

International Union of Geodesy and Geophysics (IUGG)

Activities' Report - 2019

Fausto Guzzetti

1. Introduction

The **International Union of Geodesy and Geophysics** (IUGG, <http://www.iugg.org/>) is the international organization devoted to the advancement, promotion and dissemination of knowledge on the Earth system, its space environment and the dynamic processes that cause changes. The Union consists of eight international associations and six thematic commissions. The eight international associations are:

- The International Association of Cryospheric Sciences (IACS);
- The International Association of Geodesy (IAG);
- The International Association of Geomagnetism and Aeronomy (IAGA);
- The International Association of Hydrological Sciences (IAHS);
- The International Association of Meteorology and Atmospheric Sciences (IAMAS);
- The International Association for the Physical Sciences of the Oceans (IAPSO);
- The International Association of Seismology and Physics of the Earth's Interior (IASPEI);
- The International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI).
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The six **commissions** are:

- Climatic and Environmental Changes (CCEC);
- Mathematical Geophysics (CMG);
- Geophysical Risk and Sustainability (GRC);
- Study of the Earth's Deep Interior (SEDI);
- Data and Information (UCDI);
- Planetary Sciences (UCPS).

In February 2019, the CNR President, by Order No. 11 of 11 February 2019, renewed the appointments of National Representatives to the International Non-Governmental Scientific Bodies for the period 2019-2022, including the appointments of National Representatives to the IUGG and its **eight international associations**. The necessarily were the followings:

For the **International Union of Geodesy and Geophysics** (IUGG) Dr. Fausto GUZZETTI Delegate, and Prof. Claudia PASQUERO substitute.

For the **International Association of Cryospheric Sciences (IACS)** Prof. Barbara STENNI Delegate, and Dr. Giovanni MACELLONI substitute.

For the **International Association for Geodesy (IAG)**, Prof. Mattia CRESPI Delegate, and Dr. Paolo MESSINA substitute.

For the **International Association of Geomagnetisms and Aeronomy (IAGA/IUGG)**, Prof. Umberto VILLANTE Delegate, and Dr. Luigi VIGLIOTTI substitute.

For the **International Association of Hydrogeological Sciences (IAHS/IUGG)**, Prof. Alberto MONTANARI Delegate, and Dr. Tommaso MORAMARCO substitute.

For the **International Association of Metereological and Atmospheric Sciences (IAMAS/IUGG)**, Dr. Marcella MIGLIETTA Delegate, and Dr. Massimiliano PASQUI substitute.

For the **International Association of Physical Sciences of the Ocean (IAPSO/IUGG)**, Dr. Mauro SCLAVO Delegate. Dott. SCALVO resigned and Dr. Katrin SCHROEDER was nominated Delegate, Dr. Andrea CUCCO substitute.

For the **International Association of Seismology and Physics of Earth's Interior (IASPEI/IUGG)**, Prof. Warner MARZOCCHI Delegate, and Dr. Andrea ARGNANI substitute.

For the **International Association of Volcanology and Chemisty of the Earth's Interior (IAVCEI/IUGG)**, Prof. Giuseppe DE NATALE Delegate, and Dr. Claudia PRINCIPE substitute.

2. Main activities carried on by the IUGG during 2019 relevant for Italy and for CNR

The IUGG and the eight International associations provided the endorsement to the Italian event organized by the National IUGG Commission in 2019 in Rome, and described in § 7 below. The event was advertised in the IUGG Electronic Journal, Vol. 19, No. 11 (1 November 2019):

6. Italian National Committee Announcement: Workshop on “State of the art and perspectives on the prediction of natural events”

A workshop on the “State of the art and perspectives on the prediction of natural events” (/Stato dell’arte e prospettive della prevedibilità degli eventi naturali/) will be organised by the Italian National Committee for Geodesy and Geophysics at the CNR Headquarters in Rome, on 26 and 27 November 2019. The scope of the workshop is to bring together experts on the prediction of natural hazards to assess their methods, techniques, tools, expectations and even their personal understanding and feelings on our current collective ability to predict natural hazards, and on perspectives for the future. The workshop will be centered around 16 talks on eight main hazards or phenomena. For each hazard / phenomenon, two speakers were selected by one of the eight Union Associations. The talks will be accompanied by ample periods for collective discussion, which will be the real focus of the workshop. The workshop will be held in Italian.

3. Activities carried on by the Italian Delegate within the Union during 2019 and impact on the Italian scientific community

By order of CNR President No. 11/2019 of 11 February 2019, prot. 0009953, Dr. Fausto GUZZETTI was appointed as national Delegate to the IUGG. Subsequently, Dr. GUZZETTI was appointed Chairman of the CNR IUGG Commission.

