



# CGI ANNUAL REPORT 2017

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## 1. Main role of CGI

- *Mission*

To foster the interoperability and exchange of geoscience information, by active community leadership, collaboration, education, and the development and promotion of geoscience information standards and best practice.

- *Vision*

- that geoscience information can be exchanged, understood, and used without limitation,
- that geoscience information can be readily integrated with standards-based information from other knowledge domains,
- that geoscience information is semantically rich and structured to enable seamless interaction in all environments,
- that global education about the management, modeling, exchange, and use of geoscience information enables its best possible application,
- the benefit of all society.

## 2. Role within IUGS science policy

The CGI fills the role of the geoscience information body of the IUGS. It represents IUGS geoscience information matters, provides the means for transferring geoscience information and systems, assists international dissemination of best practice geoscience information, stimulates and supports initiatives which are developing standards and its Council members hold several significant positions within the international geoscience information community.

## 3. Organization, Council members and officers

- *Council Officers 2017-2020*

The CGI Council members are:

- François Robida (Chair) – France
- Zhang Minghua (Co-Secretary General)– China
- KombadayeduMhopjeni (Co-Secretary General)– Namibia
- Ollie Raymond (Treasurer and Web Manager)– Australia
- Gabriel Asato – Argentina
- Kazuhiro Miyazaki – Japan
- Tomasz Nałęcz - Poland
- David Percy – USA
- Harvey Thorleifson–USA
- Robert Tomas –Czech Republic

The CGI working groups are coordinated by:

- GeoScienceML Working Group (GeoSciML) –Ollie Raymond,Australia(before July 2017) and Eric Boisvert, Canada(since July 2017)
- EarthResourceML Standard Working Group (ERML) – Jouni Vuollo, Finland

- Geoscience Terminology Working Group (GTWG) – Mark Rattenbury, New Zealand
- Geoscience Information in Africa - Network (GIRAF)  
–MesfinWubeshetGebremichael, Tanzania /Ethiopia

The current CGI secretariat is located at the Development Research Center of China Geological Survey, Ministry of Land and Resources, P. R. China (DRC of CGS). The contact email is [CGIsecretariat@mail.cgs.gov.cn](mailto:CGIsecretariat@mail.cgs.gov.cn).

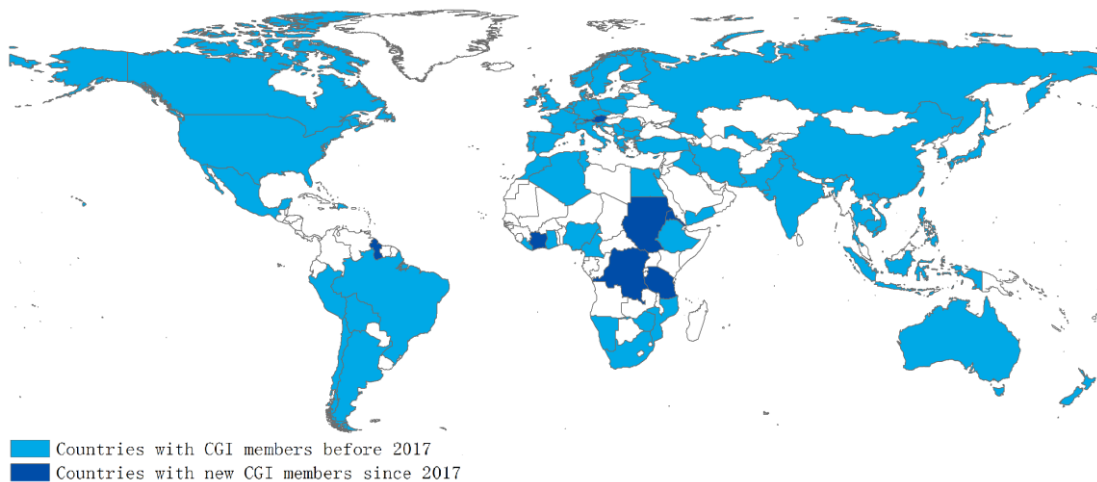
- *Council web presence*

The CGI Council provides constantly the necessary updates to the Council web presence. <http://www.cgi-iugs.org>. The intent of the CGI web site, which is still hosted by the BGS, is to provide easily discoverable information, better highlight CGI activities, emphasize CGI support emerging standards, and provide an area to showcase CGI sponsored Working Groups.

A CGI LinkedIn group has existed since December 2013. The group provides a forum for CGI and LinkedIn members to connect with other geoscience professionals, to post news of upcoming events, to ask questions and to discuss CGI related issues. <http://www.linkedin.com/groups?gid=6539642>

- *Membership*

CGI now has 334 members in 74 countries across the world. There are 62 new members from 9 different countries this year 2017.



#### 4. Extent of support from sources other than IUGS

Other than the substantial in-kind contribution of the geological organizations that pay the salaries and expenses of CGI Council and members, the CGI does not receive additional support. Sometimes CGI workshops are co-organized by other organizations such as the UNESCO, the German Federal Ministry for Economic

Cooperation and Development (BMZ), the Geological Survey of Namibia, Australian Aid, SEGEMAR, the United Nations Development program, SEAMIC, and China Geological Survey who have been contributing to these events.

## 5. Interaction with other international projects

The CGI, in collaboration with OGC, is continuing to review Geoscience ML (GeoSciML). Both the linked global OneGeology project and the past European EC project OneGeology-Europe are using GeoSciML to make geological data interoperable and accessible via their web portals. The EC Directive INSPIRE used for the Geology and Mineral Resources Implementing Rules CGI products: the GeoSciML and Earth Resource ML (ERML) data model and CGI vocabularies. ERML was adopted by major EU funded projects as Mineral4EU or EURare.

- *News*

The GeoSciML v4.1 data standard was ratified and published by Open Geospatial Consortium (OGC) in March 2017, shortly after the acceptance of GeoSciML version 4.0 data transfer standard by a unanimous vote of the Technical Committee of OGC in November 2016. This significant milestone cements GeoSciML's place as an international geological data transfer standard.



The GeoSciML are now hosted on the OGC GeoSciML website.

The original CGI GeoSciML website still maintains access to all historic versions of GeoSciML and links to other supporting resources like UML models and vocabularies.

## 6. CGI Online Presence

CGI maintains several websites, online newsletters, a LinkedIn group, and online file repositories for its Working Groups. The main CGI website, online newsletters, and LinkedIn group are addressed in this report. The CGI Working Group reports will address their specific online resources.

- *CGI Website –www.cgi-iugs.org*

The major redevelopment of the CGI website in 2017 is mainly to promote the newsletter that was circulated in July. More space on the page will be focused on CGI activities and major events and news of globe geological science information and news from IUGS in the future.

The screenshot shows the CGI website homepage. At the top left is the CGI logo with the text 'Commission for the Management and Application of Geoscience Information'. To the right are logos for GeoSciML and STUGS. Below the header is a navigation menu with links: Home, About Us, Join CGI, Data Standards, Publications, Useful links, and Contact Us. The main content area is divided into four sections:

- Welcome to the CGI:** Contains a 'Join Now' button and text about the mission to foster interoperability and exchange of geoscience information.
- Current Working Groups:** Lists three groups: GeoSciML (developing a geological data transfer standard), EarthResourceML (developing a data transfer standard for mineral resources), and Geoscience Terminology (developing multilingual vocabularies).
- News:** Features an article about the RFG 2018 conference in Vancouver, a 'CGI Newsletter' announcement, and a notice about the publication of GeoSciML v4.1 by OGC.
- Geoscience Information in Vienna:** Reports on meetings held in Vienna and Orleans, France, and includes photos of attendees.

The website content continues to be coordinated by Ollie Raymond. The British Geological Survey (BGS) hosts the CGI website: Future work required on the website includes:

- further update the “Commission Documents” pages to include most recent documents.
- minor updates to Working Group pages to keep their content current.

Google Analytics continues to provide a wealth of information about the number of visits and the behavior of people visiting the website. Detailed website statistics for the period October 2015 - October 2017, and a comparison with the previous 12 months shows that there is more than double the amount of visitors than that of last year.

- *CGI Newsletter*

Only one CGI newsletter was circulated to CGI members, in July 2017, due to Ollie Raymond’s increased work commitments to his employer, Geoscience Australia. CGI Council members concerning to take on the task of producing two or three newsletters next year for the better beneficial to CGI publicity.

- *CGI LinkedIn group*

The CGI LinkedIn group was created in October 2014 and currently has 53 members.

There has been negligible activity on the LinkedIn group, but it remains a viable option for CGI communications should Councilors or members wish to use it.

