

# **MINUTES**



**INTERNATIONAL UNION OF GEOLOGICAL SCIENCES  
73<sup>rd</sup> EXECUTIVE COMMITTEE MEETING  
OPEN SESSION**

**February 27<sup>th</sup> - 28<sup>th</sup>, 2019**

**Beijing, China**

**INTERNATIONAL UNION OF GEOLOGICAL SCIENCES  
73<sup>rd</sup> EXECUTIVE COMMITTEE MEETING  
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### 73<sup>rd</sup> IUGS EXECUTIVE COMMITTEE MEETING OPEN SESSION

**February 27<sup>th</sup>-28<sup>th</sup>, 2019**

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## **Participants**

### **IUGS Executive Committee:**

CHENG Qiuming (CQ; President), Stanley FINNEY (SF; Secretary General), Hiroshi KITAZATO (HK; Treasurer), Roland OBERHAENSLI (RO, Past President, Chair of Nominating Committee), Kristine ASCH (KA; Vice President), William CAVAZZA (WC; Vice President), Edmund NICKLESS (EN; Councilor), Benjamin MAPANI (BM; Councilor), Silvia PEPPOLONI (SP; Councilor), Claudia MORA (CM; Councilor)

### **Observers** (attending parts of the meeting):

Özlem ADIYAMAN LOPES (UNESCO), WANG Kun (China Geological Survey), HOU Zengqian (National Natural Science Foundation of China, NSFC), Giuseppe DI CAPUA (Publications Committee, PC), Dolores PEREIRA (Publications Committee, PC), David HARPER (International Commission on Stratigraphy, ICS), ZHANG Minghua (Commission on the Management & Application of Geoscience Information, CGI), Marianne KLEMUN (International Commission on the History of Geological Sciences, INHIGEO), Chris KING (Commission on Geoscience Education, Training & Technology, COGE), Benjamin VAN WYK DE VRIES (International Commission on Geoheritage, ICG), Alecos DEMETRIADES (Commission on Global Geochemical Baselines, CGGB), Rodolfo CAROSI (Commission on Tectonics and Structural Geology, TecTask), Yasukuni OKUBO (Task Group on Geohazards, TGG), Laurance Donnelly (Initiative on Forensic Geology, IFG), Hans THYBO (International Lithosphere Program, ILP), Daekyo CHEONG (37<sup>th</sup> IGC), Seung Ryeol LEE (37<sup>th</sup> IGC), Oleg PETROV (Russian Geological Research Institute, VSEGEI), Alexandru MICU (International Association of Geomorphologists, IAG), Eduardo DE MULDER (Earth Science Matters Foundation, ESM), Adrian Mark IMMENHAUSER (International Association of Sedimentologists, IAS), Jennifer MCKINLEY (International Association for Mathematical Geosciences, IAMG), Matthew HARRISON (OneGeology), Vitor CORREIA (European Federation of Geologists, EFG), Manuel PUBELLIER (Commission for the Geological Map of the World, CGMW), WANG Meng (Young Earth Scientists Network, YES), Tanvi ARORA (YES), Rafiq AZZAM (International Association of Engineering Geology and the Environment, IAEG), WU Faquan (IAEG), CAO Jianhua (UNESCO International Research Center on Karst).

### **IUGS Secretariat:**

MA Yongzheng (Director), LI Wei (Secretary), SITU Yu (Secretary), XU Yaqi (Secretary), MU Langfeng (Secretary)

## **1. Welcoming Addresses**

Cheng Qiuming (CQ), IUGS President, warmly welcomed all the participants in the

73rd IUGS EC Meeting and sincerely thanked National Natural Science Foundation of China (NSFC) and China Geological Survey (CGS) for hosting the meeting.

Prof. Dr. Hou Zengqian, Vice President of NSFC, welcomed the IUGS friends. He said that IUGS is a big family for geoscientists worldwide and has been leading the frontier research of global geosciences, making tremendous contributions to promoting fundamental geoscience research. He extended congratulations on the successful launch of the DDE programme - the first IUGS-recognized big science programme. He said that NSFC has always been supporting Chinese geoscientists to participate in the IUGS scientific programmes and activities, and has been in discussions with IUGS on establishing relevant mechanism to enhance support for IGCP and giving full play of the international platform of IGCP so that more extensive international exchanges and cooperation could be carried out centering on Earth resources, global change and life evolution, geohazards, water cycle geosciences and geodynamics ~~to make our due contributions to solving key geoscience problems worldwide.~~

Dr. Wang Kun, Vice President of CGS, welcomed all the IUGS delegates and expressed warm congratulations on the successful opening of the DDE forum. He said that the Chinese geoscience community and IUGS have kept long-term, friendly and constructive cooperation relations. Since the Geological Society of China joined IUGS as an adhering member in 1976, China has been actively participating in the IUGS scientific activities. In 1996, China successfully hosted the 30th IGC in Beijing. From 1997 to 2008, China undertook the publishing of Episodes. Currently, more than 100 Chinese geoscientists serve in various IUGS scientific bodies. In 2013, China's membership level increased to category 8, the highest level of its kind. In 2014, IUGS become the supporter of China Mining Congress and successfully organized a special session at the Congress, officially launching the RFG initiative. He said that as one of the founding members of the DDE program, CGS will actively participate in the DDE scientific activities together with other international organizations and institutions.

Dr. Wang Kun said that in 2012 the competent Chinese governmental department and IUGS signed an MoU in accordance with which the IUGS Permanent Secretariat was relocated to Beijing with the committed duration from 2012 to 2020. The Chinese government has provided all necessary manpower, logistical and financial support for the efficient operation of the Secretariat. Since its relocation to China, the Secretariat has been actively performing its duties. With the consideration that the MoU will expire on 2020, the Chinese government hopes to renew the MoU and continue to support the operation of the Secretariat in China, so as to make our due contributions to IUGS and to the development of international geosciences.

CQ thanked NSFC and CGS for sponsoring the meeting and supporting the IUGS scientific activities, and looked forward to continued cooperation with the Chinese geoscience community.

## **2. Discussion and Approval of Agenda**

One addition was made to the agenda under item 7.d. “application for Task Group on Karst”.

Agenda approved.

## **3. 2018 Executive Committee and Bureau Meetings**

### **3.a. Approval of Minutes of the 72nd EC meeting in Potsdam**

Motion to approve the Minutes of the 72nd EC Meeting

Approved

### **3.b. Status of Action arising from the 72nd EC meeting**

SF commented that most of the actions have been completed, except one pending item “Ad Hoc Review Committees to send the IUGS webmaster the ARC reports to be uploaded on the IUGS website”. The ARC reports need to be approved by the EC first before being posted on the IUGS website.

### **3.c. Bureau meetings in Vancouver (June) and Sendai (November)**

CQ introduced that 3 Bureau Meetings were held in 2018: (1) Potsdam in January; (2) Vancouver in June; (3) Sendai in November. The Bureau Meetings were extended to include both the Bureau Members and two Vice Presidents.

### **3.d. Status of Action arising from Vancouver and Sendai Bureau Meetings**

SF commented that most of the actions have been completed and some undone actions will be discussed at the Open and Closed Sessions of the EC Meeting. In accordance with the decisions of the Bureau Meeting, action items concerning the President-elect are obsolete.

CQ acknowledged the support from the local groups for the Bureau Meetings.

## **4. Executive Committee Reports**

### **4.a. President's Report**

The primary goal of President's activities for the past year was to implement a strategic plan and to set priorities for the EC to strengthen IUGS: enhancing its leading roles in geosciences, increasing the level of interaction with IUGS constituent groups and collaborating with other organizations. Ultimately, this will improve the engagement of

IUGS membership. Significant progresses have been made with these regards.

a. IUGS' Leading New Science Program

The vision of the International Union of Geological Sciences (IUGS) is to promote development of Earth sciences through the support of broad-based scientific studies relevant to the entire Earth system. Also, it applies results of these and other studies for preserving Earth's natural environment while wisely using natural resources. Furthermore, it improves prosperity of nations and the quality of human life; the goal is to strengthen public awareness of geology and advance geological education in the widest sense. In the new era of Earth system science, in conjunction with digital revolution such as big data, internet and cloud computing, new platforms and programs are required for facilitating efficiency for the utilization of geoscience data with a move from traditional approaches conducting research to a modern approach involving data mining, machine learning, knowledge discovery and artificial intelligence. Transitions towards this goal reflects the new 'big data' driven paradigm for supporting geoscientific research. Because different subject areas have various scientific focuses and needs, and because scientists in separate regions are affected differently by the finances of scientific infrastructures, IUGS is an ideal organization to bring together their expertise through big science program and member engagement. Big science program should meet the following criteria:

- ☐ Global and major issues
- ☐ International collaboration
- ☐ Transdisciplinary
- ☐ Global – Free – Open – Sharing - Service
- ☐ Collaboration with ISC, UNESCO etc.
- ☐ Promotion in underrepresented nations

To support the above big science program, centers of excellence, similar to UNESCO Category 2 centers, should be recognized by IUGS despite not legitimately being part of the IUGS. These centers are associated through formal arrangements approved by the IUGS EC.



The Deep-time Digital Earth (DDE) program is a new initiative proposed by several Adhering National Members and International Associations Affiliated Members of IUGS. The DDE program has been approved by IUGS EC as the first IUGS Recognized Big Science Program. Since the approval of the DDE proposal, it has attracted a great deal of interest and support worldwide. DDE aims to establish linked earth big-data hubs that are interoperable with other databases including published data in the public domain and unpublished data in institutions and centers of expertise. Similar to OneGeology, which aims to provide a single map of world geology, DDE will be an international consortium that aims to provide “Geological Google” with harmonized data conveniently for science, industry, and the general public. However, unlike other existing databases, DDE will provide the geologies and geographies of Deep-time, as well as data on the properties of those geologies, and thus will provide insight into the distribution and value of earth’s resources and materials, as well as hazards – while also providing a glimpse of the Earth’s geological future. DDE has been set as a 10-year international big science program (2019-2028) with milestones anticipated at the 36th International Geological Congress (36th IGC, 2020), 21th International Sedimentological Congress (21th ISC, 2022), 37th IGC 2024, and the 38th IGC 2028. DDE is going to serve as a new platform for facilitating efficient and additive international collaboration along with knowledge sharing. The program will run as an open program which encourages broad collaboration among geosciences as well as in transdisciplinary fields. It welcomes engineers, social scientists and economists for collaborations. It hopes that DDE can be further developed with support from other GeoUnions and the International Science Council (ISC). It should be considered as a project amongst the challenging domain of digital revolution recognized by ISC.

#### b. Interaction with IUGS Constituent Groups

The year started with a very successful 72nd EC meeting, which was held in Potsdam, Germany. The IUGS EC had fruitful interactions with approximately 50 participants from Europe and worldwide. During 2018 IUGS has maintained close and collaborative

relationships with UNESCO, ISC, ISC-GeoUnions and other organizations. IUGS has been actively supporting the merger of ICSU and ISSC, the election of new governing council of the new International Science Council (ISC) and the new initiatives of ISC. Several members from GeoUnions were elected as new officers of ISC. President Qiuming Cheng has communicated with the new officers of ICS on various occasions. A formal invitation was sent to the president of ISC for participating in the DDE Forum and IUGS EC meeting. Dr. Li Jinghai, vice president of ISC has kindly confirmed to participate in the DDE on behalf of ISC. Dr. Alik Ismail-Zade, Secretary of ISC and Secretary General of IUGG has also confirmed to participate the DDE forum. The GeoUnions have met twice last year (in Paris and Istanbul, respectively) with the main objective of supporting the election of ISC officers and new project proposals to ISC. Vice President William Cavazza attended the first meeting in Paris and President Qiuming Cheng attended two meetings, and he proposed several suggestions including the DDE initiative. A meeting has been arranged for the GeoUnions' representatives who will be attending the DDE forum. The main agenda of this meeting will be for the GeoUnions to collaborate on further development of DDE.

UNESCO and IUGS have been making efforts to enhance the joint program IGCP. Last year, six new IGCP projects, together with other ongoing projects, were granted financial support. According to the annual report of IGCP, this year, a large number of excellent proposals have been received for consideration. UNESCO and IUGS welcome financial support from governments, academic institutions and industries to further expand. On the management side, three IGCP council members finished their term this year and three new members were elected from about a hundred nominations to fill these positions. All six members (three ongoing members and three new members) have been appointed by the DG of UNESCO and President of IUGS.

President Cheng thanks UNESCO for their management efforts in facilitating the election processes. All IUGS EC members are thanked for participating in these election processes. President Qiuming Cheng has informed the DG of UNESCO about the DDE initiative and invited UNESCO to participate in the IUGS EC meeting and the DDE Forum.

Dr. Ozlem Adiyaman Lopes is going to represent the organization on this occasion.

At several international conferences and on other occasions President Qiuming Cheng has had great opportunities to interact with large groups of adhering members, affiliated members as well as other organizations. For example, he attended the IGCP council meeting and CGMW General Assembly (February in Paris), EGU2018 (April in Vienna), Big Data Workshop (May in Zhejiang, China), RFG 2018 (June in Vancouver), ISC GA (July in Paris), 15th IAGOD and 24th ASGMI (August in Argentina), IAMG 2018 and 50th Anniversary Celebration (September in Prague), China Mining 2018 (October in Beijing), GSA 2018 (November in Indianapolis), GeoUnions Meeting (November in Istanbul), Workshop on Risk Reduction (November in Sendai) etc. On these occasions, President Qiuming Cheng introduced IUGS, focusing on its recent development and progress, as well as involvement with leaders from many organizations, such as EGU, GSA, ASGMI, OAGS, EuroGeoSueveys, CFES, GAC, CIM, and adhering members from Canada, US, BGR, Japan, Finland, Norway, Australia, India, and Turkey, as well as various international programs such as USARRAY (US), LithoProbe (Canada), EON-ROSE (Canada), SinoProbe (China), International Lithosphere Program (ILP), International Ocean Drilling Program (IODP), International Continent Drilling Program (ICDP) and Deep Carbon Observatory (DCO).

