO-CRADLE project:
   i. Videoconference: 19/05/2017
   ii. Mid-term review meeting: 06-07/07/2017

b. U-Geohaz project proposal is approved: 13 Geological Surveys will participate in the H2020 project: Geohazard impact assessment for urban areas (2018-2020): 10/10/2017

c. PanAfGeo project:
   i. Remote Sensing training in Ethiopia: 16/11/17 – 01/12/17

d. EuroGEOSS call preparation: 13/12/17

4. Participation in the EU-GMS European Ground Motion Task Force lead by BGR:

   • Supra-National Ground Motion Service (SNGMS) task force meeting in Hannover: 28/03/2017

   • 2nd SNGMS task force meeting in Oslo: 04-05/07/2017

   • EU-GMS White Paper submission, 25/09/2017: European Ground Motion Service (EU-GMS)

   • A proposed Copernicus service element

   • EU-GMS receives green light from the Copernicus User Forum, 13/10/2017: With unanimous assent the User Forum recommends the EU-GMS / GMSDE for immediate realization in Copernicus. This is expressed in Copernicus Work programme 2018 adopted.

5. GEO:


b. GEO-XIV Plenary and associated events in Washington D.C: 23-27/10/2017

c. EuroGEOSS call preparation: 13/12/17

5. Future perspectives

EOEG will continue participating in H2020 Geo-Cradle and PanAfGeo projects, and the recently started H2020 U-Geohaz. The Landslide working group will evaluate: the integration of geohazards into urban planning and the impact of damaging landslides in Europe. A review of subsidence due to ground water extraction will be derived from the collaboration with the International Hydrological Programme (IHP) UNESCO Working Group on Land Subsidence (WGLS).

GEO activity will target increasing the presence of EOEG and EGS in EuroGEOSS initiative:

• Developing the Community of Activity: Earth Observations for Geohazards, Land Degradation and Environmental Monitoring (ID 88).

• Supporting European Ground Motion Service (EU-GMS): A proposed Copernicus service element
Geo-Energy Expert Group

As of January 2017, the GEEG consists of 54 members from 28 surveys.

Chair: Serge van Gessel (TNO, Netherlands)
Deputy Chair (for CCS): Kris Piessens (GSB, Belgium)
Deputy Chair (for Fossil Fuels): Peter Britze (GEUS, Denmark)
Deputy Chair (for Geothermal Energy): Annamaria Nador (MBFSZ, Hungary)

1. Executive Summary

During 2017, the GEEG members, together with various other non-member geological institutes across Europe, were involved in the establishment of 7 major research proposals under GeoERA. Awaiting their ranking and selection, these projects will commence by mid-2018 and end by mid-2021. In 2017, GEEG members successfully delivered the EUOGA project results to DG-RTD and DG-JRC.

2. Mission and Vision

In support of the first EGS research strategy pillar, the Geo-Energy Expert Group (GEEG) initiates and coordinates collaborative activities by its members in order to provide and publish impartial, scientifically robust and harmonized information and expertise to advance the understanding of fossil fuel and geothermal energy resources, and CO2 and energy storage capacities in Europe. This information is used to analyze and facilitate possibilities for responsible and sustainable use of geoenergy resources in Europe, thereby contributing to securing access to energy in Europe.

3. Scope and Focus

The current scope and main focus for the Geo-Energy Expert Group is the initiation and execution of research projects that were submitted under the GeoERA programme in January 2018. Under this programme, GEEG collaborates with the other expert groups, in particular the WREG, MREG and SIEG. Upon the ranking and selection of the project proposals (external expert panel), the project activities shall be carried out from mid-2018 until mid-2021. The results will support the establishment of a sustained future geological service for Europe. In 2018 the GEEG will furthermore focus on the organization of a cross-thematic workshop on “New horizons in geological and geo-environmental monitoring”, to which all expert groups are invited. This action is meant to substantiate the third EGS strategy pillar.

4. Activity report

4.1 Key projects and initiatives

- GeoERA

The bulk of GEEG’s activities in 2017 were aimed at the first and second stage call of GeoERA. In June, the members of GEEG and other geological survey institutes provided 19 research ideas, which are used to formulate the stage 2 call objectives. From October onward, transnational project teams have worked on the establishment of project proposals answering to these objectives (7 projects in total with an allowed budget of 10,3 M Euro and ~30% EC refund). The projects are intended to start on June 2018 and have an expected end date of June 2021.

The following proposals were submitted:
- GARAPS: Assessment of fossil resources and gas hydrates
- GEO4SURE: Novel assessment methodologies for geothermal resources
- HOTLIME: geological assessment of geothermal potential in carbonate plays
- MUSE: Enabling shallow geothermal potential in urban areas
- HIKE: Hazards and Impacts Knowledge for Europe
- 3DGEOMOD: Establishing 3D geomodelling workflows for Europe
- GEOCONNECT3D: Developing and implementing 3D modelling to policy support workflows
With the establishment of the research ideas and project proposals, the members of GEEG have intensively interacted through several workshops, face-to-face meetings and weekly teleconferences. The main face-to-face events were:

- GeoERA Kick-Off, January 2017 (Utrecht)
- GEEG/GeoERA-Energy meeting, April 2017 (Rome)
- GeoERA Stage 2 Launch event and workshop, October 2017 (The Hague)
- GeoERA-Energy Project proposal Workshop, December 2017 (Vienna)

**EUOGA European Unconventional Oil and Gas Assessment**

On May 18th, 2015, GEUS submitted a proposal on behalf of EGS in response to the call JRC/PTT/2015/F.3/0027/NC: Provision of a geological evaluation of potential unconventional oil and gas resources in Europe. The project proposal was awarded on June 25th, 2015, and incorporates the characterization and spatial compilation of European shale gas and shale oil resources, as well as a quantitative assessment of these resources, based on readily available and public information at the Geological Surveys. GEUS acts as a coordinator on behalf of EGS while the other geological surveys participate through subcontracting (currently over 23 Surveys have confirmed to contribute to the project, and some are in the process of joining). TNO is a main partner responsible for carrying out the resource assessment. The total project duration is 2 years with a budget of 700,000 Euro. In March 2017 the results of GeoERA were submitted to the Commission, DGJRC and DG-RTD. The final closeout meeting was held on 27 September 2017 at the premises of TNO. The results met the expectations of the Commission and were received with great satisfaction. Follow-up work on other energy topics is considered an opportunity for further EGS-JRC collaboration.

- GEEG currently organizes a workshop on monitoring and test beds (Nottingham, March 21-23, 2018). The workshop is intended to support the third EGS strategy pillar on exchange of knowledge and capacities. All expert groups are invited for cross-disciplinary sharing of technologies and knowledge.

- Together with CO2GeoNET partners, GEEG collaborates in the planning of a European CO2 storage atlas. The plans are prepared for presentation to the commission. It is the intention to maintain the data in EGDI. CO2GeoNET currently leads the initiative.

- GBA coordinates the Interreg GeoPlasmaCE project, which focuses on implementing shallow geothermal applications in European cities. EGS is an official observer (by person of Estelle Petitclerc from RBINS-GSB).

### 4.2 Related networks

GEEG member surveys are represented in the following major networks and associations that are relevant to geo-energy. The work and knowledge in EGS are mostly complementary to the objectives and mission of these networks. The cross connection provides additional scope for collaboration in EU programmes.

- **CO2GeoNet**
  11 members surveys in GEEG (Austria – GBA; Belgium - RBINS-GSB; Czech Rep. – CGS; Denmark – GEUS; France – BRGM; Germany – BGR; Hungary – MFGI; Netherlands – TNO; Poland - PGI-NRI; Spain – IGME; UK – BGS) participate in CO2GeoNet which is a non-profit scientific Association joining together 26 research institutes spanning 19 European countries. CO2GeoNet is the independent European scientific authority dealing with all aspects of geological storage of CO2. The Association pools more than 300 experts, researchers and postgraduate students. CO2GeoNet started as a Network of Excellence under the EC 6th Framework Programme (2004-2009) and became a non-profit scientific Association in 2008 registered under French Law. EGS, CO2GeoNet and also ENERG have cooperated at several times under establishing projects under EC, e.g. FP6 project EU GeoCapacity (coordinator GEUS), the...
FP7 project CGS Europe (coordinator BRGM), EC contract: CO₂StoP project (coordinator GEUS). EGS also cooperated with CO2GeoNet organising a side-event in the blue zone of the COP21. Current activities take place under the ENOS project

**EneRG**

Within EneRG 10 GEEG member institutes from Croatia, Czech Republic, Denmark, France, Greece, Hungary, Poland, Slovak Republic, Slovenia and the Netherlands work together with 35 other technical and geological institutes on geo-energy research topics. The EneRG is an informal contact network open to all European organisations which have a primary mission and objective to conduct basic and applied research and technological activities related to the exploration and production of energy sources derived from the Earth’s crust.

### 4.3 Associated Research programmes and projects

GEEG members participate in the following research programmes that relate to the field of geo-energy:

- **EERA Shale Gas Joint Programme:**
  TNO-Netherlands, GSB-Belgium, GEUS-Denmark, PGI-Poland, LNEG-Portugal, IGR-Romania, IGME-Spain, BGS/UKERC – Great Britain

- **M4Shale:**
  TNO-Netherlands, LNEG-Portugal, GEUS-Denmark, IGME-Spain, PGI-Poland, CGS-Czech Republic, BGS – Great Britain

- **EERA-CCS Joint Programme:**
  BGS-UK, BRGM-France, IGME-Spain, PGI-Poland, TNO-Netherlands, BGS/UKERC – Great Britain

- **ECCSEL-CCS**
  BGS-UK, BRGM-France, PGI-Poland, TNO-Netherlands

- **FP7 UltimateCO2:**
  BRGM-France, BGR-Germany, BGS-UK, GEUS-Denmark, TNO-Netherlands, and non-GEEG: SWISSTOPO-Switzerland)

- **EERA-Geothermal:**
  BRGM-France, GSB-Belgium, GEUS-Denmark, IGR-Romania, IGME-Spain, PGI-Poland, LNEG-Portugal, BGS-UK,

### 5. Future perspectives

During the next 3-4 years, most GEEG members will be involved in joint research activities within the transnational GeoERA projects. The perspective is to establish a sustained research framework for the Geological Surveys (being prepared by the GeoERA Foresight Team). Further opportunities for new projects will be investigated, such as the establishment of a European CO2 storage atlas in collaboration with CO2GeoNET partners. GEEG collaborates in the setting up of a new JRC-EGS collaboration agreement.
Geochemistry Expert Group

Chair: Clemens Reimann, Norway, NGU
Deputy Chair: Anna Ladenberger, Sweden, SGU
Deputy Chair: Philippe Négrel, France, BRGM

1. Executive Summary

The 2017 activities of the EuroGeoSurveys Geochemistry Expert Group (GEG) were:

(i) additional laboratory work on the GEMAS samples,
(ii) publication of papers and presentations in conferences using results from the FOREGS Geochemical Atlas of Europe, European Groundwater Geochemistry (EGG), Geochemistry of Agricultural and Grazing land soil (GEMAS), and Urban Geochemistry (URGE) projects,
(iii) discussion of ideas for developing pan-European geochemical projects of interest to policy makers, the scientific community and the public, and
(iv) preparation of the GEMAS internet version.

Results from all four completed projects are relevant for various European Commission Directives and EU international commitments.

2. Mission and vision

Sound scientific data must be in the forefront for planning and political decision-making. The mission of GEG is, thus,

(i) to provide high quality geochemical data of near-surface materials,
(ii) to develop harmonised geochemical databases for multi-purpose use,
(iii) to offer independent non-biased expert advice to the European Commission, and
(iv) to supply sound geochemical background data to scientists for their research, and to the public, in general, for education and other applications (e.g., land use planning, agriculture, remediation).

3. Scope and focus

The focus of GEG is the execution of pan-European applied geochemical projects using harmonised procedures of sampling, sample preparation, and laboratory analysis. The scope is to bring under the same umbrella applied geochemists with various specialties (e.g., environmental, exploration, ground water geochemistry) from all EGS member institutions, and to act as a forum for the exchange of expertise and to work together in order to deliver good quality professional products and services to European Union countries.

4. Achievements 2017

4.1. Projects

GEMAS: Activities during 2017 were (i) the presentation of results in conferences (see Section 4.4,) (ii) writing of papers on different
aspects of the GEMAS project (see Section 4.5), (iii) additional determinations on the agricultural and grazing land soil samples, which should be completed in 2018, namely (a) Sr isotopes (b) mineralogical determinations on the agricultural and grazing land soil samples, (iv) preparation of GEMAS e-book, and (v) the Geological Survey of Ireland is developing an internet viewer for the GEMAS data sets under its Public Data Viewer Series.

**URGE:** Writing of papers on urban geochemical projects carried out in different European cities, which will be published in a Special Issue of the Journal of Geochemical Exploration (vol. 157) in the first half of 2018 with the title: *Urban Geochemical Mapping: The EuroGeoSurveys Geochemistry Expert Group’s URGE project*. The Special Issue will bear the EuroGeoSurveys logo.

### 4.2. European Commission Calls and Outside funding sources

A 1st step INTERREG proposal for the Danube Transnational Programme (SIMONA) was submitted by the Geological Survey of Slovenia (leading applicant) in collaboration with the Austrian Institute of Technology GmbH, Geological Institute of Bulgarian Academy of Sciences, Croatian Geological Survey, Federal Institute for Geosciences and Natural Resources, Szent István University (Hungary), Geonardo Environmental Technologies Ltd. (Hungary), National Agricultural Research and Innovation Centre (Hungary), Technical University of Cluj Napoca (Romania), Geological Institute of Romania, State Geological Institute of Dionyz Stur, Geological Survey of Federation of Bosnia and Herzegovina, Geological Survey of Montenegro, Faculty of Mining and Geology (Serbia), Public Institution Waters of Srpska (Bosnia Herzegovina), Regional Development Agency Medimurje Redea (Croatia), General Directorate of Water Management (Hungary), Institute of Chemistry-Academy of Sciences of Moldova, Institute of Geology and Seismology, Academy of Sciences of Moldova, Ministry of Agriculture and Rural Development (Montenegro), Copper Mining and Smelting complex (Serbia), Institute for the Development of Water Resources “Jaroslav Cerni” AD Belgrade, National Agency for Environment Protection (Romania), State Geological and Subsurface Survey of Ukraine. The result is expected to be announced in the Spring of 2018.

Clemens Reimann (GEG Chairperson) participated in the GeoERA Groundwater meeting in Warszawa on September 26-27, 2017, in order to discuss the possibilities to integrate a European-scale ground- and surface-water geochemistry project in GeoERA. More than half of the geological surveys of Europe had expressed their interest in such a project. During the planning stage of the separate Work Packages, it turned out that GeoERA could not provide sufficient funds and conditions to realistically carry out a Pan-European project with at least 35 participating organisations within the given timeframe of just 3 years.

Eurometaux is also very interested in a surface and spring water geochemistry project of Europe based on low-density sampling. Clemens Reimann and Belinda Flem had a meeting with the Eurometaux metals consortium at their yearly meeting in Brussels on the 9th of October 2017 and presented the GEG project idea. Participants were quite excited about the project idea and agreed that such a data set is absolutely needed. It was agreed to stay in contact and look for financing opportunities at both ends.
4.3. Offering expert advice

Manfred Birke, Vladimir Klos and Alecos Demetriades participated in the ‘1st Ice-breaking Workshop on Global Black Soil Critical Zone Geo-Ecological Survey (BASGES)’, which was organised by the Shenyang Geological Survey, Shenyang, P.R. China, 8-12 December 2017. The results of the WEGS, FOREGS and GEMAS projects were presented, and expert advice was given on how to tackle the black soil occurring in the different continents.

4.4. Events

18-19 January 2017 - Environmental Analytical Chemistry of TCEs, the COST Action TD1407 Workshop on Environmental Concentrations, Cycling & Modelling of Technology-Critical Elements, David Lopatie Conference Centre of the Weizmann Institute of Science, Rehovot, Israel (https://www.costnotice.net/ws). Invited presentations:

- Reimann, C., 2017. Statistical analysis and processing of geochemical data.


Geochemical mapping is an established method for studying the spatial distribution of chemical elements in different media, e.g., rock, soil, water, sediment and plants, and to document changes in their chemical composition occurring in different compartments of the ecosystem. Depending on the target and question to be answered, the resulting geochemical data can be used in mineral exploration, environmental, medical and forensic sciences, agriculture, forestry, land use planning, etc. The results of geochemical mapping allow understanding of natural processes operating at the continental to regional scale, such as weathering, climate, tectonic evolution, etc. At present, it is crucial not only to provide background levels of elements, but also to understand and to document the consequences of contamination on the surface environment, which is no longer pristine and undergoes changes caused by human activities. Modern geochemical mapping relies on building databases and providing digital data services to the community as a whole. Geochemistry is a highly quantitative methodology utilising advanced mathematical, statistical and spatial methods for the processing and presentation of the obtained analytical data. While large scale geochemical mapping gives approximate background levels of elements even at the continental scale, the regional mapping provides important answers to more local questions such as the chemical status of various types of soil (forest, agricultural, urban), local groundwater etc. Geochemical data sets have a high impact on socio-economic aspects and the well-being of humans and animals, because they provide additional information about the practical quality of inhabited environment including agricultural soil, drinking water, building materials, etc., and can be directly used by the authorities and policy makers, e.g., for defining the guideline values. The aim of the session is to present
the status of geochemical mapping in the XXI century with the rapid development of novel methods, and unavoidable presence in the digital world with focus on continental, regional and local (e.g., catchment or urban environment) scale geochemical mapping data sets, using various sampling media, like soil, sediment, water, plants, etc.

(a) Oral presentations


(b) Poster presentations


NOTE: The joint meeting of GEG and IUGS Commission on Global Geochemical Baselines, preceded the EGU meeting (20-21 April 2017), and was hosted by the Geological Survey of Austria at its premises in Vienna (it was reported in the six-monthly report).
5-9 June 2017 – 7th International Workshop on Compositional Data Analysis, Abbadi, San Salvatore, Sienna, Italy (http://www.compositionaldata.com/codawork2017/). Invited keynote presentation:


12 October 2017 - Presentation for the members of the Croatian Geological Society, Faculty of Mining, Geology and Petroleum Engineering, University of Zagreb, Croatia.


28 November 2017 – Workshop on the Urban Geochemistry of Lefkosia soil, organised by the Cyprus Geological Survey Department, Amphitheatre of the Institute of Agricultural Surveys:

- Zissimos, A.M., 2017. Results of the Lefkosia urban soil geochemistry project.

3 December 2017 – Geo-variety - Inheritance for the Future, workshop organised by the Retirees Union of the Institute of Geology and Mineral Exploration at the Antonis Tritsis amphitheatre, Cultural Centre of the Municipality of Athens, Hellas:


7 December 2017 – The Cyprus Institute 2017 Colloquium Series, Guy Ourisson Building, Seminar Room (1st Floor), Lefkosia, Cyprus: Invited colloquia lecture:


8-12 December 2017 - 1st Ice-breaking Workshop on Global Black Soil Critical Zone Geo-Ecological Survey (BASGES), Shenyang Geological Survey, Shenyang, P.R. China:
• Demetriades, A. and the EuroGeoSurveys Geochemistry Expert Group’s FOREGS team, 2017. WEGS and FOREGS Geochemical mapping of Europe.


• Klos, V. and Filipovich, V., 2017. Ukrainian black soil research: A review and its prospects.

4.5. Publications


Note: In total, >35 GEMAS project papers have been published in international journals.

4.6. Book sales

GEMAS atlas: Book sales since publication in April 2014: >750 copies of both volumes, including free copies sent to libraries worldwide. Sales by Schweizerbart were 462 copies of (Parts 1 &2), 81 copies of Part 1 and 72 copies of Part 2.

EGG atlas: Book sales, since publication in August 2010, reached 925 copies.
Urban Geochemistry textbook: Book sales, since publication in April 2011, reached 620 copies.

5. Future Perspectives

Among the future perspectives, apart from on-going work on the GEMAS project samples, the following harmonised data sets have been identified as 'missing' in the eyes of the Geochemistry Expert Group:

- 4th GEMAS project quality control report on all completed determinations (e.g., Br, I, Magnetic and colour measurements).
- Sr isotope determinations on GEMAS samples (ongoing).
- Modern isotope systems on GEMAS samples.
- DNA Analysis on the GEMAS samples.
- Mineralogical determinations on GEMAS samples (ongoing).
- URGE - urban geochemistry phase II – towards the production of homogeneous and representative urban data sets (for this purpose a brochure was written).
- Harmonised and coherent lithogeochemistry of Europe (complementary to the parent material map of Europe).
- Tap/Surface/Spring water geochemistry.
- Low density geochemistry of the European shelf.
- Forest soil geochemistry.
- Geochemistry of the North Atlantic Basin (for this purpose a brochure was written in collaboration with EGS Marine Geology Expert Group).
- Biogeochemistry.
- Coal and oil geochemistry database.
- Internally consistent geochemistry database of European mineral deposits geochemistry (complementary to the ProMine and Minerals4EU databases).
- GEMAS Follow-up projects.
- Use of the GEMAS data as ground proofing data set for remote sensing (discussion with European Space Agency), and
- GEMAS e-Book or electronic version of GEMAS Atlas for free download on the Internet to be finalised in 2018.

A one-page project description is available for most of the proposed project ideas. Further, the development of the tasks has been allocated to different Task Groups.

Finally, it is worth mentioning that the European fertiliser industry is interested in the GEMAS data.
International Cooperation & Development Task Force

**Deputy Chair:** Diana Ponce de León (IGME, Spain)  
**Deputy Chair:** Fabian Helms (BGR, Germany)

1. **Executive Summary**

EGS Task Force on International Cooperation and Development, is headed by two deputies Diana Ponce de Leon (IGME – Spain) and Fabian Helms (BGR). It is continuing its activities to intensify and improve international cooperation since 2011.

The first goal was the African continent, where cooperation was successfully established with the Organization of African Geological Surveys (OAGS). In the last years, another challenge appeared relating cooperation with geological surveys of Latin America associated within the Organization of Ibero-American Geological and Mining Surveys (ASGMI).