- *CGI Working Group Websites*

All CGI working groups maintain web pages and services.:

GeoSciML: [http://www.cgi-iugs.org/tech\\_collaboration/geosciml.html](http://www.cgi-iugs.org/tech_collaboration/geosciml.html)

EarthResourceML: [http://www.cgi-iugs.org/tech\\_collaboration/earthResourceML.html](http://www.cgi-iugs.org/tech_collaboration/earthResourceML.html)

GeoScience Terminology working group:

[http://www.cgi-iugs.org/tech\\_collaboration/geoscience\\_terminology\\_working\\_group.html](http://www.cgi-iugs.org/tech_collaboration/geoscience_terminology_working_group.html)

GIRAF network: <http://www.giraf-network.org>

## 7. Chief accomplishments and products

### 7.1 CGI News

Ollie Raymond (right in the photo below) received a 2017 achievement award from Geoscience Australia CEO James Johnson (left) for his leadership in the production of the GeoSciML data standard over the last 10 years.



### 7.2 Working Group Reports

#### 7.2.1 GeoSciML Standards Working Group

- *Membership*

The official OGC GeoSciML Standards Working Group (SWG) membership stands at 36 members and observers. However, the public GeoSciML mailing list (which does not require OGC membership and is a better measure of actual SWG observers) has 77 registered Members from Australia, Austria, Belgium, Canada, China, Czech Republic, Finland, France, Germany, Italy,



Japan, Netherlands, New Zealand, Poland, Portugal, Russia, Sweden, UK, and USA.

- *Meetings and activities*

The working group met at OGC Technical Committee meeting in Southampton on Sept 12th 2017. The meeting attracted about 25 persons, including two remote participants.

The OGC/CGI GeoSciML Standards Working Group (SWG) held its annual face-to-face meeting at Geologische Bundesanstalt (Geological Survey of Austria) in Vienna in May. This was the first meeting since the GeoSciML v4.1 data standard was ratified and published by OGC in March. All current documentation and schemas are now hosted on the OGC website. The original CGI website still maintains access to all historic versions of GeoSciML and links to other supporting resources like UML models and vocabularies.

After 8 years as Chair of the Working Group, Ollie Raymond stepped down and Eric Boisvert (pictured) from the Geological Survey of Canada has taken on the role.



The working group discussed minor corrections to the version 4.1 standard, considered a GML version 3.2 profile of GeoSciML-Lite, and reviewed the best practice of delivering data using the GeoSciML-Lite data standard.

Members also considered the future direction of the SWG, in particular towards potential new standard encodings of the GeoSciML data model, such as RDF and JSON.

A small change was made to GeoSciML XSD schemas. No changes were required in the specification document itself (OGC 16-008). The process nonetheless requires the SWG to go through the formal process of submitting a corrigendum and have it approved at the plenary. The corrigendum is accepted, but as of end of November, the new schemas are still not updated on the official web site (<http://schemas.opengis.net/gsml/4.1/>) due to internal OGC workload. This is a bit of an issue since ESRI is waiting for final schema to progress on ArcGIS implementation.

The EPOS project (European Plate Observing System) is working on improving Borehole Lite to support EPOS use cases. Borehole Lite is used to index borehole data from several sources and link back to original data sources.

Preliminary experiments with ShapeChange to create RDF and JSON encoding were presented as an alternative to GML/XML. It was concluded that automated encoding from current UML model was not sufficient to create usable RDF. An OGC Interoperability Experiment was proposed to work on RDF encoding, but



organisations are reluctant to engage into a formal process with hard deadlines. The group is exploring other less formal ways.

IGS (<http://www.igsint.com/>) created RDF ontologies from GeoSciML vocabularies. They showed interest into any progress the SWG can make into RDF encoding. Their approach showed an interesting way to merge model and vocabularies. BRGM presented an impressive plugin developed for QGIS (Free and Open Source GIS) that can ingest and navigate complex GML, such as GeoSciML and GWML (GroundwaterML).

Full documentation of the work and products of the GeoSciML Standards Working Group can be found at:

- <http://www.geosciml.org> (public website with schemas and data models)
- <http://www.opengeospatial.org/standards/geosciml> (OGC specification)
- [http://external.opengeospatial.org/twiki\\_public/GeoSciMLswg/WebHome](http://external.opengeospatial.org/twiki_public/GeoSciMLswg/WebHome) (public wiki with minutes and actions of meetings), and
- <https://www.seegrid.csiro.au/subversion/GeoSciML/> (Subversion working document repository)

## 7.2.2 Geoscience Terminology Working Group

- *Membership*

The membership of the group numbers 24 members. Members come from Australia, China, Denmark, Finland, France, Germany, Great Britain, Italy, New Zealand, Russia, Slovenia, Spain and USA. Membership is defined and managed through a Google Group with membership rights administered by Mark Rattenbury (NZ, chair since 2014) and Steve Richard (USA). Actual participation in vocabulary development and management involves only about half of the membership. The face-to-face GTWG meeting at Vienna on 26 May 2017 resolved to ask inactive members whether they still wish to continue their membership of the GTWG and as a result three memberships were discontinued.

- *Meeting and Activities*

The GTWG activities are described under link from CGI's website, simplified and updated in late 2016, [http://www.cgi-iugs.org/tech\\_collaboration/geoscience\\_terminology\\_working\\_group.html](http://www.cgi-iugs.org/tech_collaboration/geoscience_terminology_working_group.html) and from the GeoSciML website at <http://www.geosciml.org/>. The page has been enhanced with addition of the "Our Vocabularies" section that includes links to the SSSVoc repositories of four key vocabularies.

A financial grant from CGI Council for ~€9880 to fund multi-lingual translation work has been granted. The work is being coordinated by Rachel Heaven of the British



Geological Survey and will add European and Asian language label translations that have been extracted from the former CGI's Multi-Lingual Thesaurus of Geosciences product. The work is on track for completion in early 2018.

- *Achievements*

Two vocabularies, *planarPolarityCode* and *mappingFrame*, have been adopted since the last report and limited progress has been made with others. The Vienna meeting identified *collectionTypeValue* as a vocabulary that could be easily assembled and other vocabularies requiring little further work will be put up for review in by 30 September; notably *geoscientific Themes*, *borehole Purpose*, *event Environment* and *event Process*.

A new path forward for the problematic *mineral Deposit Type* vocabulary has been identified through engaging an external shepherd, Professor Molnàr Ferenc of GTK, Finland working with group member Jouni Vuollo. and engaging a wider representation of ore system specialists from the members' and other organisations. A working group has been assembled.

Work on compiling *natural Geomorphology Feature* terms has resulted in a some uncertainty as to the scope of the vocabulary. The Vienna meeting resolved that GTWG should discuss options and the use case(s) and to decide whether there may need to be more than one vocabulary to describe these features.

The Vienna meeting resolved to promote and adopt the *regionalLithologicUnit* vocabulary forward as soon as possible, recognising that the improvements will be more easily identified through its implementation by various geoscience organisations.

The vocabulary host service has successfully been migrated to Geoscience Australia. The use of persistent URIs has meant no user changes are needed to link to the service e.g. <http://resource.geosciml.org/def/voc/> These vocabularies are all published for general discovery in the Australian National Data Service (ANDS)'s Research Vocabularies Australia (RVA) Portal:

<https://vocabs.ands.org.au/search/#!/?p=1&publisher=CGI%20Geoscience%20Terminology%20Working%20Group&q=>

Particular thanks are due to Ollie Raymond and his GA team for making their server facilities available for CGI. Details on the upload and editing of vocabularies have not yet been finalised but it is likely that several GTWG members will be granted permission to effect changes to the vocabulary service content.

- *Future work and Issues*

There remain a number of outstanding GeoSciML data model vocabularies still to complete, approximate half of those required and mostly for the extension schemas. The EarthResourceML data model still requires the key but problematic *mineralDepositType* vocabulary. The compilation of many of these remaining vocabularies has been started. In addition, considerable work remains to be done to integrate multilingual geoscience terms with existing CGI vocabularies to provide multilingual support.

Face-to-face meetings are particularly productive periods for the GTWG, including the build up to and aftermath of the meeting. The co-alignment with other meetings such as CGI Council, GeoSciML SWG, ERML WG and GIC is effective for increasing the participation level.

### 7.2.3 EarthResourceML(ERML) Standards Working Group

- *Membership*

The EarthResourceML Working Group (ERML WG) has six members (2016-2017):

- |                   |                       |
|-------------------|-----------------------|
| • Jouni Vuollo    | GTK – Finland (Chair) |
| • Daniel Cassard  | BRGM – France         |
| • James Passmore  | BGS – Great Britain   |
| • Michael Sexton  | GA – Australia        |
| • Ollie Raymond   | GA – Australia        |
| • Mark Rattenbury | GNS – New Zealand     |

- *Meetings and activities*

ERML SWG members attended one face-to-face meeting in Orleans, France on 5<sup>th</sup> June 2017 hosted by Daniel Cassard and Bureaude Recherches Géologiques et Minières. The meeting was held after the meetings of the GeoSciML Standards Working Group (SWG), the Geoscience Terminology Working Group (GTWG) at Vienna.