#### c. Promoting IUGS for New Memberships

At the 24th Council of ASGMI in Argentina, President Qiuming Cheng delivered a presentation in front of 22 Geological Surveys (Argentina, Bolivia, Brasil, Chile, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, España, Guatemala, Honduras, México, Nicaragua, Panamá, Paraguay, Perú, Portugal, República Dominicana, Uruguay, Venezuela) some of which are not IUGS members. Qiuming Cheng also welcomed more Latin-American countries to join the IUGS. In addition to email communication, further interactions with leaders of the ASGMI were conducted a month later during the Forum of Geological Survey Directors at the China Mining Forum. Qiuming Cheng distributed the DDE proposal to ASGMI for comments. A representative from ASGMI is going to attend

the IUGS EC and DDE forum. OAGS is an Organization comprising the African Geological Surveys. Considering that there are 54 nations in Africa and that IUGS only has 5 active African members 24 inactive members, it results that 25 African countries are not associated with IUGS (non-IUGS members). At a special Forum during the China Mining and Expo in October, Qiuming Cheng interacted with directors of several geological surveys. Qiuming Cheng had a meeting with the delegation of Organization of African Geological Survey (OAGS) led by Mr. President Alex Ndubuisi Nwegbu. Qiuming Cheng and President Alex Ndubuisi Nwegbu discussed potential collaborations regarding membership and promotion of DDE initiative in Africa. Qiuming Cheng also exchanged with Mr. Aziz Rabbah, the minister of the Ministry of Energy, Mines, Water and Environment of Morocco, to encourage interaction and collaboration between Morocco and IUGS. President Qiuming Cheng was invited and has accepted to represent IUGS in participation in the Mining Convention (MMC2019) which will be held in Morocco.

With the assistance of the Secretariat Office, countries that are not yet active members of IUGS or have never been associated with IUGS are prepared in various ways to take steps to join IUGS. Several members have either reactivated their memberships or joined as new IUGS members.

President welcomed two new EC Members, IUGS Councillors 2018-2022: Dr. Silvia Peppoloni from Italy and Dr. Claudia Mora from the United States.

#### **4.b. Secretary General's Report**

Activities and work since the IUGS Executive Committee meeting in Potsdam involved 1) managing votes among the EC and the Council, 2) setting the agenda for Bureau meetings and this EC meeting, 3) representing the EC in the Publications Committee, 4) producing IUGS annual reports and brochure, 5) serving as a communication link between the EC and leaders of constituent groups, addressing

problems that have arisen, but also developing bonds, and 6) planning IUGS activities at the 36th IGC.

Votes managed within the EC include those on 1) new Holocene subdivisions, Cambrian and Permian GSSPs, and a revision to a statute for the Commission on Stratigraphy, 2) seven proposals for Global Heritage Stone Resources for the Heritage Stone Subcommittee of the Commission on Geoheritage, 3) the new chair, members, and statute change for the Publications Committee, and 4) Kyrgyzstan, Myanmar, and Nepal as new adhering members. The statute revision approved for the term of the Publications Committee and the approval of new adhering members will be presented to the Council for ratification at the 36th IGC. Also managed was the by-election for the vacated position of IUGS Councilor for 2018-2022.

Agendas and background information were prepared for Bureau Meetings in Vancouver, Canada in June 2018 and Sendai, Japan in November 2018 and for this EC Meeting. The Secretary General composed Calls for 2018 annual reports to all IUGS constituent groups, adhering members, and affiliated organizations, which the Secretariat distributed. And, the Secretary General informed EC members of annual reports to review.

As the EC member on the Publications Committee, the Secretary General brought matters of concern to the EC at the Bureau Meetings, posted news of IUGS activities on Social Media, and conveyed to the webmaster revisions to the website decided by the PC. The posts on Facebook of the new Holocene subdivisions resulted in more than 120k views, 20k likes, and 10K shares in less than three week.

The Secretary General served as editor of the 2017 IUSG annual report, recruiting articles and photos and editing contributions. The Secretary General oversaw the publication in Episodes of biographies and photos of IUGS councilors. And, after review of the IUGS Brochure and Flyer by the Publications Committee, the Secretary General will now work with the Secretariat to produce these documents. Pertinent is the development

of the IUGS Vision Statement at this EC meeting.

Following the 72nd EC meeting, the Secretary General wrote to all constituent groups and to those affiliated organizations that requested financial support to inform them of the support allocated by the EC, to explain the reasons for that support and to explain the need to include prioritized, itemized budget requests in 2018 annual reports/2019 budget requests. The Secretary General reviewed the budget requests of those groups who requested it and gave feedback.

During 2018, the Secretary General met with the director of IGME, the adhering organization for Spain to resolve problems of payment of its annual subscription and its membership status. The Secretary General dealt with interpersonal problems in the Commission on Geoheritage.

The Secretary General has communicated to the LOC of the 36th IGC regarding all IUGS activities and events at the Congress. At the Sendai Bureau Meeting, the SG brought up for discussion the IUGS awards to be presented at the Congress. At that meeting, the Bureau voted to revise significantly, the IUGS awards. These changes are on the agenda for discussion and approval at this EC meeting. Also on the agenda for consideration is the production of medals to be given to each awardee.

The Secretary General monitors much of the internal business of the IUGS, e.g., ensuring the reports of Ad-hoc reviews are sent to the Secretariat and then to the IUGS President, communicating with the new councilors on matters of concern to them, responding to questions of membership from various affiliated organizations, advising constituent groups on difficult situations and on views of the EC.

The Secretary General commends the Secretariat staff for their excellent support to the Secretary General. They are skilled in IUGS matters and respond immediately to requests. In 2016, the Secretary General with help of the Secretariat produced a master

list by country of Participants (officers, voting members, and leaders) in IUGS constituent groups. More recently at the request a direction of the Secretary General, the Secretariat has compiled a list of IUGS activities for each country. This includes field excursions, meetings of all types, ceremonies (e.g. GSSP dedications), and all other activities mentioned in 2018 annual reports.

In light of these activities and responsibilities the Secretary General made several requests for leaders of all IUGS constituent groups. These are 1) a Call to all constituent groups for elections of officers and voting members for 2020- 2024 with names of elected officers submitted to the IUGS SG for approval at the 2020 IUGS EC meeting in January 2020; 2) a Call for action photos for new IUGS Brochure; 3) a Call for contributions for 2018 IUGS Annual Report; and 4) a Call for posting of Annual Reports on websites; linking to or loading on IUGS website, and 5) a request for information on plans for sessions and business meetings at the 36th IGC.

**ACTION:** Secretariat to distribute the list of 2018 IUGS activities for each country to related Adhering Organizations.

#### **4.c. Treasurer's Report**

Hiroshi Kitazato (HK) reported that by Dec. 31, 2018 the IUGS balance was USD 1,567,077.27, USD 844,569.68 of which was reserves in investment accounts. He reported that the total income and expenditures of IUGS in 2018 amounted to USD 605,233.43 and USD 418,611.07 respectively, contributing to a net income of USD 186,622.36 (includes 35th IGC Capitation Fee USD 108,581.15 and RFG 2018 Capitation Fee USD 1,797.34). This reflected a relatively optimistic financial position.

IUGS current account USD 722,507.59 includes the amount of 35th IGC Capitation Fee, RFG 2018 Capitation Fee, Hutchinson Account, Russian Reserve and and Emile

Argand Award (USD 205,385.40). The total revenue was USD 605,233.43, which included USD 428,978.28 for membership fees.

In 2018, among the 122 IUGS Adhering Members, 70 were active members and 52 were inactive members based on the submission of membership fees.

**Alteration of Status during the year 2018**

Korea South	Inquiry to raise category 3 to 5	
Kyrgyzstan Myanmar	Active	New members
Spain	Inactive → Active	2015 to 2018 dues paid
Guyana Morocco		2017 and 2018 dues paid (2016 dues unpaid)
Bangladesh		2018 dues paid (2016 and 2017 dues unpaid)
Costa Rica	Pending → Active	2017 and 2018 dues paid (2016 dues unpaid)
Argentina Iceland Iraq Latvia Peru Portugal Tajikistan Uruguay	Active → Pending	Dues unpaid for 2 years till the end of 2018
Gambia Philippines Tanzania Zambia	Pending → Inactive	Dues unpaid for 3 years till the end of 2018
Nepal	Applied for membership (dues unpaid)	

**Countries with no contact point - 22 countries**

Angola, Belarus, Belize, Bolivia, Burkina Faso, Cote D'Ivoire, Ecuador, Ghana, Iraq, Madagascar, Nicaragua, Panama, Paraguay, Saudi Arabia, Somalia, Suriname, Swaziland, Tunisia, Uruguay, Venezuela and Yemen (Rwanda)

**Countries restricted by OFAC (US Office of Foreign Assets Control) - 4 countries**

Cuba, Iran, North Korea and Syria

WC commented that efforts shall be made to follow up with the 22 Adhering Members with no contact points and special attention should be paid to those Adhering Members turning from active to pending, and from pending to inactive.

**4.d. Permanent Secretariat's Report**

Ma Yongzheng reported that he has served as the Director of the Secretariat since



August 2018. He thanked the former Director Dr. He Qingcheng for his hard work and contributions to the work of the Secretariat. The work completed in 2018 mainly included the following:

1. Organization of Business Meetings

(1) 72nd EC Meeting and Bureau Meeting in Potsdam, Germany on January 23-26

Sent repeated reminders for annual reports from IUGS Bodies;

Prepared and distributed meeting documentation (including Agenda, annual reports);

Coordinated on meeting participant and logistical issues;

Assembled financial requests from IUGS Bodies;

Minute taking, preparation and distribution (including Action List);

Provided logistical service during the meeting.

(2) Bureau Meeting in Vancouver, Canada on June 20-21, 2018

Prepared meeting documentation;

Prepared Minutes and sent it to meeting participants for modification.

(3) Bureau Meeting in Sendai, Japan on November 12-13, 2018

Provided logistical and clerical service for the Bureau Meeting, including liaison, and minute taking;

Prepared and distributed related documentation for the Bureau Meeting.

(4) 73rd EC Meeting in Beijing, China on February 26 to March 2, 2019

Went through domestic formalities to get approval of the meeting being held in China and secured budget to financially support the meeting;

Assisted Secretary General in preparing and distributing the Announcement of the 73rd EC Meeting, Call for Submitting IUGS Annual Reports and other related documents to IUGS Constituent Groups, Adhering Organizations and Affiliated Organizations; Sent repeated reminders for annual reports from IUGS Bodies;

Collected registration forms and annual reports. Went through domestic formalities to issue the formal invitation letters Prepared and distributed meeting documentation (including Agenda, annual reports); Coordinated on meeting participant and logistical issues; Assembled financial requests from IUGS Bodies; Assisted in organizing the DDE forum; Provided logistical service during the meeting.

## 2. IUGS Exhibitions

In order to publicize and promote the IUGS activities in the international geoscience community, the Secretariat organized the following 5 IUGS exhibitions at major international geoscience conferences and events:

(1) IUGS-UNESCO-CGMW Joint Exhibition at the EGU General Assembly

(2) IUGS Exhibition at RFG 2018 Conference

(3) IUGS Exhibition at 2018 China Mining Conference & Expo in Tianjin, China

(4) IUGS Exhibition at 2018 GSA Annual Meeting in Indianapolis, USA

(5) IUGS Exhibition at 2018 AGU Fall Meeting in Washington D.C., USA

Coordinated with the local Organizing Committee and booked the IUGS booth;

Initiated to call for materials from the IUGS constituent groups for the booth exhibition;

Redesigned the IUGS posters introducing IUGS constituent groups and scientific activities;

Prepared displaying materials (annual reports, charts, CGI flyers, notebooks, T-shirts, bags, fridge magnets etc.);

Exhibited IUGS posters introducing IUGS scientific activities;

Displayed and distributed IUGS products (charts, brochures, Episodes, annual reports).

## 3. IUGS Activities during 2018 China Mining Conference

(1) Partnership maintenance

Arranged a meeting between IUGS President and officials from China Geological Survey (CGS) and British Geological Survey (BGS); Major topic of the meeting is the future cooperation in the newly-proposed IUGS “Deep Time Digital Earth” Program (IUGS-DDE);

(2) Membership maintenance

Arranged a meeting between the President and the delegation of Organization of

African Geological Survey (OAGS) led by Mr. Alex Ndubuisi Nwegbu, the President of OAGS to promote IUGS among African countries;

Arranged a meeting between the President and Mr. Aziz Rabbah, the Minister of Energy, Mines, Water and Environment of Morocco to motivate the reactivation of Morocco's IUGS membership; The Secretariat then got in contact with Morocco and provided information on how to reactivate its IUGS Category-2 membership.

#### 4. Outreach and Publications

##### (1) Annual Report

Designed the 2017 IUGS Annual Report;

Mailed the hardcopies of the 2017 IUGS Annual Report to all the IUGS constituent groups.

##### (2) Episodes

Prepared the list of recipients;

Mailed 100 hardcopies of Episodes and hardcopies of the previous 4 issues for the year of 2017.

##### (3) E-Bulletin

Formatted and distributed the E-Bulletin to over 16,000 recipients;

Updated the list of recipients based on feedbacks.