2. **Mission and vision**

The mission of the ICDTF is to increase the capacity of EGS and its members to establish stable, permanent and effective relationships with Geological Survey organizations and other relevant stakeholders internationally, as well as to capitalize on international cooperation opportunities.

3. **Scope and focus**

Assisting the EC in the implementation of the Industrial Policy Dialogues with partner countries; Developing a strategy to work with African geological administrations for strengthening the Organization of African Geological Surveys (OAGS) by realization of the feasibility study (2013 – 2015) and first phase of the PanAfGeo project (2017 – 2019);

Starting the cooperation with Latin American geological surveys (Organisation of Ibero-American Geological and Mining Surveys - ASGMI); INTERMIN Project proposal

In the longer term, developing the cooperation with South-East Asia (Committee for the Coordination of Geoscience Programmes in South-East Asia - CCOP) and other areas or the world with similar demands.
Marine Geology Expert Group

Chair: Henry Vallius (GTK, Finland) MEGE
Deputy Chair: Sytze van Heteren (TNO, Netherlands) MEGE

1. Executive Summary

Marine Geology Expert Group (MEGEG) includes representatives from 24 EuroGeoSurveys member organizations. The group held its Annual Meeting in Rome, Italy on September 29, 2017 at the Sapienza University campus. Since 2009, the group has provided marine geoscience information to the European Commission’s European Marine Observation and Data Network (EMODnet). The third phase (April 2017 – April 2019) of EMODnet, coordinated by GTK, is in its first year. Like its predecessors, it is strengthening the bond of its member and associate surveys and has enabled the ones with a developing mapping program to profile themselves nationally. For some of our member surveys, EMODnet is the only marine project, ensuring some continuity in offshore mapping and strengthening their digital presence as part of the European Geological Data Infrastructure EGDI. In 2017, MEGEG members have contributed to a substantial number of EU-funded and transnational projects, commonly with a multidisciplinary scope. In addition, they continue to play a lead role in the Atlantic research alliance between the EU, the USA and Canada, as well as in other global initiatives. Several sub-groups of MEGEG members met during the year to discuss issues and future opportunities of regional importance, solidifying links between the national marine mapping programs. Jointly, they co-wrote three GeoERA proposals.

In 2017, following a twenty-year hiatus, Italy’s Geological Survey reestablished a Marine Geology Section. Several other surveys have relocated (Denmark), grown (Netherlands, Norway, Russia, Sweden), firmly established their presence as a result of EMODnet (Croatia), or added vessels (Ireland, Poland). Others have been reorganized or (Estonia, Poland), reduced in size (Cyprus, Ukraine) or temporarily been without a director (Greece). Overall, marine geology appears to be on the rise. By creating temporary positions and through intensive cooperation with partner institutes and universities, fundamental-scientific and applied output are being increased even where permanent staff growth is not yet an option.

2. Mission and vision

The MEGEG promotes marine geological information and interpretations as a fundamental requirement for all activities that take place in Europe’s seas. We deliver high-quality information and advice to inform decision makers responsible for our seas, underpinning EU Action Plans and Directives by ensuring that marine science is integrated. We focus on issues of global importance such as sustainable use of natural resources, climate change, habitat mapping, natural hazards and long-term maintenance of databases. Through pan-European, transnational cross-disciplinary collaboration, the MEGEG ensures visibility within EuroGeoSurveys.

3. Scope and focus

Recognizing that different members have different tasks and responsibilities at a national level, the group’s strategy revolves around collaboration and visibility. The EMODnet program has provided an opportunity for all MEGEG members to work together. In addition, some members have been active in initiatives such as the EuroGeoSurveys Northeast Atlantic Geosciences group (NAG), with the initiation of the NAG-Coast Group and the MIM group (MAREANO-INFOMAR-MAREMAP) for knowledge and best-practice sharing related to marine mapping. On occasion, equipment or ship time is being shared (e.g., Portuguese-Spanish...
Whenever possible, projects are developed between multiple members, looking for opportunities to involve the marine biological, oceanographic/hydrographic, physics, chemistry, archaeological and even pharmaceutical communities as well. The PROPEL cruise in May 2017, funded by EUROFLEETS-2, involved marine geology partners of France, Italy, Germany, Portugal and Spain. The MEGE also expands its geographical scope whenever possible, as the issues that affect the European seas have global significance. Knowledge exchange with Geoscience Australia on geomorphological seafloor analysis and intertidal mapping, with the USGS on coastal change, marine geological mapping and Fe-rich biomineralizations, and with the South China Sea Institute of Oceanology on ferromanganese nodules is ongoing. The group is represented in ICES Working Groups, the European Consortium for Ocean Research Drilling ECORD (providing us with access to the Integrated Ocean Drilling Program IODP), the Atlantic Seabed Mapping International Working Group ASMIWG, the Global Ocean Research Alliance, the International Seabed Authority entrusted with various functions relating to activities in the deep sea, INSPIRE Thematic Clusters, the European Plate Observing System EPOS and the European Multidisciplinary Seafloor and water-column Observatory EMSO.

4. Achievements 2017

4.1 Projects

The MEGE participates in government- and industry-commissioned projects, both internationally and nationally. To generate knowledge needed for tackling tomorrow’s questions, we collaborate with academic institutes, involving graduate and post-graduate students and supporting programs as prestigious as Fulbright. Topics of mutual interest include marine mapping; geohazards; marine minerals and hydrocarbons; CO2 storage, methane hydrates and shallow gas; geochemistry; geo(archo)logical heritage; offshore windfarms, cables and pipelines; environmental-impact assessment and regulation; remote realtime monitoring; database development (digital libraries with (archival) maps, seisms and reports; WebGIS compatible; INSPIRE compliant; with tool and script libraries; interoperable and with distributed delivery); and paleoceanography and climate change.

All MEGE members are involved in the third phase of EMODnet-Geology. The project started on April 1, 2017 and will end on March 31, 2019. Information on seabed sediments, subsurface geology, coastal behavior, geological hazards, mineral resources and drowned landscapes, compiled for all European sea areas, is made available through the project portal (http://www.emodnet.eu) using Web Map Services (WMS) that also feed other portals such as OneGeology-Europe and the European Geological Data Infrastructure EGDI. Tri-monthly reports were submitted to the EC in July and October 2017.

NAG-Coast is an initiative of the Northeast Atlantic Geoscience (NAG) group of EuroGeoSurveys and intends to tackle the white ribbon that marks the transition between land and sea. The group has investigated ways to increase the visibility of coastal-geological science in northern Europe. Building on a white paper finalized in early 2015, NAG-Coast members will map coastal type as part of EMODnet 3, intending to use it as a feasibility study for a pan-European roll-out in EMODnet 4.

Other projects with multiple MEGE partners include EMODnet-Bathymetry and the EMODnet Ingestion Portal; EU projects ODIP 2 (Ocean Data Interoperability Platform), Blue Mining (Breakthrough solutions for sustainable deep sea mining) for which the BGS RockDrill 2 was deployed, SEAm BOTH (SEAmless Maps and Management of the northern BOTHnian), and BONUS SEAMOUNT (New innovative underwater vehicles for studying submarine groundwater discharge and associated nutrient fluxes); COST Actions FLOWS (Impact of fluid circulation in old oceanic lithosphere on the seismicity of transform-type plate boundaries), MEDSALT (Uncovering the Mediterranean salt giant), MIGRATE (Marine gas hydrate - an indigenous resource of natural gas for Europe) and OCEANGOV (Ocean Governance for Sustainability); a JPI Oceans project on Ecological Aspects of Deep-Sea Mining; SUBVENT (Submarine fluid venting on the continental margins of the Canary Islands); transnational MSFD-related projects INDI67 (Developments of methods to improve the monitoring of MSFD
indicators 6 and 7), TiLES (Transnational and Integrated Long-term Marine Exploitation Strategies), SedGOF (Assessment for ecosystem-based management of marine environment on the basis of sea bottom and sediments of the Gulf of Finland) and various Natura 2000 and Marine Spatial Planning initiatives (Denmark; Finland, SmartSea; Sweden, Symphony); IODP-related projects CISU (Climate - ice sheet - sea interactions in the Baltic Sea Basin), DAN-IODP-SEIS (Geological history of the Kattegat during the last 130,000 years), Chicxulub K-Pg Impact Crater, Mariana Convergent Margin, and Mediterranean Outflow; a pre-feasibility survey of the FinEst Link submarine tunnel; and the 6th TRASNA Survey (mapping a swath between Europe and North America as part of the Atlantic Ocean Research Alliance).

Some projects presently carried out by individual members address topics that are suitable to adoption by the groups. Concerning overseas territories and international waters, the IMMILA project is a source-to-sink study focusing on a catchment basin affected by nickel extraction in New Caledonia, LESELAM assesses the effect of soil erosion on siltation of a lagoon in Mayotte, deep-sea-mining projects in the central Pacific (manganese nodules), the Indian Ocean (massive sulfides) and the Azores, Canary Islands and the Antarctic South Shetland Islands (hydrothermal vents) quantify resources in vulnerable areas. Concerning land-sea integration, the TUNB project (Deeper subsurface of the North German Basin) intends to build a 3D-geological model of the entire North German Basin, TRESURE addresses emerging contaminated sediments along the uplifting northern Baltic Coast of Sweden, the TASMANDRAKE project focuses on the geodynamic evolution of the Drake and Tasmania gateways and the land-sea tectonic correlation of the continental margins and oceanic basins, and IGCP Project 639 focuses on sea-level change from minutes to millennia. National mapping programs have focused on lithostratigraphy, sedimentary processes, depositional systems, tectonics, debris-avalanche and debris-flow deposits. They include the Finnish seafloor-mapping program, RGF-Plateau Continental (France), YPOTHER (Greece), INFOMAR (Ireland), CARG (Italy), Geological Mapping of Lithuanian Baltic Sea, MAREANO (Norway), Geological Integrated Coastal Zone and Seabed Mapping (Poland), Seamless Geological Maps of Russian Arctic, Hydrographic and Oceanographic Research Program of the Spanish Exclusive Economic Zone, and MAREMAP (UK).

New systematic mapping initiatives in areas rarely surveyed previously address the Croatian part of the Adriatic Sea, and Norwegian and Russian parts of the Barents Sea. Some of these include significant efforts in digitizing paper records, including seismic profiles and borehole descriptions. These and other data are disseminated through new multidisciplinary marine portals such as the Finnish portal (www.MarineFinland.fi), a national service linking information and data from various Finnish marine data providers, a repository of geological and geophysical mass data from the Polish maritime areas, a database and catalogue of mineral deposits in the Spanish continental margin (REMIMARES) and a database of seismic profiles in SEG-Y format of the Mediterranean and Cantabrian margins (GIBAS).

4.2 New methods and vessels

In support of the project-related activities, research infrastructure is being shared (e.g. FINMARI in Finland) and new technologies have been developed and tested. Important advances concern the use of drones in seamless mapping from land to sea; methods to improve the monitoring of indicators related to seafloor integrity; ocean-bottom seismometers for unraveling the deep structure of the Earth's crust and upper mantle in offshore areas; a cryogenic magnetometer for oil prospecting and mineral exploration; and a Moving Vessel Profiler and a new method on stratified random sampling design that can be applied during surveying. New, fully equipped vessels were acquired by GSI and PGI.

4.3 Calls and project development

A joint proposal for EMODnet-Geology 3, coordinated by GTK and including all MEG member institutes, was successful, as was a proposal for EMODnet-Bathymetry 3. Several members have coordinated efforts in their preparation for ERA-MIN 2 (Fostering coordinated research on the entire value chain for raw materials), and three (partly) marine proposals
were submitted under the GeoERA umbrella (Integrating the GSOs’ information and knowledge on subsurface energy, water and raw material resources, to support sustainable use of the subsurface in addressing Europe’s grand challenges). Marine sand and gravel resources are addressed in the Aggre-grades proposal led by GEUS, metallogenetic mineral resources in the MINDeSEA proposal coordinated by IGME Spain, and hydrates in the continental margin in the GARAH proposal initiated by GEUS. Individual members were rewarded for successful project proposals under EU-BONUS: ECOMAP (Baltic Sea environmental assessments by opto-acoustic remote sensing, mapping, and monitoring) and SEAMOUNT (New innovative underwater vehicles for studying submarine groundwater discharge and associated nutrient fluxes). Proposals were also submitted under INTERREG (tsunami wave modeling, susceptibility mapping and tsunami triggers), EMSO and national flags (3D seismics, renewable energy, sustainable development, tectonic ocean spreading, habitat mapping, coastal mapping, arctic gas hydrates, basement weathering, windfarm development, CO2 storage, contourites, sediment traps).

4.4 Events

Scientists from the MGEG contributed to the organization of the Study Day Sand Extraction in Ostend (Belgium), a Marine Geology Summer Workshop in Telašćica (Croatia), a World Tsunami Awareness Day Workshop in Lefkosia (Cyprus), a Deep-Sea Mining Workshop in Berlin (Germany), AGU sessions and a side meeting on Seabed Mapping discussing current seabed mapping programs, initiatives such as seabed 2030, approaches to deep-water mapping and coastal mapping in New Orleans (USA), an EMSAGG Workshop on Marine Sand and Gravel Resources in tandem with the INFOMAR Seminar 2017 (Cork, Ireland), a MIM Workshop on Geomorphological Mapping in Dublin (Ireland), the Baltic Sea Days in St. Petersburg (Russia) on the environmental consequences of physical damage to the seafloor and coastal zone, an International Conference and Exhibition on Oil and Gas Resource Exploration in Russian Arctic and Continental Shelf in St. Petersburg, the Gulf of Finland Science Days 2017 in Tallinn (Estonia), and a BlueMed meeting on sustainable growth in the marine and maritime sectors of Slovenia in the Northern Adriatic in Piran (Slovenia). An open knowledge sharing network will be established with counterparts from other continents.

4.5 Publications and other dissemination

Several MGEG members have been exploring interactive ways to disseminate knowledge and output, making use of open-source portals with Web Map Services, Google Earth, story maps, smartphone apps, geosites and geotrails, vessel tours, interactive public presentations, Facebook, Twitter (“#ShipwreckSaturday” and “#OnThisDay”), and YouTube. For outreach, we participated in many events, including the Irish Geological Research Meeting, Atlantic Ireland 2017, INFOMAR Sandboxes as part of 2017 BT Young Scientist Exhibition and Ireland’s SeaFest events, Irelands 2017 Our Ocean Wealth and Smart Ocean conferences, Arklow Maritime Festival, National Heritage Week. The new marine science gallery in the Galway City Museum features geological topics. A press release by IGME Spain on the discovery of new strategic mineral resources in the Canary seamounts had a great impact in the media with more than 50 interviews with journalists. Newspaper articles detailing MGEG member’s marine activity appeared in Inshore Ireland, The Irish Times, NRC (Netherlands). GTK participated in the compilation of the VELMU (Marine Habitat) Atlas. Peer-reviewed published highlights are:


Medialdea, T., Somoza, L., González, F.J., Vázquez, J.T., de Ignacio, C., Sumino, H., Sánchez-


5. Future perspectives

At a European level, the main collaborative focus of the marine departments of the geological surveys will continue to be the EMODnet Program. There will be a significant increase in available funding during the next phase of EMODnet. The program is expected to continue after 2020 to underpin ‘Blue Growth’, the European Commission’s long-term strategy to support sustainable growth in the marine and maritime sectors as a whole. The 'blue' economy represents millions of jobs and generates a gross added value of almost €500 billion a year. The MEG members address the Blue Growth strategy in many of their activities and play central roles both nationally and internationally in the key areas with potential for growth. The MEGG Chair is a member of the Advisory Board on the Blue Mining Project. Indirectly, EMODnet will continue to employ marine geoscientists and data experts fulfilling both EU mandates and national needs. It has spawned and strengthened regional collaboration in the Mediterranean and elsewhere, illustrated by initiatives aimed at producing an updated structural map of the geologically active Central Mediterranean Sea and at reconstructing the role of Mediterranean outflow water in global climate variability.

While mapping the seabed, MEG members will continue to address issues such as the security of energy supplies (hydrocarbons and renewable energy) and raw materials (mineral and aggregate resources), both GeoERA topics; the protection of the amenity value of the marine environment for food (e.g., habitat mapping for fisheries and aquaculture); and the optimization of aspects related to health and safety (pollution and geohazards), cultural heritage and recreation. We are glad that Italy once again has a Marine Geology Section. During 2018 the new Law on Geological Exploration should formalise the role of the Croatian Geological Survey as the responsible institution for the geological mapping of the eastern Adriatic seabed. EMODnet is providing crucial start-up support to Albania (Marine Geology Directorate created in 2014).

In the drive to ensure that the MEGG contribution remains relevant to Europe for the foreseeable future, new research roadmaps are being developed that focus on emphasizing the role of marine-geological mapping and research in everyday lives. In many of these roadmaps, standard mapping evolves into 3D- and 4D modeling and adaptive monitoring, supporting the knowledge economy and underpinning EU directives for sustainability (with emphasis on seafloor-integrity indicators, mapping of priority areas, and data products relevant to effective spatial planning, maritime jurisdiction and business development). Newly commissioned vessels will be equipped with all instruments needed for state-of-the-art mapping (e.g. new Belgian vessel (2020) able to operate in Arctic waters, refitted Portuguese vessel (2018)). Quantification of the uncertainty of geodata adds to its applied value and is expected to play an increasingly important role in decision making. Marine geological data management moves toward an open-access policy and toward public outreach aimed at broadening the surveys’ appeal and visibility.

Aside from ensuring the connectivity across marine seabed mapping internationally, moved forward by EMODnet, the MEGG network will also need to look beyond the realm for which it is responsible. There is a clear need for linking marine and terrestrial geology. Groundwater cells do not stop at the coastline, sediment is exchanged temporarily and permanently between land and sea, and tools and protocols developed for one purpose or group may well be useful for another. In this light, the EGDI portal as embedded in GeoERA will be used to disseminate past and future EMODnet deliverables. Beyond Europe, the best way of solidifying our role and influence is by continuing to work together and by having a strong representation. With the retirement of Alan Stevenson in 2016, who had been appointed by Sieglinde Gruber (Head of the Marine Resources Unit at the EC’s DG for Research and Innovation) to chair a Working Group to advance an Atlantic Seabed Mapping Action Plan while also playing a key role in other global initiatives, it is important to ensure proper replacement. Plans for a NAG-TEC 2 (North Atlantic Geoscience
Tectonostratigraphic study of the evolution of the NE Atlantic, for example, have been ongoing throughout the year and should not progress without expert marine input. To broaden and strengthen its position and to increase the use and visibility of the European geological surveys, the MGEG sees significant added value in interacting and **collaborating with other EuroGeoSurveys Expert Groups**. At present, the MGEG is communicating with the Mineral Resources Expert Group on the topic of marine minerals. To make full use of Copernicus Services and Sentinel data, we want to strengthen ties with the Earth Observation and Geohazards Expert Group, and we attended a dedicated EuroGeoSurveys meeting in Madrid to learn more about geo-applications of earth observation. When considering groundwater processes and characteristics across the land-sea boundary, the MGEG and the Water Resources Expert Group have a clear common interest.

**Non-EGS organisations associated with the MGE:G**

Institute of Oceanology, Bulgaria (Lyubomir Dimitrov), Hydrographic Institute of Croatia (Ranko Crmaric and Nenad Leder); Jarðfeingi, Faroe Islands (Lis Mortensen and Bartal Højgaard), Ifremer, France (Laure Simplet), Bundesamt fuer Seeschifffahrt und Hydrographie, Germany (Manfred Zeiler), ISOR, Iceland (Ögmundur Erlendsson, Árni Hjartarson and Skulli Vikingsson), Latvian Environment, Geology and Meteorology Centre (Antra Eihenberga, Daiga Pipira, Agnese Jansone and Ieva Bukovska), Geological Survey of Montenegro (Slobodan Radusinovic), GeoEcoMar, Romania (Gabriel Ion), Dokuz Eylul University, Turkey (Günay Çifçi, Mustafa Ergun and Erdeniz Ozel, and Prichernomorske State Regional Geological Enterprise (Sergey Osharin and Valerii Rokitskyi).
Mineral Resources Expert Group

Chair: Daniel Oliveira (LNEG, Portugal)
Deputy-Chair: Sebastian Pfleiderer (GBA, Austria)
Deputy-Chair: Gerry Stanley (GSI, Ireland)
Deputy-Chair: Henrik Schiellerup (NGU, Norway)

1. Executive Summary

The EuroGeoSurveys Mineral Resources Expert Group held its two yearly meetings (Kyiv and Brussels) with a strong emphasis on the GeoERA call for projects. The group has collectively contributed in several research projects, namely, MICA, PROSUM, FORAM and Geo-Cradle. Two calls were answered and were successful for funding from H2020 (Intermin and Minland). Apart from several notable achievements for the year, the production of the new Critical Mineral Resources Map of Europe based on the 2017 CRM list is to be highlighted.

2. Mission and vision

The MREG mission is to provide the best available mineral expertise and information based on the knowledge of member Geological Surveys, for policy, communication, public awareness and education purposes at European level, focusing mainly on strengthening the position of the European minerals industry towards resource sustainability and competitive growth.

3. Achievements 2017 - Scope and focus

The MREG attended the National Delegates Meeting in Brussels (13 February 2017) and held its spring and winter meetings in Kyiv (25-27 April; hosted by GeoInform) and Brussels (6-7 November; hosted by RBINS), respectively.

MREG (under the EGS umbrella) submitted proposals to H2020 Calls in March 2017, as follows:

1- H2020-SC5-2016-2017 (Greening the Economy), Type of action: Coordination and support action. Topic: SC5-16-2016-2017, Proposal number: 776642 – INTERMIN (INTERNATIONAL NETWORK OF RAW MATERIALS TRAINING CENTRES), and

Both projects were accepted for funding and commenced in December 2017.