#### *The ERML conceptual model*

Version 2.0 of the CGI data standard for mineral occurrences and mines has been published 2014 see - <http://www.earthresourceml.org/>. After small modifications (2015-16) ERML is now fully compatible with the requirements of the European Commission's INSPIRE data specification for Mineral Resources.

In particular, important communities such as INSPIRE and Minerals4EU project provided valuable feedback to develop ERML 2.0 model and now ERML 2.0 is the preferred standard for mineral resource data sharing projects EURare, Minerals4EU, and ProSUM projects, and the Australian AuScope, and Geoscience Portal projects.

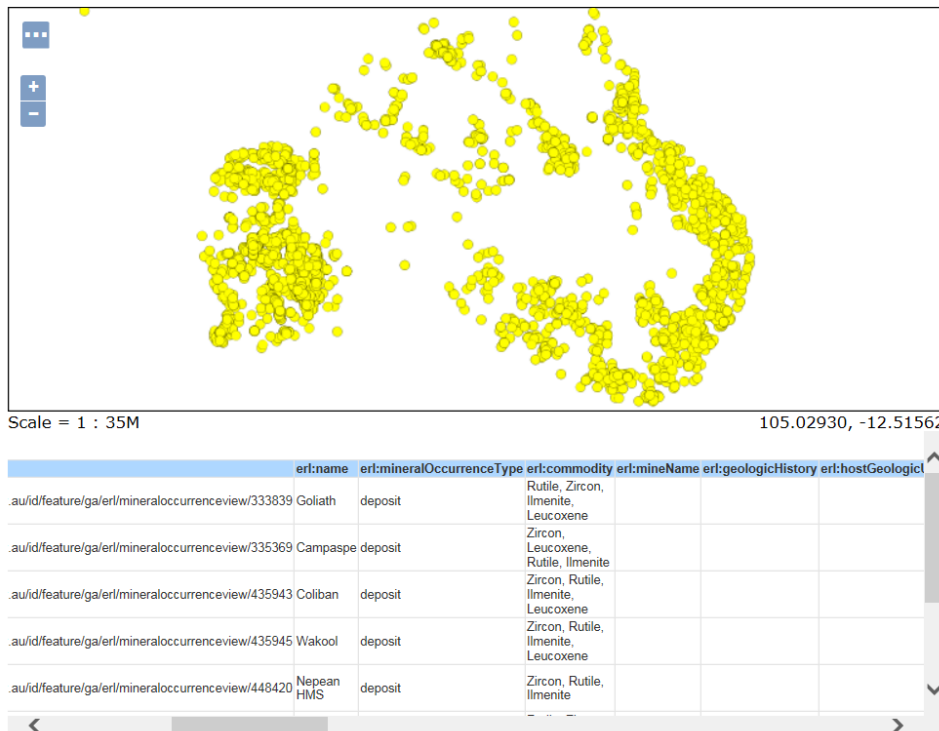
EarthResourceML Lite v. 1.0 version was accepted August 2016 and released August 2016. ERML Lite delivers a simplified flat view of key elements of the full ERML data model. It can be used to standardise delivery of mineral resource data via Web Map Services (WMS) and simple features Web Feature Services (WFS SF0). Geological Surveys in Australia and New Zealand have also endorsed the ERML Lite standard for delivery of mineral occurrence data.

*Documentation*

All the CGI SWG web pages have been harmonized and the ERML web pages ([http://www.cgi-iugs.org/tech\\_collaboration/earthResourceML.html](http://www.cgi-iugs.org/tech_collaboration/earthResourceML.html)) have been updated. The data model documentation has been published in the ERML webpages.

*Uptake of EarthResourceML*

It is pleasing to note that there has been wide uptake of the ERML data standard in national and provincial Geological Surveys (Australia - Europe), mainly through its adoption by data sharing communities such as AuScope, INSPIRE/Minerals4EU and EGD. In the short term, the major challenge is to get USGS/USA and GCS/Canada to join as active participants to develop/implement the ERML standard. IUGS/CGI WS's session proposal to RFG2018 ([www.rfg2018.org](http://www.rfg2018.org)) organizing committee was accepted - RS17: Geoscience Information Technology for the Next Generation session. At the meeting one issue is havean ERML Lite promotion session – how to use ERML Lite model for “Global Mineral Resource” service (GA – GNS – GTK – BGS –BRGM).



Current ERML Lite test service - GeoScience Australia

## Work plan

Future development of ERML and ERML Lite will be undertaken by the ERML Working Group based on the feedback from use of ERML v2 like Minerals4EU and ProSum projects. The next versions (ERML v.3 and ERML Lite v.2) of both model will be published before the RFG2018 meeting.

The last ERML data model vocabularies (MineralDepositGroup, MineralDepositType, Product and WasteType) will need more work in the future year. Much more activity from the whole GTWG is really needed to review/vote/adoptshepherd's proposals!

## 7.3 CGIRegional Group Reports

### 7.3.1 CGI in Asia

- *Meetings and activities*

**(1) Seminar on Geoinformation Sharing Technology for 'the Belt and Road Region'**

Aimed for geoscience information sharing amongst the vast region of so called 'the Belt and Route Region' by China, covering part or all of Oceania, Asia, Europe, Arab and Africa, a seminar on geoinformation sharing technology was held on 16-20 May, 2017 in Beijing by China geological survey. More than 50 participants of different geological organization officials and experts exchanged views and shared current technology for data exchange and information sharing in CGS. All the CGI standards were particularly proposed to use in this region.



**(2)CCOP-CGS Workshop/Training on IGDP and Compilation Technology**

A cooperation project between China and CCOP(east and southeast Asia geoscience program coordinating committee) on Integrated Geological Data Processing(IGDP) and compilation technology was kicked-off by a workshop/training on 22-24 May

2017 in Beijing, China. Apart from the training of geological, geophysical and geochemical data processing techniques, 20 participants from Cambodia, China, Indonesia, Japan, Korea, Malaysia, Vietnam and CCOP Technical Secretariat joined a discussion on OneGeology and regional geoscience map compilation techniques. Work plan for the next two years was also issued.



### ***(3) China-ASEAN Mining Information Sharing Seminar***

On Aug 25 in Nanning city, China-ASEAN Mining Information Sharing Technology and Mechanism Seminar was held during the 2017 China-ASEAN Mining Cooperation Forum and Exhibition. Delegates from Cambodia, Laos, Thailand, Vietnam and other countries gave speeches at the seminar focused on geoscience information sharing communication mechanism and joint infrastructure construction.



### ***(4) China-ASEAN Cross-Border Geological Correlation and Map compilation***

A training course on capacity building on cross border geological correlation for ASEAN states was held on 16-30 June 2016 in Chengdu, China. 32 participants from Cambodia, Lao PDR, Malaysia, Myanmar, Thailand and Vietnam signed a minutes of



meeting on proposal and discussion on geosciences cooperation and cross-border geological map compilation among China and ASEAN states and a plan for the greater Mekong subregion geosciences cooperation.

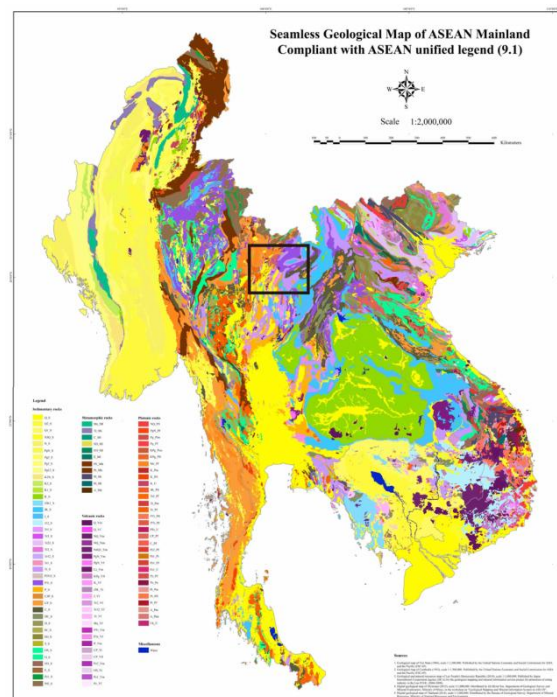


#### **(5) OneGeology Covering East Asia**

The Geological Survey of Japan (GSJ) is continuously implementing the OneGeology project covering East and Southeast Asia in cooperation with the CCOP and its member countries. Most of WMSs of the geological maps of the countries, such as Indonesia, Malaysia, Vietnam, Myanmar, Philippines and Papua New Guinea et al, are hosted by GSJ servers. The WMSs of Laos, Thailand and South Korea are hosted by these own servers. The steering committee meeting was held in Gdansk, Poland on March 2017. The OneGeology covering East Asia website is now moved to the GSJ system and the site's new URL is <https://ccop-gsi.org/gsi/onegeologyasia/index.php>.