Rented a new mass email sending platform and designed a brand new and reader-friendly format for emailed IUGS E-Bulletin. The new format has received some positive feedbacks from the IUGS community.

#### 5. Membership Maintenance

Sent to the Nepal Academy of Science and Technology and Myanmar Geoscience Society the digital Membership Application Form and other related document;

Maintained correspondence with them on the membership issue.

#### 6. Communications

Sent to all the IUGS constituent groups, Adhering Organizations and Affiliated Organizations the following information:

1) Call for Members to Join the Council of the International Geoscience Programme

2) Call for Nominations to the Governing Body of the International Science Council

3) An announcement for the International Association for Mathematical Geosciences 50th Anniversary Meeting

Updated the contact information of IUGS Affiliated Organizations in the IUGS Management System according to the information published on their official websites.

#### 7. Promotion

New IUGS promotional items are under preparation and will be used at the IUGS booth exhibitions in 2019.

#### 8. Others

Assisted the IUGS Nominating Committee and the IUGS Secretary General in the election of new IUGS Councillor (2018-2022).

**ACTION:** Secretariat to reply e-mails with signing their names.

### 5. IUGS Committees

#### 5.a. Publications Committee

##### 5.a.1. Publications Committee Report

Dolores Pereira, Chair of the Publications Committee, reported that the Publications Committee (PC) was composed of herself as Chair, Prof. Stanley Finney (IUGS Secretary General), Prof. Daekyo Cheong (Editor of Episodes), Mr. Giuseppe Di Capua (Webmaster), and Dr Gurmeet Kaur (member responsible for social media outreach issues).

The impact factor of Episodes for 2015 was published in June 2016, 3.26, marking the highest one in the history of Episodes. The 2017 Impact Factor of the journal announced in June 2018 was 1.614. The IF has decreased compared to some of the previous years, but the journal is still attracting high quality papers. An ad-hoc review of Episodes was carried out in 2015, and the ARC report was published in Episodes in 2017. The on-line system of Episodes has been implemented, but needs complete revision on

user-friendliness, accuracy in contents and Cross-Ref possibilities.

Current progress on books published for the IUGS by the Geological Society of London (GSL) is as follows: Two books (The Permian Timescale and Health and Natural Hazards) were been published during the year; SP474: HP-UHP metamorphism and tectonic evolution of orogenic belts and SP477: Subaqueous Mass Movements and Their Consequences are partly published online-first; four are in preparation but not yet in production; and two new proposals have been received and are being considered by the GSL Books Editorial Committee.

IUGS social media includes four platforms: IUGS Facebook, IUGS Twitter, IUGS LinkedIn and IUGS Google plus. Sources for social media posts are from monthly IUGS E-bulletin, IUGS webpage, webpage of IUGS constituent bodies and IUGS publications. Content of IUGS posts includes brief note with scope of furthering reading, relevant photographs, important web links/pages for further reading with all posts and use of hashtags to make it more visible. The content has been updated 2-3 times every week on average. The total number of Facebook followers reaches 7000. Silvia Peppoloni is responsible for the IUGS E-bulletin. A monthly call is sent to the IUGS constituent groups and IGCPs for source of news.

Intensive work has been undertaken to update the former website by the new webmaster. The webmaster has created the account and started to choose a template, tested a menu and best position for putting in evidence some pages that generally are of great interest for visitors of the IUGS website.

#### **5.a.2. Discussion of IUGS website**

G. Di Capua first presented the one-year record of the visits to IUGS official website in 2018, which showed that weekly cycles were slightly down from last year with average of 101 visits a day and around 706 visits a week.

G. Di Capua pointed out two peaks of visits during 2018 because of the IUGS FB posts on Holocene subdivisions 18-19 July and IUGS FB posts on some EC members 30 August. And there was a great gap from 18-26 August.

The web-hosting fees up to 1,732.50 CAD were unpaid for 5.5 years from 1 Jan. 2013 to 30 June 2018 and the cost for a period from 24 August 2018 to 23 August 2019 is 1,050.00 CAD. G. Di Capua reviewed the problem-solving process of the great gap.

G. Di Capua reported that the percentage of returning visitors dropped by 50% compared with that of 2017. 89.8% of the visitors are new visitors. The comparison table between 2016, 2017 and 2018 was shown to illustrate the drop of visits to sessions, number of users, pageviews and pages per session. Only about 12% of the visits lasted more than 3 minutes. More than 29,000 of the 36,730 visits were less than 1 minute in length and most of those were less than 10 seconds in length. In other words only about 7,000 visits to the IUGS website were likely interested to the visit. United States (15.51%), Nigeria (8.00%) and China (7.11%) were the three countries who visited the IUGS website most frequently. No less than 8% of the session visits are phishing efforts from Africa (-3% than 2017). The global map view of the IUGS website classified by city visits for 2018 was presented to show that no less than 10% of the city visits are phishing efforts from Africa (in 2017: no less than 14%). The most popular pages in the Website were still same as in 2017 including "Directory", "Calendar" and "What is IUGS". The number of events in the IUGS Calendar for 2018 is 176.

G. Di Capua showed design of the new IUGS website and introduced the new online platform for web editing Wix at a low cost (181.7 Euros for one year or 334.1 Euros for two years), a user-friendly tool easy to manage. In 2019, the domain service must be renewed and the web-hosting service will be changed.

## **5.b. Finance Committee**

WC reported that the IUGS Statutes and Bylaws prescribed that IUGS should have such a committee to plan for the finances, evaluate proposals for independent auditing of the union for Council, and advise the EC on the management of funds so as to improve IUGS financial operations. The primary roles of the Finance Committee are to identify external financial opportunities for IUGS and to propose to the Executive Committee ways to improve IUGS financial operations, including: the allocation of funds in relation to the strategic priorities and missions adopted by the Executive Committee; and overseeing the conduct of an independent external audit of IUGS finances. The Finance Committee shall present a report including the results of an independent audit to the IUGS Council every four years before the election of a new Executive Committee.

WC reported that the Terms of Reference of Finance Committee (FC) were drafted and circulated among EC members. The Committee shall consist of a minimum of 4 (four) and a maximum of 5 (five) persons, including a minimum of 1 (one) and a maximum of 2 (two) members of the IUGS Executive Committee (EC). Current IUGS Treasurers cannot be FC members. The Committee shall elect its Chair who will report directly to the EC. The FC shall be directly appointed by the IUGS EC for a term of up to four years. The entire FC or individual FC members may be re-appointed by the next EC, two terms in total. All FC members shall be from active IUGS member countries. WC then introduced members of the current FC 2018-2020 including WC himself, Andrew J. Fleet, John W. Hess and Edmund Nickless. They've met twice in London in March and November last year.

WC reported that two documents had been provided to the EC. The recommendations are as follows: improvement of financial investments; membership drive; surplus funds; increased level of auditing; define level of funding to DDE; protection of IUGS intellectual property; and marketing of Episodes.

### **5.c. New Activities Strategic Implementation Committee (NASIC)**

Edmund Nickless (EN), Chair of NASIC, began the report by reminding the audience briefly why NASIC was established and why the initiative they are pursuing resourcing future generation is on the agenda. NASIC, an outgrowth of the new strategic plan agreed in 2012, was established in February 2013 to develop Resourcing Future Generations initiative with an extensive list of questions to be addressed including 'is it worthwhile doing?' The initial scope of RFG was to include minerals, energy and water, all with implications on land-use. EN reviewed the major achievements of NASIC in past years and then specific activities in 2018. These included reaching out to the Royal Institute of British Architecture in February; organizing a workshop in Moscow with Bellona Foundation in April; organizing two sessions at RFG 2018 in June; representing RFG at University of Newcastle seminar on responsible consumption in June; reviewing UNEP IRP draft report on mineral resource governance in August; and writing an advice note for COP24 with Newcastle University.

NASIC held a core group meeting during RFG2018. It was noted that half of the c2000 audience were within 10 years of their first degree indicating that the conference was full of energy and different from other conferences.

EN briefed on the proposal of organizing the Summer School (ReStoRE) brought up by iCrag (Irish Centre for Applied Research in Applied Geosciences) for 50 post graduate research students to be held in Dublin Ireland in July 2019. It has been a long-term ambition of the RFG initiative to reach out to younger geoscientists and social scientists. IUGS is the main sponsor at £30k (€33k or \$38k). Other confirmed sponsors are BHP (€6,000), Boliden (€5,000), Teck (€10,000) and GSI (to be agreed). Other sponsors are being actively sought. Format of Summer School is keynote lectures and four workshops and sponsors are to be involved in and help choose the theme of the workshop topics. Students will be assigned to a specific workshop and prepare discussion papers on emerging themes. Hope is that students attending will make RFG themes an



object of their future research. The selected students will present at the 36<sup>th</sup> IGC.

Workplan for 2019 and beyond are as follows: to run ReSToRE with iCrag; to mobilize Core Group to submit proposals to and organize sessions at the 36th IGC; to look at feasibility of sending a small IUGS delegation, working if possible with University of Newcastle once the venue for COP25 is announced; to broaden participation by non geoscience disciplines in RFG; to plan that selected students attending the ReSToRE summer school will present at 36th IGC; to invite speakers from disciplines who would not traditionally attend and IGC; and to link to DDE and broaden participation of early career researchers in RFG.

## **6. IUGS Commissions: Annual Reports and 2019 Plans**

### **6.a. Stratigraphy (ICS)**

David Harper, Chair of ICS, reported on the high points in 2018 and plans for 2019. DH briefed on the global reach of ICS covering over 350 members of the various subcommissions. Completion of the chart, series/epoch and stage/age definition, is the key priority of ICS.

ICS has selected eight main areas of achievement for the commission as a whole in 2018. Eight versions of the ICS Chart or Timescale have been produced in 2018 by the Graphics Officer, Dr. Kim Cohen. There are now 16 translations of the chart and German and Russian translations have recently been completed. Agreements have been signed to strengthen links with the Geobiodiversity Database (GBDB) and the Deep-Time Digital Earth (DDE) project. ICS attempted to make revisions of the statute on voting procedures. The ICS App developed by the Informatics Officer, Dr. Fan Junxuan and colleagues in Nanjing can be downloaded from the App Store now. DH has tried to invite all the subcommission chairs to gather in the 3rd international stratigraphy conference, STRATI 2019, held in Milano in Italy. Dr. Nora Noffke was appointed as new chair for a rejuvenated

International Subcommittee on Precambrian Stratigraphy and discussions on the status of the term Precambrian are in progress. A new subcommittee on Timescale calibration has been established.

Recent GSSPs (Global boundary-stratotypes) established (listed in stratigraphic order):

base of the Meghalayan Stage (4,200 yr before 1950) [Upper Holocene]

base of Northgrippian Stage (8,326 yr b2k) [Middle Holocene]

base of the Greenlandian Stage (11,700 yr b2k) [Lower Holocene]

base of Sakmarian Stage [Permian]

base of Wuliuan Stage [Cambrian]

base of the Miaolingian Series [Cambrian]

Other key updates to ICS International Chronostratigraphical Chart includes: Eight versions during 2018, reflecting regular updates; Revised numerical age for base of Cryogenian System (from 850 Ma to ~720 Ma); Translations into numerous languages including French, German, Belgian Dutch, Chinese, Spanish (Castellano, Catalan, Basque), American Spanish, Japanese, Norwegian, Portuguese, Russian, Lithuanian and Finnish.

DH presented ICS plans for 2019: Increased activity in a number of subcommittees; Active and significant participation in STRATI 2019; Engagement with DDE to provide time-series data from GSSPs and other relevant sections; enhancement of outreach through distribution of the chart, dedication ceremonies, the web, social media and the ICS App; Completion of 'New Developments on Stratigraphic Classification' by the ISSC; Routine use of the Geobiodiversity Database (GBDB) as a repository for stratigraphical and other relevant information; Calibration of the Timescale in terms of, for example, state-of-the-art orbital tuning and radiogenic isotope dating; Planning ICS participation in the next IGC (Dehli 2020).

## **6.b. Education, Training and Technology Transfer (COGE)**

Chris King, Chair of COGE, pointed out the difference of this year's report in that the COGE report contains all the normal things you expect in an IUGS Commission report focused on objectives and structure, products, accomplishments and budget given as appendices, and the main thrust of the report focuses on a global strategy to support geosciences education based on the evidence available, on what is currently being done and what should be done in the future.

In October 2018 IUGS Commissions were asked to provide much more detail than previously for their budget bids to be submitted in early 2019. This seemed like an opportune time to devise a global strategy for supporting geoscience education. This view was supported by members of the Commission on Geoscience Education (COGE). This document builds on the foundation of the previous EGU 'Strategy for Enhancing Geoscience Education – 2018' document in a global context and draws on previous activity of IUGS-COGE, the International Geoscience Education Organisation (IGEO) and surveys of global geoscience education carried out previously by IGEO with the support of IUGS and, most recently, carried out by UNESCO/IGEO with the support of IUGS.

Global school-level surveys of geoscience education showed:

- only around two thirds of the countries surveyed have geoscience in their curriculum
- the geoscience teaching guidelines are not closely followed in around a third of countries
- support for geoscience teachers in schools is available in less than half the countries whilst financial support is available in less than a quarter of the countries
- in the majority of the countries the quality of teaching materials is moderate or poor.

Research has shown that the most effective way to improve geoscience education is

to target teachers and other educators. Research has also shown that, whilst it is important for geoscience educators to have good teaching materials, providing good materials alone is not enough. Good teaching materials need to be put into the hands of the educators and they need to be shown how to use them if there is to be measurable impact on teaching and learning.

Experience indicates that geoscience educators can be sub-divided into five main groups.