MREG was represented at the following meetings:

1- Ad Hoc Working Group (AHWG) on Criticality (Brussels, 25 January 2017) focusing on the new criticality assessment methodology. MREG also provided comments to the draft final report and the 75 attached factsheets. Resources and reserves information mentioned in the factsheets is conforms to the UNFC for Resources and often sourced data from Minerals4EU.
2- GeoERA kick-off meeting in Utrecht, Netherlands (17-18 January 2017) with particular emphasis on the sub theme GeoERA Raw Materials. At the meeting, Gerry Stanley, MREG Deputy-Chair was formerly designated as Theme Coordinator for Raw Materials.
3- African Mining Indaba (Cape Town, 6-9 February 2017).
“Minerals projects” in which MREG is involved:

1. EGS Projects related to Minerals:

   **MICA** (Mineral Intelligence Capacity Analysis): The MICA project brings together a multidisciplinary team of experts from natural and technical sciences, social sciences including political sciences, and information science and technology to assist in the collection, collation, storage and making available of Raw Materials Intelligence in a useful way which corresponds to stakeholder needs.

   **ProSUM** (Prospecting Secondary raw materials in the Urban mine and Mining wastes): The project aimed to provide an inventory of secondary raw materials, particularly critical raw materials, arising from WEEE, ELVs, waste batteries and mining waste. This inventory will support the European Innovation Partnership’s Strategic Implementation Plan to build an EU raw materials knowledge base.

   **FORAM** (Towards a World Forum on Raw Materials): The FORAM project is mapping multi-stakeholder initiatives working on raw materials globally. Through an online questionnaire, information is collected on the initiatives’ organisational structure, objectives and strategies, type of raw materials, number of stakeholders involved, step in the value chain and more. With this information, the FORAM project has created an overview of currently active multi-stakeholder groups.

   **Geo-Cradle** (Coordinating and integRating state-of-the-art Earth Observation Activities in the regions of North Africa, Middle East, and Balkans and Developing Links with GEO related initiatives towards GEOSS): The continuous provision of accurate and timely information through coordinated and sustained Earth Observation (EO) activities is considered a key enabler for informed decision making in response to challenges such as adaptation to climate change, improved food security & water extremes management, better access to raw materials and energy and many more. In this context, large international initiatives such as GEO and Copernicus are promoting the integration and coordination of Earth Observation capacities at regional, national and international levels.

2. EU-Latin America Mineral Development Network Platform: MDNP project

   The MDNP project is the continuation of the EU-Latin America Policy Dialogues with Latin America. EGS is part of the MDNP Advisory Board (AB).

   EGS contributes to the project with advice and recommendations. EGS has participated in the two AB meetings that have been set up so far and has contributed to the interim report through MREG, International Cooperation and Development Task Force and the EGS Secretariat. MREG provided support and advice for the preparation of the Mets2018 event: [http://www.mets2018.eu/en/](http://www.mets2018.eu/en/)

Other activities:

1. Contribution to GEO: EuroGEOSS concept paper
2. Contribution to DG JRC-RMIS
3. European Minerals Day
4. Communication activities related to minerals

The new Critical Raw Materials Map:

**A Second Edition of MREG’s Critical Raw Materials Map of Europe was published in December based on the EC’s updated list of CRM for Europe.**
MREG was an invited expert in:

1. The first Synergic Circular Economy across European Regions (SCRREEN) expert group meeting resources and clustering event held in Brussels (28-29 June 2017).
2. GeoERA Foresight Team – Expert panel chair input for geological service of Europe (GS4E) discussion.

During the first half of 2017, MREG contributed to the following:

3. Submitted project ideas on Raw Materials to the GeoERA 1st Stage Call MREG was also involved in preparing project proposals for the 2nd Stage Call.

4. Future Perspectives

GeoERA stage 2 calls (Raw Materials Theme) were successfully answered by Group Members and submitted in early January 2018. We now await the review of the proposals and will implement the successful proposals.

MREG will also respond to requests for information and advice on minerals related matters from the EC to support policy, communication, public awareness and education.


1. Executive Summary

The main activity of the SIEG in 2017 has been focused on EGDI, GeoERA and EPOS. For EGDI, a strategic paper has been submitted to the Directors and funding has been decided to maintain the platform before the beginning of the GeoERA IPT (Information Platform Theme). The preparation of the GeoERA IPT proposal has been the top priority of SIEG members during 2017, in coordination with the three other topics. Regarding EPOS, the technical development of the “geology component” is progressing in coherence with EGDI, in parallel with the definition of the future partnership between EPOS and EGS.

2. Mission and Vision

Spatial information / information systems expertise is a key asset in the design and development of the European Geological Data Infrastructure (EGDI) which is at the core of EGS strategy, and this expertise has to be mobilized in a transverse way, in support to the other EGS expert groups to develop an EGS infrastructure.

3. Scope and Focus

In the coming years, priority should be given to the consolidation of EGDI in all its dimensions (scoping, technical, governance, funding), and its contribution to GeoERA. The mechanisms to guarantee that new pan-European projects will contribute and support the EGDI will also be developed and implemented. On a broader perspective, the SIEG has also the responsibility to propose to EGS a strategy to guarantees that its infrastructure can fit/collaborate with other infrastructures (ESFRIs, EPOS, INSPIRE, EOSC, Copernicus, EuroGEOSS ...).

4. Achievements 2017

4.1 Projects

- EGDI
  During the EGS General Meeting in March 2017 it was decided to provide funding for the basic operations of EGDI through voluntary contributions from the members and some reallocations of EGS budget. These contributions add up to a little more than 100,000€ for 2017. Following this decision, the main contributors to the implementation of EGDI version 1 (GEUS, BRGM, GeoZS, CGS and BGS) had a meeting in Paris in May where they discussed the way forward for EGDI, including a vision, strategic goals and success criteria. They produced a paper forwarded to the Excom on 30 June 2017: “EGDI Strategic paper”. This paper, which includes a workplan was be presented to the National Delegates in Vienna. Due to the prioritization on GeoERA, the activity on EGDI has been minimal so far, and a planning is currently in preparation for Spring 2018.

- GeoERA
  The coordination of the Information Platform Specific Research Topic has been done by Jørgen Tulstrup on behalf of the SIEG. Coordination with the Geoenergy, Groundwater and raw materials SRTs is crucial to align the content of the Information platform developments with the thematic topics. A face to face
meeting was organised in September and regular weekly teleconferences were followed by large number of participants for the preparation of the proposal. The two SIEG co-chairs are also involved in GeoERA activities not directly related to IPT.

- EPOS

European Plate Observing System (EPOS) is a European research infrastructure for solid earth science. EPOS is currently being implemented, funded by Horizon 2020 and a few EGS members are participating in the project. EPOS will be operated through an ERIC supported by member states. The ERIC will be formally created in 2018. BGS, BRGM and GEUS have been selected to host the EPOS core services. EGS has signed a Memorandum of Understanding with EPOS with the aim of facilitating the best possible relations and synergies between EPOS and EGDI. The target user groups, and data content are in large parts different between EPOS and EGDI but EGDI is supposed to be the link between the NGSOs of Europe and EPOS concerning geological data. The formalisation of the relationship between EPOS and EGS will be discussed in 2018.

4.2 Events

- 13-14 February 2017 – Brussels - National Delegates meeting and EGS Chairs meeting
- 29 May/1 June – Vienna - GIC meeting (SIEG members + alter egos from other continents)
- 5-6 September 2017– Vienna - National Delegates meeting
- 6-8 September- Strasbourg - Inspire conference
- 11-15 September 2017 – Southampton – OGC meeting / creation of Geoscience Domain Working Group
- 17-18 October – The Hague – GeoERA Kick off
- 19 October – Leiden – GeoERA IPT meeting for preparation of IPT proposal
- 30 November / 1 December 2017 - Brussels - Digital Infrastructures for Research

A big amount of teleconferences and dedicated meetings involving members of the SIEG were organised in the context of the EGDI project, and for the GeoERA project.

5. Publications

There are no formal publications from SIEG, however many communications and publications have been made by SIEG members on EGDI and EPOS in particular: at the INSPIRE Conference, EGU, ...

Members of the SIEG have also contributed to the development of the GeoSciML v4.1 data standard which was ratified and published by OGC in March 2017.

They also contributed to the creation of the new Geoscience Domain Working Group in OGC with the goal to propose developments of new standards initiated in Europe (such as 3D model metadata, borehole exchange...).
6. Future Perspectives

Short-term priorities will be to succeed in GeoERA IPT development in coordination with other GeoERA Projects.

An efficient and mutually beneficial partnership between EGDI / EGS and EPOS is also a high priority that must be in place by end 2018. The EGS strategy regarding the new landscape prepared by the Commission in the EOSC implementation should also be discussed to better address the long-term development of our “data” activities. Finally, the SIEG should certainly find time to discuss the challenges and opportunities of new technologies (such as 3D/BIM, Big data, Linked data, IA…) for its members, and to explore the synergies that could be developed between members on that matter.
Water Resources Expert Group

Chair: Klaus Hinsby (GEUS, Denmark)
Deputy Chair: Hans Peter Broers (TNO, Netherlands)
Deputy Chair: Anna Kuczynska (PGI-NRI, Poland)
Deputy Chair: Laurence Gourcy (BRGM, France)

1. Executive Summary

The main activity of WREG in the first part of 2017 was to prepare and submit groundwater project ideas for stage one of GeoERA. In the second part it was developing final groundwater proposals for the four specific research topics for groundwater in stage 2 of GeoERA defined by the GeoERA secretariat based on the 34 received project ideas. Besides that, activities in 2017 also included active participation in CIS WG Groundwater meetings.

2. Mission and Vision

The Water Resources Expert Group (WREG) strives to collect and provide data and decision-support tools for the long-term protection, sustainable management and improvement of groundwater resources across Europe based on sound groundwater research. The efforts focus on EU societal challenges and support of EU policies on water taking into account both protection of groundwater legitimate uses and terrestrial and aquatic ecosystems according to the Water Framework and Groundwater directives as well as the Blueprint to Safeguard Europe’s Water Resources.

3. Scope and Focus

Provision of groundwater and hydrogeology data for sustainable management and safeguarding of Europe’s Water Resources on a scientifically sound basis. Focus of WREG for the coming five years will be 1) to identify and supply relevant data for the groundwater part of GeoERA and the Geoscience Information Platform (GIP / EGDI) and 2) to Identify groundwater research gaps and develop groundwater research projects and publishable scientific papers related to these.

4. Achievements 2017

4.1 Projects and calls

The main achievement in 2017 was the submission of 34 project ideas for GeoERA and later on four proposals for the specific research topics defined from these (deadline 12.1.2018). The achievement was the result of many years of work by especially TNO, EGS and the other members of the GeoERA secretariat as well as the chairs of the involved expert groups. WREG chairs have worked for many years to get groundwater higher on the European research agenda e.g. through meetings and conferences with the Commission and through our active involvement in Working Group Groundwater of the Common Implementation Strategy for the Water Framework Directive.

4.2 Events

- January-March:
  17/01/2017 - GeoERA kick-off, Utrecht: Presentation of and call for project ideas for the groundwater theme: Klaus Hinsby, GEUS.
  21/02/2017 - Presentation of WREG annual report at National Delegates Forum: Laurence Gourcy, BRGM.
28/03/2017 – GeoERA-gw meeting, Antwerp: Plenary meeting on groundwater project idea development: Klaus Hinsby (GEUS), Hans Peter Broers (TNO), Laurence Gourcy (BRGM), Anna Kuczynska (PGI) and 22 other WREG members.

- April-June:
  25-26/04/2017. 32th CIS Working Group Groundwater Meeting, Gozo, Malta: WREG were represented by: Laurence Gourcy (BRGM), who presented activities on trend assessment in relation to the implementation of the Water Framework Directive.
  07/06/2017. Deadline for project idea call: WREG members submitted together about 30 project ideas, which all were eligible, and discussed and developed in close collaboration between all GeoERA partners.
  20-22/06/2017. GeoERA GES meeting, Llubljana - initial discussion and evaluation of the received project ideas in all GeoERA themes: Hans Peter Broers (TNO).

- July-September:
  04-05/07/2017. GeoERA meeting, Copenhagen – continued evaluation of project ideas and the development of specific research topics and call texts for the GeoERA phase 2 call for project proposals: Klaus Hinsby (GEUS)
  04/08 – 26/09. Preparation for GeoERA groundwater meeting at PGI in Warsaw September 26-27: Anna Kuczynska (PGI), Klaus Hinsby (GEUS), Hans Peter Broers (TNO) and Laurence Gourcy (BRGM).

- October - December:

Preparation of GeoERA groundwater proposals GW1 (HOVER, Laurence Gourcy, BRGM), GW2 (TACTIC, Anker L. Højberg / Klaus Hinsby, GEUS), GW3 (RESOURCE, Hans Peter Broers, TNO) and GW4 (VoGERA, Sian Loveless / Rob Ward, BGS) – groundwater theme coordination, Klaus Hinsby

4.3 Publications

There are no common publications from WREG for 2017, but many members (surveys and scientists) are among the most active and cited groundwater research institutions and scientists in Europe as e.g. demonstrated in the annual report for 2016. The GeoERA coordinator and theme coordinators submitted a common paper related to GeoERA for a special issue of Annals of Geophysics on geoethics (van Gessel et al., 2017).

5. Future perspectives

Key aim of WREG in and beyond GeoERA is to conduct groundwater research and provide scientifically sound and standardized data for the European Geoscience Information Platform/European Geological Data Infrastructure (GIP / EGDI) to support implementation of EU policies, sustainable resources management and integrated surface and subsurface spatial planning. Easy and efficient access to these data according to the “FAIR” principles (Wilkinson et al. 2016) will benefit public and private research organisations and public-private partnerships developing innovative water and environment monitoring and modelling, as well as the authorities developing integrated, sustainable and cost-efficient...
resource policies. Innovative and broadly applicable solutions and products/instrumentation for sustainable water management and smart monitoring and modelling will support and preserve Europe’s leading role in developing sustainable solutions to safeguard water resources and the environment.
THE SHAPE OF OUR BUSINESS 2018
Earth Observation and Geohazards Expert Group

Chair: Gerardo Herrera (IGME, Spain). Deputy Chair: Eleftheria Poyiadji (IGME, Greece). Deputy Chair: Maria Przyłucka (PGI-NRI, Poland). Deputy Chair: Veronika Kopackova (CGS, Czech Republic).

1. Executive Summary

In 2018, some members of EOEG participated in H2020 Geo-Cradle and H2020 U-Geohaz project: Geohazard impact assessment for urban areas, and got involved in a new project proposal that was approved: EuroGEOSS Showcases: Showcasing and promoting users’ uptake of GEOSS through a coordinated and innovative approach for the benefits of Europe.

The work made by the Landslide working group on the integration of landslide hazard products into urban and land use planning was submitted as a paper to the Landslides journal and a scientific report was prepared on damaging landslides in Europe in the past years.

EOEG participated in Raw Materials conferences focusing on Earth Observation such as the EU-LA Mining & Exploration Convention (METS) and the Raw Materials Week, as well as in the EU-GMS European Ground Motion Task Force meetings and the GEO-XV Plenary summit.

EOEG meeting was kindly hosted by the Geological Survey of Austria in Vienna (Austria).

2. Mission and vision

The mission and vision of EOEG is twofold: to improve geoscience knowledge exploiting the full range of Earth Observation tools; and, to evaluate the impact of geohazards in Europe through the harmonization and upgrading of national databases and the application of innovative mapping, monitoring and modeling techniques and methods.

3. Scope and focus

The scope and focus of EOEG are twofold: landslide and subsidence mapping, monitoring and modeling at different scales from local to European; and, the application of remote sensing (radar, optical, hyperspectral and thermal) for geohazards monitoring, mineral exploration and assessing the impact of mining activity.

4. Achievements 2018 - Activity report

1. EOEG activities:
   a. National Delegates forum & 4th EGS – JRC Workshop, Brussels: 26/02/2018
   b. EOEG meeting in Vienna, Austria: 12-14th April 2018
   c. Invited talk at the Task Force Meeting EU-Ground Motion Service in the EEA, Copenhagen, Denmark: 19-20/04/2018
   d. Invited talk at the EU-LA Mining & Exploration Convention (METS) in Madrid: 11/04/2018
   e. EOEG members are evaluating the possible participation in the H2020 call: “Raw materials innovation actions: exploration and Earth observation in support of sustainable mining”
   f. Invited to the Evaluation Panel of the Screening Study of Major Landslides in Greenland in Copenhagen, Denmark: 26-27/09/2018
   g. Presentation of EOEG activities at the Raw Materials Week: 12-16/11/2018
2. Landslide working group activities:
   a. Questionnaire on landslide monitoring sites in Europe circulated: 05/07/2018
   b. Manuscript submitted to landslides journal: Why a European directive on landslides is necessary?: 30/09/2018
   c. Report on recent damaging landslides reported by the Geological Surveys of Europe: 31/12/2018

3. EOEG Projects:
   a. H2020 GEO-CRADLE project: closure year activities
   b. H2020 U-Geohaz project: on going activities
   c. H2020 EuroGEOSS Showcases: Showcasing and promoting users’ uptake of GEOSS through a coordinated and innovative approach for the benefits of Europe: approved, currently in the GA preparation phase

4. EU-GMS European Ground Motion Task Force and related activities:
   • Invited talk at the Task Force Meeting EU-Ground Motion Service in the EEA, Copenhagen, Denmark: 19-20/04/2018
   • Participation in the INSAR.no launch meeting in Trondheim: 29/11/2018

5. GEO:
   a. EOEG reports the progress made in the Community of Activity: Earth Observations for Geohazards, Land Degradation and Environmental Monitoring to the Secretary of the Group on Earth Observation (GEO): 15/05/2018
   b. GEO-XV statement preparation and EGS poster elaboration
   c. GEO-XV Plenary and associated events in Kyoto, Japan: 29/10/2018 – 2/11/2018

5. Future perspectives

EOEG will continue participating in H2020 UGEOHAZ and EuroGEOSS Showcases projects.
The Landslide working group will continue with the elaboration of the:
   • Damaging landslides database
   • The review of landslide monitoring test sites in Europe.
   • Factsheets and a white paper on landslides will be prepared to summarize the work done in the past years

EOEG involvement in GEO will be increased through the participation in EuroGEOSS Showcases project.
A possible project proposal could be prepared in response to the H2020 call: “Raw materials innovation actions: exploration and Earth observation in support of sustainable mining”.
Next EOEG meeting will be celebrated in the first week of June, together with UGEOHAZ project training activity. This meeting will be kindly hosted by the Geological Survey of Greece.
Geochemistry Expert Group

Chair: Philippe Negrel (BRGM, France). Deputy Chair: Anna Ladenberger (SGU, Sweden).

1. Executive Summary

The 2018 activities of the EuroGeoSurveys Geochemistry Expert Group (GEG) were:
(i) additional laboratory work on the GEMAS samples;
(ii) publication of papers and presentations in conferences using results from the FOREGS Geochemical Atlas of Europe, European Groundwater Geochemistry (EGG), Geochemistry of Agricultural and Grazing land soil (GEMAS), and Urban Geochemistry (URGE) projects;
(iii) discussion of ideas for developing pan-European geochemical projects of interest to policy makers, the scientific community, and the public, and
(iv) preparation of the GEMAS on-line version.

Results from all four completed projects are relevant for various European Commission Directives and EU international commitments.

2. Mission and Vision

Sound scientific data must be in the forefront for planning and political decision-making. The mission of GEG is, thus,
(i) to provide high quality geochemical data of near-surface materials, which affect directly or indirectly our quality of life;
(ii) to develop harmonised geochemical databases for multi-purpose use: “one project – many customers”;
(iii) to offer independent non-biased expert advice to the European Commission, and
(iv) to supply sound geochemical background data to scientists for their research, and to the public, in general, for education and other applications (e.g., land use planning, agriculture, remediation).

3. Scope and Focus

The focus of GEG is the execution of pan-European applied geochemical projects using harmonised and quality-controlled procedures of sampling, sample preparation, and laboratory analysis to produce high-quality data for multipurpose use. The scope is to bring under the same umbrella applied geochemists with various specialties (e.g., environmental, mineral exploration, ground water geochemistry) from all EGS member institutions, and to act as a forum for the exchange of expertise and to work together to deliver high quality professional products and services to European Union countries.

4. Achievements for 2018

4.1. Projects

GEMAS: Activities during 2018 were (i) the presentation of results in conferences (see Section 4.4,) (ii) writing of papers on different aspects of the GEMAS project (see Section 4.5), (iii) additional determinations on the agricultural and grazing land soil samples, which should be completed in 2019, namely (a) Sr isotopes (b) mineralogical determinations on the agricultural and grazing land soil samples, (iv) preparation of GEMAS e-book, and (v) the Geological Survey of Ireland is developing an internet viewer for the GEMAS data sets under its Public Data Viewer Series.
URGE: Publication of papers on urban geochemical projects carried out in different European cities in a Special Issue of the Journal of Geochemical Exploration (vol. 187) in April 2018 with the title: Urban Geochemical Mapping: The EuroGeoSurveys Geochemistry Expert Group’s URGE project (see Section 4.5). The Special Issue bears the EuroGeoSurveys logo. This is considered a good promotion of GEG and EuroGeoSurveys activities.

4.2. European Commission Calls and Outside funding sources

GEG members participate in different projects:

- **The INTERREG Danube Transnational Programme** (SIMONA: Sediment-quality Information, Monitoring and Assessment System to support transnational cooperation for joint Danube Basin water management). The main objective of SIMONA is to respond to the current demand for the effective and comparable measurements and assessments of sediment quality in surface waters in the DRB by delivering a ready-to-deploy Sediment-quality Information, Monitoring and Assessment System to support transnational cooperation for joint DRB water management. The FOREGS and GEMAS data will be used in this project. [http://www.interreg-danube.eu/approved-projects/simona](http://www.interreg-danube.eu/approved-projects/simona).

- **SCRREEN** - Raw materials are crucial to Europe’s economy and essential to maintaining and improving our quality of life. Securing reliable and unhindered access to certain raw materials is a growing concern within the EU and across the globe. To address this challenge, the European Commission has established a list of Critical Raw Materials (CRMs: Sb, Baryte, Be, Bi, Borate, Co, Coking coal, Flurospar, Ga, Ge, Hf, He, In, Mg, Natural Graphite, Natural Rubber, Nb, Phosphate Rock, P, Sc, Si, Ta, W, V, PGMs, HREE, LREE). CRMs combine a high economic importance to the EU with a high risk associated with their supply. The list of CRMs should help (i) Implement the EU’s industrial policy and strengthen industrial competitiveness; (ii) Stimulate the production of CRMs and the launch of new mining activities in the EU, and (iii) Prioritise actions, negotiate trade agreements, challenge trade distortion measures, and promote research and innovation. [http://sccreen.eu/](http://screen.eu/).