#### **(6) 1:1 M Seamless Geological Map of Southeast Asia**

The GSJ continuously supports the ASEAN Seamless Geological Map (1:1,000,000) project since the Department of Mineral Resources (DMR) of Thailand proposed the project at the ASOMM+3 meeting held in Bali, Indonesia in November 2013 and its kick-off meeting in CCOP office in Bangkok on July 16-17, 2014. The CCOP is currently implementing the 1:1 million seamless geological mapping project in cooperation with GSJ. Myanmar, Thailand, Vietnam, Laos and Cambodia are also working on the harmonization of their 1:1 million geological maps' legends. The seamless map will be completed in this fiscal year.

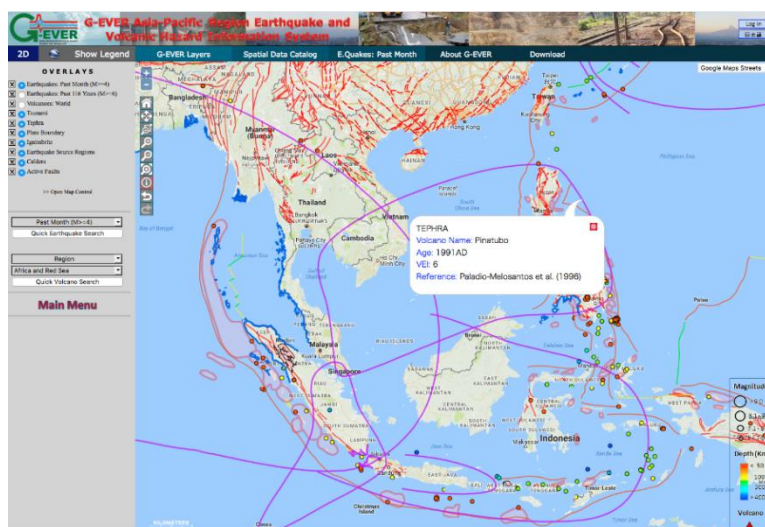


### **(7) CCOP Geoinformation sharing infrastructure for East and Southeast Asia**

The CCOP Geoinformation Sharing Infrastructure Project is implemented by CCOP and GSJ. The main objective of the project is to develop a web-based system for the sharing of geoscience information among the countries in the Asia-Pacific region. Currently, CCOP and GSJ provide the servers to host the GSJ main portal site and the database. There are presently more than 10 independent WebGIS portal sites generated using the GSI system. These sites can be accessed directly outside the GSI system like the portal of Thailand which could be accessed at <https://ccop-gsi.org/gsi/thailand/index.php>.

### **(8) Asia-Pacific Region Global Earthquake and Volcanic Eruption Risk Management**

The Asia-Pacific Region Global Earthquake and Volcanic Eruption Risk Management (G-EVER) is a consortium among the geohazard research institutes in the Asia-Pacific region (<http://g-ever.org>). G-EVER provides two web-based information system that are useful for the reduction of risks caused by the aforementioned natural disasters. These are the earthquake and volcano hazard Information system (<http://ccop-geoinfo.org/G-EVER/>) and the volcanic hazard assessment support system.



### **(9) ASEAN WebGIS and Mineral Database Information System Training Series**

Japan International Cooperation Agency (JICA) and GSJ implemented the ASEAN WebGIS and Mineral Database Information System Training Series. The trainings are intended for the countries comprising the ASEAN. JICA financed the project while GSJ provides the experts and lecturers. The meeting in Japan was held at GSJ from September 4 to 22. The training in Laos was held at the Department of Mines, Vientiane from September 25 to 29.





This was followed by on site field training in Luangprabang, Laos from October 1 to 5. The training was mainly on the development of the ASEAN Mineral Information System using FOSS and OGC Standards. It included web based database creation, database population, querying the database using the Structured Query Language (SQL) and the formulation of WMS and WMS clients.

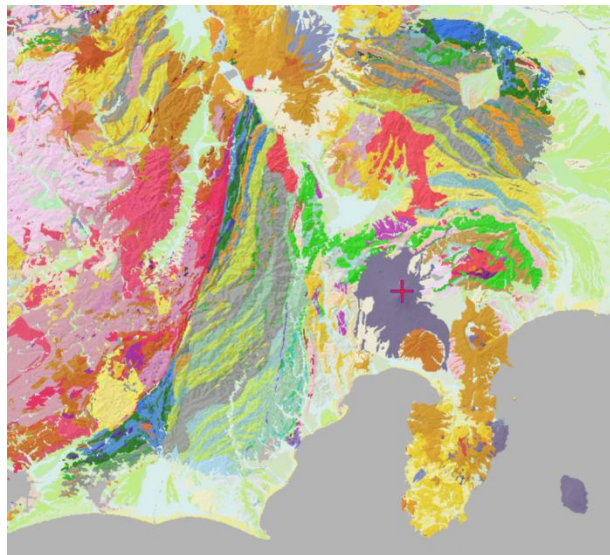
### **(10) PHIVOLCS FaultFinder Mobile WebApp**

The Philippine institute of volcanology and seismology (PHIVOLCS) and GSJ collaborated to develop a mobile app for easy determination of the active fault locations and related information in the Philippines. The main purpose of the app is to inform the users to easily determine the active fault location relative to the users' current location, home, office, school or any location of interest. The app was officially launched on July 25, 2016.

- **Main Progress**

#### **(1) Seamless Digital Geological Map (1:200,000) of Japan**

As the product of the merged 1:200,000 geologic quadrangle maps covering the entire country of Japan, the Seamless Digital Geological Map of Japan (1:200,000) V2, was published in May, 2017. The new version is compiled based on a new legend. The new legend is divided into about 2400 legends in combination the ages and the kinds of rocks and rock facies, which is structured systematically and designed in order to offer a simplified legend set to the user.

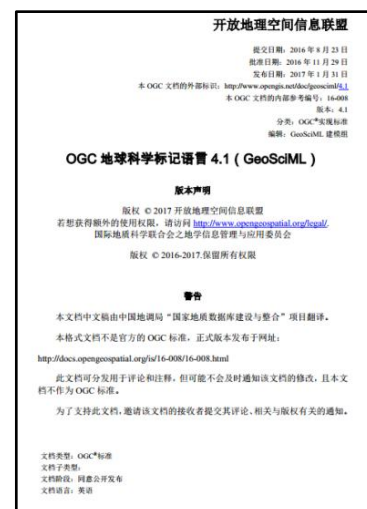


#### **(2) GeoSciML translation into Chinese**

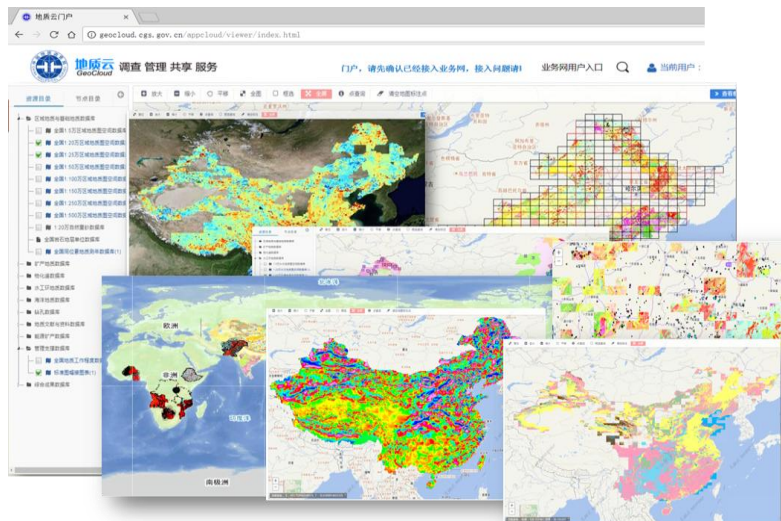
China Geological Survey has translated GeoSciML v4.1 in 2017 for the preparation of implementation in the survey.

#### **(2) GeoCloud in China Geological Survey**

Aiming for efficient data sharing through web, project data collection and intelligent field mapping data



management, China Geological Survey has launched “GeoCloud 1.0” for both integrated data release and internal data and resource management in November 2017 based on cloud technology. 75 physically distributed core databases from 19 nodes/organizations covering regional geology, energy Geology, mineral resources, hydrogeology, geohazard, marine geology, geophysics, geochemistry, remote sensing, drilling were released both in WMS/WMTS, partly WFS and with datasets.



