IUGG
IAG AIG
International Association of Geodesy

Newsletter
February 2024

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Contents

The *IAG Newsletter* is under the editorial responsibility of the *Communication and Outreach Branch* (COB) of the IAG.

It is an open forum and contributors are welcome to send material (preferably in electronic form) to the IAG COB. These contributions should complement information sent by IAG officials or by IAG symposia organizers (reports and announcements). The *IAG Newsletter* is published monthly. It is available in different formats from the IAG new internet site: http://www.iag-aig.org

Each *IAG Newsletter* includes several of the following topics:

I. news from the Bureau Members
II. general information
III. reports of IAG symposia
IV. reports by commissions, special commissions or study groups
V. symposia announcements
VI. book reviews
VII. fast bibliography

General Announcements

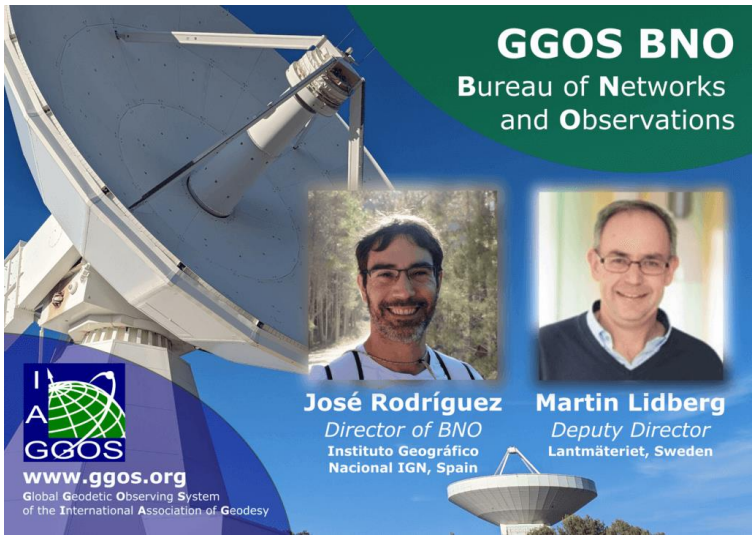
New Director and Deputy of GGOS Bureau of Networks and Observations

We are pleased to announce that our colleagues

- **José Rodriguez** – from the Red de Infraestructuras Geodésicas RIG, Instituto Geográfico Nacional IGN, Spain
- and **Martin Lidberg** from Lantmäteriet, the Swedish Mapping, Cadastral and Land Registration Authority,

have taken over the coordination of the GGOS BNO (Bureau of Networks and Observations) as Director and Deputy Director respectively. Their professional expertise guarantees a successful contribution to the further development of GGOS. We warmly welcome José and Martin and greatly appreciate their support.

We do not want to end this message without paying tribute to **Mike Pearlman** for all his efforts and successes over the past years at the helm of the BNO. We also thank him for his willingness to continue as a member of the BNO and to assist José and Martín in the transition.



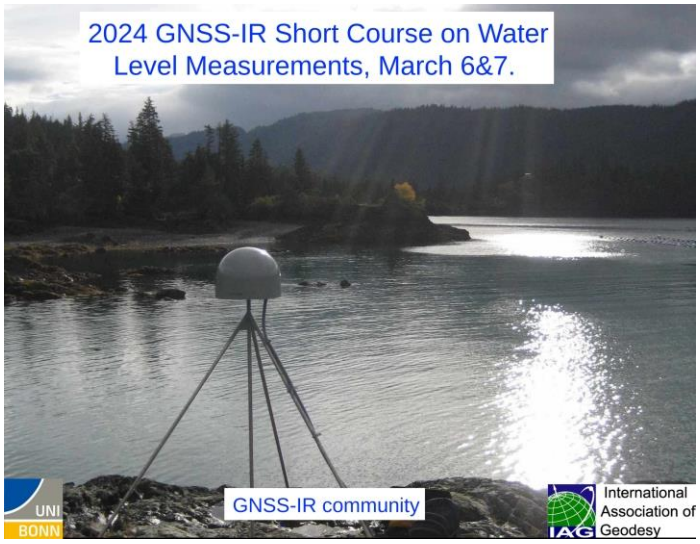
Kind regards

Laura Sánchez, GGOS President

Martin Sehnal, Director of the GGOS Coordinating Office

Meeting Announcements

GNSS IR Short Course



The GNSS Interferometric Reflectometry (GNSS-IR) Community is happy to announce that we will be holding a virtual short course on March 6/7. The first two-hour session will be dedicated to the basic principles of GNSS-IR, while the second two hour session will cover theory and applications of GNSS-IR for measuring water levels in rivers, lakes, and the ocean. Examples using both geodetic-quality and low-cost sensors will be shown.

A main goal of the course is to teach people how to use the gnssrefl software, an open source software package in python for GNSS-IR applications:

https://github.com/kristinemlarson/gnssrefl

Further details about the short class - including how to register - will be posted at the following link in mid-February:

https://gnssrefl.readthedocs.io/en/latest/pages/sc_index2024.html

This short course is being sponsored by the Collaborative Research Center 1502 DETECT, Bonn University.