- **ProSUM (Prospecting Secondary raw materials in the Urban mine and Mining wastes)**. ProSUM objectives are to deliver the first Urban Mine Knowledge Data Platform: (i) Compilation of a centralised database of all available data and information on arisings, stocks, flows and treatment of waste electrical and electronic equipment (WEEE), end-of-life vehicles (ELVs), batteries and mining wastes; (ii) It will include Primary and secondary raw materials data, easily accessible in one platform; (iii) Provide the foundation for improving Europe’s position on raw material supply, with the ability to accommodate more wastes and resources in future, and (iv) Provide user friendly, seamless access to data and intelligence on mineral resources from extraction to end of life products with the ability to reference all spatial and non-spatial data. [http://www.prosumproject.eu/](http://www.prosumproject.eu/).

- **AgriAs (Evaluation and management of Arsenic contamination in agricultural soil and water)** - The FOREGS and GEMAS maps, databases and publications have been used in the AgriAs project lead by the Geological Survey of Finland. AgriAs is co-funded by the EU and Academy of Finland, L'Agence nationale de la recherche, Bundesministerium für Ernährung und Landwirtschaft and Forskningsrådet FORMAS under the ERA-NET Cofund WaterWorks2015 Call. This ERA-NET is an integral part of the 2016 Joint Activities developed by the Water Challenges for a Changing World Joint Programme Initiative (Water JPI). [http://projects.gtk.fi/AgriAs/](http://projects.gtk.fi/AgriAs/).

- **Smart Exploration** - Sustainable mineral resources by utilising new exploration technologies H2020-SC5-2016-2017. The focus is on developing cost-effective, environmentally-friendly tools and methods for geophysical exploration, as well as other aspects such as geological and geochemical target vectoring and generations. [https://smartexploration.eu/](https://smartexploration.eu/).

- FRAME - Forecasting and assessing Europe’s strategic critical raw materials (CRM) needs – GeoERA; The project will build on previously and currently developed pan-European and national databases, and expand the strategic and CRM knowledge through a compilation of mineral potential and metallogenic areas of critical raw materials resources in Europe, focused on related metal associations on land and the marine environment. Secondary resources, in terms of historical mining wastes and potential by-products will also be considered. The mineral resources targeted will have to extend beyond the current EU CRM list and also include minerals and metals (e.g., Li, Cu, Mn) that are strategic for the European downstream industry in the mid- and long-term perspective. [http://www.frame.lneg.pt/](http://www.frame.lneg.pt/).

- PERFORM - “Improving Geothermal System Performance through collective Knowledge Building and Technology Development” (web-site under construction). The work in PERFORM focuses on implementation and evaluation of capabilities to control mineral scaling, particles clogging, corrosion, and temperature/stress related effects of geothermal flow and injectivity. The project is structured as a four-step approach: (i) Building a database that integrates geological, geochemical, geomechanical and operational data with the aim to learn and understand the reservoir performance and water-rock interaction processes; (ii) Predict and validate the performance of selected geothermal plants and sites. This part includes predictive geochemical modelling of thermodynamic processes etc.; (iii) Solve and prevent. This part includes, e.g., an approach for developing particle and cation filters together with an approach for CO₂ injection and temperature stimulation, and (iv) Dissemination and developing a toolbox. The toolbox is to be used for operational advice, focussing on how to economically optimise field cases.

**Outside funding source:** Eurometaux is still interested to partially finance a surface and spring water geochemistry project of Europe based on low-density sampling (like GEMAS, i.e., up to 30% of the funds come from Eurometaux). The problem is to find another financing source.

### 4.3. Offering expert advice

Alecos Demetriades participated in the ‘2nd Workshop on Global Black Soil Critical Zone Geo-ecological Survey (BASGES)’, which was organised by the Shenyang Geological Survey (SGS), Shenyang, P.R. China, in Harbin from the 20th to the 24th of October 2018, representing the IUGS Commission on Global Geochemical Baselines (IUGS CGGB) and the EuroGeoSurveys Geochemistry Expert Group (EGS GEG). He presented the first draft of the BASGES Project Manual of Standard Geochemical Methods with co-authors from IUGS CGGB (Alecos Demetriades, Ariadne Argyraki, Christopher C. Johnson, David B. Smith, Kate Knights, Patrice de Caritat), EGS GEG (Manfred Birke), SGS (Dai Huimin, Liu Kai), and the Russian Federation (Igor Savin). The Manual is planned to be completed by the 31st of March 2019, on the condition that SGS provides the information for a number of outstanding issues. Upon finalisation of the Manual, countries in Europe with black soil (Chernozem) will be contacted, e.g., Ukraine, Russia, Poland, Germany, Hungary, Czech Republic, Slovakia, Romania, Bulgaria, Moldavia, Austria and Serbia.

### 4.4. Events


The session included three blocks, each focusing on one of the aspects mentioned in the title: Critical Zone (CZ) functioning, CZ reconstruction, and geochemical techniques in CZ research.
(1) **Critical Zone functioning in the Anthropocene**

Understanding the functioning of the CZ is crucial, as it affects, e.g., soil fertility, weathering and erosion rates, recharge processes, and transit times. It is crucial to estimate the vulnerability and recovery-time of the critical zone and associated landscape in order to plan the sustainable use of water and soil resources, and to protect ecohydrological systems under climate or land use change. This session block will, therefore, focus on natural and disturbed landscape evolution, including key processes of the CZ, such as weathering, soil erosion, ecohydrological processes and soil organic matter dynamics.

(2) **Reconstructing the evolution of CZ, based on soils, sediments and geomorphology**

The reconstruction of the CZ’s past evolution is an essential prerequisite for estimating its further evolution. This session block focusses on the mutual relationships between geomorphology, sediments and soils, and on the use of sediments and soils for reconstructing landscape evolution. These archives also provide a multitude of proxies (pollen, plant-derived lipids and alkanes, molluscs, etc.), allowing for palaeovegetation and palaeoclimate reconstruction. Holistic approaches are needed to obtain a synthesis of the information from the various archives.

(3) **Using the geochemical composition of soils and sediments for tracing provenance, anthropogenic activities and pollution pathways in CZ research**

The focus of this session block is on geochemical approaches, including isotope studies (i) for characterising soils and sediments with respect to their provenance; (ii) for detecting anthropogenic activities and tracing pollution pathways in the CZ; (iii) for geochemical mapping and studying the spatial distribution of chemical elements and (iv) for obtaining a better understanding of water-rock interaction, physico-chemical and biological processes within the CZ.

Research on all three aspects included in this session is needed in order to understand the present CZ functioning and potentially predict its further evolution in times of accelerated global change. Such research also requires significant support from observatory structures through the development of CZ Observatories (CZO-OS) to continuously deliver long term data on any compartment of the CZ using highly instrumental field sites.

Three oral presentations were delivered by GEG members in two of the aforementioned blocks:

An accessible, global-scale geochemical database, generated using standardised sampling, analytical, and quality control protocols, is a critical requirement as nations strive to meet the needs of future generations for adequate mineral resources exploited in an environmentally responsible manner. Such a database provides not only important data for exploration, but also vital information on the background variation of potentially toxic elements that might be released to the environment during mining and mineral processing. This session will focus on the status of developing such a global geochemical database and provide case histories of global-scale geochemical studies.

Four oral presentations were delivered by GEG members:


One poster presentation was displayed by GEG members:

- Reimann, C., Demetriades, A., Fabian, K., Birke, M., Matschullat, J., Schoeters, I., Flem, B. & the GEMAS Project Team, 2018. GEMAS: Periodic Tables of the distribution of elements in European (a) agricultural soil and (b) mineral deposits.

8-10 November June 2018 – Annual General Meeting of the Organisation of African Geological Surveys (OAGS), Dakar, Senegal

The Geological Surveys of Africa are interested to carry out in Africa the Global Geochemical Baselines project according to the specifications of the FOREGS Geochemical Atlas of Europe. Our recommendation was the establishment first of an OAGS Geochemistry Working Group. There was an invitation for a European member of the IUGS Commission on Global Geochemical Baselines (IUGS CGGB) to participate at the meeting and to deliver a presentation. As this was not possible, due to financial and time restrictions, the matter was discussed with the EuroGeoSurveys Secretary General, Dr. Slavko Solar, and the Chair (Philippe Négre) and Deputy Chair (Anna Ladenberger) of the EuroGeoSurveys Geochemistry Expert Group, and for the presentation to be delivered by Gloria Simubali from the Geological Survey of Namibia, who participated in the 2017 Joint Annual Business Meeting of GEG and IUGS CGGB in Vienna. A PowerPoint presentation was compiled with the title: ‘Africa Global-scale Geochemical Baselines for mineral resource and environmental management: Establishment of an O.A.G.S. Geochemistry Working Group, and Capacity-building phase’, which was prepared by Alecos Demetriades & David B. Smith (IUGS CGGB) and Philippe Négre & Anna Ladenberger (GEG) and delivered by Gloria Simubali.

The OAGS welcomed the proposal and decided to establish an O.A.G.S. Geochemistry Working Group, and the IUGS CGGB and GEG will be assisting Gloria Simubali in this work.

Further, Philippe Négre is discussing the involvement of GEG in the second phase of PanAfGeo.
4.5. Publications


Journal of Geochemical Exploration, Volume 187, April 2018
Special Issue: Urban Geochemical Mapping: The EuroGeoSurveys Geochemistry Expert Group’s URGE project


5. Future Perspectives

Among the future perspectives, apart from on-going work on the GEMAS project samples, the following harmonised data sets have been identified as 'missing' in the eyes of the Geochemistry Expert Group:

- 4th GEMAS project quality control report on all completed determinations (e.g., Br, I, Magnetic and colour measurements).
- Sr isotope determinations on GEMAS samples (on-going).
- Modern isotope systems on GEMAS samples.
- DNA Analysis on the GEMAS samples.
- Mineralogical determinations on GEMAS samples.
- URGE - urban geochemistry phase II – towards the production of homogeneous and representative urban data sets (for this purpose a brochure was written).
- Harmonised and coherent lithogeochemistry of Europe (complementary to the parent material map of Europe).
- Tap/Surface/Spring water geochemistry.
- Low density geochemistry of the European shelf.
- Forest soil geochemistry.

4.6. Book sales

**GEMAS atlas:** In total, 11 copies of both volumes, and 3 copies of volume 1 were sold in 2018. The hitherto total sales by Schweizerbart are 544 copies of (Parts 1 & 2), and 13 copies of volume 1. In addition, BGR has sent through its library exchange programme 140 copies of both volumes to national geological surveys, ministries or politicians. NGU has also given free volumes to different institutions. It is, therefore, difficult to estimate the exact number of hard copies that are worldwide since its publication in April 2014. A conservative estimate is around 700 to 750 copies.

**EGG atlas:** Book sales, since publication in August 2010, reached 925 copies.

**Urban Geochemistry textbook:** Book sales, since publication in April 2011, reached 635 copies, and Royalties earned from the sale of 15 books up to the end of 2018 are £12.75.
l. Geochemistry of the North Atlantic Basin (for this purpose a brochure was written in collaboration with EGS Marine Geology Expert Group).
m. Biogeochemistry.
n. Coal and oil geochemistry database.
o. Internally consistent geochemistry database of European mineral deposits geochemistry (complementary to the ProMine and Minerals4EU databases).
p. GEMAS Follow-up projects.
q. Use of the GEMAS data as ground proofing data set for remote sensing (discussion with European Space Agency), and
r. GEMAS e-Book or electronic version of GEMAS Atlas for free download on the Internet to be finalised in 2018.

A one-page project description is available for most of the proposed project ideas. Further, the development of the tasks has been allocated to different Task Groups.

Finally, it is worth mentioning that the European fertiliser industry showed interest in the GEMAS data.
International Cooperation and Development Task Force

Chair: Diana Ponce de León (IGME Greece). Deputy Chair: Fabian Helms (BRG, Germany)

1. Executive Summary

In 2018, the continuity of international activity in EGS was evaluated and, therefore, the continuity of ICDTF. For this reason, at the request of national delegates, a proposal of activities for ICDTF was elaborated. This proposal was presented to the Directors workshop in Vienna (April 2018) along with an analysis made by the secretariat about possible degrees of participation in international cooperation. At the end of the Directors workshop the EGS president, Teresa Ponce de Leão, announced the possibility to form a consortium for “PanLatEUGeo” proposal (EGS-ASGMI). Secretary General asked the geological surveys about their interest to join the consortium and 25 geological surveys answered affirmatively. The approach that was then made for ICDTF was to focus on promoting PanLatEUGeo. It was also approved that Diana Ponce de León Gil (IGME Spain), Deputy Chair of ICDTF, was the Chair.

2. Mission and Vision

The mission of ICDTF is to increase the capacity of EGS and its members to establish stable and effective relationships with Geological Survey organisations and other relevant stakeholders internationally, as well as to capitalise on international cooperation opportunities. ICDTF ensures that members share their international cooperation expertise, acting upon request of the EU institutions.

3. Scope and Focus

The current focus of ICDTF is to consolidate cooperation with the Association of Iberoamerican Geological and Mining Surveys (ASGMI) through PanLatEUGeo proposal. In addition, a proposal to participate in the Call for Commitments will be prepared to give a quality assurance to the commitment at the European level and facilitate access to finance.

4. Achievements

- Coordination with the Secretary General and the Executive Committee of ASGMI to take up the PanLatGeo proposal of 2016 (now called PanLatEUGeo) (June 2018).
- Coordination with the International Cooperation Expert Group (GECI) of ASGMI for the revision of PanLatEUGeo concept note (July 2018).
- PanLatEUGeo concept note revision by ICDTF (September-October 2018).
- Confirmation of the interest of UNEP and UNESCO in supporting the proposal (October and November 2018).
- Presentation of PanLatEUGeo proposal and delivery of the concept note to a representative of DG GROW (November 2018).

- Improvement and update of the concept note, including the comments made by the representative of DG GROW in November (in progress) (December 2018).
Reports and Documents

- Information of the progress of PanLatEUGeo (September 2018).
- Updated PanLatEUGeo Concept Note (November 2018).

Meetings and Workshops

- EGS Expert Groups Chairs Meeting (Brussels, February 2018).
- ASGMI General Assembly in Salta (Argentina, August 2018):
  - Presentation of advances in PanLatEUGeo proposal.
- Several meetings with the Secretary General and the Executive Committee of ASGMI to define PanLatEUGeo proposal.
- Videoconference with UNESCO representatives to seek support for PanLatEUGeo proposal (October 2018).

- Videoconference with UNEP representatives to seek support for PanLatEUGeo proposal (October 2018).
- Raw Materials Week (Brussels, November 2018):
  - Meeting with ASGMI and DG GROW representatives.
  - PanLatEUGeo proposal presentation in the Brokerage Session.

5. Future Perspectives

- Complete and submit to DG GROW the PanLatEUGeo concept note updated by ICDTF (EGS) and GECI (ASGMI), including the improvements suggested by DG GROW representative in November (March 2019).
- Follow up the PanLatEUGeo proposal in DG GROW and submit it to DG DEVCO.
- Seek UNDP support for the proposal.
- Participate in the General Assembly of ASGMI in Tegucigalpa (Honduras, April 2019) to strengthen EGS-ASGMI relations and continue consolidating PanLatEUGeo proposal.
- Prepare a proposal to participate in the Call for Commitments to be recognized as a Raw Materials Commitment (cut-off date 30 June 2019).
Marine Geology Expert Group

Chair: Henry Vallius (GTK, Finland). Deputy Chair: Sytze van Heteren (TNO, Netherlands)

1. Executive Summary

The Marine Geology Expert Group (MGEG) includes representatives from 24 EuroGeoSurveys member organizations. The group held its Annual Meeting in Shëngjin, Albania on September 24, 2018. Since 2009, the group has provided marine geoscience information to the European Commission’s European Marine Observation and Data Network (EMODnet). The third phase (April 2017 – April 2019) of EMODnet, coordinated by GTK, is in its second year. Like its predecessors, it is strengthening the bond of its member and associate surveys, and has enabled the ones with a developing mapping program to profile themselves nationally. For some of our member surveys, EMODnet is the only marine project, ensuring some continuity in offshore mapping and strengthening their digital presence as part of the European Geological Data Infrastructure EGDI. In 2018, MGEG members have contributed to a substantial number of EU-funded and transnational projects, commonly with a multidisciplinary scope. In addition, they continue to play a lead role in the Atlantic research alliance between the EU, the USA and Canada, as well as in other global initiatives. Several sub-groups of MGEG members met during the year to discuss issues and future opportunities of regional importance, solidifying links between the national marine mapping programs. The MGEG participates in two GeoERA projects: MINDeSEA on metallogenic mineral resources and GARAH on hydrates in the continental margin. Although some marine sections are growing (Ireland, Netherlands, Poland, Russia) and many are stable, others are under pressure (Cyprus, Greece, Ukraine). Marine geology appears to be on the rise where vast volumes of new subsurface data become available as part of windfarm development and where surveying is deemed important for geopolitical reasons (Arctic). By creating temporary positions and through intensive cooperation with partner institutes and universities, fundamental-scientific and applied output is being increased even where permanent staff growth is not yet an option. Presently, the MGEG is overly dependent on EMODnet, and uncertainty about continuity and future budgets is a major worry for the smaller partners.

2. Mission and vision

The MGEG promotes marine geological information and interpretations as a fundamental requirement for all activities that take place in Europe’s seas. We deliver high-quality information and advice to inform decision makers responsible for our seas, underpinning EU Action Plans and Directives by ensuring that marine science is integrated. We focus on issues of global importance such as sustainable use of natural resources, climate change, habitat mapping, natural hazards and long-term maintenance of databases. Through pan-European, transnational cross-disciplinary collaboration, the MGEG ensures visibility within EuroGeoSurveys.

3. Scope and focus

Recognizing that different members have different tasks and responsibilities at a national level, the group’s strategy revolves around collaboration and visibility. The EMODnet program has provided an opportunity for all MGEG members to work together. In addition, some members have been active in initiatives such as the EuroGeoSurveys Northeast Atlantic Geosciences group (NAG), with the initiation of the NAG-Coast Group and the MIM group (MAREANO-INFOMAR-MAREMAP).
for knowledge and best-practice sharing related to marine mapping. On occasion, equipment or ship time is being shared. Whenever possible, projects are developed between multiple members, looking for opportunities to involve the marine biological, oceanographic/hydrographic, physics, chemistry, archaeological and even pharmaceutical communities as well. The MEGG also expands its geographical scope whenever possible, as the issues that affect the European seas have global significance. Knowledge exchange with Geoscience Australia on geomorphological seafloor analysis and intertidal mapping, with the USGS on advanced communication of scientific research towards improved resilience to natural disasters induced by geohazards, coastal change, marine geological mapping, Fe-rich biomineralizations and ocean spreading centres, and with the South China Sea Institute of Oceanology on ferromanganese nodules is ongoing. The group is represented in ICES Working Groups, the European Consortium for Ocean Research Drilling ECORD (providing us with access to the Integrated Ocean Drilling Program IODP), the Atlantic Seabed Mapping International Working Group ASMIWG, the Global Ocean Research Alliance, the International Seabed Authority entrusted with various functions relating to activities in the deep sea, INSPIRE Thematic Clusters, the European Plate Observing System EPOS and the European Multidisciplinary Seafloor and water-column Observatory EMSO, and the British Ocean Sediment Core Research Facility.

4. Achievements 2018

The MEGG participates in government- and industry-commissioned projects, both internationally and nationally. To generate knowledge needed for tackling tomorrow’s questions, we collaborate with academic institutes, involving graduate and post-graduate students and supporting programs as prestigious as Fulbright. Topics of mutual interest include marine mapping; geohazards; marine minerals and hydrocarbons; CO₂ storage, methane hydrates and shallow gas; geochemistry; geo(archeo)logical heritage; offshore windfarms, cables and pipelines; establishment of stone reefs; environmental-impact assessment and regulation; remote real-time monitoring; database development (digital libraries with (archival) maps, seismics and reports; WebGIS compatible; INSPIRE compliant; with tool and script libraries; interoperable and with distributed delivery); and paleoceanography and climate change.

All MEGG members are involved in the third phase of EMODnet-Geology. The project started on April 12, 2017 and will end on April 11, 2019. Information on seabed sediments, subsurface geology, coastal behavior and resilience, geological hazards, mineral resources and drowned landscapes, compiled for all European sea areas, is made available through the project portal (http://www.emodnet.eu) using Web Map Services (WMS) that also feed other portals such as OneGeology-Europe and the European Geological Data Infrastructure EGDI. As part of EMODnet, a working Group (made up of the Geological Surveys of Italy, Slovenia, Croatia, Montenegro and Albania) was established with the aim of producing a pre-Pliocene geological map of the Adriatic Sea. NAG-Coast, an initiative of the Northeast Atlantic Geoscience (NAG) group of EuroGeoSurveys to tackle the white ribbon that marks the transition between land and sea, has been delayed but will still be necessary in preparation of a pan-European roll-out in EMODNet 4.

Other projects with multiple MEGG partners include EMODnet-Bathymetry (and High Resolution Seabed Mapping) and EMODnet Data Ingestion; GeoERA projects MINDeSEA (metallogenetic mineral resources), FRAME (strategic raw materials) and GARAH (hydrates in the continental margin). Some projects presently carried out by individual members address topics that are suitable to adoption by the groups, including arctic environments, land-sea integration, environment and hazards, and sediment records. National mapping programs have focused on lithostratigraphy, sedimentary processes, depositional systems, tectonics, debris-avalanche and debris-flow deposits. They address areas not surveyed previously such as the Croatian part of the Adriatic Sea, and the Norwegian and Russian parts of the Barents and White Seas. Some of these include significant efforts in digitizing paper records, and dissemination through new multidisciplinary marine portals.
As mapping is transitioning into subsurface modelling, it becomes possible to build decision-support tools. Important advances concern the use of virtual reality and an increasing capability for vessel-based monitoring and study of shallow waters. Proposals were submitted under INTERREG, IODP, EMSO and national flags, focusing on climate change, sustainable development, coastal erosion, use of satellite data, geohazards, marine minerals and aggregates, seabed habitats, tectonics. Many of these have a mapping component and most are linked to work done and expertise acquired under the EMODnet program.