1. Teachers of geoscience in schools and colleges who have strong geoscience backgrounds and who may also have received training in geoscience education.

2. Teachers of science or geography in schools and colleges who have some geoscience in the curricula they teach but who have poor geoscience backgrounds and have received no training in geoscience teaching.

3. Teachers of geoscience in Higher Education (HE) who have strong geoscience backgrounds and have received generic training in HE teaching, but who have usually received little professional development in geoscience education.

4. Those providing informal geoscience education.

5. Researchers into geoscience education.

Plans for the future in support of Group 1:

- A meeting to develop an IGEO/EGU European chapter is planned for April 2019 at Coimbra, Portugal to bring European national groups together into an umbrella organisation. This first meeting is financially supported by EGU.

- GIFT conferences are being planned for Vienna (annually, EGU), Montreal 2019 (AGU), Central America (EGU 2020 – 2023) and southern Africa (EGU 2021 – 2024).

- The IUGS should support all these initiatives by continuing to support the work of IGEO financially and by publicising the initiatives.

Plans for the future in support of Group 2: IUGS should: continue its publicity support for the Earthlearningidea website initiative with its increasing numbers of teaching

activities and its global importance; continue to support the 'Exploring Geoscience' textbook initiative and the development of its regionalised versions, through publicity; extend the Geoscience Education Field Officer programme (formulated as a pilot programme for field officers in four countries by the EGU), by developing a parallel pilot programme to appoint and train four unpaid field officers in non-European countries where their efforts are likely to be successful; trained in offering interactive workshops to teachers and other educators through methods that research has proved to be effective; workshops to be offered at teacher conferences and other venues.

Plans for the future in support of Group 3: IUGS should: keep in view the developing strategies of the EGU Committee on Education (EGU CoE) to provide subject-specific professional development in teaching to geoscientists in Higher Education, with a view to supporting these initiatives through approval and publicity in the future.

Plans for the future in support of Group 4: IUGS should: for those providing geoscience outreach – who have first degrees in geosciences; for those providing geoscience outreach – who have poor geoscience backgrounds.

Plans for the future in support of Group 5: IUGS should: if the EGU develops a database of geoscience educational researchers to facilitate networking between them, provide publicity support for this initiative.

COGE has developed a job description for the IUGS Commission on Geoscience Education members.

This 'Strategy for Enhancing Global Geoscience Education – 2019' document addresses the IUGS objective of to: 'strengthen public awareness of geology and advance geological education in the widest sense.' The document has not only identified real weakness areas in geoscience education around the world, but some important pockets of

strength and innovation. The most important ways of providing IUGS support for global geoscience education are by:

- supporting and collaborating with global geoscience educational initiatives already underway – a number of these have been outlined;
- in particular, by broadening the EGU pilot initiative to appoint and train unpaid Geoscience Education Field Officers in different countries; as part of an IUGS/IGEO extension to the EGU pilot, four Field Officers would be appointed and trained in presenting interactive workshops to teachers and informal educators in their own regions during 2019/2020;
- If the Geoscience Education Field officer pilot is successful, and it is to be rolled out to more countries beyond the four included in the pilot, then this will involve considerable IUGS investment in future years;
- Thus the IUGS Executive Committee is urged to support the work of the IUGS Commission on Education in general and the Geoscience Education Field Officer initiative in particular.

CK concluded that the IUGS EC was requested to approve the 'Strategy for Enhancing Global Geoscience Education – 2019' document, to approve the 2019/20 budget request with all Priorities added up to \$13,862, to indicate their decision very soon, and to acknowledge indicative budget requests for future years.

### **6.c. Management and Application of Geoscience Information (CGI)**

Zhang Minghua, Co-Secretary General of CGI, first introduced Mission and Vision of CGI and the composition of CGI Council Members (2016-2020). The new election will be organized later in 2019. CGI has 460 members in 76 countries among which 2 new countries and 65 new members from 9 different countries were added in 2018.

The Working Groups of CGI included:

- GeoScienceML Working Group (GeoSciML) – Eric Boisvert, Canada;
- EarthResourceML Standard Working Group (ERML) – Jouni Vuollo, Finland ;
- Geoscience Terminology Working Group (GTWG) – Mark Rattenbury, New Zealand;
- GeoScienceDWG Working Group –Beaufils, Mickael, France;
- Geoscience Information in Africa - Network (GIRAF) – Mesfin Wubeshet Gebremichael, Tanzania.

CGI's main achievements in 2018 are as follows: a session "Geoscience Information Technology for next Generation" (22 presentations) during RFG 2018; Participation to the first United Nations World Geospatial Information Congress (UNWGIC) in China on 19-21 Nov. 2018; GeoSciML available on public site and Github for implementers, OGC Borehole Interoperability Experiment (BoreholeIE); Work on OWL version of GeoSciML (for semantic web and AI use), and demonstration of "linked open data" in partnership with OneGeology; Multilingual translation work of CGI Multilingual Thesaurus of geosciences; Demonstration in OneGeology of how to use ERML Lite model for a "Global Mineral Resource" data and mapping service.

CGI's work plan for 2019 includes: actively participation in IUGS Deep-Time Digital Earth program; setting up "Geoscience Information" sessions in IGC2020; 3D group of CGI/OGC : continue to push forward the Joint CGI/OGC Geoscience Domain Working Group work, in partnership with OneGeology; continuing to push forward the implementation of GeosciML after becoming an OGC Standard; continuing the development and implementation promotion of EarthResourceML; continuing to push forward promotion of CGI products and to draft a marketing plan; updating and enriching the CGI online presence; taking measures to publish the CGI newsletter regularly; take measures to publish more publications of CGI related issues within IUGS "Episodes", representing the IUGS in Geoscience information matters; more effective connection with CODATA and RDA.

The next CGI Council meeting will be held in Madrid, Spain 6-10 May, 2019.

#### **6.d. History of Geological Sciences (INHIGEO)**

Marianne Klemun, Secretary General of INHIGEO, reviewed the objectives of INHIGEO, which are to promote studies on the history of geological disciplines in an international context and to encourage national and regional organisations with the same purpose.

MK informed that 2018 had been a very busy and productive year for INHIGEO.

The 43rd Annual INHIGEO Conference of 2018 and the business meeting were at the heart of this year's activities. The 43rd Annual Conference took place at the Palace of Mining in Mexico City from 12 to 22 November 2018 with 46 contributions in seven sessions. This conference was organized by the Vice-President of the INHIGEO of Latin America L.F. Azuela in cooperation with the Institute of Geography, the Institute of Geology, the Institute of Geophysics of the Universidad Nacional Autónoma de México (UNAM) and has received financial support from UNAM.

Currently INHIGEO has 301 members from 59 countries (including 14 Associate members). This is a small increase on 297 members from 58 countries reported at the Cape Town meeting in 2016 and a very slight reduction (of one) in comparison with 2017. The annual membership ballot took place in early 2018 (April/May) and 7 new members were elected.

The INHIGEO Annual Record has continued publication in the past year with reports of activities focused on the previous calendar year. A new INHIGEO website, which came online in 2016 and enhances communication between the commission and the public and is accessible at: [www.inhigeo.com](http://www.inhigeo.com). Since 2012 the INHIGEO Circular has been issued quarterly by the Secretary-General in March, June, September and December of each year. Mike Johnston and Marianne Klemun have submitted an article to Episodes. Four books based on the two 2017 conferences, two on 2018 conferences are forthcoming in 2019/20.



Celebrating INHIGEO's 50th anniversary, in Yerevan, the following was published:

Mayer, W., Clary, R. M., Azuela, L. F., Mota, T. S. & Wolkowicz, S. (eds) History of Geoscience: Celebrating 50 Years of INHIGEO. Geological Society, London 2017, Special Publication 442. The book, which includes studies and reviews on the history of geology in various countries and regions, was presented within a symposium "Celebrating 50 Years of INHIGEO" in 2017 at the anniversary conference held in Yerevan, Armenia.

Future INHIGEO conferences are as follows:

44th INHIGEO Symposium Varese / Como, Italy	2-12 Sept. 2019
45th INHIGEO Symposium New Delhi, India	2-8 March 2020
46 <sup>th</sup> INHIGEO Symposium, Krakow, Poland	18-24 July 2021
ICHST Conference in Prague, Czech Republic	25-31 July 2021

In July 2019 Italy will also host the 3rd International Congress on Stratigraphy - STRATI 2019 (Milan, 2-5 July 2019), where a session on History of Stratigraphy had been proposed by members of INHIGEO Italian delegation (Ezio Vaccari, Andrea Candela, Marco Pantaloni, Luigina Vezzoli)..

MK presented minor changes to INHIGEO Terms of Reference for forwarding to the IUGS Council, including: (1) the establishment of the "Affiliated Association" category in 2014; (2) renaming our annual publication in 2013 from INHIGEO Newsletter to INHIGEO Annual Record; (3) the importance of informative historical field trips which have been an important INHIGEO activity from its beginning.

INHIGEO wishes to especially acknowledge and thank IUGS for its past support. INHIGEO looks forward to the IUGS's continuous support in order to keep playing a vital role and providing important activities in future.

## **6.e. Tectonics and Structural Geology (TecTask)**

Rodolfo Carosi, Chair of TecTask, reported that TecTask focused on the following topics after the IUGS ad-hoc review Committee during 2017 and discussion inside the EC involving later all the TecTask officers:

1. TecTask Web Portal as our arena for communication and exposure to the public and science community;
2. Terms & Standards initiative with a wiki-like Internet Platform;
3. Organizing a YORSGET conference for knowledge sharing, exchange and training opportunity for young scientists (July 2018 Montgenevre and 2020 Sicily, Italy);
4. Monthly world Web Cast seminars on Structural Geology and Tectonics uploaded to the TecTask YouTube channel;
5. Overhaul of the Outcropedia portal including field trips;
6. TecTask as a major contributor and player at the 2020 IGC in Delhi.

Dr. Taja Torvela is the new web manager starting in 2017. The new TecTask website has been created using WordPress: <http://www.tectask.org/>. Two new pages have been added in 2018: 1) TecTask Terminology, 2) TecTask Youtube Channel. The TecTask webpage, along with the Outcropedia webpage, continue to be active also on the Social Network by April 2017.

Terms & Standards initiative with a wiki-like Internet Platform is a major initiative that remained dormant over the past years, although it was constantly recognized as a fundamental objective of this commission. The basic concept is to develop a platform populated with terms and their definition, which can be publically discussed by the enrolled members before those are elevated into formal glossaries or a dictionary. The officers David Peacock and Lorenzo Gemignani developed the contents of this page. Several hundreds of terms have been added, checked and described with references to international papers and books. In the next few weeks the platform will be communicated

to the Structural Geology and Tectonics community to further develop and discuss SG and T terminology. Additionally, there will be a meeting of the main contributors to the Terminology & Standards wiki in June 2019, during the conference DRT-2019 in Tübingen, Germany.

TecTask created the TecTask You Tube channel where we upload monthly invited seminars (<https://www.youtube.com/channel/UCXFYiccBYXw85bneuMm4Xgg>). TecTask started and launched this new initiative in June 2018 recording and uploading a seminar once a month to cover topics of Structural Geology and Tectonics, including regional studies of wide interest. TecTask have more than 234 people inscribed in the channel up to now and nearly 5,000.00 views of the seminars in eightn months. Several signals of appreciation by colleagues both for research and for teaching were received. The main aim of this channel is to provide the first worldwide seminar in Structural Geology and Tectonics, and allow researchers in different countries (especially in developing ones) to attend and participate in global seminars.

Outcropedia was seen as a potential tool to start collecting potentially interesting outcrops. TecTask overhauled the website during 2018 and the new website has been launched on December 2018. The site is now able to host many high quality photos and allow to navigate quickly (<http://outcropedia.tectask.org/>). TecTask uploaded the most part of the photos of the old site. Photos are now divided into categories: Boudinage, Faults, Folds, Foliation, Fractures, Joints, Veins, Lineations, Metamorphic Rocks, primary structures, sedimentary, magmatic rocks, Shear Zones. Outcropedia can also be used to store information on key sites of interest of other commissions. TecTask plans to develop an Outcropedia App for smartphones, with the possibility to easy use Outcropedia and to upload photos and descriptions of outcrops directly from the mobile in the field.

TecTask has been in close contact with the organizing committee of the 36th IGC – Delhi 2020 by the vice-Chair Prof. Manish Mamtani. The following 6 symposia have been approved and listed in the 2nd circular of the 36th IGC to be held in 2020 in Delhi (India)

as part of Theme-27 entitled “ROCK DEFORMATION AND RHEOLOGY”.

- 1 .Field Structures – Macro to Meso Scale Deformation Processes
2. Rheology and Deformation Mechanisms in the Earth
3. Fabric Analysis – Past, Present and Future
4. Structural Control on Fluid Flow and Mineralization
5. Extrapolating Experimental Rock Deformation Results to Field Structures
6. Structural Geology and Society - Restoration, Geothermal Energy and Hydrocarbons

Other engagements of TecTask in IGC 2020 are as follows:

Prof. Bruce E. Hobbs (TecTask Officer) has been proposed for a Plenary Talk by the IGC committee;

Prof. Alison Ord (EC member and former Chair, TecTask) is co-convening a symposium “Extrapolating Experimental Rock Deformation Results to Field Structures”;

Prof. Rodolfo Carosi (Chair, TecTask) is co-convenor of a symposia entitled “Brittle vs. Viscous Deformation in the Himalaya – Field to Experiments” and “Tectonic evolution of the Himalaya” in another Theme (The Himalaya – Anatomy of an Evolving Mountain Chain).