Makan A. Karegar

Meetings Calendar

IAG Sponsored Meetings

IVS 13th General Meeting and 25th Anniversary

March 4 – 8, 2024, Tsukuba, Japan
URL: https://www.youtube.com/watch?v=mQkA8VHKWD4

Short Course on GNSS-IR for Water Level Measurements

March 6 – 7, 2024, Online
URL: https://gnssrefl.readthedocs.io/en/latest/pages/sc_index2024.html

EUREF Symposium 2024

June 5 – 7, 2024, Barcelona, Spain
URL: https://euref-symposium.atlantidaviatges.com/

20th Geodynamics and Earth Tides Symposium (G-ETS 2024)

August 25 – 30, 2024, Strasbourg, France
URL: https://g-ets2024.sciencesconf.org/

Gravity, Geoid and Height Systems 2024

August 26 – 29, 2024, Thessaloniki, Greece
URL: https://www.gghs2024.com/

GGOS Days 2024 and GGOS Focus Areas Topical Meeting

October 7 – 11, 2024, Potsdam, Germany
URL: https://ggos.org/event/ggos-days-fa-meeting-2024/

6th Joint International Symposium on Deformation Monitoring (JISDM)

April 7 – 9, 2025, Karlsruhe, Germany
URL: https://jisdm2025.gik.kit.edu/

IAG Scientific Assembly 2025

September 1 – 5, 2025, Rimini, Italy
URL: https://www.iag-aig.org/events/107

IAG Related Meetings

EGU General Assembly 2024

April 14 – 19, 2024, Vienna, Austria
URL: https://www.egu24.eu/

ION Pacific PNT Conference

April 15 – 18, 2024, Honolulu, Hawaii
URL: https://www.ion.org/pnt/index.cfm

FIG Working Week

May 19 – 24, 2024, Accra, Ghana
URL: https://www.fig.net/fig2024/index.htm

Japan Geoscience Union Meeting 2024

May 26 – 31, 2024, Chiba, Japan
URL: https://www.jpgu.org/meeting_e2024/

34th Conference on Mathematical Geophysics

June 2 – 7, 2024, Bombay, Mumbai, India
URL: https://www.cmg2024.org

18th Symposium of SEDI

June 23 – 28, 2024, Great Barrington, MA, USA
URL: https://sedi-conference-2024-2675c.ingress-baronn.ewp.live/

45th COSPAR Scientific Assembly

July 13 – 21, 2024, Busan, Korea
URL: https://www.cospar2024.org/

32th IAU General Assembly

August 6 – 15, 2024, Cape Town, South Africa
URL: https://astronomy2024.org/

2024 European Polar Science Week conference

September 3 – 6, 2024, Copenhagen, Denmark
URL: https://www.europeanpolarboard.org/news-events/events/event/events/2024-european-polar-science-week-conference/

18th Symposium of SEDI

June 2 3 –28, 2025, Great Barrington, MA, USA
URL: https://sedi-conference-2024-2675c.ingress-baronn.ewp.live/

Reports

AQG operator meeting 2024: workshop and joint measurements

Organized by the GFZ Section 4.4 "Hydrology" and under the umbrella of the Collaborative Research Centre "TerraQ" (SFB 1464), the world's first workshop on the "Absolute Quantum Gravimeter" (AQG, Exail) took place from 22 to 26 of January 2024 at Leibniz University Hanover (Germany), together with a joint measurement session from several AQG instruments. It was the first meeting of the community of quantum gravimeter operators after this instrument became available as the first commercially new type of absolute gravimeter. The AQG is a gravimeter which uses quantum technology of free falling, cooled atom clouds for measuring the acceleration due to the attraction of the Earth and related masses.

International workshop with lively exchange

The two-day workshop (24 to 25 of January) was attended by more than 30 participants from 14 organizations and 7 different countries, including the instrument manufacturer (Exail). First experiences with the instrument were exchanged and theoretical questions related to the measurement principles, instrument development, open questions and future standards were discussed. The main aim of the workshop was to initiate a continuous exchange within the AQG community and to establish a user platform from which all current and future AQG operators could benefit.