### 7.3.2 CGI in Africa

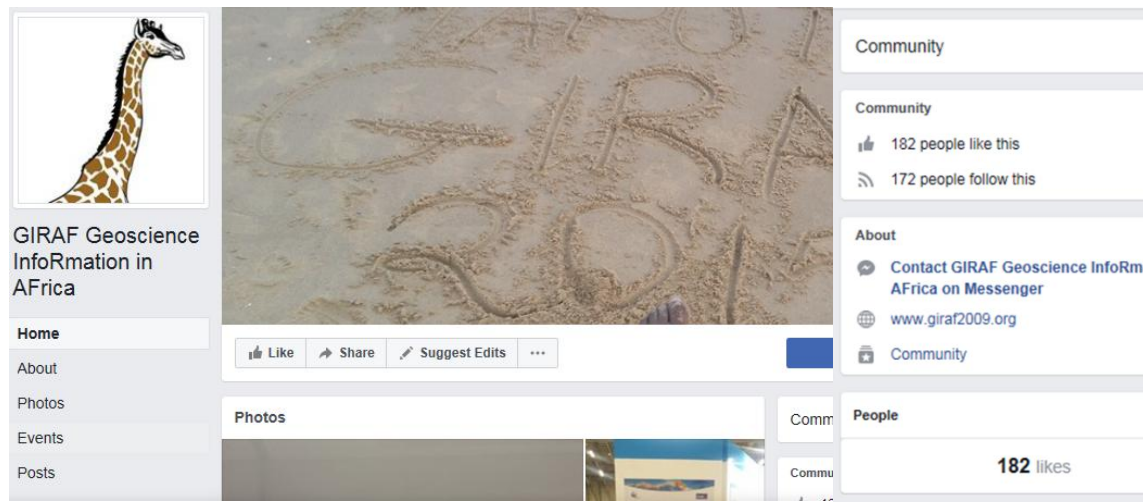
Outreach to raise awareness of CGI was done at a number of meetings and workshops including the 10th Annual General meeting of the Organisation of African Geological Surveys (OAGS) in Lobatse, Botswana and in Beijing, China in a CGS training for developing countries. African members represent the minority, currently 9% of CGI membership and more awareness sessions are needed to engage new members. In 2017, the outreach efforts led to 6 new African members. There are 39 members from 17 African countries, with the majority of members from Nigeria.



The next Geoscience Information in Africa (GIRAF) meeting will be held as a session in the 27th Colloquium of African Geology (27 CAG) and 17th Conference of the Geological Society of Africa (GSAf17) 21-28 July 2018 in Aveiro, Portugal, for the CAG27. Since the successful handover in Ibadan, Nigeria at 26 CAG, the GIRAF Secretariat is hosted by the African Minerals and Geoscience Center (AMGC) Secretariat under the leadership Mr. Mesfin Wubeshet Gebremichael (Southern and

Eastern Africa Mineral Centre (SEAMIC)).

GIRAF members were engaged on social media through regular postings of geo-information news on Facebook. At present, 172 people follow GIRAF on Facebook.



GIRAF on Facebook

### 7.3.3 CGI in South/Latin America

- *Chief Accomplishment*

The CGI activities in South America are focused on the development of outreach activities to encourage the development of geoinformation, promote the adoption of CGI standards and create awareness about the rule of information technologies in GS activities at decision levels.

- *Meetings*

#### *Ibero-American Open Science Meeting in Buenos Aires*

Under the auspices and support of Ibero-American States Organizations, Portugal, Uruguay and Argentina Ministry of Science and Technology and the participation of Spain, Brasil and Colombia science, technology and innovation agencies an International Seminar on Open Science was held in Buenos Aires Argentina from May 31st to June 2nd.

Open Science as a way of collaborative research work and knowledge distribution by means of digital methods kept the interest of the regional science community as a way to improve science and technology development and performance.

The meeting was focused mainly in open access digital repositories. In this context reports not only will be reviewed but also their data and results. It is hoped that in the future this initial step in latinamerican countries will facilitate the development of interoperability methods for any kind of scientific data and enhance the development of current initiatives made at different levels and domains by international organizations like IUGS-CGI, ICSU, Research Data Alliance, etc.



- *Regional update*

### *Progress of Standards in South America*

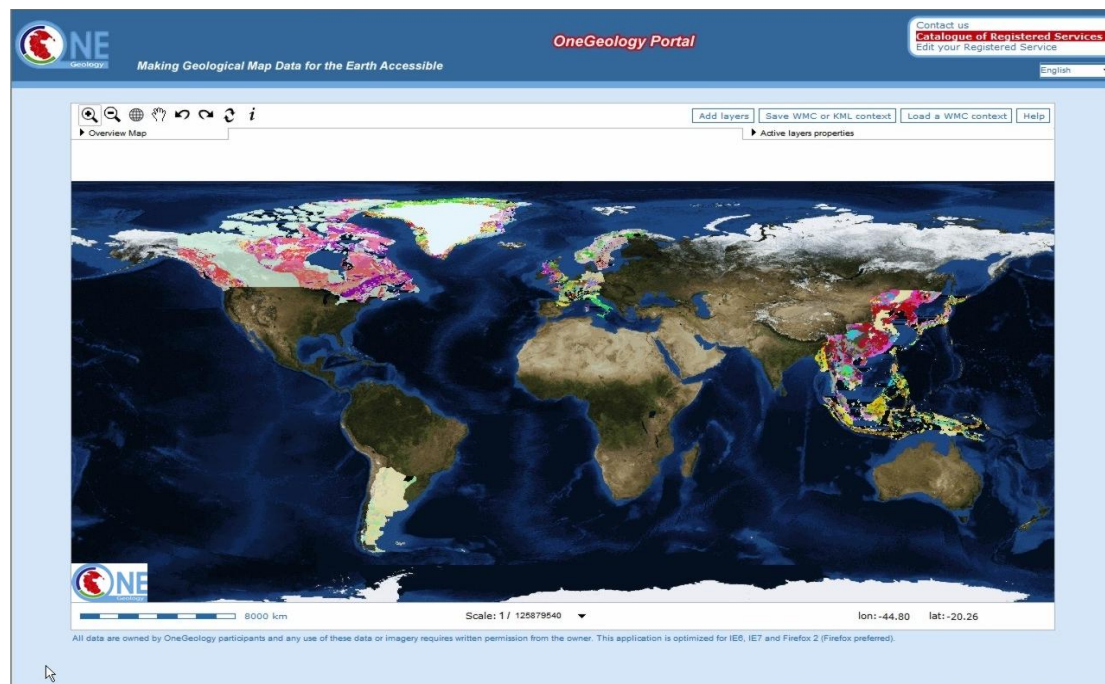
Since more than ten years ago CGI activities in South America had a strong support given by actors that belongs to different organizations. CGI, IUGS, OneGeology and different professionals from latinamerica and international geological surveys helped in the development of different activities like the diffusion of IUGS-CGI electronic standards, organization of seminars and training activities.

Argentina, Chile, Brasil, Perú, Dominican Republic (in this order) put their geological information on line as Web Mapping Services and about three years ago Brasil started to publish his information following the GeoSciML standard. As experience, it was perceived that the success of the adoption of IUGS-CGI standards in SA not only depended of the willings of the regional geological surveys but in a mayor degree by the context provided by political interest given to technologies like e-government and national geospatial data infrastructure.



Despite the initial success and enthusiasm to embrace and join this international effort, as it was mentioned before, about four years ago the influence and activities of IUGS-CGI in this region started to decline due to several unfortunate episodes and misunderstandings.

Resolving the present situation in SA requires a major effort not only by CGI-SA but also the support of geological community in order to recuperate the status of development of geoscience electronic standards in the region.



(Look of the beginning. WMS services published by geological surveys in the context of OneGeology)

### 7.3.4 CGI in North America

- North America(NA) is supporting 1G, representative by BoyanBrodaric.
- NA will support and participate in RFG CGI sessions.
- NA is in active contact with Earthcube, and Energistics, for example.
- NA is seeking to sustain the USGIN legacy left by Lee Allison.
- Harvey will speak at the 3D workshop in France in February.
- Harvey will host a Geological Mapping Forum in Minneapolis in March 2018.
- DMT – Digital Mapping Techniques – will be in Lexington in May 2018
- Harvey and his co-chairs will hold a 2-day, pre-meeting 3D geological mapping workshop at RFG in June 2018.
- Coordinated with the CGI sessions at RFG, NA is supporting related sessions in Vancouver.

- CGI councils from north America will do what they can to support the meetings of CGI at RFG2018.

### 7.3.5 CGI in Europe

The European activities regarding the geoscience data & information interoperability and provision have been happening under the two major frameworks:

- Implementation of European Commission INSPIRE Directive according to the official Working Plan (MIWP 2016-2020).
- Developing the EGDI as a part of the establishment of the European Geological Surveys Research Area to deliver a Geological Service for Europe (GeoERA)".