In support of our activities and to ensure visibility, we (co-) organized sessions and a side meeting on seabed mapping at AGU; study days on sand extraction, coastal research, Baltic Sea geology, and Gulf of Finland science; workshops on marine geology, tsunami awareness, deep-sea mining, sand and gravel resources, particle-size analysis, volcano monitoring, and geomorphological mapping; conferences on marine geological and biological habitat mapping (GeoHab), oil and gas exploration in the Russian arctic, sustainable growth in the marine and maritime sectors, cities on volcanoes, geosciences for the environment, and natural hazards and cultural heritage; with working groups on Atlantic seabed mapping, the eastern Baltic seabed, Adriatic seafloor geology, and international cooperation (especially with Chinese colleagues). Many of these activities have a land-sea component. Of particular importance is the formalization of an international network of marine geologists and seabed mappers initiated by GSI and Geoscience Australia in a voluntary network called 1Seabed. We await confirmation from GEBCO as to whether this network can operate under GEBCO.

Several MGEG members have been exploring interactive ways to disseminate knowledge and output, making use of open-source portals with Web Map Services, Google Earth, story maps, smartphone apps, geosites and geotrails, vessel tours, interactive public presentations, Facebook, Twitter (“#ShipwreckSaturday” and “#OnThisDay”), and YouTube. We continue to pay attention to outreach, participating in many events, restyling websites with case studies, organizing press releases, appearing in newspaper articles and TV documentaries, helping to establish marine geoparks, and publishing an atlas of volcanic seamounts as well as a ‘Code of Sand’, with 17 messages for a more sustainable use of marine sands. Peer-reviewed published highlights are:


5. Future perspectives

At a European level, the main collaborative focus of the marine departments of the geological surveys will continue to be the EMODnet Program, although funding during the next phase of EMODnet appears less certain than before. Still, the program is expected to continue after 2020 to underpin ‘Blue Growth’, the European Commission’s long-term strategy to support sustainable growth in the marine and maritime sectors as a whole. The ‘blue’ economy represents millions of jobs and generates a gross added value of almost €500 billion a year. Indirectly, EMODnet will continue to employ marine geoscientists and data experts fulfilling both EU mandates and national needs. It has spawned and strengthened regional collaboration in the Mediterranean and elsewhere.

While mapping the seabed, MGEG members will continue to address issues such as the security of energy supplies (hydrocarbons and renewable energy) and raw materials (mineral and aggregate resources), both GeoERA topics; the protection of the amenity value of the marine environment for food (e.g., habitat mapping for fisheries and aquaculture); and the optimization of aspects related to health and safety (pollution and geohazards), cultural heritage and recreation. The collection and availability of vast volumes of new marine geological data in support of the energy transition provides new opportunities that must be addressed in part as a group.

In the drive to ensure that the MGEG contribution remains relevant to Europe for the foreseeable future, new research roadmaps are being developed that focus on emphasizing the role of marine-geological mapping and research in everyday lives. In many of these roadmaps, standard mapping evolves into 3D- and 4D modeling and adaptive monitoring, supporting the knowledge economy and underpinning EU directives for sustainability (with emphasis on seafloor-integrity indicators, mapping of priority areas, and data products relevant to effective spatial planning, maritime jurisdiction and business development). Quantification of the uncertainty of geodata adds to its applied value and is expected to play an increasingly important role in decision making. Marine geological
data management moves toward an open-access policy and toward public outreach aimed at broadening the surveys’ appeal and visibility.

Aside from ensuring the connectivity across marine seabed mapping internationally, moved forward by EMODnet, the MEG network will also need to look beyond the realm for which it is responsible. There is a clear need for linking marine and terrestrial geology. Groundwater cells do not stop at the coastline, sediment is exchanged temporarily and permanently between land and sea, and tools and protocols developed for one purpose or group may well be useful for another. In this light, the EGDI portal as embedded in GeoERA will be used to disseminate past and future EMODnet deliverables.

Beyond Europe, the best way of solidifying our role and influence is by continuing to work together and by having a strong representation. To broaden and strengthen its position and to increase the use and visibility of the European geological surveys, the MEG sees significant added value in interacting and collaborating with other EuroGeoSurveys Expert Groups. At present, the MEG is cooperating with the Mineral Resources Expert Group on the topic of marine minerals. To make full use of Copernicus Services and Sentinel data, we want to strengthen ties with the Earth Observation and Geohazards Expert Group. When considering groundwater processes and characteristics across the land-sea boundary, the MEG and the Water Resources Expert Group have a clear common interest.
Mineral Resources Expert Group

Chair: Daniel Oliveira (LNEG, Portugal). Deputy Chair: Sebastian Pfleiderer (GBA, Austria) Deputy Chair: Henrik Schiellerup (NGU, Norway). Deputy Chair: Henrike Sievers (BGR, Germany).

1. Executive summary

The Mineral Resources Expert Group was active on a number of fronts in 2018 ranging from its active role as an “advisory board” to the Commission on several mineral resources issues, a new collaboration agreement with JRC, minerals events and several minerals research projects. The Group has significantly contributed to augmenting the Battery Raw Materials database and checked the data, at the Commission’s request, associated with the Dialogue on Battery Raw Materials. The MREG has strong ties with the UNFC and contributed as an expert in other H2020 funded projects.

2. Mission and vision

The MREG (its mission, vision, achievements and future perspectives) was presented at the EGS Directors & National Delegates meeting 12-13/4/2018 in Vienna.

The MREG mission is to provide the best available mineral expertise and information based on the knowledge of member Geological Surveys, for policy, communication, public awareness and education purposes at European and international level, focusing mainly on strengthening the position of the European minerals industry towards resource sustainability and competitive growth.

3. Achievements 2018 - Scope and focus

MREG attended the National Delegates Meeting in Brussels (27 February 2018) and held its biennial meetings in Budapest (18-19 April 2018; hosted by the Mining and Geological Survey of Hungary - MBFSZ) and Rome (27-29 November 2018; hosted by the Istituto Superiore per la Protezione e la Ricerca Ambientale - ISPRA).

The MREG was also present and/or represented EGS at the following meetings: 1-METS2018 - 10 – 12 April 2018, Madrid, Spain; 2-PDAC2018 – at the European Union stand; 3 - 6 March 2018, Toronto, Canada; 3-various meetings of the Raw Materials Supply Group; 4-45th EGS Directors Meeting and Workshop – 16-17 October 2018, Bratislava, Slovak Republic; 5-Raw Materials Week, 12-16 November 2018, Brussels, Belgium.

The main activities of the group in the earlier part of the year were clearly focused on the signing of the new collaboration agreement between EGS and JRC, the projection of the EGS image abroad, namely in Canada at the PDAC and the launch of the GeoERA projects. During the latter part of the year, the activity focused on the early stages of data acquisition in the various Raw Materials and Information Platform projects of GeoERA, the upcoming Raw Materials Week contributions and specific requests from the Commission. One of these requests was the checking of the data associated with the Dialogue on Battery Raw Materials.

Since 2014, the MREG task force on “National Mineral Resources Projects in Europe” collects information on MR related activities carried out by European Geological Survey Organizations (GSO’s) on a national level. The objective is to establish, maintain and share a meta-database of past and current projects in order to identify expertise, to instigate knowledge exchange between GSO’s, and to reveal new areas of research or shifts of focus.

Metadata of projects include title, description, country, scope, start and end year, contact email and internet link. In addition, projects are indexed according to the field of activity (e.g. primary resource mapping, environmental impact assessment, investigation of secondary resources,
market reviews, web portals) and according to the commodities investigated. MREG strives to update the database once a year. Currently, the database contains metadata on 537 projects carried out in 28 European countries. Most common projects are the mapping of primary resources and occurrences (19%), the investigation of anomalies and potentials (16%), followed by activities on the maintenance of databases (13%), on resource management (11%) and on data harmonization (9%). The most frequently investigated commodities are industrial minerals and construction materials (49%) and ores (41%), while studies on energy raw materials are less often performed (10%).

The development of MR related activities over the last three years shows that the number of projects investigating anomalies and potentials, or mapping resources and occurrences has increased significantly while the maintenance of databases or activities on resource management stayed constant. Studies on processing technology, environmental impact of mining, on mining waste and on secondary resources have recently come more into the focus of GSO’s across Europe and demonstrate an increasing level of interest into these topics. Below is a summary of the “Minerals projects” in which MREG members are involved:

MICA (Mineral Intelligence Capacity Analysis): The MICA project brings together a multidisciplinary team of experts from natural and technical sciences, social sciences including political sciences, and information science and technology to assist in the collection, collation, storage and making available of Raw Materials Intelligence in a useful way, which corresponds to stakeholder needs. The project finished in January 2018.

FORAM (Towards a World Forum on Raw Materials): The FORAM project is mapping multi-stakeholder initiatives working on raw materials globally. Through an online questionnaire, information is collected on the initiatives’ organisational structure, objectives and strategies, type of raw materials, number of stakeholders involved, step in the value chain and more. With this information, the FORAM project has created an overview of currently active multi-stakeholder groups. The project is now finished.

Geo-Cradle (Coordinating and integRating state-of-the-art Earth Observation Activities in the regions of North Africa, Middle East, and Balkans and Developing Links with GEO related initiatives towards GEOSS): The continuous provision of accurate and timely information through coordinated and sustained Earth Observation (EO) activities is considered a key enabler for informed decision making in response to challenges such as adaptation to climate change, improved food security & water extremes management, better access to raw materials and energy and many more. In this context, large international initiatives such as GEO and Copernicus are promoting the integration and coordination of Earth Observation capacities at regional, national and international levels. The project has run its course.

EU-Latin America Mineral Development Network Platform: MDNP project is the continuation of the EU-Latin America Policy Dialogues with Latin America. EGS is part of the MDNP Advisory Board (AB). EGS contributes to the project with advice and recommendations. EGS has participated in the two AB meetings that have been set up so far and has contributed to the interim report through MREG, International Cooperation and Development
Task Force and the EGS Secretariat. MREG provided support and advice for the preparation of the Mets2018 event: http://www.mets2018.eu/en/. The project is now finished.

INTERMIN will create a self-sustainable long-term lasting international network of training centres for professionals. This project involves educational and research institutions in the EU and the leading counterparts in third countries, based on specific country expertise in the primary and secondary raw materials sectors. The network will map skills and knowledge in the EU and the third countries, identify key knowledge gaps and emerging needs, develop roadmap for improving skills and knowledge, as well as establish common training programmes in the raw materials sectors. In line with the EU’s strategy for international cooperation in research and innovation (COM(2012)497), the consortium will seek international collaboration, fostering and exploring synergies with the relevant EU Member States initiatives.

ORAMA will identify the best practices in collecting information on raw materials and focuses on optimising data collection for primary and secondary raw materials in Member States. A cornerstone to the EIP on Raw Materials is the development of the EU knowledge base on primary and secondary raw materials, commenced by a series of European-funded projects. As the next iteration, ORAMA addresses specific challenges related to data availability, geographical coverage, accessibility, standardisation, harmonisation, interoperability, quality, and thematic coverage in Member States. ORAMA also seeks solutions to the harmonisation of statistics between primary production and flows of secondary metals.

PROSUM project was establishing a European network of expertise on secondary sources of critical raw materials (CRM) and other strategic minerals, vital to today’s high-tech society. ProSUM directly supports the European Innovation Partnership (EIP) on Raw Materials and its Strategic Implementation Plan calling for the creation of a European raw materials knowledge base. The ProSUM project provides a state of the art knowledge base, using best available data in a harmonised and updateable format, which allows the recycling industry and policymakers to make more informed investment and policy decisions to increase the supply and recycling of secondary raw materials. The ProSUM project has created an inventory for waste streams with a high potential to serve as a source of secondary raw materials.

PanAfGeo, for “Pan-African Support to the EuroGeoSurveys-Organisation of African Geological Surveys (EGS-OAGS) Partnership”, is a project which supports the training of geoscientific staff from African Geological Surveys through the development of an innovative training programme. This 3-year (2017-2019) Pan-African cooperation programme will provide about 50 training sessions for some 1,200 geologists coming from 54 African countries. This programme of 10.3 million euros is co-funded by the European Union through its Directorate-General for International Cooperation and Development (DG DEVCO), and a Consortium of 12 European Geological Surveys led by BRGM-French Geological Survey.

MINLAND Competition about use of land is fierce within Europe. Currently, the need for metals, construction raw materials and industrial minerals is increasing. There is a large need for access to land for exploration and extraction of mineral raw materials, including critical raw materials. MINLAND aims to secure access to land, with actual or potentially valuable resources, for exploration and extraction of minerals, in an integrated and optimised process, within the EU. The EU has recognised the need for shared guidelines about harmonised land use and the need for mineral policy strategies within Europe. MINLAND offers an answer to these challenges.

EGDI Launched in 2016, EGDI gives access to datasets and services from a number of pan-European data harmonisation and infrastructure projects, either entirely funded by EGS members or co-funded by the EU, including OneGeology-Europe (geological mapping), EuroGeoSource (energy and minerals), ProMine (minerals), PanGeo (Earth Observation and
geohazards), TerraFirma (Earth Observation and geohazards), GeoMind (geophysics), GEMAS (soils and geochemistry) and EMODNet (seabed mapping). For this first version of EGDI a new digital geological map of Europe, developed according to the EC INSPIRE Directive specifications, has been prepared to replace the previous OneGeology-Europe map. It features: 1- A central database systems for storing pan-European geological datasets; 2- Mechanisms for populating these databases with data from National Geological Survey Organisations; 3- A metadatabase containing a large amount of information about pan-European, national and cross border geological datasets, and, 4- A website including a GIS enabling the user to easily find and show data related to a number of pre-defined topics, search for all datasets in the system, combine data from different topics, show metadata and for some data also show detailed recordings.

GeoERA - The main objective of GeoERA is to contribute to the optimal use and management of the subsurface. GeoERA funds 15 research projects that will aim to support 1) a more integrated and efficient management and 2) more responsible and publicly accepted, exploitation and use of the subsurface. The projects will cover the applied geosciences, addressing the following four themes: Raw Materials, Geo-Energy, Ground Water and Information Platform.

The Raw Materials themed projects of GeoERA are EuroLithos (European Ornamental stone resources, FRAME (Forecasting and Assessing Europe’s Strategic Raw Materials needs), MINDeSEA (Seabed Mineral Deposits in European Seas: Metallgeny and Geological Potential for Strategic and Critical Raw Materials) and Mintell4EU (Mineral Intelligence for Europe). The MREG group is highly involved in all those projects. The data coming from these projects are very relevant to the European Commission’s current strategies; namely the Battery Initiative and e-Mobility, the Circular Economy and the Critical Raw Materials List. Those strategies resulted in urgent and spontaneous requests by the European Commission to which the group responds. Moreover, the data will, in the end also feed JRC’s RMIS by using the EGDI platform.

Because of the importance of the set of data coming from these projects, MREG has incorporated an extra day of meetings with its biennial meeting over the lifetime of these projects to discuss relevant results and plan future actions. The first of these was held in conjunction with the winter meeting in Rome and was very successful.

Of note is already the contribution of FRAME to a specific request by DG Grow on the distribution of Battery Raw Materials in Europe. A first draft map was handed in November. A second more updated map was handed to DG Grow in December and the map is now being updated with newer data from non-consortium partners to provide a more complete picture.

MREG has also been involved as an “invited expert” in SCRREEN and was invited to participate in the various workshops and discussions held in 2018 on the current state-of-the-art of the critical raw materials and the circular economy. SCRREEN MREG members BGR, BGS, BRGM, GeoZS, GEUS, GTK and SGU are partners in the SCRREEN project that aims to establish an EU Expert Network that covers the whole value chain for present and future critical raw materials. It will also build on existing structures and initiatives, as well as international collaborations, and aims at clustering related EU projects and initiatives.

SCRREEN has been mandated by the EC to identify through its network experts who will to the next criticality assessment starting in 2019.

Publication of the list of critical raw materials is expected in 2020. Therefore, the project will be prolonged until mid-2019.

MREG continues to have a strong input into the United Nations Framework Classification for Resources (UNFC) and was present, as it has been in the last years, at the UNECE Resource Management Week 2018 held in April (23-27) in Geneva. UNFC provides countries, companies, financial institutions and other stakeholders a futuristic tool for sustainable
development of energy and mineral resource endowments and applies to oil and gas; renewable energy; nuclear fuel resources; mineral resources; injection projects for the geological storage of CO₂; and the anthropogenic resources such as secondary resources recycled from residues and wastes.

UNFC is capable managing the natural resources required for the present and future needs of the society and is a unique tool for harmonizing policy framework, government oversight, industry business process and efficient capital allocation, which is adopted by the Commission for mineral resource description and characterisation.

Other contributions by members of MREG:

On a final note, MREG vice Chair, Gerry Stanley retired from active duty at the GSI in July and hence also MREG. Henrike Sievers of BGR is the new replacement and stepped into the role seamlessly.
Spatial Information Expert Group

Chair: François Robida (BGRM, France). Deputy Chair: Jørgen Tulstrup (GEUS, Denmark). Deputy Chair: Jasna Sinigoj (GEOZS, Slovenia).

1. Executive Summary

The main activity of the SIEG in 2018 has been focused on GeoERA. In addition to that EGDI and EPOS have also been on the agenda. A substantial part of the SIEG members were involved in the preparation of a proposal for the GeoERA Information Platform theme, and the project was awarded in April. The project started in July and is the main focus point of the SIEG now. The project will build on EGDI thereby also adding data and functionality to that platform.

The operation of EGDI has been carried out by the EGDI Consortium consisting of members from the SIEG. They have signed a Consortium Agreement among them as well as a Service Level Agreement with EGS. The EGDI has been extended with data from new projects and data has also been added for more countries under other projects.

The development of the EPOS system has continued in 2018 and members of the SIEG have been involved in the Thematic Core Service (TCS) for Geological Information and Modelling. EPOS is now going into the operational phase and it has been decided that EGDI shall provide the services to this TCS and that EGS shall coordinate it.

2. Mission and Vision

Spatial information/information systems expertise is a key asset in the design and development of the European Geological Data Infrastructure (EGDI) which is at the core of EGS strategy, and this expertise has to be mobilized in a transverse way, in support to the other EGS expert groups to further develop the EGS data infrastructure.

3. Scope and Focus

In the coming years, priority should be given to the consolidation of EGDI in all its dimensions (scoping, technical, governance, funding). It is currently first of all contributing to GeoERA, and funding of basic operations is provided by members of EGS. In the longer perspective it is important to ensure a stable funding of the platform. In addition to EGS this could be EPOS, other EU funded projects, a Geological Service for Europe and others.

Cooperation with the other Expert Groups have started but should be intensified in the coming years in order to ensure the EGDI to the largest degree possible serves the needs of them.

4. Achievements

Projects
- EGDI (not really a project but anyway...)

In 2018 a number of EGS members have once again on a voluntary basis provided funding for the basic operations of EGDI. These contributions add up to a little more than 100,000€ for the year Mid-2018 till Mid 2019. This has enabled the EGDI Consortium consisting of GEUS, BRGM, GeoZS, CGS
and BGS to operate and maintain the system and to provide support to users. The main achievements have been:

- Governance and funding
  - A governance model for EGDI has been suggested and approved by the General Assembly.
  - Initial talks have been going on between the EGDI Consortium and two EGS members (Luxembourg and Malta) about establishing "National EGDI".
  - The funding issue has been extensively worked on and hopefully the agreements that have been reached with EPOS will result in funding of parts of EGDI.

- Standardisation
  - Participation to creation of OGC Geoscience Domain Working Group.
  - Preparation of the metadata records templates.
  - Amendment of the metadata profile and validation in accordance with current standards (INSPIRE technical guidelines v. 2.0.1)
  - Standardisation between the data models for EMODnet and EPOS for inclusion in EGDI.

- Basic maintenance
  - Improved data content for:
    - Surface geological map: Norway included.
    - Minerals4EU database: Greece, Croatia, Poland, Portugal and Ukraine added.
  - New projects:
    - EURare.
    - EUOGA.
    - Landslide database.
    - North Sea Regulators data.
    - EPOS borehole-index.
    - GeoCradle
    - EMODnet

- MICKA metadata system maintenance:
  - Security procedures.
  - Analysis of availability of procedures plus monitoring of website traffic.
  - Backup system.
  - Hardware upgrades.
  - Optimisation of harvesting system.
  - Maintenance of website.

- User support has mainly been focused on harvesting data from new providers, provision of metadata and preparing data to be included in the surface geological map and Minerals4EU.

- GeoERA

Many members of the SIEG are highly occupied by the GeoERA Information Platform project. The project will establish a platform to safeguard and disseminate the geospatial results from the 14 other GeoERA projects and will be built as an extension of EGDI. The first half year of the project has mainly been devoted to the analysis of the requirements to the platform from the “customers” (the 14 projects) so that the system can be designed according to those. Many features are already present on EGDI, but several of the projects will be producing 3D and 4D geological models, a data type which is currently not supported by EGDI.

- EPOS

European Plate Observing System (EPOS) is in its last year of development, and data and services on geology, mineral resources and metadata will be delivered from EGDI. Furthermore, new datatypes like basic (meta)data about boreholes and 3D models are under development. The formal relationship between EGDI/EGS and EPOS is under development.
1. Executive Summary

The main activity of WREG in the first part of 2018 was to prepare and submit the four groundwater project proposals HOVER, RESOURCE, TACTIC and VoGERA for the GeoERA call medio January. The WREG chair and SIEG co-chair furthermore submitted a proposal for the Grand Solutions program of Innovation Fund Denmark medio February for co-funding of six GeoERA projects (the four groundwater projects and the GIP and Mintell4EU projects) and the coordination activities of the WREG and SIEG chair and co-chair.

The contents of the four groundwater project proposals and the GeoERA project in general were presented at the KINDRA final conference in Brussels in February and the 34th Plenary meeting of the CIS Working Group Groundwater (WGG) in Bern in April, respectively. All four groundwater projects were funded in spring and many groundwater project partners took part in the GeoERA kick-off meeting in first week of July in Brussels.