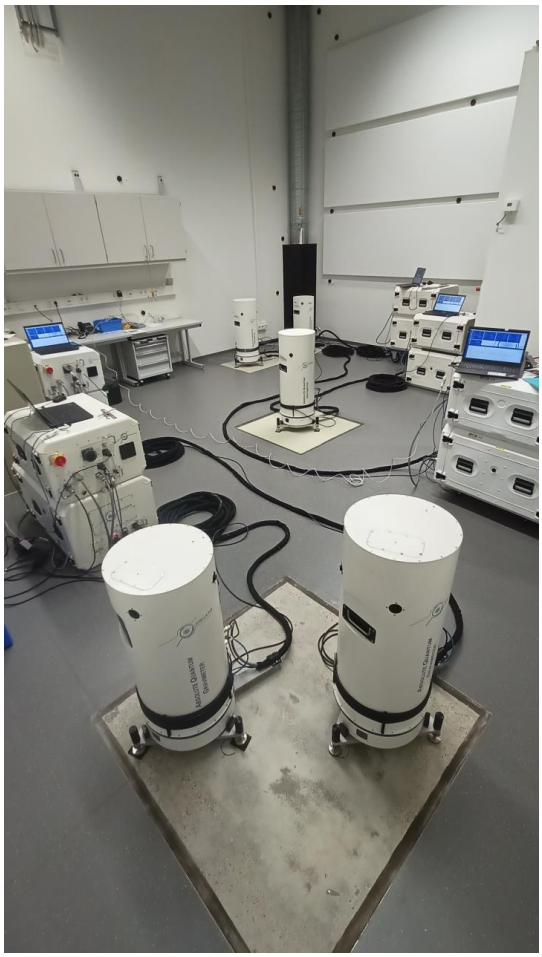
Besides the traditional field for gravimetry, geodesy, the AQG community and its end-users were spread within applied geoscience in e.g. hydrology and vulcanology. Engaging and extensive discussions in an open and welcoming atmosphere contributed to the success of the event.

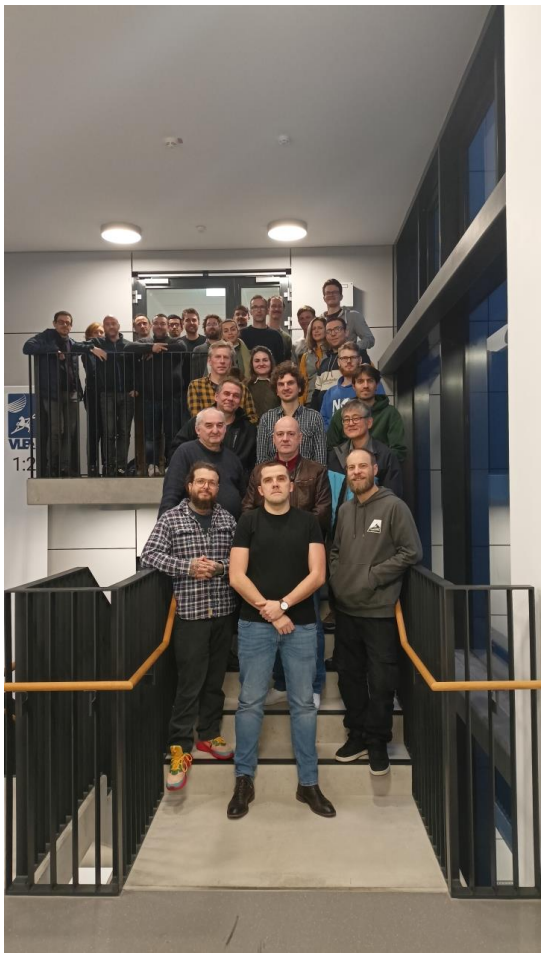
First comparative measurements at the same location

Along the workshop, measurements with AQGs were carried out for a week in a gravimetric laboratory at Leibniz University Hanover. A gravimetric laboratory is characterized by very stable foundation structures on which the devices are placed and also offers constant conditions in terms of room temperature and humidity. The aim is to minimize possible interference factors on the measurements.

Five AQG units of the same type (version B) came together in one room for the first time anywhere in the world. The following teams participated in the measurements: instrumental park of Action Spécifique Gravimétrie of Epos-France (AQG-B01), the German Research Center for Geosciences in Potsdam (AQG-B02), the Institute of Geodesy and Cartography, Poland (AQG-B07), the Leibniz Institute of Applied Geophysics in Hanover (AQG-B09), and the German Federal Agency for Geodesy and Cartography in Leipzig (AQG-B10). The measurement activities were spread within 5 days (day and night) and included a series of test measurements aimed at deepening the knowledge of the functioning of AQG gravimeters produced by Exail. This non-official

comparison did not have the focus on obtaining the most precise absolute gravity station values but the joint measurements were carried out with the intention of testing certain device characteristics and behaviors, with the focus on comparing the performance of the devices. Among other things, this involved the noise behavior of the devices and their stability during longer measurements. Repeatability, i.e. how accurately a result can be measured again at the same point, was also a central point of the comparison.





Credit: Przemysław Dykowski

Pushing forward IAG activities

The entire meeting (workshop and measurements) is well aligned with the goals of two groups within the IAG: The WG Q.1: “Quantum gravimetry in space and on ground” of the IAG Project – Novel Sensors and Quantum Technology for Geodesy (QuGe) as well as Sub-Commision 2.1. “Terrestrial gravimetry for the needs of geosciences and metrology”. Both groups emphasize the importance of stimulating communication, cooperation and knowledge dissemination through international meetings and workshops.

Marvin Reich – Vice-Chair WG Q.1: “Quantum gravimetry in space and on ground”(term 2023-2027)

Przemysław Dykowski – Chair Sub-Commision 2.1. “Terrestrial gravimetry for the needs of geosciences and metrology” (term 2023-2027)