- **INSPIRE**

Thanks to the IUGS-CGI outstanding work in the field of data interoperability, semantic harmonization, data provision etc. there are now new opportunities for the community to be “even more visible” and imbedded in the official EU activities. Here is the list of the relevant new activities where the CGI work can be not only presented, but also get the EC “certification” – recommend -ation to be used in Europe.

**(1) New INSPIRE MIWP Action (2017.2) on Alternative encodings.**

This is the opportunity to promote the GeoSciML 4.1 as the official OGC-CGI standard for exchanging of geological information which could get the status of INSPIRE alternative encoding. That would mean in practice that the EU geological communities will be able to use CGI – GeoSciML geological data exchange format to be INSPIRE technically and legally compliant. The Action will be kick-off in January by launching an official Call for good examples of alternative encodings as well as experts to participate in the new EU Working Group. CGI should be active in both nominating experts as well as providing documentation of CGI-OGC GeoSciML as a community good practice.

**(2) New Action INSPIRE Action on (2017.3) on Better SW client support to INSPIRE Data.**

This Action is to provide a landscape mapping of the SW Client support for INSPIRE datasets; prepare a testing data to include all the complexities (e.g. nested structures) and initiate the dialogue with SW solution providers (Open source as well as SW vendors) to improve the Client support. The CGI community again due to its maturity in this field can provide valuable experience and tools to be tested and used.

INSPIRE Geoportal Thematic Viewer

European Commission > INSPIRE > INSPIRE Geoportal Thematic Viewer > Protected Sites

Home | Priority Datasets | **INSPIRE Data Themes** | Applied methodology | Harvesting Status | Only National Coverage  OFF

## Datasets - Geology of Europe

INSPIRE Geoportal Dataset Statistics

- 104 Metadata records
- 681 Viewable Dataset Layers
- 123 Downloadable Datasets

INSPIRE Monitoring & Reporting 2016 (status 2016)

- 2139 Metadata records

Download Report

Select a COUNTRY

Austria	Finland	Latvia	Portugal
Belgium	France	Liechtenstein	Romania
Bulgaria	Germany	Lithuania	Slovakia
Croatia	Greece	Luxembourg	Slovenia
Cyprus	Hungary	Malta	Spain
Czech Republic	Iceland	Netherlands	Sweden
Denmark	Ireland	Norway	Switzerland
Estonia	Italy	Poland	United Kingdom

Version: 0.0.1beta | Powered by: INSPIRE Geoportal

INSPIRE: INSPIRE Web Site, INSPIRE Legislation, INSPIRE library, INSPIRE Themes, INSPIRE Thematic clusters

NEWS & EVENTS: News, Events, Conferences, RSS News

INSPIRE Tools: Tools, Validator, Metadata editor, Registry, Data Specification toolkit

Priority Dataset: Home, Priority Datasets, INSPIRE Themes, Applied methodology, Harvesting Status

**(3) The EC has launched an official Call for Change proposals to the Implementing Rules on data and services interoperability.**

The EU geological community has prepared, based on the experience gained via national activities as well as various EU funded projects, a consolidated proposal dealing with changes in several geological code lists (semantics) the way data should be displayed (WMS layer organization and visualization). The proposal was accepted and will be now officially evaluated by INSPIRE MIG groups together with additional cca. 40 proposals. The final decision is scheduled for the end of 2018.

**(4) Management of Good practices and their certification.**

Based on the request from the communities of practice, the EC has prepared a proposal for managing and certifying INSPIRE good practices. The Proposal was recently endorsed and the EC (JRC) is now preparing detailed instructions covering e.g. a workflow for initiating and accepting a Good practice “certification”; the minimum necessary



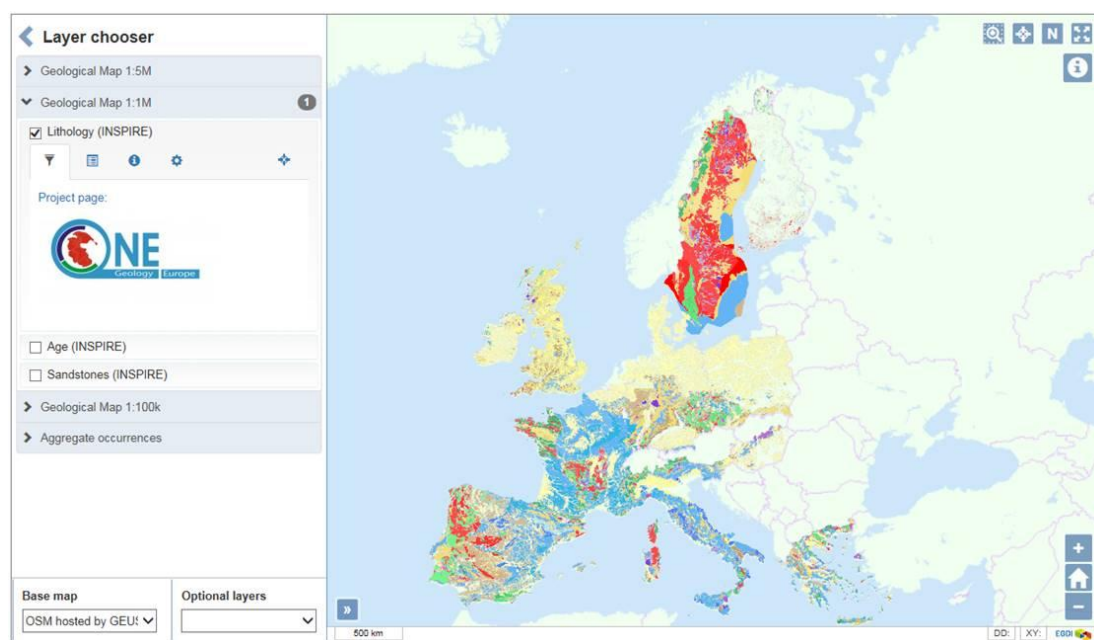
information to be entitled to start the process, common template for documentation etc. Again, it will be beneficial for CGI activities to follow this closely and if relevant provide good practices and let them certified and thus recommended for use by European Commission.

Another INSPIRE related activity that is relevant to mention is the continuation of the support from the EC to communities of INSPIRE implementers – via INSPIRE Thematic Cluster facilitators - <https://themes.jrc.ec.europa.eu/>. It is very important that the Earth Science Cluster that is the collaboration platform for EU Earth Science community to share their experiences, good practices issues etc. related to implementation and use of INSPIRE, will have a facilitator from the geological community.

The EC recently launched the Beta Version of the INSPIRE Geoportal – Thematic Viewer - <http://inspire-geoportal.ec.europa.eu/thematicviewer/>; which represents a new way of providing a simplified access to the content of the EU Geoportal which is harvested from the Member states. The applications there are meant to hide the INSPIRE complexity by providing a Dashboard like interface to the data. At the same time show only those MD records for which there is a functional download and view services. It clearly gives for the first time a “reality check” on the availability of INSPIRE datasets in Europe.

Geology is currently “represented” by 104 MD records, 681 WMS layers and 123 Downloadable datasets.

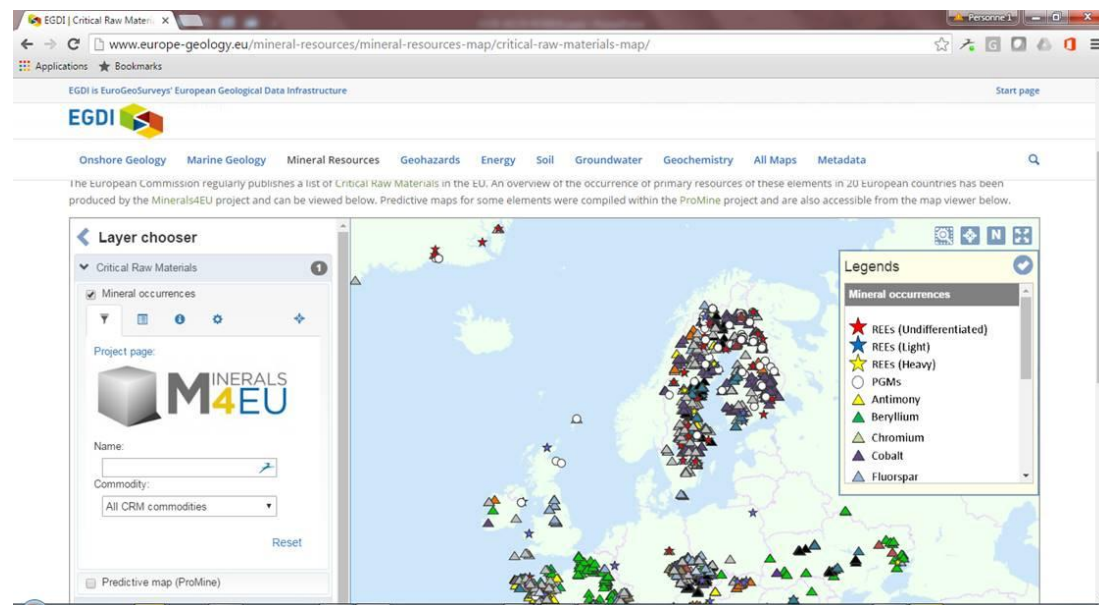
The application has triggered a positive interaction not only between the EU-MS, but also inside the MS to clean up better the data provided to EU Geoportal.