In the second part of 2018 members of the GeoERA groundwater project consortium / WREG presented the HOVER and VoGERA projects at the 35th Plenary meeting of Working Group Groundwater in Vienna in October, where meetings of the HOVER and RESOURCE projects were also held back-to-back with the WGG meeting. The VoGERA project had a stakeholder meeting in Brussels in November with the participation of Canadian colleagues, and the WREG chair participated in the GIP-P meeting at the Belgian Survey in Brussels in October.

The chairs of WGG have asked for time slots for presentations of the RESOURCE and the TACTIC project at the 36th Plenary meeting of the CIS Working Group Groundwater in Bucharest in April 2019. Two abstracts were submitted to EGU 2019 meeting in Vienna by the WREG chair/groundwater theme coordinator in collaboration with the other GeoERA theme and groundwater project coordinators, one specifically for the groundwater projects and one for GeoERA in general.

2. Mission and vision

The Water Resources Expert Group (WREG) strives to collect and provide data and decision-support tools for the long-term protection, sustainable management and improvement of groundwater resources across Europe based on sound groundwater research. The efforts focus on EU societal challenges and support of EU policies on water taking into account both protection of groundwater legitimate uses and terrestrial and aquatic ecosystems according to the Water Framework and Groundwater directives as well as the Blueprint to Safeguard Europe’s Water Resources.

3. Scope and focus

Provision of groundwater and hydrogeology data for sustainable management and safeguarding of Europe’s Water Resources on a scientifically sound basis. Focus of WREG for the coming five years will be 1) to identify and supply relevant data for the groundwater part of GeoERA and the Geoscience Information Platform (GIP / EGDI) and 2) to Identify groundwater research gaps and develop groundwater research projects and publishable scientific papers related to these.
4. Achievements 2018

The main achievement in 2018 were submitting proposals and receiving funding for the four projects of the GeoERA groundwater theme:

HOVER: *Hydrogeological processes and Geological settings over Europe controlling dissolved geogenic and anthropogenic elements in groundwater of relevance to human health and the status of dependent ecosystems* (Lead: Laurence Gourcy, BRGM)

RESOURCE: *RESOURCES of groundwater, harmonized at Cross-Border and Pan-European Scale* (Lead: Hans Peter Broers, TNO)

TACTIC: *Tools for Assessment of Climate change Impacts on Groundwater and Adaptation Strategies* (Lead: Anker Lajer Højberg, GEUS)

VoGERA: *Vulnerability of Shallow Groundwater Resources to Deep Subsurface Energy-Related Activities* (Lead: Sian Loveless, BGS)

Besides the submission of these project proposals other main activities were:

1) Participation of GEUS, BGS and TNO (the GeoERA coordinator) in the final conference of the KINDRA project developing a European Inventory of Groundwater Research and assessing trends and gaps in groundwater research (www.kindra-project.eu) with four presentations from the WREG group (GEUS and BGS); and

2) Participation in the 34th Working Group Groundwater plenary meeting in Bern April 24-25 with three presentations from the WREG Group (from BRGM, PGI and BGS) including a general presentation of the GeoERA groundwater projects. In addition, GEUS submitted a proposal to Innovation Fund Denmark for co-funding of GEUS’ GeoERA activities including coordination between the groundwater theme projects listed above and the other GeoERA themes and the involvement and collaboration with USGS and three European globally leading groundwater dating laboratories in Germany and Switzerland in HOVER WP6.

MAIN ACTIVITIES

Jan-March

12/01/2018 – Submission of the four GeoERA groundwater proposals by BRGM, TNO, GEUS, BGS and EGS partners (all WREG chairs and most WREG members)

16/02/2018 – Submission of proposal to Innovation Fund Denmark for co-funding of GeoERA projects with participation of GEUS within the groundwater, Information Platform and raw materials themes including the coordination of the groundwater and Information Platform themes as well as the TACTIC, Mintell4EU and GIP projects (Klaus Hinsby, WREG & Jørgen Tulstrup, SIEG)

27/02/2018 - Presentation of WREG annual report at National Delegates Forum; Laurence Gourcy, BRGM.

27/02/2018 – Presentations at the final Conference of the KINDRA project: Klaus Hinsby, GEUS and Rob Ward, BGS

April-June:

24-25/04/2018. 34th CIS Working Group Groundwater Meeting.: WREG were represented by: Laurence Gourcy (BRGM), Hans Peter Broers (TNO), Anna Kuczynska (PGI) and Rob Ward (BGS). BRGM, PGI and BGS presented progress on activities on trend assessment in relation to the implementation of the Water Framework Directive and two new projects (incl. GeoERA).

July-September:

02-05/07/2018. GeoERA kick-off, Brussels – participation of all WREG chairs and about 30 WREG members
15/8/2018. Submission of contract documents for Innovation Fund Denmark for GeoERA co-funds

29/8/2018. First HOVER WP3 (kick-off) meeting – Paris

24-26/9/2018. TACTIC kick-off meeting, GEUS, Copenhagen

October-December:

8-9/10/2018. 35th CIS Working Group Groundwater (WGG) Meeting: WREG were presented by: Laurence Gourcy (BRGM), Benjamin Lopez (BRGM), Hans Peter Broers (TNO), Anna Kuczynska (PGI), Rob Ward (BGS) and Klaus Hinsby (GEUS). Laurence, Benjamin, Klaus and Rob presented projects or lead discussion groups during the WGG meeting:

10-11/10/2018. Common HOVER WP5 and 6 and RESOURCE WP6 meeting at the Austrian Geol. Survey, Vienna

17-18/10/2018. HOVER WP7 meeting, BGR, Berlin.

24-25/10/2018. Groundwater theme coordinator in meeting with GIP – Belgian Geol. Survey, Brussels

30/11/2018. VoGERA stakeholder meeting, VMM, Brussels

Web meetings: In addition to the physical meetings mentioned above, the groundwater projects lead, and coordinator have monthly web coordination meetings with participation of the GIP contact, Margarita Sanabria, IGME, ES, (first Monday in every month). All project boards of WP leaders and WPs have also frequent web meetings coordinating the activities and ensuring project progress.

Finally, all groundwater projects provided information for their project websites on the GeoERA website: http://geoera.eu.

Publications

There are no common publications from WREG for 2018, but many members (surveys and scientists) are among the most active and cited groundwater research institutions and scientists in Europe as e.g. demonstrated in the annual report for 2016. IGME Spain probably published the first research paper from a project with acknowledgement of GeoERA funding (Collados-Lara et al., 2018). The paper was published as part of the TACTIC project (the paper is attached).

5. Future perspectives

Key aim of WREG in and beyond GeoERA is to conduct groundwater research and provide scientifically sound and standardized data for the European Geoscience Information Platform/European Geological Data Infrastructure (GIP / EGDI) to support implementation of EU policies, sustainable resources management and integrated surface and subsurface spatial planning. Easy and efficient access to these data according to the “FAIR” principles (Wilkinson et al. 2016) will benefit public and private research organisations and public-private partnerships developing innovative water and environment monitoring and modelling, as well as the authorities developing integrated, sustainable and cost-efficient resource policies. Innovative and broadly applicable solutions and products/instrumentation for sustainable water management and smart monitoring and modelling will support and preserve Europe’s leading role in developing sustainable solutions to safeguard water resources and the environment.

References


---

Communication and Strategy Task Force

Chair: Claudia Delfini (ISPRA, Italy).

1. Mission and Vision

The mission of the Communications Strategy Task Force (CSTF) is to increase the visibility and knowledge on EuroGeoSurveys and, in particular, its goals, and activities, and to disseminate the results achieved, with the main scope to build stronger relations with the most important public administrations, in the particular European Union institutions, as well as the private sector, and to raise awareness and interest in major mass media.

2. Scope and Focus

The scope of the CSTF is to create the EGS Communication Strategy Plan for the period 2019-2024.

The CSTF will improve the EGS identity and visibility on the basis of the agreed EGS strategy and on the recently updated Statutes. It will identify methods and tools to collect and disseminate information that is the results of the collective work done by the EGS Members.

The CSTF will look at internal and external factors that affect the organisation for having a better understanding of the strengths and weaknesses of EGS as well as of the threats and opportunities of the “environment” in which EGS operates.

3. Achievements

The CSTF has been approved during the GM in March 2018 and formalised during the ND Forum in September 2018.

The first face to face meeting has been organised on the 27th November 2018. During the meeting, the members of the CSTF have been discussed about the main goals of the communication strategy plan, on the basis of the strengths and weaknesses of EGS. The agreed conclusions have been the starting point for drafting the communication strategy plan.

A videoconference has been set up before the end of January to finalise the document to be presented at the NDs Forum in February 2019.

Due to budget constraints for the communication, the CSTF has been identified few options to carry on the communication actions listed in the plan that needed to be discussed during the next NDs Forum.

The final version will be presented for approval at the Spring 2019 General Meeting.

4. Perspectives for 2019

The Communication Strategy Task Force will continue for at least one year after the approval of the Communication plan with the aim to monitor the implementation of planned activitie
KEY PERFORMANCE INDICATORS - 2018
**Introduction to Key Performance Indicators (KPIs)**

**What is a KPI?**

KPIs are measurable values that demonstrate how effectively a company or entity is achieving key strategic and/or business objectives. They provide an insight into the degree of success and the progress made in pursuing goals.

**Why are we doing this?**

They should help us to understand how well the ExpertGroups are performing compared to their strategic goals and objectives and will help us to evaluate their success at reaching targets. They also act as a framework to assist the Expert Groups to initiate the continuation of growth, progress and development. With effective analysis and dialogue, KPIs will enhance the productivity of the Expert Groups and provide them with a non-restraining set of indicators/orientation points.

**Are they relevant?**

KPIs are only as valuable as the action it inspires. To make KPIs relevant, the Expert Groups should adopt them with a positive and proactive mindset so they can guarantee that their use will provide positive change. Expert Groups should be proactive in looking and analysing its activities in accordance with the KPIs, as KPIs can provide a good framework for continued development and good dialogue with members of the Expert Group. Furthermore, as all EGs and EGS have targets and goals in mind, adding KPIs to the ‘dashboard’ only makes the decision making, reporting and efficiency, that much easier!

**Defining the KPIs:**

The current KPIs were adapted from the basic KPIs by the EGS secretariat and are intrinsically linked to EGS strategic goals. They have been defined according to the critical strategic objectives of the Expert Groups. KPIs of EGS is based on 5 categories; 1) relevance and sustainability; 2) scientific output and/or possible impacts on industry; 3) structuring effect on national and European levels; 4) EG coordination, and, 5) contribution to the third pillar.

It must be noted, that the EGS do not remain static and as and a consequence the KPIs should not either. The KPIs are likely to change as the EGs evolve. Therefore, they should be reviewed, and if necessary redefined on a regular basis (i.e. annually or bi-annually).

**The process:**

The EuroGeoSurveys (EGS) secretariat formulated a draft KPI document based on the annual reports of the EGs, whereby KPIs that are related to specific outcomes and objectives of the EGS and the EGs were noted. This was sent to the Expert Group chairs, for their comments and suggestions. For this process, it was agreed during the Chairpersons meeting on 11 February 2019, the EGS secretariat would conduct a draft KPI analysis for each EG based on the KPIs. This draft would be sent to the chairs of the EGs and they would then have an opportunity to comment further. The comments would then be added to their KPI report in the relevant section.
EuroGeoSurveys (EGS) KPIs for Expert Groups (EGs)

**KPI1. Relevance and sustainability;**
1.1. Global consistency of the EG to achieve the EGS strategy.
1.2. The relevance of the topics covered in the description of EG work.
1.3. The inclusion of the key partners (surveys) and the level of their commitment in EG.
1.4. Quality of the management of EG.
1.5. Sustainability of the funding business model in EG.
1.6. EG capacity to look to the future.

**KPI2. Scientific outputs and/or possible impacts on the industry;**
2.1. Relevance
   2.1.1. of scientific output EG deliverables,
   2.1.2. possible impacts on industry.
2.2. Launched and running EG common projects.
2.3. Publications of EG in last 5-10 years.
2.4. Added value offered by the EG to the industry.

**KPI3. Structuring effect on national and European levels;**
3.1. Networking with other European entities in the field (ex. EIP-RM, KIC, EPOS, etc).
3.2. Links with or impacts on national programmes.
3.3. Dissemination activities towards public or member states.
3.4. Active interfaces with other EG.

**KPI4. EG coordination inside and outside helping to reduce the number of other potential overlapping work;**
4.1. Actions that resulted from sharing resources.
4.2. The inclusion of all EGS community.

**KPI5. Contribution to the third pillar;**
5.1. Contribution to mobility fostering.
5.2. Contribution to infrastructure sharing.
5.3. Openness towards international cooperation.
5.4. Foreseen training activities.
1. KPI Evaluation for Earth Observation Expert Group (EOEG), 2018

Number of Members: 85

Some of the key achievements of 2018 for EOEG:

✓ Landslide working group activities.
✓ Involved with numerous projects.
✓ Invited to talk at some events.
✓ Presentation at Raw Materials week 2018.

Review:

KPI1: EOEG is active in participating in events and providing relevant information to the EC (i.e. landslide inventory map).

EOEG have very large participation (many people from many different countries).

KPI2: DG ECHO showed interest in the landslide inventory map in 2018 (which complies with the pillar II of the EGS strategy) and published it so they could utilise it. They published one article, entitled ‘Why a European directive on landslides is necessary’.

KPI3: EOEG is involved with a number of projects, GeoCradle (the closure of activities), U-Geohaz (ongoing activities) and GEOSS and has also been involved with GeoERA. They were invited to take at the EU0LA Mining and Exploration Convention in Madrid and to the Evaluation Panel of the Screening Study of Major Landslides in Greenland in Copenhagen, Denmark, as well as presenting at the Copernicus Raw Materials Week, 2018.

KPI4: Data from the landslide inventory map has been distributed around Europe.

KPI5: The EOEG is contributing to the Pillar III of the EGS strategy through GeoERA, has provided training under the U-Geohaz programme and participated in events all around the globe.

Future Perspectives

The future perspective of EOEG include; 1) the continuation in the participation of H2020 U-GEOHAZ and EuroGEOSS showcase projects; 2) increase EOEG involvement with GEO through the participation in EuroGEOSS; 3) possible involvement of several Geological Surveys in a project “Raw materials innovation actions: exploration and Earth observation in support of sustainable mining”; 4) become involved with the new UEGE and other EGs in EGS, and 5) continuation of the Landslide working group initiatives by creating a damaging landslides database, reviewing landslide monitoring test sites in Europe, elaborating on factsheets and a publishing a white paper.
2. KPI Evaluation for Geochemistry Expert Group (GEG), 2018

Number of Members: 54

Some of the key achievements of 2018 for GEG:

✓ Publications.
✓ GEG members participate in different projects.
✓ Offering expert advice.
✓ Participated in events.
✓ Participated in presentations.

Review:

**KPI1:** GEG provides valuable information for GEMAS and the articles it published in 2018.

**KPI2:** GEG published 12 articles in 2018. 11 copies of the GEMAS atlas were sold in 2018, the EGG atlas has now been sold 925 times since August 2010 and the Urban Geochemistry textbook has been sold 635 times since April 2011. The European fertiliser industry showed interest in GEMAS data. Eurometaux is interested in partially financing a surface and spring water geochemistry project of Europe based on low-density sampling.

**KPI3:** The members of GEG participated in several different projects which links them with other national programmes, such as, INTERREG Danube Transnational Programme (SIMONA), SCRREEN, ProSUM, AgriAs, Smart Exploration, Explora, FRAME and PERFORM.

**KPI4:** GEG offered expert advice on standard geochemical methods at ‘Workshop on Global Black Soil Critical Zone Geo-Ecological Survey (BASGES).

**KPI5:** GEG took part in events such as; 1) the European Geoscience Union General Assembly, Vienna, Austria; 2) Resources for Future Generations, Vancouver, Canada; 3) Annual General Meeting of the Organisation of African Geological Surveys (OAGS), Dakar, Senegal.

**Future Perspectives**

All GEG future perspectives are related to scientific output (to name a few, modern isotope systems on GEMAS samples, DNA analysis on GEMAS samples, harmonised and coherent lithogeochemistry of Europe).
3. KPI Evaluation for GeoEnergy Expert Group (GEEG), 2018

Number of Members: 61

Some of the key achievements of 2018 for GEEG:

✓ Involved with the establishment of 6 GeoERA projects.
✓ Organised a knowledge sharing event.
✓ Participated in events.
✓ Participated in projects.
✓ Held its bi-annual meeting in Ljubljana.

Review:

**KPI1:** The GEEG notes the necessity to maintain its relevance in Europe and is currently working on the renewal of its strategic agenda and raising its profile within the EU.

Focus on pillar 1 and 3. Building sustainability through better integration with EGDI >> GeoERA. GeoERA catalyser for finding model.

Interreg (Hemoplasma-CE). UNFC involvement.

**KPI2:** GEEG has been involved with six GeoERA projects (GARAH, HOTLIME, MUSE, HIKE, 3DGE-EO-EU and GeoConnect3d). Along with other GeoERA members, GEEG participated in the GeoERA kick-off events held in Brussels in 2018. GEEG have stated that they did not publish work in 2018, and they have not yet a common project in collaboration with other EGs.

EUOGA, ESTMAP, GeoPlasma, TransEnergy, Darlinge, ENOS, GeoMOL, GeoEthics paper. More linked to authorities (regional/national).

Suggestion: should we implement dissemination plans for GEEG in the next 4-5 years. Also includes knowledge sharing workshops.

Publication of results via GeoERA / EGDI platform.

**KPI3:** Participation with GeoERA and other EGs through this programme.

Link to national programmes.

DG-JRC / RTD / ENER / ENV.

Integrating with the new URBAN geology expert group.
Strengthen collaboration with other networks (ENeRG, CO2GeoNET, EPOS, IEA?, UNFC, EERA).

Map these networks, establish liaisons, jointly emphasize relevancy of subsurface research in Horizon Europe.

Strengthen/extend DG’s communications.

Establish a communication plain.

**KPI4:** Dissemination of activities and sharing of information came from the GeoMonitoring event at the BGS and the GIP/SIEG project workshop at the GSB.

*GeoERA workshops (also together with non-EGS members and other EGs).*

Continuation of workshop activities. Involve other EGs.

Initiatives for joint field measurements (e.g. MUSE). Funding? Engage and collaborate with URBAN EG.

**KPI5:** The knowledge sharing event on GeoMonitoring at the BGS was held in view of Pillar III of the EGS strategy.

Organize yearly workshops.

See number 4.

**Future Perspectives**

GEEG mentioned the following; 1) to raise EC profile and external visibility; 2) to write an Energy Storage position paper; 3) to establish promotional maps to increase the visibility of GEEG services; 4) gain support for further Subsurface Energy research in Horizon Europe; 5) organise yearly technology workshops; 6) get involved with other Expert Groups and; 6) link with external events to enhance participation and networking.
4. KPI Evaluation for Marine Geology Expert Group (MGEG), 2018

Number of Members: 48

Some of the key achievements of 2018 for MGEG:

✓ Participates in government and industry commissioned projects.
✓ Involved in the third phase of EMODnet-Geology.
✓ Cooperate with the Mineral Resources Expert Group on the topic of marine minerals.
✓ Co-organised sessions and side meetings, study days, workshops and working groups.
✓ Participated in events.
✓ Organised press releases.
✓ Appeared in newspaper articles.
✓ TV documentaries.
✓ Published atlas of seamounts.
✓ Published ‘Code of Sand’.
✓ Published 13 articles.

Review

KPI1: MGEG provides valuable information to the EC Marine Observation and Data Network (EMODnet). MGEG are developing new research roadmaps that focus on emphasising the role of marine-geological mapping and research in everyday lives in order to remain relevant to Europe for the foreseeable future.

KPI2: MGEG members have contributed to EU-funded and transnational projects (i.e. EMODnet and MINDeSEA), which have a multidisciplinary approach. The MGEG also participates in government and industry projects (EMODnet, EGDI and EuroGeoSurveys North Atlantic Group (NAG)), both nationally and internationally. They also published 13 peer-reviewed articles in 2018.

KPI3: Dissemination activities include the following; Web Map Services, Google Earth, storey maps, smartphone apps, geosites and geotrails, vessel tours, interactive public presentations and on social media. MGEG is cooperating with the Mineral Resources Expert Group on the topic of marine minerals.

KPI4: MGEG contributes inclusively to EGS (i.e. involvement with MGEG and focus on remaining relevant) and contributes to the sharing of resources (i.e. EMODnet).

KPI5: MGEG continues to play a lead role in the Atlantic research alliance between the EU, the USA and Canada, as well as in other global initiatives. They mention specifically in their annual report that as well as ensuring the connectivity across international marine seabed mapping, there is a clear need for linking marine and terrestrial geology.

Future perspectives

Throughout 2019, MGEG will continue the EMODnet-programme (funding appears less certain before). The programme is expected to continue after 2020 to underpin ‘Blue Growth’, the ECs long-term strategy to support sustainable growth in the marine and maritime sectors. To ensure that MGEG contribution remains relevant to Europe, new research roadmaps are being developed to focus on emphasising the role of marine-geological mapping and research in everyday lives. MGEG acknowledges the need to look beyond the realm for which it is responsible and recognise that there is a clear need for linking marine and terrestrial geology. EGDI portal will
be used to disseminate past and future EMODnet deliverables. MEGE sees significant added value in interacting and collaborating with other EGS Expert Groups. Specifically, they would like to make use of Copernicus Services and Sentinel data, by strengthening ties with the Earth Observation and Geohazards Expert Group. They see interest in collaborating with the Water Resources Expert Group with regards to groundwater processes and characteristics across the land-sea boundary.

5. KPI Evaluation for Mineral Resources Expert Group (MREG), 2018

Number of Members: 72

Some of the key achievements of 2018 for MREG:

✓ Attended and represented the EGS in meetings.
✓ A new collaboration agreement between EGS and JRC.
✓ Data acquisition.

Review:

KPI1: The signing of a new collaboration between MREG and JRC shows a continued partnership with the EC. The projects MREG is involved with are very relevant to the EC's current strategies (circular economy, CRMs etc).

KPI2: MREG provides an added value to the industry by providing information to the EC (see KPI3), which helps to strengthen the position of the European minerals industry and in turn will make the EU more competitive on the global market.