The 27th IUGG General Assembly was held from 8 to 18 July 2019 in Montreal, Canada. The Italian delegation attended the IUGG Council meetings was composed by Fausto GUZZETTI, Mattia CRESPI, Giuseppe DE NATALE, Fausto GUZZETTI, Marcello MIGLIETTA, Barbara STENNI, Umberto VILLANTE, Warner MARZOCCHI and Katrin SCHROEDER. Dr. GUZZETTI attended the three Council meetings, and the other delegates to their respective Association plenaries.

During the 27th IUGG General Assembly, Dr. Katrin SCHROEDER, national IAPSO representative and CNR ISMAR scientist, was awarded the prestigious "Early career scientist awards" of the IUGG.

The CNR President delegated Dr. Fausto GUZZETTI to represent CNR at the IUGG 100 years Anniversary, which took place in Paris, on 29 July 2019, at the UNESCO headquarters (<http://100.iugg.org/index.php>). During the ceremony, in the presence of Prince Albert II of Monaco, the President of the IUGG, Kathryn WHALER, presented the Italian delegate with a plaque commemorating Italy's centennial participation in the IUGG, through CNR. Italy is one of the nine founding nations of the IUGG, along with Australia, Belgium, Canada, France, Japan, Portugal, the United Kingdom, and the United States.

4. Evaluation of the participation in terms of benefits and membership cost

The assessment is largely positive. The CNR membership fee covers both participation in the activities of the Union and in its eight international associations, which have no additional membership costs.

5. Evaluation of Italians' attendance and how to improve interest and involvement

The Italian community is significantly involved in the Union's activities, both at an organisational and scientific level, as the Union's offering is varied.

6. Italian experts with important roles within the Union or within related Commissions and Programs

- Carlo BARBANTE is National Delegate to the IUGG International Arctic Science Committee (IASC).
- Raffaella D'AMICIS is Vice-Chair of the Panel on Capacity Building (PCB), Committee on Space Research (COSPAR).
- Giorgina DE FRANCESCHI is chair of the Scientific Committee on Antarctic Research (SCAR) expert group on GNSS Research and Application for Polar Environment (GRAPE) and "vice-chair" of the Committee G of the Union Radio-Scientifique Internationale (URSI).

- Alcide Giorgio Di SARRA is member of the International Radiation Commission (IRC).
- Maria Cristina FACCHINI is member of the International Commission on Atmospheric Chemistry and Global Pollution (ICACGP).
- Ennio FERRARI is Vice-President of the International Commission on Surface Hydrology, International Association of Hydrological Sciences (ICSW/IAHS).
- Aldo FIORI is President of the International Commission for Ground Water, International Association of Hydrological Sciences (ICGW/IAHS).
- Fabio FLORINDO is President Elect, EGU Division of Earth Magnetism & Rock Physics, and chairman of the Working Group I.2 “Paleomagnetism” Division I - Internal Magnetic Fields of IAGA.
- Teodoro GEORGIADIS is member of the Capacity Building and Education Committee of IUGG.
- Giovanni MACELLONI is national Delegate (alternate) to the International Arctic Science Committee, and Italian Focal point for the Global Cryosphere Watch of the World Meteorological Organization (GCW-WMO).
- Massimo MATERASSI is national Delegate to Commission G of the Union Radio-Scientifique Internationale (URSI).
- Antonio MELONI is President of the National Scientific Commission for Antarctica.
- Alberto MONTANARI is Presidente of the European Geosciences Union (EGU), and recipient of the IAHS Dooge Medal in 2019.
- Fernando NARDI is President of the Citizen AND Hydrology Working Group (CandHy WG) of the International Association of Hydrological Sciences.
- Paolo PORTO is President Elect of the International Commission on Continental Erosion of the International Association of Hydrological Sciences (ICCE/IAHS).
- Ilaria PROSDOCIMI is Secretary for the International Commission on Statistical Hydrology of the International Association of Hydrological Sciences (ICSH/IAHS).
- Vincenzo ROMANO is national expert on Space Weather in the UN Committee on the Peaceful Uses of Outer Space (COPUOS), and Italian co-coordinator of the International Space Weather Initiative (ISWI).
- Stefania SPARNOCCHIA is Secretary General of the International Association for the Physical Sciences of the Oceans (IAPSO), and Liaison Officer of IUGG/IAPSO to the UNESCO Intergovernmental Oceanographic Commission.
- Roberto SULPIZIO is Secretary and member of the Executive Committee of the International Association of Volcanology and Chemistry of the Earth’s Interior (IAVCEI).
- Flavia TAURO is President of the Working Group Measurements & Observations in XXI Century (MOXXI) of the International Association of Hydrological Sciences.
- Stefano TINTI is member of the Joint Tsunami Commission of the International Association for the Physical Sciences of the Oceans (IAPSO), International Association of Seismology and Physics of the Earth’s Interior (IASPEI), and International Association of Volcanology and Chemistry of the Earth’s Interior (IAVCEI).
- Paola VANNUCCI is President Elect EGU Division on Tectonics and Structural Geology.