- *GEOERA and EGDI*

Following the successful development of OneGeology-Europe, Mineral4EU and other project coordinated by members of EGS (EuroGeoSurveys - the association of European Geological Surveys), implementing CGI standards, a new platform, EGDI has been formally launched in July 2016. EGDI (European Geological Data Infrastructure) provides sustainable access to the specific geological data, information and knowledge of the EGS members, and in particular to secure results of already finished European geoscience-related projects performed by the members of EGS.

Early 2017, GeoERA, a new EU co-founded initiative was launched, with a budget of 36 M€. It is a large research program coordinated by EGS, involving all the European Geological surveys, and focusing on four themes: mineral resources, groundwater, geo-energy and information platform. The information platform will be developed based on EGDI to support the dissemination of the projects results from the 3 other themes. It will explicitly rely on CGI standards.



### 7.3.6 CGI in Oceania

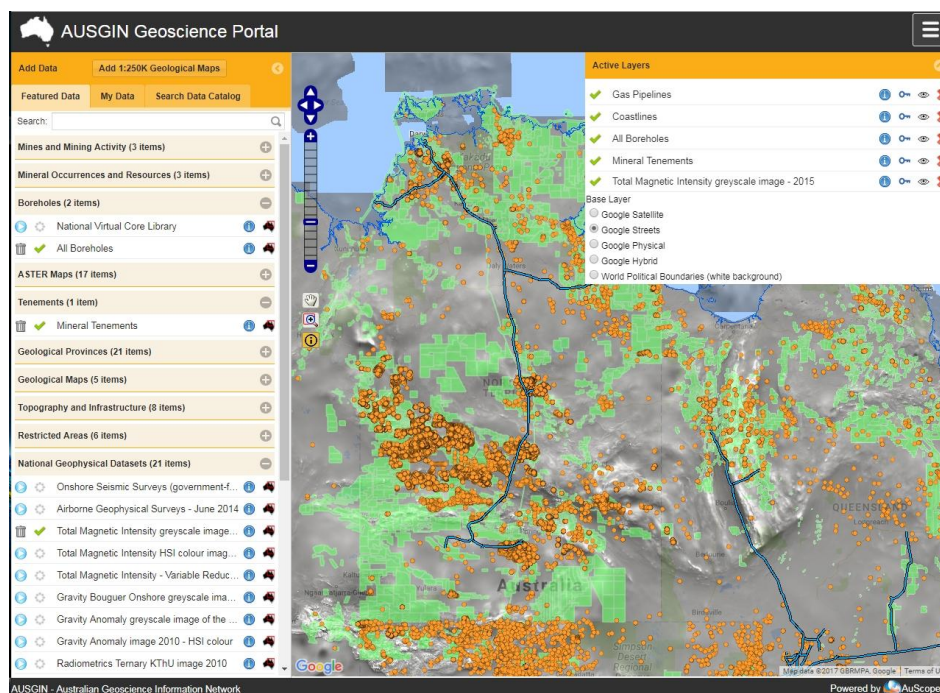
- *Australia/New Zealand Government Geoscience Information Committee (GGIC)*

The Australia-New Zealand Government Geoscience Information Committee (GGIC) continues to coordinate Australasian information management best practice in government geological agencies. All Australian States and territories, and New Zealand, are represented on the GGIC. GGIC nominate a member to representative

Oceania on CGI Council (currently Ollie Raymond).

GGIC ran the first of a planned series of technical workshops on building geological web services using CGI data standards (ie, GeoSciML and EarthResourceML) in May 2016. The workshop, designed for technical officers and geologists, covered the use of EarthResourceML and EarthResourceML-Lite in web services.

The Australian Geoscience Information Network's (AusGIN) "[Geoscience Portal](#)" has been upgraded during 2017 to provide better analytical and display tools for geoscience data services using CGI and OGC data standards. The Portal is currently undergoing a major makeover to better serve Australian geoscience data to the world. GGIC is also working in collaboration with the Australian Government's AuScope funding initiative to further develop the capability of Australian geoscience data providers to deliver CGI- and OGC-compliant data services.



As part of its contribution to IUGS CGI, Geoscience Australia (GA) now hosts the suite of CGI [GeoSciML](#) and [EarthResourceML](#) websites, and the CGI's geoscience vocabulary service. The CGI vocabularies are also available through the [Research Vocabularies Australia](#) website. The transfer of hosting arrangements from CSIRO to GA was completed in April 2017. GGIC also coordinates the contribution from Oceania to CGI working groups, most notably the Geoscience Terminology Working Group, of which Mark Rattenbury (GNS NZ) is chair. GGIC members also intend to provide presentations at the RFG2018 conference highlighting uses of CGI and OGC data standards.

- *Promotion of CGI standards in Oceania*

All Australian and New Zealand (GNS) geological survey agencies are now delivering geological map, borehole, mineral occurrence, and mines data as web services using CGI data standards. All the Australian services are all available through the AusGIN Geoscience Portal. The [AusGIN website](#) includes links to all CGI data standards.

Geoscience Australia (GA) has published new EarthResourceML (ERML) and EarthResourceML –Lite web services for its national mineral deposits and resources database. The knowledge gained from using ERML and ERML-Lite in delivering these services led GA to propose improvements to the data standards in the CGI ERML Working Group. These changes will be included in the next versions of ERML and ERML-Lite. Geoscience Australia is also currently implementing a number CGI standard vocabularies in its geological databases.

The 2017 version of GNS's QMAP 1:250 000 Geological Map of New Zealand seamless GIS dataset has been released and contains links to CGI codelists for age terms, unit types, representative lithology and metadata records amongst others. An EarthResourceML-Lite-compliant layer of New Zealand mineral occurrences GERM\_ERML\_VIEW at <http://maps.gns.cri.nz/geoserver/web> is now available. New Zealand's PetlabGeoanalytical Geoscience Australia and GNS NZ Database of rock and mineral properties has incorporated CGI vocabulary terms for rock names and geological age.

The GNS Transantarctic Mountains geological GIS compilation has expanded in scope to include all Antarctica through considerable international collaboration. This is being led by GNS Science New Zealand through the Scientific Committee for Antarctic Research and also involves Geoscience Australia. The compilation is making excellent progress and will be exposed as web service layers including to the OneGeology portal in stages; the first tranche potentially in 2018.

### ***Oceania Membership of CGI committees***

#### CGI Council

- Ollie Raymond – Geoscience Australia

#### Standards Working Groups

- Ollie Raymond - Geoscience Australia (acting chair – GeoSciML; ERML, GTWG)
- Mark Rattenbury - GNS Science, New Zealand (chair – GTWG; GeoSciML, ERML)
- Alastair Ritchie - Landcare Research, New Zealand (GeoSciML)
- Bruce Simons - recently retired from CSIRO, Australia (GeoSciML, ERML)
- Michael Sexton - Geoscience Australia (ERML)
- Simon Cox - CSIRO, Australia (GTWG)

## 8. Main problems encountered

The World's economic and political crisis is having strong impact on monetary support for regional activities of the CGI, in South America and of GIRAF for instances.

The difficulties in cross-border communication and low budget meeting organization make it a challenge to maintain the group cohesion and stay informed on the problems and issues that each of the CGI member countries are struggling with.

The CGI Council acknowledges the financial plight of representatives from lesser foundations, and that travel expectations of council members should not be applied as strictly to them. While every effort should be made by all council members to attend annual meetings in person, if this is not possible, then Council members are expected to participate in meetings via teleconference.

Also other outreach activities are often being organized synergistically, based on any opportunities given, rather than merely on medium term planning.

Another difficult issue is to find a common way to open IUGS-CGI accounts not as a private person in order to establish a transparent process of the use of IUGS resources to support CGI activities.

## 9. Annual Financial Report

- *2017 expenditure summary*

All CGI funds were transferred from previous CGI accounts in France to the new treasurer (Ollie Raymond) in Australia. Completed 18 April 2017. Some foreign currency transfer fees and currency conversion costs were incurred by CGI in the course of the transfer of banking arrangements between countries.

Some difficulties were encountered in finding convenient international banking arrangements in Australia. The initial bank account that was set up in Australia proved to be unsuitable, so funds had to be transferred from the initial Australian account to a new account. Now all CGI funds are in a single consolidated Australian bank account, all in Australian dollars.