## **6.f. Geoheritage (ICG)**

Benjiamin van Wyk de Vries, the new Secretary General of ICG since October 2018, reviewed the establishment of ICG as a new IUGS Commission at the 35th IGC. The Commission was formed through the re-constitution of two pre-existing geological heritage Task Groups within IUGS, the Task Group on Geoheritage (TGG) and the Heritage Stone Task Group (HSTG) as two sub-commissions, respectively the Heritage Sites and Collections Sub-commission (HSCS) and the Heritage Stones Sub-commission (HSC).

With the exception of specific projects that the Executive may propose, it is expected that the majority of the work of the Subcommission will be carried out through thematic Working Groups, including scientific assessment for UNESCO Global Geopark proposals, Global Geosites, Geomorphosites, Volcanic Geoheritage and Palaeontological Heritage. The Geoheritage Assessment WG is the most important one in that it is charged with producing guidelines for the desk top evaluations of global geopark proposals.

### **Heritage Stones Sub-commission**

List of meetings/symposia in 2018 were presented:

Global Stone Congress (24th April – 2nd May, 2018) (170 participants from 12 countries)

I Workshop on Heritage Stones (2-4th of October, 2018) (49 participants from 16 countries)

List of the publications in 2018 were presented:

- Proceedings of I Workshop on Heritage Stones

[https://issuu.com/home/published/compilacion\\_abstract\\_reducido](https://issuu.com/home/published/compilacion_abstract_reducido)

- Freire-Lista, D and Fort, R. (2018) Historical City Centres and Traditional Building  
• Stones as Heritage: Barrio de las Letras, Madrid (Spain). Geoheritage.

<https://doi.org/10.1007/s12371-018-0314-z>

- Navarro, R., Pereira, D., Gimeno, A. del Barrio, S. (2018) Influence of natural carbonation process in serpentinites used as construction and building materials. Construction and Building Materials 170, 537–546

- Pereira, D., González Neila, C., del Arco, A. (2018) Salamanca, city of Stone and Heritage. Diputación de Salamanca.

- Pereira, D. (2018) Natural Stone and World Heritage: Salamanca, Spain. Taylor and Francis (ed.). See end of the report.

The contents of this report are in many parts the same as for IGCP 637, a project initiated by and run in parallel with the Heritage Stones Sub-commission and by the same

people. The S-G of the Sub-commission, Lola Pereira, is project leader of the IGCP project.

The Heritage Stones Sub-commission has proposed a session “Heritage Stones: construction and restoration materials for sustainable development” at EGU 2019. With the Sub-commission for Heritage Sites and Collections, they have proposed a session under Theme-1 "Geoscience for the Society" titled with “Natural Stones and Architectural Heritage” for the 36th IGC. The 2<sup>nd</sup> Workshop on Natural Stones will be held in Torino in 2020.

### **Heritage Sites and Collections Sub-commission**

The main events in the Sub-commission for Heritage Sites and Collections have been:

- Up-dating of the Web site (hosted at the National Museum for Natural History in Paris.
- European Geophysical Union 2018, Vienna April – Geodiversity and Geoheritage session was sponsored and coordinated by the commission. Also a splinter meeting to discuss geoheritage governance, attended by e.g. UNESCO and IUCN personnel.
- IUGS RFG in Vancouver in June 2018 where Kevin Page represented the ICG sub-commission on sites and collections with a seminar
- Meeting for the bureau for the Commission for Geoheritage in Paris 1st July.
- A reorganisation of the bureau after the resignation of the secretary general, Kevin Page in September 2018. Benjamin van Wyk de Vries (université Clermont Auvergne) agreed and was accepted as replacement in October 2018.
- Meeting in Chambéry on the national inventory of geoheritage in France took place the 15-17 October 2018.
- The Global Geoparks meeting in Madonna di Campiglio, Italy was attended by Kevin Page and Benjamin van Wyk de Vries, where these two were able to arrange the transfer of secretary general, and to meet with UNESCO Geosciences programme personnel and Global Geoparks members.

- Working group on Geoheritage Assessment: Lead by José Brilha (University of Minho, Portugal) this group has produced a document on assessment guidelines for UNESCO Global Geopark Assessment. These have been passed to the IUGS executive committee and are being introduced to UNESCO Geosciences.

- Benjamin van Wyk de Vries was appointed to the IUCN Geoheritage Specialist Group as IUGS representative. (Both Patrick DeWever and Ben are members of the IUCN World Council for Protected Areas). We are currently providing input to the IUCN five-year plan through the Specialist Group.

Publications are as follows:

1- One article submitted to Episodes on "Géologie sur le Tour de France" (De Wever P. et Oberhänsli R.: The Tour de France, the perfect geological showcase".

2 – Geological Walks 'Balades géologiques à Palaiseau' : . Driou G. & Roniou D., Edit Biotope/MNHN, 38 pages (Figure 1 top).

This is the 37th booklets published for France. 12 booklets are being finalised and, 11 others are being written. To date, 80 000 copies have been distributed.

3 - Stratotype Turonien : Amédéo F., Matignon B. & Robaszynski F. (Editors), De Wever P. (Foreword by), 414 pages, colour & b/w photos, colour & b/w illustrations and colour & b/w maps, tables; includes CD-ROM (Figure 1 bottom).

4- Stratotype Danien : Montenat C. & Merle D. (Editors), De Wever P. (Foreword by), 478 pages, 348 colour & b/w photos, colour & b/w illustrations and colour & b/w maps, 19 tables; includes CD-ROM.

5- Inventaire national du patrimoine géologique : De Wever P., Egoroff G., Cornée A., Graviou P., Avoine J. et Baillet L., 2018, Bound book in colour – 252 pages -Isbn : 978-2-7598-2294-2.

Future on:

- a. Aim to develop more working groups, such as one to deal with geoheritage and natural risk;

- b. A working group to study the idea of a Diamond Open Access Geoheritage Journal

will be set up with the aim of in 2020 starting with a fully Open Access special issue;

c. Start a Geoheritage E-mail listserv to animate the global community (the listserv has been created at University Clermont Auvergne and will be tested in 2019);

d. Work to globalize the sub commission and commission to make sure the composition fully representative and equitable;

e. Engage in Outreach at a global level. Benjamin van Wyk de Vries is preparing an event at UNESCO in Paris (15-16 April) subsidized by the IUGG 'Knowing Planet Earth', that we will support also with IUGS personnel / funds.

Benjamin van Wyk de Vries added that they just received the message that the new IGCP project Geoheritage for Resilience had been approved. The updated Terms of Reference will be finalized and sent to IUGS EC for ratification. The Commission will thus continue to consolidate the new structure and effective working procedures. Promotion of the ICG will be made at several international events such as conferences and joint meetings with associated commissions.

#### **6.g. Global Geochemical Baselines (CGGB)**

Alecos Demetriades, Treasurer of CGGB, reported that the format of the annual report had been changed and followed recommendations made by the IUGS EC last year.

Directly after the EC meeting last year and according to the mandate that the Commission must set standards for CGGB, the following work has started and part of this work will continue in 2019:

The work on a comprehensive 'International Union of Geological Sciences Manual of Standard Methods for Establishing the Global Geochemical Reference Network' started. It is anticipated that this will be a unique manual of methods used in applied geochemistry, because the authors of each chapter have considerable experience in geochemical methods from sampling, sample preparation, laboratory techniques, quality control, data management and data processing. It is anticipated that it will be completed in the first half



of 2019.

Alecos Demetriades reported the planned commitments in 2019 as follows:

Completion of the 'International Union of Geological Sciences Manual of Standard Methods for Establishing the Global Geochemical Reference Network' in collaboration with a global team of applied geochemists, soil scientists, geomorphologist, mathematician-computer programmer and GIS experts;

Completion of the 'BASGES Project Manual of Standard Geochemical Methods' in collaboration with Shenyang Geological Survey and Russian V.V. Dokuchaev Soil Science Institute;

Conversion of statistical programs from MS-DOS Fortran 77/Power Station 4 to 32- and 64-bit Windows platform, and made freely available through the Commission's website;

Preparation of conference presentations, and workshop material;

Updating the Commission's website;

Providing assistance and information to requests from different geological surveys and individuals, especially participants in workshops.

Participation in the 73rd IUGS Executive Committee meeting in Beijing;

Making short video films to show the sampling procedures, as it is impossible to train all the national sampling teams;

Participation in the International Congress of the Geological Society of Greece (22nd to 24th May 2019, Athens) with a session entitled 'Geochemical mapping for environmental and resource management' (T4.S1), and a one-day Workshop on 'Global-Scale Geochemical Mapping';

Participation in the International Symposium on Environmental Geochemistry (7th to 10th August 2019, Peking University, Beijing, China) with a session entitled 'Regional and Global Geochemistry: Opportunities and Challenges', followed by a two-day workshop on Applied Geochemistry at Shangluo Institute, Shangluo near Xi'An, Shaangxi Province, China;

Participation in the 5th YES Congress with a three-day workshop on 'Applied Geochemistry and Global Geochemical Baselines' (Freie Universität Berlin, Berlin, Germany, 9th to 13th September 2019): two-days of lectures on the 8th and 9th of September 2019, and a field training workshop on the 14th of September 2019;

Participation in the 3rd BASGES Workshop organized by the Shenyang Geological Survey in the autumn of 2019;

Organization and participation in the two-day autumn annual joint business meeting of the Commission and the EuroGeoSurveys Geochemistry Expert Group, which will be on the 26th and 27th September 2019, and hosted by the Mining and Geological Survey of Hungary, Budapest; Website hosting.

CGGB has organized and participated in a dedicated session at the 36<sup>th</sup> IGC in New Delhi entitled '4th Arthur Darnley Symposium: Challenges and opportunities of Global-scale geochemical mapping'. Election of CGGB new officers for the term 2020-2024 has already been considered and the names will be submitted by January 2020.

## **7. IUGS Task Groups, Initiatives, Joint Programs**

### **7.a. Global Geoscience Professionalism (TGGGP)**

Vitor Correia, Representative of TGGGP, reported on the major activities of TGGGP in 2018. He presented a photograph of participants of the first Solvay Conference in 1911 in Brussels, Belgium to illustrate the importance of international collaboration.

Vitor Correia introduced the purpose of TGGGP as follows: to foster dialogues and break down barriers between applied/industry practitioners and educators/researchers, ensuring excellence and best practice in the application of geoscience in the interests of the public and society; to offer tangible professional practice support across the IUGS and beyond to all parts of the geoscience community; and to promote the principles and practice of professionalism in the geological sciences.

Key activities during 2018 are comprised of the following aspects:

Task Group meetings via Go-To-Meeting (and one in-person meeting at RFG2018 Vancouver), as well as regular email communication throughout the year on a variety of topics;

Oliver Bonham (Secretary of TG-GGP)<sup>5</sup> was a member of the both the Steering Committee and the Program Committee for the IUGS-sponsored RFG2018 (Resources for Future Generations) conference in Vancouver, in June of 2018;

Ruth Allington (Chairperson of TG-GGP)<sup>6</sup> gave an invited plenary speech at the 5th Slovenian Geological Congress on 4th October 2018. This was entitled “Breaching the boundaries between Science and Profession - an imperative for geoscience in the service of society” and was an abridged and updated version of the invited plenary lecture first presented at 35IGC in Cape Town in 2016;

Members of the Task Group made presentations in and/or convened sessions focusing on geoscience professionalism at RFG2018 (Vancouver, June 2018);

In addition to RFG2018, a range of other presentations were also made during the year by Task Group members on professionalism in geosciences;

Isabel Fernandez (Treasurer of TG-GGP)<sup>7</sup> was appointed by the Task Group as Communications Officer in November 2018, tasked with ensuring dissemination on social media and via IUGS channels and member organisations of news of the Task Group’s activities and publication of articles and papers on professionalism in the geosciences;

Although minor updates and adjustments were made to the Task Group website at [www.tg-ggp.org](http://www.tg-ggp.org), the planned re-design and launch of a revamped website on a new platform was put on hold during the year given reduced funding available;

Members of the Task Group were, as usual, involved in bringing content to sessions of EGU 2018 in Vienna in April organised by the IAPG, and close links between the Task Group and IAPG have been maintained through the year;

TGGGP was formally invited to participate with the UNECE “Competent Person Task Force” to identify common requirements and standards for professional geoscientists and

thereby contribute to the development of a competency framework for professionals using the United Nations Framework Classification for estimation of a wide range of natural resource quantities;

Task Group member The European Federation of Geologists (EFG) completed two large resources policy related projects in 2018 that are relevant to professionalism in geoscience in Europe, with connections to the broader international arena;

Representing Task Group member American Institute of Professional Geologists ("AIPG"), Barbara Murphy has coordinated the compilation of a database of Task Group meetings and conference calls and members' publications, presentations, and participation in conferences and working groups relevant to the aims of the Task Group – the most recent version of this is in the Task Group Dropbox folder;

An online survey of Task Group member entities was completed that has assembled baseline information on how each entity operates as a professional body;

A sub-committee, led by Aaron Johnson of AIPG, was formed in 2017 and has made some progress in 2018 assembling information on the different CPD (Continuing Professional Development) programmes in use in geoscience professional bodies around the world.

The strategic plan for TGGGP is presented in three sections following this brief introduction: the goals and aims of TGGGP; specific actions planned to meet the strategic goals and aims are summarized in each of the years of the plan period; and the plan is presented in full in tabular format. Two overarching Strategic Goals have been identified for TG-GGP:

Goal I: Promote the principles and practice of professionalism in the geological sciences;

Goal II: Offer tangible professional practice support across the IUGS and beyond to all parts of the geoscience community.