KPI3: The MREG has an active advisory role to the EC on several mineral resource issues. MREG has a direct link to policy, such as in DG GROW raw materials and DG RTD research and innovation. MREG has high engagement and is well established within the EC. MREG is also active with GeoERA (i.e. Raw Materials and Information Platform projects). MREG are involved with the following projects: MICA, FORAM, Geo-Cradle, MDNP, INTERMIN, ORAMA, PROSUM, PanAfGeo, MINLAND, EGDI and GeoERA.

They switch their priorities according to the important issues on hand. For example, when DG GROW had concerns about REE and CRM, MREG had an unofficial task force dealing with this. Nowadays, the focus is on the Battery initiative, which MREG is engaging with (i.e. with their “side project”, FRAME).

KPI4: Data from the projects are shared with the EC.

KPI5: With regards to international cooperation, MREG continues to have a strong input into the UNFC.

MREG have a permanent member dedicated to liaising with UNFC.

Future Perspectives

Due to the importance of the data coming from so many projects, MREG has incorporated an extra day of meetings with its biennial meets over the lifetime of the projects to discuss relevant results and plan future actions.
6. KPI Evaluation for Spatial Information Expert Group (SIEG), 2018

**Number of Members:** 79

Some of the key achievements of 2018 for SIEG:

- Governance and funding for the basic operations of EGDI.
- Standardisation.
- Basic maintenance.
- New projects.

**Review:**

**KPI1:** The work of the SIEG remains very relevant to EGS and is a key player in the continued design and development of the European Geological Data Infrastructure (EGDI), which is at the core of the EGS pillars strategy. By incorporating all the information from other EGs, SIEG fosters the inclusion of all key partners.

**KPI2:** SIEG remains committed to participating fully at the European level and there are several new projects, including, EURare, EUOGA, Landslide database, North Sea Regulators data, EPOS borehole index, GeoCradle and EMODnet. They are also involved in new projects, to name a few, EURare, EUOGA, North Sea Regulators data. ESG members provided funding on a voluntary basis for the basic operations of EGDI.

**KPI3:** There have been common projects with other EGs in the form of GeoERA and there has been the standardisation between data model EMODnet with the MGE, as well as the attempt for the inclusion of EPOS and the EGDI platform. Many members of SIEG are occupied by the GeoERA Information Platform project which will be built as an extension of EGDI.

**KPI4:** With regards to sharing data, the EDPI infrastructure has become a universal platform for EGs to visualise and publish their data.

**KPI5:** formal development and standardisation between EGDI/EGS and EPOS are under development and in line with Pillar III of the EGS strategy.

**Future Perspectives**

The need to invest in data management and more professionalism in information technology for platforms like EGDI. SIEG was set up specifically for the INSPIRE programme, and now 12 years down the line they have assessed the need to refresh their purpose in order to evolve and reach their potential.
7. KPI Evaluation for Water Resources Expert Group (WREG), 2018

Number of Members: 72

Some of the key achievements of 2018 for WREG:

✓ Submitting proposals for GeoERA groundwater theme.
✓ Participate in conferences.

Review:

KPI1: WREG has good capacity to look towards the future as shown by its five-year plan, which is to identify and supply relevant data for the groundwater part of GeoERA and the Geoscience Information Platform (GIP/EGDI), to identify groundwater research gaps and develop groundwater research projects and publishable scientific papers related to these.

KPI2: WREG received funding for four projects of the GeoERA groundwater theme (HOVER, RESOURCE, TATIC and VoGERA). Many members of WREG are amongst the most active and cited groundwater research institutions and scientists in Europe.

KPI3: WREG has worked with SIEG regarding the submission for a proposal to the Innovation Fund Denmark for co-founding GeoERA projects.

KPI4: WREG contributes to the sharing of resources through GeoERA.

KPI5: WREG contributes to the 3rd pillar of the EGS through GeoERA. They took part in numerous events throughout the year, most related to GeoERA (i.e. VoGERA stakeholder meetings, CIS working group groundwater meeting).

Future Perspectives

The main future perspectives include; 1) conduct groundwater research and provide scientifically sound and standardized data for the GIP and EGDI to support the implementation of EU policies, sustainable resource management, and integrated surface and subsurface planning 2) provide easy and efficient access to these data according to the ‘FAIR’ principles; 3) provide innovative and broadly applicable solutions/instrumentation for sustainable water management.
EGS Secretariat Activities 2017-2018
YEAR 2017:

**Statutory meetings - 2017**

- **February**: 38th National Delegates Forum, Expert Groups Chairs meeting - Brussels
- **March**: 92nd Executive Committee - Brussels
- **June**: 93rd Executive Committee – Porto
  Extraordinary National Delegates Forum & Statues Workshop - Brussels
- **August**: 93b Executive Committee – Hannover
  Directors Workshop - Hannover
- **September**: 39th National Delegates Forum - Vienna
- **October**: 94th Executive Committee - Belgrade
  43rd General Meeting - Belgrade
- **December**: 95th Executive Committee - Brussels

---

1. **Project engagement**

**Minerals4EU Foundation**

*The Minerals4EU project ended in 2015 but efforts continued, as a key deliverable was to set up a permanent body (Minerals4EU Foundation) in 2016.*

*Coordinator: EuroGeoSurveys*

The M4EU Foundation was formally set up in 2016. The Management Board (EGS President, EGS SG, WEEE Forum, University of Leoben, Fraunhofer Institute, Geological Survey of Albania, British Geological Survey) was set up. During 2017 two Management Board videoconferences were held, where the role and involvement of each MB member and EGS Secretariat was discussed, the organisation of the Foundation considered, and needed actions for the continuation of Minerals4EU Foundation in a frame of GeoERA projects / Geological Service for Europe. Discussions so far have no tangible results.

**EGDI-Bridge**

*Bridge venture supported by in-kind contributions from SIEG members to further develop the EGDI Portal.*

*Coordinator: GEUS*

EGDI has developed in a EGDI version 1 by in-kind contributions from individual Surveys and was launched in June 2016. In 2017 involved EGS members prepared the plan how to maintain the EGDI. Several members contributed up to 5,000 € towards a fund of almost 70,000 € for the maintenance and further development of EGDI. The EGS budget secured another 38,000 €. The EGDI contract is under preparation and should be signed in the first half of 2018.

**GEO/GEOSS**

*EGS is a member in the global initiative Group on Earth Observations as a ‘Participating Organisation’ and an active member of the GEO European High-Level Working Group.*

EuroGeoSurveys has been a member of GEO since its foundation 14 years ago and participates and collaborates actively in its activities. During 2017 EGS participated in several workshops and meetings: GEO Ministerial Summit in October in Washington (EGS had a booth under the EC delegation, poster on EGDI was presented) – it was here that the EuroGEOSS initiative was officially launched. The EGS Secretariat contributed to the EuroGEOSS concept paper, together with Expert Groups: MREG; EGDI, EOEG. EGS Secretariat had an important role in establishing the Consortium for the EuroGEOSS proposal. Besides EGS has a Community Activity included in the GEO Work Programme 2018-2020 – the EOEG has worked on this with the support of the EGS Secretariat.

**MICA Project**

*Start date: 1/12/2015    End date: 31/01/2018*

*Coordinator: GEUS*
Budget: €1,998,955 funded by the EU Horizon 2020 Programme

Role of EGS: WP7 “Communication, outreach and linkages” leader, acting as the umbrella organisation for the participation of the EGS members as Third Parties.

The MICA project continued to contribute to on-going efforts towards the establishment of a raw materials knowledge base infrastructure begun by projects such as ProMine, EURare, Minventory, EuroGeoSource, Minerals4EU, ProSum, I2Mine, INTRAW, MINATURA2020 and others. During the 2017, MICA project was presented at two important events: World Resource Forum (WRF2017) in Geneva and Raw Materials Week held in November 2017 in Brussels. In addition, one MICA Workshop was held at Gran Canaria in May 2017. EGS has submitted all five deliverables in line with the time schedule. The MICA final event took place in Brussels in January 2018.

**EUOGA Project**

*Start date: 1/09/2015    End date: 28/02/2017*

*Coordinator: GEUS*

*Budget: €700,000 funded by the EU Horizon 2020 Programme*

*Role of EGS: n/a*

The EUOGA project is a service contract with DG JRC on EU Unconventional Oil and Gas Assessment. The project lasted 18 months and had a budget of 700,000 €. It was coordinated by GEUS with the involvement of the GEEG members. The project involved collaboration with JRC-IET in gathering the collective knowledge on shale gas and shale oil, vested in the Geological Surveys of Europe. It provided the first important step on the way to a comprehensive, science-based and reliable GIS mapping of the shale hydrocarbon resources in Europe. The project ended in September 2017.

**PanAfGeo Project**

*Start date: 16/12/2016    End date: 15/12/2019*

*Coordinator: BRGM*

*Budget: €10,248,953 co-funded by DG DEVCO through the Pan-African Programme*

Role of EGS is to promote and facilitate dialogue and interactions between the Project partners, African Geological Surveys and stakeholders. The goal is to increase the visibility of the PanAfGeo actions and to create a communication network raising awareness on the importance of sharing (WP8 Communication & Dissemination). EGS became also WP leader of WP9 (logistic of the trainings, travel, allowances, IT equipment).

The first official PanAfGeo meeting between all the European Partners will took place in February 2017 in Cape Town (South Africa) during the Mining Indaba Conference, where the first plans on future activities were done. Kick-off Meeting was held in May in Windhoek (Namibia). The first Consortium Amendment includes the redistribution of the tasks (logistic of the trainings, travel, allowances, IT equipment) to EGS Secretariat and associated budget. The signing of the Consortium Amendment was prolonged until December 2017, which caused EGS Secretariat to pre-finance 185,000 € from EGS budget. This was crucial for project to continue with planned activities without any delay. In December 2017 EGS received the money to cover all the costs that occurred during 2017 and for the activities planned for the first half of 2018, before the 2nd pre-financing. Consortium meeting was held in December 2017 in Brussels. EGS project manager Celine Andrien visited Nigeria in November 2017, to reinforce the position of OAGS and cooperation between EGS in OAGS. In all, 10 trainings were organized with involvement of 247 trainees in 2017. The trainings gained high visibility at the political level with presence of Ministers at the openings to various trainings, along with the media attention that follows. This resulted in high visibility for the 12 EGS Members involved. There was also very good feedback from the trainees and WP leaders and co-leaders on the high quality of the trainings. The success has led to new African countries requesting to join the OAGS.

**INSPIRE**

The cooperation with DG JRC for the implementation of the INSPIRE Directive was consolidated by the signature of a second service contract, that covered the period from September 2015 to March 2016. A third JRC contract, its tender was published at the beginning of 2017, was planned
to be signed in 2017 for a period of 2 years. Misunderstandings between JRC and EGS delayed the signature of the third contract.

**ProSUM Project**

*Start date: 1/01/2015   End date: 31/12/2017*

*Coordinator: WEEE FORUM*

*Budget: €3,704,327.57 funded by the EU Horizon 2020 Programme*

Small role of EGS was in WP1 “Management & Coordination”, WP4 “Waste Characterisation” and WP6 “Dissemination & exploitation”, and also acting as the umbrella organisation for the participation of the EGS members as Third Parties.

The ProSUM project aim was establishing a European network of expertise on secondary raw materials from mining waste, batteries, end of life vehicles and WEEE. The ProSUM project supported the European Innovation Partnership (EIP) on Raw Materials and its Strategic Implementation Plan in Raw Materials Knowledge Base like MICA project. 15 Geological Surveys, EGS members, were involved in the project, 5 surveys as main beneficiaries and 10 as linked third parties under the EGS umbrella.

Final event of the project was held during the RM week in November 2017 in Brussels. The project ended in December 2017. Financial and technical reports are prepared to be submitted in February 2018.

**GeoERA ERA-NET**

*Start date: 1/01/2017   End date: 31/12/2021*

*Coordinator: TNO*

*Budget: €31,303,030.39 co-funded by the EU Horizon 2020 Programme [€10,000,000 EU contribution, €21,303,030.39 in kind from participants]*

*Role of EGS: Subcontracted to assist GEUS in WP5 “Communication & Dissemination”.*

Project with a full title “Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe” started officially in 2017. Kick-off meeting of the programme was held in January 2017 in Utrecht. GeoERA partners forming the Secretariat (TNO as Coordinator), BGR, GEUS, GeoZS and EGS), along with the nominated Theme Coordinator (Gerry Stanley - GSI, Serge van Gessel - TNO, Klaus Hinsby - GEUS and Jørgen Tulstrup - GEUS), carried out extensive preparatory work in almost whole 2017 to launch two stages programme call. The GeoERA Joint Call was set up in two stages: Call for Project Ideas and Call for Project Proposals. The Call for Project Ideas opened in April 2017 with a submission deadline of 7th of June 2017. The Call for Project Proposals opened in October 2017 and closed on the 12th of January 2018. The Call will fund only project proposals submitted by the Geological survey organizations, that are members of GeoERA. EGS Secretariat assisted in the project preparation of raw materials calls, the one related to minerals yearbook activities, and MineralsEUFoundation. The EGS Secretariat and GEUS made preparation to sign the contract that would facilitate the work of EGS Secretariat in GeoERA.

**GEO-CRADLE Project**

*Start date: 1/02/2016   End date: 31/07/2018*

*Coordinator: National Observatory of Athens*

*Budget: €3,030,800 funded by the EU Horizon 2020 Programme*

The EGS role is to act as the umbrella organisation for the participation of the EOEG via the EGS members as Third Parties in WP2, WP3, WP4, WP5, WP6 and WP7.

GEO-CRADLE, 2.5-year H2020 project, coordinates and integrates state-of-the-art Earth observation activities in the regions of North Africa, Middle East, and Balkans and developing links with GEO-related initiatives towards GEOSS. Fourteen Geological Surveys are involved, three as linked third parties under the EGS umbrella.

GEO-CRADLE Mid-Term Review Meeting, Advisory Board and General Assembly were held in June 2017 in Brussels. In addition, several Internal Progress meetings and regional workshops were held during the 2017. The project is running well and the EGS contribution is in line with the commitments signed in the Grant Agreement. EGS has already completed all the deliverables committed in the DOW.
FORAM Project
Start date: 1/1/2016 End date: 31/10/2018
Coordinator: World Resources Forum Association
Budget: €1,542,438 funded by the EU Horizon 2020 Programme
Role of EGS: WP leader for WP2 “Structure & Baseline” and WP5 “Dissemination”.
EGS leads WP2 (Structure and Dialogue) and WP5 (Communication and Dissemination). 2017 is for the project Towards a World Forum on Raw Materials (FORAM) a second and final year. During the year EGS Secretariat personal involved in project changed (W.Hunter and C.delfini were replaced by J.Vidovic and N.Savall). FORAM project was presented at several international conferences and workshops. Financial and technical reports for the first year were submitted, all project activities are in accord with the plan of the project.

MINLAND Project (NEW PROJECT)
Start date: 1/12/2017 End date: 30/11/2019
Coordinator: Geological Survey of Sweden (SGU)
Budget: €1,498,691.25 funded by the EU Horizon 2020 Programme
Role of EGS: WP leader for WP8, partner in WP1, WP2, WP7
“Mineral resources in sustainable land-use planning” or MINLAND project has been designed to meet the challenges of competing land use from many different needs. Securing access to land for exploration and extraction of minerals, including critical raw materials in an integrated optimized process is of great importance. The MINLAND project will pursue four main objectives: to produce a data base of existing policies, to provide guidelines on how to link land use and mineral policies, to analyse land use case studies of mineral exploration and extraction with respect to mineral- and land-use policies. The aim is to support a more efficient and sustainable permitting process by providing best practice examples and to ensure knowledge exchange among relevant stakeholders.
The MINLAND consortium, coordinated by the Geological Survey of Sweden builds upon participation from all over Europe. The consortium consists of partners and third parties covering such expertise as geological land use information mining authorities, land use authorities, industry and academy. It is further supported by a broad stakeholder group covering from municipal and regional level land use authorities to Euromines, World Wildlife Fund, PDAC, UEPG, and land use experts. EGS is one of the 22 partners and there are seven EGS members who are third parties (GeoZS, GIU, MBFSZ, CGS, BRGM, GSD, HGI-CGS). Grant agreement was signed in November 2017.

INTERMIN Project (NEW PROJECT)
Start date: 01/02/2018 End date: 31/01/2021
Coordinator: Geological Survey of Spain (IGME)
Budget: €1,266,021.25 funded by the EU Horizon 2020 Programme
Role of EGS: WP leader for WP5 (Communication and dissemination), partner in all WPs
“International network of raw materials training centres” or INTERMIN project will create a long-term sustainable international network of training centres for professionals. The project involves educational and research institutions in the EU and the leading counterparts in some raw materials producing countries, based on specific country expertise in the primary and secondary raw materials sector. The network will map skills and knowledge in the European Union and the other countries, identify key knowledge gaps and emerging needs, develop roadmap for improving skills and knowledge, as well as establish common training programmes in the raw materials sector. In line with the EU’s strategy for international co-operation in research and innovation, the consortium will seek international collaboration, fostering and exploring synergies with all relevant EU Member States initiatives.
The INTERMIN consortium, coordinated by the Geological Survey of Spain (IGME) builds upon participation from all over Europe. EGS is one of the 14 partners and there are seven EGS members IGME, SGU and five an EGS linked third parties (GIU, MBFSZ, CGS, LNEG, IGME Gr.). Grant Agreement was signed in November 2017.
European Technology Platform on Sustainable Mineral Resources (ETP SMR)

EGS is a member of the ETP SMR, an industry-led stakeholder forum recognised by the European Commission. EGS is contracted to run the Secretariat of the ETP SMR.

EGS continued to run the ETP SMR Secretariat in 2017. The ETP SMR continued its involvement in the EIP on Raw Materials with representation in the Operational Groups, however its application to renew its seat on the High-Level Steering Group was rejected by the EC without explanation (several member organisations have seats here however). The main activity in 2017 revolved around the further development of the VERAM project’s vision and roadmap for raw materials research and innovation towards 2050. The ETP SMR held their General Assembly December 2017 in Brussels, at which a new Executive Committee was elected for the next two years – Slavko Solar was elected as Vice President on behalf of EGS. Seen as a key representative body of EU research and innovation in the mineral resources sector, the ETP SMR is involved in many EU project Advisory Boards, including FORAM, EURARE and the newly established INTERMIN project. EGS will continue to operate the Secretariat of the ETP SMR in 2018.

VERAM Project

Start date: 1/12/2015  End date: 31/05/2018
Coordinator: ETP SMR
Budget: €1,431,498.75 funded by the EU Horizon 2020 Programme
Role of EGS: provide administrative support as a linked third party to the ETP SMR.

The VERAM Project was launched in December 2015 under the coordination of the ETP SMR. Under the Grant Agreement, EGS is officially a third party to the ETP SMR. In its second year of the project, the consortium developed the vision and roadmap for raw materials research and innovation sector towards 2050, with an in-depth stakeholder workshop and stakeholder consultation designed to ensure the content is as complete as possible. With the results of the stakeholder consultation to be analysed and incorporated into the roadmap at the beginning of 2018, a common long term 2050 vision and roadmap for research and innovation coordination in the raw materials sector will be released at the final event, being planned for April 2018. The scope of the VERAM project includes metals, industrial minerals and aggregates and wood.

2. Communication

EGS published “Geology in History” the 4th promotional book of EGS during the 42nd EGS General Meeting in March 2017. The book describes a surprising and unusual combination that brings you to understand how the geological discoveries have marked history and determined the shape of our society, of our culture and of our habits. Through “Geology in History” EuroGeoSurveys renewed its commitments in engaging with the wider public to communicate geology by showing how human beings would not have evolved without geologists and geology.

The FORAM project released its;
- 2nd Newsletter in July, which comprised several interviews, global mapping and analysis of raw materials initiatives on it. In addition to this, the ways to enhance the dialogues among FORAM stakeholders were also part of it.
- 3rd Newsletter published in December reported about the World Resources Forum that took place in October in Geneva, results from the global mapping of existing Raw Materials initiatives and the outcome from the INTRAW and FORAM project roundtable held during the Raw Materials Week in November.

In 2017 EGS published approximately 20 articles on EGS NEWS section, the interactive e-Newsletter of EuroGeoSurveys. News, interviews, media and press releases were published on the website and were further promoted through social media channels. In 2017, EGS NEWS increased the number of permanent subscribers, visitors, pages views and sessions.
EGS participated in several events. The most important ones, in terms of visibility, are listed under “External activities.” By attending these events EGS has reinforced its visibility and capabilities, especially in relation to the European Commission creating the basis for support for projects such as PanAfGeo. In June 2017, EGS took part in the first PanAfGeo training, minerals resources assessment bilateral meetings with the Organisation of African Geological Surveys (OAGS) and the EC.

**YEAR 2018:**

**Statutory meetings - 2018**

<table>
<thead>
<tr>
<th>Month</th>
<th>Meeting Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>February</td>
<td>95th Executive Committee - Kyiv</td>
</tr>
<tr>
<td></td>
<td>40th National Delegates Forum,</td>
</tr>
<tr>
<td></td>
<td>Expert Groups Chairs meeting - Brussels</td>
</tr>
<tr>
<td>March</td>
<td>96th Executive Committee - Vienna</td>
</tr>
<tr>
<td></td>
<td>44th General Meeting - Vienna</td>
</tr>
<tr>
<td>June</td>
<td>97th Executive Committee – Brussels</td>
</tr>
<tr>
<td>September</td>
<td>41st National Delegates Forum - Rome</td>
</tr>
<tr>
<td>October</td>
<td>98th Executive Committee – Bratislava</td>
</tr>
<tr>
<td></td>
<td>45th General Meeting - Bratislava</td>
</tr>
<tr>
<td>December</td>
<td>99th Executive Committee – Brussels</td>
</tr>
</tbody>
</table>

**In addition**

- February: Directors Strategy Workshop – Kyiv
- June: ExCom Strategy Workshop – Brussels

EGS is a member in the global initiative Group on Earth Observations as a ‘Participating Organisation’ and an active member of the GEO European High-Level Working Group.

EGS has been a member of GEO since its foundation 15 years ago and participates and collaborates actively in its activities. During 2018, EGS participated in several workshops and meetings, including the GEO Summit in November in Kyoto, Japan Washington, where EGS had a booth under the EC delegation and poster on EGS was presented. The EGS Secretariat also contributed to the Position paper together with Expert Groups: MREG, EGDI, EOEG. Further to this, the EGS Secretariat coordinated EGS members in joining the H2020 EuroGEOSS Showcases proposal. This work was done in close cooperation with the EOEG.