Net funds transferred from France to Australia (after bank fees and charges):

- **EUR 24,392.11**

- **USD 65.54**

IUGS grant for 2017, received 20 May 2017 – **USD 7,000**

Significant payments in 2017:

- Venue hire in Vienna for CGI meeting – **EUR 780**
- Support of MesfinGebremichael for GIRAF travel costs – **USD 1,200**
- Payment to BGS for maintenance of CGI website – **EUR 2,500**

2017 end-of-year balance = **AUD 33,337.35**

A detailed transaction history is provided in the following spreadsheet.

- *2018 Budget*

CGI anticipates a similar operating grant from IUGS in 2018 -**USD 7,000 (approx. AUD 9,000)**

CGI signed a contract with BGS on 23 October 2017 for services to provide multi language translations of CGI standard vocabularies.

- payable by CGI to BGS in instalments with final deliverable expected 15 June 2018
- **£8,684.20 (approx. AUD 15,380)**

CGI is investigating spending funds on two other new initiatives in 2018:

- a grant to attend RFG 2018, for a deserving scientist who shows innovative use of, or plans to use, CGI data standards in delivering or analysing geoscience data
  - **approx. AUD 3,500**
- production of a promotional video to advertise CGI's goals and products
  - **approx. AUD 16,000**

Anticipated 2018 end-of-year balance - **approx. AUD 2,400**

	\$ account		€ account	
	in	out	in	out
<b>Balance 07/12/2015</b>	<b>20,720.00</b>		<b>969.42</b>	
<b>2016</b>				
2015 IUGS allocation	7,979.00			
transfer charges		-19.53		



## CGI 2017

Payment Cape Town CGI council meeting		-737.89
Bank charges		-4.50
subscription VISA card		-42.60
transfer account USD --> €		3922.58
transfer account USD --> €	-4233.00	
Payment to BGS for CGI website (2500€)		-2500.00
transfer charges		-4.40
Payment Cape Town CGI Workshop		-1482.97
transfer charges		-30.65
<b>Balance 11/05/2016</b>	<b>24,446.47</b>	<b>88.99</b>

Net funds transferred from France to Australia (after bank fees and charges):  
AUD 38644.52

	(AUD) account	
	in	out
<b>Balance 11/05/2016</b>	<b>38,644.52</b>	
<b>2017</b>		
IUGS grant for 2017	8,912.66	
2017 interest	33.81	
2017 payments for services		-12,507.99
2017 bank fees		-188.85
<b>Balance 06/12/2017</b>	<b>33,337.35</b>	
	(AUD) account	

## 10. Work plan for next year

- Preparation for RFG2018– prepare for the CGI session titled ‘Geoscience Information Technology for the Next Generation’, including competition organization for young geoscientists.
- 3D group of CGI/OGC. Continue to push forward the work especially a strategy work plan of the newly established collaborating working group on 3D geosciences data.
- GeosciML implementation after becoming an OGC Standard.
- Continue to push forward promotion of CGI products and to draft a marketing plan.
- Continue the development and implementation promotion of EarthResourceML.



- Update the CGI website.
- Publish the CGI newsletter regularly.
- Publish more publications of CGI related issues within IUGS “Episodes”.
- Represent the IUGS in Geoscience information matters
  - More effective connection with CODATA.
  - Enhanced relation with RDA
- Councils to issue a 4-year future action plan of CGI in his region and working group for a more visible CGI.
- Next CGI Council meeting will be held in June 2018 in Vancouver together with RFG2018.

## 11. Critical milestones

- Organization of the CGI session ‘Geoscience Information Technology for the Next Generation’ at RFG2018.
- The GeoSciML version 4.1 implementation after release by OGC in 2017, and CGI standard marketing plan.

## 12. Budget for 2018 and potential funding sources

CGI Council expects a similar budget to that provided by IUGS in previous years.

Through the budget form IUGS is not sufficient for the next year 11 main activities/events, CGI will search for outside support from both Council organizations and in collaboration with regional activities to uphold and realize its annual goal.

Obviously, the CGI is now at a well-recognized established position in the international geoscience information community and represents IUGS well on geoscience information matters.

## 13. Objectives and work plan for the next 5 years

- Catalyze productive alliances between geo-information bodies, including OGC, CODATA, RDA;
- Stimulate progress in development and application of standard geoscience

- concepts and their representation in multiple languages.
- Promote international use of data exchange standards (specially broad adoption of GeoSciML and EarthResourceML,) in regions, commissions, countries, and organizations in collaboration; Facilitate outreach, knowledge transfer and take-up of best practice in geo-information (e.g. with the South America initiative, the Asia initiative, and the GIRAF).
  - Create a task force to develop interoperability of 3D - 4D geosciences data models.
  - Enhance collaboration with other IUGS commissions, e.g. ICS.
  - Play a more visible role in coordination of regional initiatives, e.g. by organizing workshop and training courses on geoscience information management, standards and language.
  - Organize CGI session at RFG2018 in Canada.

## 14. Suggestions for improvement of IUGS activities

It would be excellent, if a common way could be found to open CGI accounts not as a private person in order to establish a transparent process of the use of IUGS resources to support CGI activities.

## 15. Conclusion

As a commission of IUGS for geosciences information, CGI has been very successful in the past 2017 for several big events in geoinformation sciences and milestone achievements both in geo-data standards and local organizations. We would like to express our thanks to all members of the CGI and its regional and the working groups, and also to the members of the IUGS Executive for their help and encouragement. We are looking forward very much to a continuous productive cooperation in 2018.

*CGI Council, 26 December, 2017.*

## 16. Contact – CGI Council members

### **François Robida** (Chair)

BRGM  
3 Avenue C Guillemin  
BP 36009  
4506 Orleans cedex 02  
France  
Telephone: +33 2 38 64 31 32  
Email: f.robida@brgm.fr

### **Zhang Minghua**(Co-Secretary General)

Development Research Center  
China Geological survey  
45 Fuwai St.  
Beijing, 100037  
China  
Telephone: +86-10-58584305  
Fax: +86-10-58584359  
Email: zminghua@mail.cgs.gov.cn

### **Kombadayedu K. Mhopjeni**(Co-Secretary General)

Geological Survey of Namibia  
Ministry of Mines and Energy  
P.O.Box 3984, Windhoek  
Namibia  
Telephone: +264-812 317919  
Email: kkmhopjeni@mme.gov.na

### **Oliver Raymond**(Treasurer and Web Manager)

Continental Geology Section  
Minerals and Natural Hazards Division  
GEOSCIENCE AUSTRALIA  
Cnr Jerrabomberra Avenue and Hindmarsh Drive  
Symonston ACT, GPO Box 378  
Canberra ACT 2601  
Australia  
Telephone: +61 2 6249 9575  
Fax: +61 2 6249 9971  
Email: Oliver.Raymond@ga.gov.au

### **Kazuhiro Miyazaki**

Geological Survey of Japan/AIST  
The Institute of Geology and Geoinformation  
Tsukuba Central 7  
1-1-1 Higashi  
Tsukuba, Ibaraki, 305-8567  
Japan  
Telephone: +81-29-861-2390  
Fax: +81-29-861-3742  
Email: kazu-miyazaki@aist.go.jp

### **Gabriel Asato**

GIS and Remote Sensing Unit  
Mining and Geological Survey of Argentina (SEGEMAR)  
Av Julio A Roca 651  
p 8 of 1 Cdad  
Autónoma de Buenos Aires  
Argentina  
Telephone: +54 11 4349 3158/26  
Fax: +54 11 4349 3187  
Email: g\_asato2000@yahoo.com

### **Robert Tomas**

Scientific/Technical Project Officer  
European Commission | DG Joint Research Centre  
Unit H06-Digital Earth and Reference Data  
Via Enrico Fermi, 2749,I-21027 Ispra (VA), Italy  
Telephone: +39 0332 78 5426  
Fax: +39 0332 78 6369  
Email: robert.tomas@jrc.ec.europa.eu

### **David Percy**

Department of Geology  
Portland State University  
1721 SW Broadway Rm 17x  
Portland, OR 97201  
USA  
Telephone: +1 503 725 3373  
Email: percyd@pdx.edu

### **Tomasz Nałęcz**

Deputy Director, Geoinformation Director  
Polish Geological Institute – National Research Institute  
4 Rakowiecka St., 00-975 Warszawa  
POLAND  
Telephone: +48 22 45 92 188  
Email: tnal@pgi.gov.pl

### **Harvey Thorleifson**

Minnesota Geological Survey  
Department of Earth Sciences  
College of Science and Engineering  
University of Minnesota  
2609 West Territorial Road  
St Paul MN 55114-1009  
USA  
Telephone: +1 612-626-2150  
Email: thorleif@umn.edu