Vitor Correia outlined 8 deliverables for the year 2019 as follows: approval of the Communication Plan 2019-2021; new enhanced website functionalities; engagement with

the IUGS EC; networking within the IUGS family; expanding the membership; support to the UNECE EGRM; evaluation of mobility of the Geosciences workforce; and benchmarking international CPD and mentoring data.

### **7.b. GeoHazards (TGG)**

Yasukuni Okubo, TGG Chair, reported on the activities of the Task Group in 2018. TGG aims to establish an information-sharing platform on occurrences of global geohazards and to publish survey guidelines of geohazards.

Yasukuni Okubo reviewed several achievements in 2018 as follows:

Workshop of Korean Active Faults R&D Project - The Korean government launched a new project to compile the national active fault map. Under the project, the workshop of Korean Active Faults R&D Project was held during March 15th - 18th 2018 in Gyeongju. The workshop was aimed at collaboration with Japan, Taiwan and Vietnam to share their experiences;

Geohazards session at RFG - TGG organized the session entitled “Convergent Margin Geohazards and Geodisasters: Present Understanding, Mitigation, and Long and Short Term Preparedness” on 20th June, 2018 at RFG2018 held in Vancouver. Nine papers from Japan, Thailand, India, Canada and USA were presented;

Taiwan-Korea-Japan Joint Symposium - The Taiwan-Korea-Japan Joint Symposium was held during 3-4 October 2018. A preliminary field excursion was conducted on the morning of 3rd October at the 9.21 Earthquake Museum, Taichung City, Taiwan. The number of participants was about 80 from three countries and USA. TGG announced the call for paper for special volume on geological society of London Special Publication;

Seminar at the 54th CCOP Annual Session - TGG organized the seminar on geohazards 30th October 2018 at the 54th CCOP Annual Session in Busan, Korea.

IUGS-SCJ-IRIDeS Geohazard Symposium in Sendai - TGG supported organization of the IUGS-SCJ-IRIDeS Geohazard Symposium in Sendai and field excursion around

Sendai Plains 13-14 Nov., 2018.;

Workshop entitled “Research works on geohazards and challenges toward international standardization of survey technologies” has been proposed for the 36<sup>th</sup> IGC.

The work plan for the year of 2019 includes geohazard survey in Vietnam, one session at the International Conference on Silk-roads Disaster (SiDRR) in Beijing during 11-12 May, one session at AOGS 2019 in Singapore from 28 July to 2 August, and discussion of an international meeting to be held in 2020 with Institute for Volcanology and Risk Assessment (IVAR).

### **7.C. Forensic Geology (IFG)**

Laurance Donnelly, IFG Chair, reported on an overview of the IFG events, activities and progress and financial summary throughout 2018. Forensic geology is of course the application of geology to law enforcement. Geologists can assist in law enforcement in three aspects: examine crime scenes, provide geological trace evidence to eliminate or implicate suspects, and search the ground related to homicide, organized crime and terrorism. IFG had 47 registered events throughout 2018, comprised of 39 knowledge exchange and capacity-building events, 5 outreach events and 3 training events. IFG signed two new committee members. Dr Biplob Chatterjee was appointed to the IUGS-IFG Committee as the Officer for India.

Laurance Donnelly explained that IFG is not only chaired by geologists, but also by police forces, special agency, intelligent services, geologist academia and industry. This year, IFG added three committee members from Australian Intelligent Services working close with the Australian Federal Police, Geovale Services in India and Alfred Knight International in the UK.

In Japan IFG has held a number of events with Geological Society of Japan. And in

the U.K., IFG has collaborated with the British government on counter-terrorism. Laurance Donnelly introduced the IFG Officer in China, Dr. Guo Hongling from the Division of Trace Evidence Analysis of Ministry of Public Security. IFG intends to hold advanced training in China in the year or years ahead. There is lots of work to do for China as most of the work in China is fundamentally in geological trace evidence. IFG started close collaboration in Singapore, the Pacific and the Southeast Asia.

Laurance Donnelly pointed out the events related to India. From 11-14 November 2018, IUGS-IFG held for the first time in India, a series of planning meeting that were specifically aimed at establishing forensic geology in India. This included collaboration with the Ministry of Home Affairs, IGS Organizing Committee, Geological Survey of India, Geovale Ltd, Amity University & Aspire Forensics, Central Forensic Laboratories, National Institute of Criminology and Forensic Science and Secretary General of India's organizing committee. IFG has met with the LOC of the 36<sup>th</sup> IGC in India and has planned to hold a three-day event on forensic geology in March 2020.

IFG investigated geological methods and techniques to manage and mitigate risks associated with fraud and theft in the minerals and mining industry. IFG has maintained close collaboration with governments including the Italian House of Representatives, the UK Home Office and Defence Science and Technology Laboratory (Dstl). IFG has had collaboration with the FBI and carried out transfer of knowledge on ground searches for burials.

The objectives for 2019 and beyond are to implement recommendations for the review conducted by IUGS ARC, and including the following:

1. Publications

Publication of, 'A Guide to Forensic Geology'; Publication of, 'Forensic Soil Science and Geology'; Publication of, 'Forensic Geology'; Publication of, 'Geoethics in Forensic Geology'.

2. Outreach, Knowledge Exchange, Capacity Building & Training

Initiate forensic geology in India; Organize a Session on Forensic Geology, at the 36th International Geological Congress, in 2020, Delhi, India, and the provision of forensic geology training for forensic scientists, police and law enforcement; Co-organize the 4th Ibero-American Congress on Forensic Geology, in Puerto Vallarta, Jalisco, Mexico; Progress the potential for the provision of training on ground searches for burials associated with homicide, counter terrorism and organised crime in USA (confidential); Support and endorse session on Soil Forensics, at Australia and New Zealand Forensic Soil Society (ANZFSS), 22-25 September, Sydney; Support and endorse memorial event in honor of Dr Raymond Murray, Phoenix, Arizona (date to be confirmed); Provision of forensic geology support to CAST.

### 3. Committee & Governance

Upgrade of the IUGS-IFG web site; Assign committee member for south-east Asia; Issue of IUGS-IFG Newsletter in 2019; Attract audiences in harder to reach communities such as, developing nations and young people; Enhance accessibility to IUGS-IFG materials through translation and distribution internationally and problems via the new IUGS-IFG web site; Engagement with forensic science regulators to align forensic geology with forensic science and following the publication of the UK House of Lords, Inquiry on Forensic Science; Assist police and law enforcement and develop guidance and best practice in forensic geology, globally.

## 8. Joint Programs

### 8.a. OneGeology

Matthew Harrison, Director of the OneGeology Secretariat, pointed out that OneGeology, a successful model for global collaboration on interoperable subsurface data, celebrated its 10-year anniversary in 2018. Currently, OneGeology has 189 member organizations from 121 countries which have signed data-sharing agreements, 13 principal members including IUGS and some geological surveys, and more than 70 members with serving data.



MH reviewed the main progresses of OneGeology in 2018 as follows: held a session during RFG 2018 a number of workshops and a joint meeting with CGI in advance; presentations at CCOP and AGU; New Open Source Portal with GeoSciML and ERML support plus usage statistics; initiation of LOOP 3D Implicit modelling engine and workflow project; preparatory discussions about cooperation with Macrostrat and GBDB (DDE); refreshed Governance model from regions to direct representation.

At the end, MH introduced the 2019 workplan of OneGeology, including the 1<sup>st</sup> meeting of the Principal Directors on 21-22 Feb., the EGU Global Infrastructure Meeting in Vietnam in April, presentations at EGU, a meeting with the Organization of African Geological Surveys, renewing the CGMW MoU, and cooperation with Deep-time Digital Earth, etc..

## **8.b. UNESCO - IGCP**

Ozlem Adiyaman Lopes, representative of the Earth Sciences and Geo-hazards Risk Reduction Section, Natural Science, UNESCO, reported on the activities of the IGCP secretariat in 2018.

IGGP explores and celebrates the links between Earth sciences and Earth heritage for sustainable development through its two pillars. IGCP, for almost 50 years, supports geoscientists from developing world to study the Earth's geological processes of societal relevance. The 2018 UNESCO IGCP Secretariat activities are as follows: oversight of IGCP projects; New Project partnership agreement with the Jeju Province Development Corporation (JPDC) of the Republic of Korea; Open call for three new IGCP Council members and ten scientific board members; Dissemination of IGCP projects achievements; Collaboration with IGCP National Committees; IGCP 2018 New Project Proposal Call & preparation of the 4th IGCP Council meeting.

OL then introduced the IGCP evaluation and management process led by UNESCO. In 2018, scientists from 105 countries participated in the delivery of these 27 active IGCP projects. 67 Meeting in 33 Countries, 26 Meetings in 16 Countries were held with IGCP Funding under the support of IUGS. In 2018, Latin American and Caribbean participation and Arab State participation both increased, however African countries' participation decreased from 30 member states to 28. Of all the project participants, 56% are young scientists (<35 years old) and 65% of all participating scientists come from developing nations. Additionally, the 2018 annual reports indicate that 27% of the 160 project leaders are women. Women also make up 32% of the 2924 participants from developing countries. IGCP bureau decides the distribution of the funds depending on availability of the funds. Jeju Province Development Corporation (JPDC) will contribute 100,000 USD to support IGCP projects and UNESCO Global Geoparks between 2018 and 2022. The IGCP Secretariat had received 106 applications from 36 member states, of which 62 applications from 33 member states were qualified to be IGCP council members for the three currently open positions, including 20 applications from qualified female candidates (from 14 member states). In 2019, IGCP will aim to increase the outreach of the IGCP National Committees to all UNESCO member states and improve the collaboration between the IGCP Secretariat, UNESCO National Commissions and IGCP National Committees.

OL informed that the deadline for project proposals was 15<sup>th</sup> October. In total 108 project leaders from 49 member states jointly submitted 21 new IGCP project proposals, among which 8 new projects (IGCP 682, 675, 679, 681, 689, 684, 685, 692) will integrate to the IGCP in 2019. In 2019, 25 projects will be funded with 1 provisional project for one year with no funding and 4 extended projects.

### **8.c. UNESCO - Geoparks Network**

As representative of IUGS Secretary General in the IGCP, the Global Geopark

Council and as liaison to IUCN, RO organized 2018 desktop evaluations of the geologic part of the geopark applications. For this task 123 reviewers have been asked to support IUGS efforts in supporting UNESCO and the IGGP program. A total of 23 applications or extensions were submitted and finally 9 applications were chosen for acceptance, other deferred or rejected during the UGGp council meeting in Madonna di Campiglio, Italy. The final ratification of the Council decisions remains to the UNESCO Council and results will be published on the UNESCO website ([www.unesco.org](http://www.unesco.org)).

A general problem of this year's desktop evaluation was poor writing of the applications. During the council meeting this was recognized and it was decided that on the one hand the geopark applicants should get more specific information along with the application information and the relevant templates. On the other hand the IUGS commission on geoheritage, ICG, and especially the members of ProGeo are working on guidelines for the IUGS reviewers that shall allow them to get an "unite de doctrine" with respect to international value of a site and other not scientific aspects of the application.

RO expressed his thanks to ProGeo and the colleagues from ICG for these efforts. As IUGS sets standards for stratigraphy and other topics, IUGS strives to come to terms with geoheritage. Once guidelines are proposed to IUGS EC for approval via the ICG and are accepted, they will be shared with the future reviewers.

#### **8.d. Proposal on Task Group on Karst**

Prof. Cao Jianhua, representative of the UNESCO International Research Center on Karst, presented a proposal for an IUGS Task Group on Karst aimed at using Earth system science to understand and study the karst system, solving problems of resources and the environment, and advancing socio-economic development in karst areas. CJ

reviewed the history of IRCK and its objectives, missions, implementation scheme and four-year work plan.

#### **8.e. International Lithosphere Programme (ILP)**

Hans Thybo, President of International Lithosphere Programme, reported that ILP was initiated in 1980 to promote interdisciplinary research on the lithosphere at the interface between IUGS and IUGG through multidisciplinary research projects. ILP has carried out 70 programs since its initiation, involving 100-1000 scientists all over the world. HT explained that ILP is important because human beings depend on the lithosphere for minerals and energy resources. The research themes are classified into four aspects: geosciences of global change, contemporary dynamics and deep processes, continental lithosphere and oceanic lithosphere. The work is carried out through task forces and coordination committees with 5-year duration. New programs are approved by the ILP Bureau. ILP is financed through annual contributions from IUGG & IUGS and national contributions from member countries. ILP has 8 task forces and three new task forces have been proposed.

The major ILP achievement are as follows: Global Seismic Hazard Assessment Map, World Stress Map, Global Strain Rate Map, Global Impact Studies, international continental drilling program ICDP and global geosciences transects and programmes. Recent activities of task forces and regional committees include organization of training courses for young researchers, and workshops and excursions for early career scientists.

#### **8.f. Joint Marine Initiative with IUGG**

Kristine Asch, elaborated on the reason why the IUGS Initiative “the ocean realm” is important. The initiative aims to foster the creation, use and optimization of IUGS standards (classifications, technical) in the marine domain for cross-boundary

understanding, foster cross-disciplinary work across IUGS themes, foster data accessibility and investigate and promote the use of marine data for society. Potential participants are as follows: International Lithosphere Program (ILP), International Union of Geodesy and Geophysics (IUGG), International Ocean Discovery Program (IODP), Scientific Intergovernmental Oceanographic Commission (IOC), Scientific Programme on Oceanic Research (SCOR), Japan Geoscience Union (JPGU), Institute of Oceanography, Southampton, EPOS, North Atlantic Geological Surveys (NAG), NOAH - North Sea Observation and Assessment of Habitats, IGCP and EMODnet geology.