**MICA Project**

*Start date: 1/12/2015  End date: 31/01/2018*

**Coordinator:** GEUS  
**Budget:** €1,998,955 funded by the EU Horizon 2020 Programme

**Role of EGS:** WP7 “Communication, outreach and linkages” leader, acting as the umbrella organisation for the participation of the EGS members as Third Parties.

The MICA project was part of the on-going effort towards the establishment of a European Union Raw Materials Knowledge Base. This project ended in 2018, with the final event taking place in Brussels, in January 2018. After this event, all of the projects final reports were submitted.

**PanAfGeo Project**

*Start date: 16/12/2016  End date: 15/12/2019*

**Coordinator:** BRGM  
**Budget:** €10,248,953 co-funded by DG DEVCO through the Pan-African Programme

The role of EGS is to promote and facilitate dialogue and interactions between the Project partners, African Geological Surveys and stakeholders.
The goal is to increase the visibility of the PanAfGeo actions and to create a communication network raising awareness on the importance of sharing knowledge and data (WP8 Communication & Dissemination). EGS became the WP leader of WP9 (logistics of training, travel, allowances, IT equipment).

Since the beginning of the project, 27 training sessions have taken place, with a total involvement of 650 trainees. In 2018 alone, there were 17 training sessions and a total of 456 trainees. Impressively, out of the 54 countries on the African continent, 46 are now part of PanAfGeo.

The PanAfGeo project has been promoted through several international and European events (including the Mining Indaba conference, METS, PDAC2018 and EGU20). Of particular note, EGS participated in the UNDP International Conference on Artisanal and Small-scale Mining & Quarrying, held in Livingstone, Zambia.

The PanAfGeo Midterm Meeting was held in Dakar in May 2018. EGS President, Ms. Teresa Ponce de Leão, attended the OAGS GM held in Dakar on November 2018. During the OAGS GM, a MoU was signed between OAGS and EGS in order to reinforce the position of OAGS and to enhance the mutually beneficial relationship. Furthermore, EGS was also present at the Ministerial Summit in Addis Ababa. The project was audited by DG DEVCO during 2018 and the preliminary results are positive. EGS continues to liaise closely with DEVCO and the coordinator (BRGM) in preparation of the Phase II of the PanAfGeo.

EGS developed a new PanAfGeo website in 2018 at the request of the OAGS members. The EGS Secretariat continues to lead WP8 Communications activities. The PanAfGeo project is recognized at this stage as a successful project and is seen as a flagship project supporting Pillar III of the EGS Strategy.

**ProSUM Project**

*Start date: 1/01/2015  End date: 31/12/2017*

Coordinator: WEEE FORUM

Budget: €3,704,327.57 funded by the EU Horizon 2020 Programme

The small role of EGS was in WP1 “Management & Coordination”, WP4 “Waste Characterisation” and WP6 “Dissemination & exploitation” and acted as the umbrella organisation for the participation of the EGS members as Third Parties.

The ProSUM project aim was at establishing a European network of expertise on secondary raw materials from mining waste, batteries, end of life vehicles and WEEE. The project concluded at the end of 2017, and in February 2018 all documents were submitted. The project coordinator led some aftermath activities in order to maintain the Project consortium as well as the results.

**GeoERA ERA-NET**

*Start date: 1/01/2017  End date: 31/12/2021*

Coordinator: TNO

Budget: €31,303,030.39 co-funded by the EU Horizon 2020 Programme [€10,000,000 EU contribution, €21,303,030.39 in kind from participants]

Role of EGS: Subcontracted to assist GEUS in WP5 “Communication & Dissemination”.

The project entitled, “Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe” started officially in 2017. GeoERA partners formed the Secretariat (TNO as Coordinator, BGR, GEUS, GeoZS and EGS), along with the nominated Theme Coordinator Gerry Stanley (GSI). It must be noted that Gerry Stanley retired in 2018, and as a result Antje Wittenberg (BGR) replaced him. Serge van Gessel (TNO), Klaus Hinsby (GEUS) and Jørgen Tulstrup (GEUS)) were very active members in 2018.

The Call for Project Proposals opened in October 2017 and closed on the 12th of January 2018. 15 project proposals were selected in April 2018 and had a joint kick off meeting in July of that year. The EGS Secretariat assisted extensively in the organisation and logistics of the event. Throughout the
year, projects were presented on many occasions, including with the Expert Groups (minerals, energy). The EGS Secretariat is involved with the communication and in 2018 a contract with GEUS was signed. The main objective of the EGS Secretariat is to promote projects as part of pillar I of the EGS Strategy as well as to prepare for the next phase (after 2021).

GEO-CRADLE Project
Start date: 1/02/2016   End date: 31/07/2018 (extended till 30/11/2018)
Coordinator: National Observatory of Athens
Budget: €3,030,800 funded by the EU Horizon 2020 Programme
The role of the EGS is to act as the umbrella organisation for the participation of the EOEG via the EGS members as Third Parties in WP2, WP3, WP4, WP5, WP6 and WP7.

GEO-CRADLE, 2.5-year H2020 project, coordinates and integrates state-of-the-art Earth observation activities in the regions of North Africa, Middle East, and Balkans (NAMEBA) and developing links with GEO-related initiatives towards GEOSS. Fourteen Geological Surveys are involved, three as linked third parties under the EGS umbrella. The project was due to end in July 2018, however it was extended to November 2018 in order to ensure completion of some final deliverables. The EGS contribution is in line with the commitments signed in the Grant Agreement. Through close cooperation with end-users in RoI, EuroGeoSurveys defined four different examples of pilot sites for which feasibilities studies were elaborated, including EO methods, for the better monitoring of the mining and post-mining areas and mitigation of their impact. We succeeded in elaborating the EO methodologies for monitoring of quarrying activities in Greece, improved monitoring in abandoned Asbestos mine in Cyprus, carbon potential investigation and determination of orientation of coal outcrops in Central Anatolian Lignite Basin in Turkey and determination of the iron potential zones in Celebi Iron-oxide mineralization district in Turkey.

Latest news is that GEO-CRADLE became a GEO Regional Initiative with the approval of the 2018 Work Programme Progress Report in Kyoto during the GEO WEEK 2018! This Initiative is a continuation and extension of the work of the GEO CRADLE Community Activity, which provided EO capacity building in the North Africa, Middle East, and Balkans (NAMEBA) region, now with potential to expand to the Black Sea. Also, on top of food security, energy, raw materials and climate change the Initiative will explore the incorporation of additional thematic areas such as disaster management and water resources management, in accordance to GEO priorities. The initiative will capitalise, sustain and scale up the results mainly achieved during the implementation of the 3-year H2020 GEO-CRADLE project.

FORAM Project
Start date: 1/11/2016   End date: 31/10/2018
Coordinator: World Resources Forum Association
Budget: €1,542,438 funded by the EU Horizon 2020 Programme
Role of EGS: WP leader for WP2 “Structure & Baseline” and WP5 “Dissemination”.

EGS leads the WP2 (Structure and Dialogue) and the WP5 (Communication and Dissemination). 2018 was the second and final year of the project, ‘Towards a World Forum on Raw Materials’ (FORAM). Financial and technical reports for the second year were submitted. EGS and LTPs did additional work (person/months) in the 2nd year of the project. The majority of these activities were carried out by EGS, mainly due to unforeseen involvement in the WP4 (Pilot Event) and managing additional necessary dialogues with stakeholders in the WP2. The budget of personnel costs exceeded the proposal costs (40,639.22 euro).

MINLAND Project
Start date: 1/12/2017   End date: 30/11/2019
Coordinator: Geological Survey of Sweden (SGU)
Budget: €1,498,691.25 funded by the EU Horizon 2020 Programme
Role of EGS: WP leader for WP8, partner in WP1, WP2, WP7.
EGS leads the WP8, communication, dissemination and exploitation. 2018 was the second year of the MINLAND project. The tasks for this project include the following; Task 8.1. Communication Strategy and Plan (completed); Task 8.2. Dissemination of project results: a) offline dissemination tools such as, brochures, postcards, newsletters, press releases, factsheets and so forth, and b) online dissemination tools such as, website, videos, social media and banners (work in progress). MINLAND project was presented at several international conferences. All project activities are in accord with the plan of the project. Financial and technical reports for the first year will be submitted January/February 2019.

**INTERMIN Project**

*Start date: 01/02/2018     End date: 31/01/2021*

*Coordinator: Geological Survey of Spain (IGME)*

*Budget: €1,266,021.25 funded by the EU Horizon 2020 Programme*

*Role of EGS: WP leader for WP5 (Communication and dissemination), partner in all WPs.*

EGS leads WP5 communication and dissemination (exploitation). 2018 has been the first year for INTERMIN. The tasks include: Task 5.1 developing the communication strategy (completed); Task 5.2 dissemination support services, including communication materials and hub and spoke' website, and; Task 5.3 fostering communication (work in progress). The INTERMIN project was presented at several international conferences throughout the year. All project activities are in accord with the plan of the project. Financial and technical reports for the first year will be submitted in February/March 2019.

**European Technology Platform on Sustainable Mineral Resources (ETP SMR)**

*EGS is a member of the ETP SMR, an industry-led stakeholder forum recognised by the European Commission. EGS is contracted to run the Secretariat of the ETP SMR.*

EGS continued to run the ETP SMR Secretariat in 2018, managing the day to day business and arranging the General Meetings and Executive Committee Meetings. The ETP SMR remains represented in the EIP on Raw Materials Operational Groups, although activity was limited in 2018 as the European Commission reassessed the role for the next research programme, namely Horizon Europe. The main activity in 2018 revolved around the finalisation of the VERAM project’s vision and roadmap for raw materials research and innovation towards 2050. The ETP SMR held two meetings in 2018, in June and December, however the quorum was not meant to be considered as General Assemblies. Reinvigorating the membership is seen as a key factor for 2019, with a view towards ensuring the need of the raw materials research and innovation community, which is reflected in the draft programme for Horizon Europe. ETP SMR is still seen as a key representative body of EU research and innovation in the mineral resources sector, with continued approaches to be involved in EU project Advisory Boards or broader representative communities in EU affairs, such as the Alliance4Materials group. EGS will continue to operate the Secretariat of the ETP SMR in 2019.

**VERAM Project**

*Start date: 1/12/2015     End date: 31/05/2018*

*Coordinator: ETP SMR*

*Budget: €1,431,498.75 funded by the EU Horizon 2020 Programme*

*Role of EGS: provide administrative support as a linked third party to the ETP SMR.*

The VERAM Project was launched in December 2015 under the coordination of the ETP SMR. Under the Grant Agreement, EGS is officially a third party to the ETP SMR and provides administrative support and assistance in the communication and dissemination activities. In its final months of the project, the consortium finalised the long-term vision and roadmap for raw materials research and innovation needs across the sector towards 2050, releasing a hard copy of the roadmap at the final conference in April 2018. The scope of the VERAM project included metals,
industrial minerals, aggregates and wood. The project was successfully concluded with all deliverables submitted and approved by the EC.

2. Communication

In 2018, EGS published approximately 9 articles on the EGS website NEWS section, the interactive e-Newsletter of EGS. Several articles were also published on the EGS social media channels as well as promotions of news, interviews, media and press releases via the latter and the EGS website. EGS renewed its efforts in keeping steady relationships with the press, both at local and national levels. In 2018, EGS NEWS increased the number of visitors, page views, sessions and followers. Overall, the EGS website was continuously updated throughout the year, and changes were reported in the members’ data, Expert Groups, news and events.

Over the past 12 months, social media activity has continued to increase the EGS visibility, as well as promoted projects and events. LinkedIn platform gained more followers, EGS Twitter gained 290 followers (taking the total number of followers to 1189) and the EGS Facebook page now has 343 followers. Further to this, the EGS YouTube channel has had an increased number of views in 2017 compared to 2016.

EGS participated in several events. The most important ones, in terms of visibility, are listed under “External activities.” By attending these events EGS has reinforced its visibility and capabilities, especially in relation to the European Commission creating the basis of support for projects such as PanAfGeo, MinLand and Intermin. In November 2018, EGS took part in the second PanAfGeo training, as well as the mineral resources assessment bilateral meetings with the Organisation of African Geological Surveys (OAGS) and the EC.

During 2018 the EGS Communication team was also involved in the communication activities (in the framework of the WP communication) for the call Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe (GeoERA). The Communications team was also involved in developing and promoting the activities carried out by the following projects:

- ETP SMR (website, press releases, newsletters). The ETP SMR was involved in the coordination of the VERAM project, supporting communication activities.
- MICA (communication strategy, brochure, press releases, stakeholder workshops, events).
- FORAM (communication strategy, brochure, press releases, stakeholder workshops, video, events).
- PanAfGeo (Kick-off and Consortium meeting, brochure, press releases, stakeholder workshops, events, booth)
- MINLAND (visual identity, logo, website, social media, press release)
- INTERMIN (visual identity, logo, website, social media)

All the activities have been carried out by optimising the financial resources available.

The next priorities from the communication point of view, are to increase the visibility of EGS amongst the EU Institutions, particularly within the EC and the EU Parliament; raise awareness of geosciences amongst the general public; keep the involvement of EGS Members high, and, maintain and reinforce the relations with media.
EGS STRATEGIC DEVELOPMENTS
2017 - 2018
STRATEGIC DEVELOPMENTS – 2017-2018

In 2017, EuroGeoSurveys and its members reconfirmed and strengthened their commitment to the EGS Strategy action plan. Two high-level Strategy Workshops were arranged in Hannover (2017) and Kyiv (2018) to maintain a coordinated vision and approach amongst the EGS community.

The implementation of GeoERA in 2017, with a call for project ideas and later also project proposals in topic on mineral resources, energy, water and information infrastructure, mobilized the EGS expert community to a great extent and led to the launch of 15 projects in July 2018. The EGDI, launched in 2016, was maintained and further developed, despite a lack of external resources, following the voluntary contributions of EGS members to cover basic costs. Discussion on how to move forward with the third pillar were vivid, with some progress seen in 2018.

Pillar I: GeoERA

The GeoERA project, coordinated by TNO and supported by EU Horizon 2020 co-financing, started in January 2017. In the first year there were two calls, first for project ideas (April 2017), and second, after the project ideas selection, the call for project proposals (October 2017). All together 17 project proposals were submitted. The GeoERA Foresight group, looking at the sustainability of the network, started their work together with EGS in 2017.

In the first half of 2018 the selection process for the projects was finished, and in the second half of 2018 the 15 successfully evaluated projects commenced (six in energy, four in minerals resources and water, and one in information infrastructure). In the first phase, projects and project themes were linked with EGS Expert Groups to improve their outreach capacity. The Foresight Group joined the EGS Horizon Europe team with the intention to jointly impact and prepare the follow up programme to GeoERA within Horizon Europe preparations.

Pillar II: EGDI

The European Geological Data Infrastructure (EGDI), launched in 2016, already gives access to data from numerous projects and more than 600 data layers through a user-friendly web portal and a related INSPIRE-compliant meta-database. In 2018, further discussion on its maintenance took place, including contracts within EGS (EGS – EGDI) for 2017-2019. It is important to note, that EGDI is financed voluntarily by some EGS members, and partly by the EGS budget. Discussions have now developed with the user community and stakeholders, and amongst them a clear opportunity for cooperation with EPOS has arisen. EGS will continue to seek out opportunity to develop these ties with a view to obtaining sustained financing to maintain and further develop EGDI in a user-oriented manner.

Pillar III: OUTREACH

The third pillar of the EGS Strategy was named OUTREACH and includes sharing knowledge, capacities and infrastructures. The pillar is loosely implemented via the activities of EGS Expert Groups and collaboration amongst the EGS members in bilateral engagements or European projects. In 2018, work began to develop a new EGS Communication Strategy with a view to setting concrete targets in the communication and dissemination activities related to the overarching EGS Strategy.

Other Activities

EGS is engaged in several other European projects, using the technical expertise in the network within research and innovation actions, as well as the more policy focused coordination and support actions under Horizon 2020. These include the recently awarded e-shape project, related to EUROGEOSS, to which the EGS Earth Observation and Geohazards Expert Group will make an important contribution. to the sustainability of EO EG. In 2018, the second phase of activities started for the PanAfGeo project following successful actions in 2017, co-financed by the EC DG DEVCO under the Pan-African Programme. The EMODnet-Geology Phase III project continues on past successes in European seabed mapping and was approved for funding in 2017.
Several Memoranda of Understanding (MoU) were signed in order to strengthen the cooperation between EGS and its major partners. This included a signing of a MoU between EGS and the United Nations Economic Committee for Europe (UNECE) on reserve and resource classification (UNFC), and a MoU between EGS and the Organisation of African Geological Surveys (OAGS) related to activities within PanAfGeo.

Overall, 2017-2018 can be considered as a time of a deepening commitment to the EGS Strategy and its implementation.

**EGS Strategic Developments:**

STATISTICS 2017
In this section you will find some interesting statistical information on EuroGeoSurveys’ membership evolution, publications, member organisations, such as staff numbers and budget data, showing past trends as well as specific details from 2017.

Please note that the following data has been collated with contributions from the national Geological Surveys of Europe, however, should not be considered as official – requests for official data on each Geological Survey should be made to the relevant national authorities.

**Membership and Staffing:**

EuroGeoSurveys represented a combined total of 11999 staff in 2017. This table shows the fluctuations of staff numbers within our membership since 2006. Please note that the data is not always available at the time of collection, hence, there are areas of no data. Although the numbers of staff dropped off in 2017 compared to 2016, in general, for most of the Surveys and Institutions, the numbers of staff have remained relatively stable over the past 5 years.

The above graph showcases the total number of staff for each EGS member, the amount of permanent staff (light blue), other permanent staff (red), and temporary staff (dark blue). Ukraine has the highest numbers of staff (3008). Staff figures for Malta, Bulgaria, Iceland, Kosovo, Montenegro, Turkey and Italy (Regione Emilia Romagna) were not available.
The combined expenditures in 2017 of EGS members totaled just over 689 million euros. France have the biggest expenditures at 68.64 million euros in 2017. Please note that there was no information given for Malta, Russian Federation, Norway, Spain, Spain (Catalonia), Federation of Bosnia and Hertz, Ukraine, Slovak Republic, Hungary, Portugal, Romania, Estonia, Serbia, Italy (Regione Emilia Romagna) and Montenegro.

The national geological surveys throughout Europe receive funding from a number of different sources which are mainly from government state funding. Other funding bodies include, EU research funding, and private funding through commercial activities.
Expertise can be called upon to address a broad range of topics, from the more common geological standpoints such as geological mapping or geohazards to the less obvious topics such as geological tourism (5 countries involved) and glaciology (8 countries involved). Geological mapping is the most involved topic (+30 countries involved).

Subdivision of the activities done by all geological surveys (please note that these percentages are an estimation). The subdivision of Basic Geological Research is the most addressed topic. Note, there is no information regarding the countries, FYROM, Republik of Srpska, Montenegro, Iceland, Italy (Regione Emilia Romagna), Latvia, Sweden, Denmark, United Kingdom, Ireland, Slovenia, Norway and Moldova.

The total number of peer reviewed publications on international scientific journals is 1995. As in previous years, the small survey of the Slovak Republic is third in the publication rankings. The United Kingdom and Denmark publish the most amount of publications with a total of 539 papers between them.
The national geological surveys that make up EGS are all public bodies that are under the supervision of various government ministries. There was a continuing trend over the last few years for Geological Surveys increasingly coming under the supervision of the Ministry of Energy/Industry and Economy (previously it was the Ministry of Environment). Compared to 2016, there has been an increase in Research, Science and Technology (+8%) and

Energy/Industry/Economy (+4%), and a large decrease (-13%) in Environment in 2017. The Other category remained stable (+1%).
STATISTICS 2018
In this section, you will find some interesting statistical information on EuroGeoSurveys’ membership evolution, publications, member organisations, such as staff numbers and budget data, showing past trends as well as specific details from 2018.

Please note that the following data has been collated with contributions from the National Geological Surveys of Europe, however, should not be considered as official – requests for official data on each Geological Survey should be made to the relevant national authorities.

**Membership and Staffing**

Concerning the total amount of staff for each of the EGS Members, the bar chart on the right showcases the proportion of permanent graduate researchers, scientists, and engineers. The sizes of the surveys throughout Europe vary considerably.

The ratio of female workers as permanent graduate researchers, scientists and engineers have remained near enough stable from 2017 to 2018.
Staff numbers show mainly a downward trend from 2006 to 2018. In general, for most of the Surveys, we can notice a slight decrease of the staff numbers, most likely linked to the economic downturn in Europe, which unfortunately continues despite a small recovery of numbers in 2010. The increase in 2016 – 2017 is due to the inclusion of data from the Russian Federation.

As regards to the percentage of work spent on the main activities of the Geological Surveys, the graph above shows that the main activities of each Survey vary from one country to another. Expertise can be called upon to address a broad range of topics, from the more common basic geological research activities, water resources and marine geology to the less obvious topics such as culture.

**Finances**

To the left, you can visualise the annual expenditure of the geological surveys in 2018. As shown total salaries and wages take up the biggest chunk of expenditure for each survey.
Above you can visualise a simple comparison between the Survey expenditures and Survey income. It can be noted that expenditures and income are similar to one another for the majority of European Surveys.

To the right, you can observe 2 charts measuring the income sources for each geological survey in 2018, shows that the national geological surveys throughout Europe receive funding from a number of different sources. The majority of funding in most cases comes from the government state budget, however, there is also investment from private funding through commercial activities.
EGS wishes to thank all the contributors to this Report.

Special thanks to Patrick Wall, Anthea Sutherland, Krishnan SR and Erika Maugeri who were responsible for the overall coordination, as well as the EuroGeoSurveys staff, the EGS Expert Group Chairpersons and all other contributors to the Annual Report.

The EuroGeoSurveys Annual Report is a publication of: EuroGeoSurveys
Rue Joseph II, 36-38, Box no.7, 1000 Brussels, Belgium.

Tel.: +32 2 888 75 53
info@eurogeosurveys.org
www.eurogeosurveys.org
www.europe-geology.eu
www.geoera.eu