- Umberto VILLANTE is President of the Space Weather Italian Community (SWICo).
- Elena VOLPI is President Elect of the International Commission on Statistical Hydrology of the International Association of Hydrological Sciences (ICSH/IAHS).
- Claudio ZACCONE is President Elect of the EGU Division on Soil System Sciences.

7. Summary of the Commission's 2019 activities

The Commission for the participation of the CNR in the International Union of Geodesy and Geophysics operates as the “Italian National Committee” of the IUGG, and is composed of the Italian delegate in the IUGG and the Italian delegates in the eight IUGG Associations (see above).

The Commission was nominated for the period 2019-2022 with the provision of the CNR President n. 25/2019, prot. AMMCNT n. 0018310 of 11 March 2019. Other members of the Commission are Prof. Claudia PASQUERO and Dr. Teodoro GEORGIADIS, member of the Capacity Building Commission of the IUGG. The secretariat of the Commission is managed by Dr. Cecilia LALLE, CNR–UREI.

The Commission has, among others, the task of providing (i) guidelines and proposals for the Italian participation in the activities of the IUGG, and (ii) support to CNR on issues concerning international initiatives and activities promoted by the IUGG.

In the first meeting of 27 March 2019, the members of the Commission unanimously elected Dr. Fausto GUZZETTI as President of the Commission, and Prof. Warner MARZOCCHI - IASPEI national representative - as Scientific Secretary of the Commission.

A second meeting of the Commission took place by videoconference on 17 June to discuss the following issues: (i) possible nominations for scientific association awards; (ii) participation of the Italian delegation at the IUGG General Assembly in Montreal, Canada; and (iii) the organization of a workshop on “State of the art and perspectives in the predictability of natural events” to be held at the CNR headquarters in Rome.

A third meeting of the Commission took place during the IUGG General Assembly in Montreal, Canada, on July 13, 2019, to discuss the scientific organization of the workshop “State of the art and perspectives in the predictability of natural events”, to be held in November 2019 in Rome, at the CNR headquarters.

Some members of the Commission met in Vienna, during the General Assembly of the European Geosciences Union, in April 2019.

During its first year of its mandate, the main activity of the Commission was the organization of the workshop “**State of the art and perspectives in the predictability of natural events**” held in Aula Marconi, CNR, Rome, on 26 and 27 November 2019, under the aegis of the IUGG and the eight international Associations.

The aim of the workshop was to discuss the predictability (or lack of predictability) of potentially dangerous natural phenomena. With the active involvement of scientists active in different fields, the meeting allowed for the comparison of various approaches and tools available today to forecast different natural phenomena, to identify their limits, the uncertainties, the scopes and the possible short and long term developments, as well as possible synergies; the latter are fundamental for the development of “multi-risk” assessments.

The national delegates in the eight associations of the IUGG, each proposed two speakers, for a total of 16 speakers who contributed to the workshop with a presentation of about 25 minutes (including Q&A), providing an overview, as far as possible exhaustive, of the issues related to the vast and complex topic of geosciences in support of the study and forecasting of potentially dangerous natural phenomena.

The 16 talks were aimed at exposing the “state of the art” of the forecasting and predicting capabilities in various fields, and were interspersed with periods of collective discussion on the current capabilities and perspectives in the predictability of the considered natural phenomena. The discussion allowed for active interaction with the other speakers and the audience (80 participants), consisting mostly of researchers. The participation of young researchers and PhD students was encouraged. They were informed in advance of the contents of the workshop so that they could participate actively in the discussion.

The first in a series, the workshop focused on a limited number of natural hazards. Other hazards are expected to be covered in other workshops originally planned for 2020, which will address vulnerability, impact, risk, mitigation and communication issues.

The workshop format provided abundant time for discussions that were animated and participated. These collegial moments were the main purpose of the workshop. Moderators and rapporteurs played a key role in leading and summarising the content of the discussions. Streaming was activated so that other experts could follow the workshop remotely.

The following workshops are likely to be delayed until 2021 due to the pandemic in 2020. Other hazards will be considered, together with other topics, including vulnerability, impact, risk, mitigation and communication.

Other activities of the Italian National Commission in 2019 concerned:

- Approve the acceptance of Latvia as a new “Associate Member of the IUGG”;
- Update the information on IUGG Commission members for the IUGG Yearbook 2020 (<http://www.iugg.org/publications/yearbooks/yearbook2020.pdf>); and
- Disseminate news of interest to the national IUGG community published in the IUGG Quarterly Newsletters (<http://www.iugg.org/publications/ejournals/>).

8. Conclusions

The first year of activity of the new National IUGG Commission has undoubtedly been fruitful. The group of national delegates of the individual international associations, and the other members of the Commission, actively participated in the regular meetings, and operated in an open and collaborative manner. In the course of the year, the basis for future collaborations was laid. The pandemic at the beginning of 2020 slowed down activities, which will resume soon.

Fausto Guzzetti

Rome, June 21st, 2020