KA reported on the achievements since last EC meeting including a successful international IUGS-EMODnet RFG-session “From Continental Shelf to Slope – Mapping the Oceanic Realm” held during RFG2018, a special issue suggested by Geological Society of London, a session at 36<sup>th</sup> IGC, and an agreement with IUGG which will contribute to the special issue and take part in the IGC session.

KA described the blueprint of the initiative as follows: to find a small group within IUGS fostering the initiative; to publish a special issue of Geological Society of London volume on Mapping the Ocean realm, with contributions from IUGS, EMODnet and IUGG members; to hold a joint session at the upcoming 36<sup>th</sup> IGC and future IUGS and IUGG conferences; to initiate sessions at EGU and AGU.

## **9. Big Science Program**

CQ introduced the Deep-Time Digital Earth (DDE) program, which aims to establish linked earth big-data hubs that are interoperable with other databases including published data in the public domain and unpublished data in institutions and centres of expertise, as well described in the President's report. CQ elaborated on how DDE becomes the IUGS recognized Big Science Program and the establishment of the Center of Excellence. The

proposal was first presented at the 72<sup>nd</sup> IUGS EC Meeting, initiated in May and brought to the Bureau Meeting in Vancouver in June 2018. Preparation of the DDE full proposal and consultations started in October 2018, and CQ made a presentation on the proposal at the Bureau Meeting in Sendai in November. Motions were sent to EC members on 25<sup>th</sup> November and approved on 22<sup>nd</sup> December followed by preparations for the 73rd IUGS EC Meeting and DDE Forum.

Deep Time Digital Earth is an international consortium aiming to develop a platform of connected geoscience informatics efforts with FAIR data (Findable, Accessible, Interoperable, and Re-usable) with adequate quality control linking various Earth's spheres (hydrosphere, geosphere, atmosphere, biosphere) in geological history.

The current sponsors of the proposal include the following IUGS constituent groups (affiliated international organizations and national members). These members will serve as founding members to support this proposal. This type of initiative could also provide an opportunity for partnership with regional and international associations of universities, publishers and datacentres.

The management bodies of the program include hierarchical structures including Governing Council (GC), Executive Committee (EC), and Working Groups (WG). The first Chair of GC is recommended to be Professor Mike Stephenson, Director of Science and Technology at the British Geological Survey. The first Chair and co-chair of EC are recommended to be Prof. Roland Oberhänsli, Past President of IUGS and Prof. Chengshan Wang, Vice president of IAS. The members of the EC will be nominated by founding groups and appointed by the DDE Governing Council (GC).

The DDE shall function with working groups who provide the EC with the operational capabilities to manage the program and to support individual DDE projects as determined by DDE GC. The first International Research Centre of Excellence for Deep Time Digital Earth (CDDE) in China will act as the Secretariat of the DDE on behalf the members. The

secretariat will supply clerical and secretarial support to all partners. Selection of location of Secretariat Office will be determined by the DDE GC every five years.

RO made additional remarks on the consensus reached through three-night roundtable meetings after the opening ceremony and signing of agreements with all the founding members on 26<sup>th</sup> February. The DDE Board is an independent board chaired by IUGS President or representative consisting of 3-4 members from academia, industry and large scientific NGOs, which will be sought by an international open call. The Science Advisory Board consists of 15 renowned scientists called and appointed by the Governing Board that oversees scientific projects, evaluates and reviews them before they are accepted as DDE Projects.

## **10. ARC Reports**

### **10.a. Global Geoscience Professionalism (TGGGP)**

Edmund Nickless, Chair of the ad hoc review committee on TGGGP, reported that the Committee was established by the IUGS EC on 29th May, 2018 to analyze performance since TGGGP was established in 2012, assess the alignment of the work of TGGGP with the objectives of IUGS, and to identify ways to increase the impact and significance of the task group. Members of the committee included EN himself, Amel Barich (IUGS Councilor), Christopher Keane and Helen Paine. They met in London on 13<sup>th</sup> September 2018 with Ruth Allington, Chair of TGGGP, and Isabel Fernandez (Treasurer of TGGGP) to consider background papers submitted by TGGGP prior to the meeting. On 14<sup>th</sup> September, they met in closed session to draft the report, which has been agreed by the committee and circulated to the task group.

EN reviewed the origins of TGGGP since its initiation in 2012 and its main achievements including a series of activities to promote and extend awareness of the concept of professionalism. The Ad hoc Review Committee reached a consensus that a

great deal had been achieved, but the current work plan is opportunistic and unfocused, with no clear project completion dates. If the purpose of establishing the task group was to scope what role professionalism and ethical behavior should have within the work of IUGS, then while much has been achieved, substantial amounts of work are still in process. The task group needs more time to bring to conclusion a number of projects, which are close to completion.

The committee recommended that the life of TGGGP be extended by a further 3 years followed by another review and that extension be subject to prior submission of a strategic plan focused on 3 or 4 well-constrained projects. Future requests for funding are linked to delivery of the 3-year strategy. The EC should more actively oversee the work of the Task Group by providing feedback to submitted Annual reports. The committee recommended that the subject should become an intrinsic part of the Core mission of IUGS and be held in as high regard as other areas of Union activity, such as the promotion of standards. To that end, the EC should put in place procedures to actively promote professionalism and ethical behavior to all its adhering members and affiliated bodies, declare that it expects its adhering members and affiliated bodies in turn to support professionalism and ethical behavior among their memberships, and make a commitment to promote professionalism and ethical behavior as a condition of affiliation.

In total, if TGGGP is to continue, it should continue to expand its membership to ensure its work is inclusive and respectful of the diversity of geoscientists, focus on delivering a framework for the core universal definition and components of professional and ethical practice in the geosciences, select future activities for both impact and having regard to the available human capital resources needed to be successful, and give early thought to the evolution of the current leadership team by the development of a succession plan.



#### **10.b. Isotope Geology and Geochronology (TGIG)**

RO made a brief report on the ARC review of TGIG. TGIG was approached early in 2018 to provide an ARC report and to reflect on setting up a venue for the ARC interviews. They finally provided a short document referring to the terms of reference for the ARC which is extremely concise and short. Having studied this document and discussed amongst the IUGS ARC responsible representatives, the committee decided that RO should recontact the chair of the TGIG Igor Villa and to discuss the matter. The outcome of this discussion was: the TGIG is still highly motivated and would like to continue its joint work with UPAC without need of financial support from IUGS; TGIG would be proud to continue its work under the umbrella of IUGS. Igor Villa apologized for the slow progress of work, which lays in the methodologies and the fact that standardising isotopic materials is slow. However the three publications produced by TGIG are of utmost importance to the world geo-community.

After this commitment of TGIG, the committee discussed the need to set up an ARC review committee and to spend time and money in travel and meeting for a subject that seems absolutely obvious in its success. We then decided that Ben Mapani and RO should individually talk to experts asking for their opinion as to continue such a task group. The feedback was mostly positive and thus the committee proposed that IUGS should further keep TGIG as a task group.

#### **10.c. ARC reviews for 2019**

SF informed that there were two overdue ad hoc reviews including ARC reviews on International Commission on Geoheritage (ICG) and Commission on Global Geochemical Baselines (CGGB). Details will be discussed at the closed session of the 73<sup>rd</sup> IUGS EC Meeting on 1-2 March, 2018.

## **11. Open Discussion: IUGS and its Constituent Groups**

SF asked leaders of the IUGS constituent groups to point out problems or give their suggestions with regard to interactions between the IUGS constituent groups and EC. Marianne Klemun, General Secretary of INHIGEO, suggested that achievements and products of INHIGEO should be advertised by IUGS in future. Chris King asked how they would be responded by the EC with regard to the strategy. Alecos Demetriades informed that CGGB had maintained close relationship with the EC.

Dolores Pereira, representative of the International Commission on Geo-heritage (ICG), pointed out that it was too late to receive the allocation until August every year. Dolores Pereira asked what they should do if there were difficult problems that cannot be resolved within the group. CQ answered if they tried hard and the problem was still unsolved, they could bring it to the EC for consultations.

**ACTION:** EC members to respond to the Constituent Groups about their strategy.

## **12. International Geological Congress (IGC)**

### **12.a. 36th IGC in 2020 (New Delhi)**

Due to visa delay, representatives of the 36<sup>th</sup> IGC were unable to participate in the 73<sup>rd</sup> IUGS EC Meeting in Beijing. Tanvi Arora, Secretary General of YES, gave an overview of progress on behalf of the LOC.

### **12.b. 37th IGC in 2024 (Busan)**

Daekyo Cheong, Advisor of the Preparatory Committee for the 37<sup>th</sup> IGC, reported that a Kick-off Meeting for the 37<sup>th</sup> IGC was held in February 2018 and the 2<sup>nd</sup> Meeting was held in June 2018. DC then introduced the structure of the Preparatory Committee including

two co-chairmen, two joint secretary generals, two executive advisers and ten directors in charge of global cooperation, field trip, public relations, academic program, special session, public support, non-academic event, event venue and project management.

DC informed that they are in the process of forming an Overseas Advisory Committee from former IUGS executives and IUGS members with IGC experience. The Preparatory Committee will be in operation until the 36<sup>th</sup> IGC in 2020. They plan to launch the Organizing Committee from 2020. The Overseas Advisory Committee will continue to serve until the year 2024 mainly through on-line consultations. Pre-publicity program includes the Next Generation Geological Scientist Conference with 2018 Annual Meeting of GSK. Promotional activities for the 37<sup>th</sup> IGC are carried out during each EGU General Assembly and will be held at the 36<sup>th</sup> IGC geo-expo. The holding of related events (IAH 2018, CCOP 2018 and AOGS 2020) in South Korea will be helpful for the successful operation of the 37<sup>th</sup> IGC and attracting world-wide geologists to Busan.

The Preparatory Committee will endeavor to make the North Korean territory open to the world for co-hosting the South-North field trip. The field excursions will also include several other Asian regions such as Japan, China, Mongolia and Taiwan.

#### **12.c. Call for bids for 38th IGC in 2028**

#### **12.d. IUGS activities at the IGC**

SF informed that the call for bids for the 38<sup>th</sup> IGC would be sent out soon. He also asked all IUGS constituent groups, adhering members and affiliated organizations to contact him for arranging meetings during the 36<sup>th</sup> IGC. SF will have direct contact with those scheduling events at the 36<sup>th</sup> IGDC. ~~before direct request from the 36<sup>th</sup> IGC LOC.~~

**ACTION:** SF to send out the call for bids for the 38<sup>th</sup> IGC.

**ACTION:** SF to ask the 36<sup>th</sup> IGC LOC to reserve venues for the IUGS constituent groups,

adhering members and affiliated organizations for business meetings.

### **13. Reports from IUGS Affiliated Organizations**

#### **13.a. International Association of Sedimentologists (IAS)**

Adrian Immenhauser, Past President of the International Association of Sedimentologists, reported that IAS was founded at the International Geological Congress in Algiers on 11 September 1952, to promote the study of Sedimentology by publication, discussion and comparison of research results, encouraging the interchange of research, particularly where international cooperation is desirable, and promoting integration with other disciplines.

IAS is a truly international association, which has 2000 – 2500 members from about 100 countries and National Correspondents in more than 50 countries. On 14 November 2016, IAS obtained a new legal status as an International Non-Profit Organization, under Belgian law.

IAS has privileged partnerships with: Society for Sedimentary Geology (SEPM), European Geosciences Union (EGU), American Geophysical Union (AGU), and the Geological Society of Africa (GSAf) .

IAS publications include volumes of the journals Sedimentology, The Depositional Record, Basin Research, and Petroleum Geology, newsletters, Special Publications, guidebooks for the International Sedimentological Congresses (every 4th year) and Sedimentological Meetings (annually). IAS publishes the journal Basin Research in collaboration with the European Association of Geoscientists and Engineers (EAGE).

#### **13.b. International Association of Mathematical Geosciences**

Jennifer McKinley, President of IAMG, made a brief report on the main activities in 2018. Founded in 1968 in Prague, the mission of the International Association for

Mathematical Geosciences (IAMG) is to promote worldwide the advancement of mathematics, statistics and informatics in the geosciences. IAMG aims to further method development and disseminate results of new research in its fields of interest with outreach within the geoscience, mathematics and geoinformatics communities.

JM outlined the structure and organization of IAMG

IAMG is proud of its journals including *Mathematical Geosciences* (IF=1.573), *Computer & Geosciences* (IF=2.567) and *Natural Resources Research* (IF=3.094). The Golden Anniversary book: "Handbook of Mathematical Geosciences: Fifty Years of IAMG" can be downloaded for free.

The chief accomplishments in 2018 including: IAMG celebrated its 50 years anniversary: IAMG2018, which was held 2-8 September 2018 in Olomouc, Czech Republic and the 50th anniversary of IAMG's founding celebration event in Praha (Prague); IAMG Distinguished Lecturers presented lectures at a number of international locations, including keynote at geoENV2018 in Belfast, UK.

In 2019, the 20th IAMG conference (IAMG2019) will be held at State College, Pennsylvania, U.S.A. August 10-16, 2019. IAMG is actively involved in the 36th IGC (2020), New Delhi, India. IAMG will convene a session in the Silk Roads Disaster Risks Reduction and Sustainable Development (SiDRR) conference in Beijing, May 2019.

IAMG is a founding member of the IUGS Big Science Program Deep Time Digital Earth (DDE) to be launched at the 36th International Geological Congress in New Delhi. JM continues to act as Communications Officer for the IUGS Initiative on Forensic Geosciences (IUGS-IFG).

In future, IAMG will remain committed to supporting early career scientist and to encouraging women in science. For the first time in 2019, the Vistelius Award will be awarded to both a female and a male recipient. A Founders Scholarship is being set up for

early career researchers and New Student Chapters are under discussion.

### **13.c. Commission on Geological Map of the World**

Manuel Pubellier, CGMW President, briefed on the 2018 activities of CGMW. The Commission for the Geological Map of the World (CGMW) is the oldest international Map Maker. It is responsible for coordinating, designing and publishing solid Earth Sciences maps of continents, oceans, major regions of the Earth and for developing cartography in the solid Earth Sciences. CGMW is organized following a scheme of thematic, continental & oceanic Sub commissions.

MP emphasized that CGMW had been actively involved in several scientific projects including DDE, GEOSEA and IGCP 667, etc. 4 maps and 3 booklets have been completed in 2018. After the General Assembly 2018, CGMW has taken actions to cut expenses, invest in the geological globe and outsource the sales. *The Tectonic Map of Arctic* has been completed and in press, and will be published for EGU in April 2019. The Geological Globe of the World on a 12-inch diameter plastic sphere was launched in June 2018.

MP added that CGMW intended to accomplish the 1:5M seamless Geological Map of the World in the coming 3 or 4 years. The Structural Map of the Indian Ocean will be distributed for free during the 36<sup>th</sup> IGC in New Delhi.

### **13.d. International Association for Promoting Geoethics**

Giuseppe Di Capua (GDC), IAPG Treasurer, reported that IAPG, founded in 2012 as a scientific non-governmental and non-political organization, offers a multidisciplinary platform for widening the discussion and creating awareness about values and problems of ethics applied to the geosciences. IAPG promotes geoethics through the international cooperation with associations, organizations and institutes. IAPG is affiliated to 7

international organizations and has signed 17 agreements for cooperation with other organizations.

GDC informed that IAPG became an official partner of the AGU Ethics and Equity Center (11 December, 2018). IAPG cooperated in the coordination activities of the European Project GOAL “Geoethics Outcomes and Awareness Learning”. IAPG is member of the International Advisory Board of the H2020 European Project INTERMIN (International Network of Raw Materials Training Centers). IAPG cooperates in the activities on geoethics into the H2020 European Project ENVRIplus “Common Operations of Environmental Research Infrastructures”. GDC has underlined that IAPG doesn’t receive money from these projects.

IAPG published the 2<sup>nd</sup> Special Issue on Geoethics in *Annals of Geophysics* and the issue entitled *Spreading Geoethics through the languages of the world*. The Cape Town Statement on Geoethics is available in 35 languages and currently supported by 21 geoscience organizations, among them the IUGS.

IAPG held sessions, workshops, and round tables in several important conferences in 2018, including the EGU General Assembly 2018, RFG 2018, Congress “Earth Sciences for Society” in Morocco, the fourth edition of MinerLima 2018 in Peru, the first Nigeria Geoethics Conference 2018, and the International Symposium on the Paleontology of Peru.

GDC introduced that Chris King, present at the 73rd IUGS EC meeting as the Chair of COGE, was bestowed with the Geoethics Medal 2018 for his excellent example of a geologist who feels and practice his geological activity as a geoethical duty towards society.

With regard to plans for 2019, IAPG will hold a session on “Geoethics: ethical, social and cultural implications of geoscience knowledge, education, communication, research and practice” with AGI and EFG during the EGU General Assembly in April 2019. IAPG and IAH will jointly hold an International Congress on Geoethics & Groundwater Management: Theory and Practice for a Sustainable Development in May 2020. IAPG also has proposed a symposium on Geoethics: Ethical, Social and Cultural Aspects in Geosciences during the 36th IGC in March 2020. The symposium was included in the 2<sup>nd</sup>

IGC Circular and will be structured in several sessions on different topics. IAPG will publish several volumes, including Exploring Geoethics (Palgrave Macmillan), Geoethics: Status and Future Perspectives (Geological Society of London). Moreover a new series by Springer Nature will be launched officially with the title “SpringerBriefs in Geoethics”. A joint task group by IAPG and the IUGS-Initiative on Forensic Geology is working to draft a White Paper on Geoethics in Forensic Geology. The nominations of the 2<sup>nd</sup> Geoethics Medal should be submitted by 30 June 2019. The 3<sup>rd</sup> International Geoethics Day will be celebrated on 17<sup>th</sup> October 2019 and the 5<sup>th</sup> MinerLima will be held in November 2019. An international survey on geoethics will be carried out to investigate geoscientists’ perception on ethical and social implications in geosciences and get feedbacks on which are the most important ethical and societal topics in geosciences.

### **13.e. Young Earth Scientists Network (YES)**

Tanvi Arora, Secretary General of Young Earth Scientists (YES), gave a brief introduction of YES and reported on the major achievements in 2018 and working plan for 2019.

YES organized the 4th training course on applied geochemists under the support of IUGS-CGGB where more than 20 guests from 15 countries participated; With Earth Sciences Matters, YES organized the Early Career workshop and GeoQuiz and YES sponsored the lunch for all young guests which allows young people to have the chance to communicate with senior scientists and researchers in mine industry; YES together with IUGS-CGI supported more young students to join RFG 2018 from lowest developing countries and gave full support for the winner of YES Network-CGI Competition; IGGP, YES and YES South American Chapter jointly contributed to one session “Innovation Across the Maritime Silk Road, Dialog on implementing of SDGs between Latin American and China” in the 2nd CiLAC; YES Joined the 2nd GSG International Workshop on Geoheritage held in Germany; YES was invited to give a presentation at the 71th CCOP Steering Committee Meeting as an observer and signed MoU with CCOP for future



collaboration to promote development of the young and early career earth scientists in Asian region.

### **13.f. International Association of Geomorphologists (IAG)**

Mihai Micu, Secretary General of IAG, reported that IAG was founded in 1989 to promote and develop collaboration in geomorphology between nations. IAG consists of 41 national members by 2019. IAG is served, by an Executive Committee formed of elected and co-opted members. Since 2002 IAG has supported 200 Young Geomorphologists from more than 50 countries. Grants (most of them devoted to scientists from less favored countries) have been offered to support their participation in IAG conferences/ workshops/ symposia/ courses, events held under the auspices of IAG, and joint initiatives with other associations/institutions.

MM introduced 13 members of the current Executive Committee (2017-2021) of IAG. IAG has maintained institutional and scientific relationship with IUGS, IGU, EGU, IPA, INQUA AND AOGS. The priorities for 2017-2021 are as follows: to establish new membership, especially from less-favoured countries, to use social media to spread information about IAG initiatives and events and enhance International bodies interactions; to strengthen the successful activity of IAG WGs and promoting new WGs on topical geomorphological issues; to rediscover the IAG roots and make them known to the present IAG community, especially to Young Geomorphologists; to foster interaction between Young Geomorphologists' national groups and promote networking among them.

### **13.g. European Federation of Geologists (EFG)**

Vitor Correia, President of EFG, reported that EFG was an NGO with headquarters in

Brussels representing geoscientists all across Europe with national professional associations as its members. Then VC briefed on the purpose, mission, vision and values of EFG. EFG has 26 national professional associations representing over 45000 individual members across Europe. EFG maintains close links with associations from overseas including AIG (Australia), CCPG (Canada), GSSA (South Africa) and AIPG (USA).

VC reviewed the major accomplishments of 2018 as follows: Epithermal Gold Deposits of Western Anatolia, Turkey, in May; active involvement in the Resources for Future Generations Conference, Vancouver, Canada in June; Dinner debate “Horizon Geoscience – Overcoming societal challenges, creating change”, Brussels, Belgium in September; active involvement in the EU Raw Materials Week and co-organisation of an UNFC workshop, Brussels, Belgium in November. In 2018, EFG has been involved in 11 European projects within the Horizon 2020 program, H2020. Accessible communication of geosciences and outreach of EFG includes website, European Geologist Journal, GeoNews, EFGGeoWeek, photo contest “legends of geosciences”, Organization of EuroWorkshops and instant social media communication.

VC emphasized the close relationship between EFG and IUGS manifested in two aspects: EFG is the founding organization of the IUGS Task Group on Global Geoscience Professionalism (TGGGP): developing a permanent link between geosciences and their professional application. Moreover, EFG has actively involved in the RFG2018 as convener of two sessions and panel discussion on professional registration.

### **13.h. Earth Science Matters**

Eduardo de Mulder, Board Chair of ESM, made a brief report. ESM is an offspring of the International Year of Planet Earth (2007-2009) and aims to communicate Earth science information to a wider audience by promoting smart, Earth-science based

solutions to current challenges and to assist Earth science organisations in their outreach activities. Therefore, the Earth Science Matters Foundation aims to share its expertise in this field with IUGS and to cooperate with the Union and its Affiliated Organizations in current and new outreach initiatives to the benefit of both organisations. A particular focus is to bridge the generation gap by transferring knowledge between senior experts and young professionals.

EM introduced the ESM Board members and current and new ESM projects including Hackathon- cross generation collaboration, Geological History Transformed to life through augmented reality, and Deep Digital Earth involvement in WG on outreach.

In 2018, Dr. Eric Grunsky and Dr Gbenga Okunlola were formally appointed Members and Dr. Eduardo was formally appointed Chair of the ESM Board. ESM assisted the Outreach & Education team and lead the Early Career Program at the RFG 2018 Congress in Vancouver. ESM also chaired a Session on bridging the generation divide present in Geosciences. In addition, ESM assisted IAMG in discussion workshops with their Student chapters during the 50th anniversary Congress in Olomouc, Czech Republic in 2018; publication of a book in the SPRINGER-NATURE Series World Regional Geography was finalized.

#### **14. International Council on Science (ICS)**

##### **14.a. Developments in Int. Council of Science**

CQ informed that IUGS had maintained close and collaborative relationships with UNESCO, ISC, ISC-GeoUnions and other organizations during 2018. IUGS has been actively supporting the merger of ICSU and ISSC, the election of new governing council of the new International Science Council (ISC) and the new initiatives of ISC. Several members from GeoUnions were elected as new officers of ISC. CQ has communicated with the new officers of ICS on various occasions. Dr. Li Jinghai, vice president of ISC has

participated in the DDE forum on behalf of ISC. Dr. Alik Ismail-Zade, Secretary of ISC and Secretary General of IUGG has also participated in the DDE forum. The GeoUnions have met twice last year (in Paris and Istanbul, respectively) with the main objective of supporting the election of ISC officers and new project proposals to ISC. William Cavazza, IUGS Vice President attended the first meeting in Paris and CQ attended two meetings. A meeting has been arranged for the GeoUnions' representatives who will be attending the DDE forum. The main agenda of this meeting will be for the GeoUnions to collaborate on further development of DDE.

WC pointed out that the ICS agenda doesn't include any basic research anymore. ICS mainly focuses on applied research, regarding basic research as socially irrelevant.

#### **14.b. Report on TROP-ICS**

Chris King, IUGS representative on TROP-ICS, made a brief report on the Trans-disciplinary Research Pedagogy for Improving Climate Studies and Understanding (TROP-ICS). TROP-ICS is vital that both the current and future generations are better equipped to address the problem of climate change. The objectives of TROP-ICS are as follows: to increase climate awareness through pedagogical innovation; to bring climate studies into the mainstream education; and to integrate climate science with core curriculum of high school and undergraduate college syllabi. The idea is not to make climate change education a stand-alone topic, but rather to bring it to the core of the science and mathematics curriculum.

TROP-ICS has developed model teaching and learning modules as proof of concept of integrating climate change-related topics across the curriculum. They are designed and packaged such that teachers across the world can use them to impart trans-disciplinary training that is essential for addressing the problems of climate change. All educational resources are reviewed and validated by subject and educational experts before making it

available for their use. Climate-related examples can be used as educational resources for teaching topics in various disciplines including biological sciences, chemistry, earth sciences, economics, environmental sciences, geography, humanities, mathematics, physics, social sciences and statistics.

TROP-ICS is an example of pedagogical innovation, incorporating a multidisciplinary approach to teaching, how to introduce relevant topics (in this case, Climate change) in your discipline, using technology in the classroom, and effective learning through location and language specific examples. More than 150 teaching tools and 31 lesson plans have been developed. CK shows several examples of pedagogical tools in different disciplinary. Using one or more pedagogical tools, detailed lesson plans as step-by-step guides for teachers to integrate climate topics in their core curricular teaching have been developed.

The TROP-ICS program is now conducting workshops for teachers across the world to take their suggestions to further improve our resources. TROP-ICS seeks collaborations with UNESCO, OCE, WMO/WCRP, UNCC-Learn, and others to promote and disseminate TROP ICSU Resources across the world for the use of teachers. Workshops for teachers across the world to seek their suggestions and feedback, have been held in New Delhi (India), Kampala (Uganda) and Thimphu (Bhutan) and upcoming workshops will be held in Egypt, South Africa, China, Australia and UK.

## **15. Closing of the Open Session**

CQ expressed his appreciation to all the delegates for their participation in and contributions to the IUGS EC meeting and sincerely thanked the valuable suggestions from the IUGS groups for the future development.

## ACTION LIST

Item	Description	Status
EC73Act_01	Secretariat to distribute the list of 2018 IUGS activities for each country to related Adhering Organizations.	
EC73Act_02	Secretariat to reply e-mails with signing their names.	
EC73Act_03	EC members to respond to the Constituent Groups about their strategy.	
EC73Act_04	SF to send out the call for bids for the 38th IGC.	Done
EC73Act_05	SF to ask the 36th IGC LOC to reserve venues for the IUGS constituent groups, adhering members and affiliated organizations for business meetings.	