



IUGG



International Association  
of Geodesy

# Newsletter

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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

### EPOS-GNSS – GNSS Data and Products for the Solid Earth Community



The European Plate Observing System (EPOS) is an e-infrastructure that provides, through a unique portal (<https://www.epos-eu.org/dataportal>), open access to standardized multidisciplinary data in support of Solid Earth science with the goal to advance the understanding of the complex Earth's dynamic system. EPOS is organized in Thematic Core Services (TCS), such as the TCS Seismology, TCS Geomagnetism, or the TCS GNSS Data and Products (also called EPOS-GNSS). Each TCS ensures the contribution of their specific community to EPOS.

EPOS-GNSS coordinates the distribution of quality-controlled GNSS data, metadata, and data products to the EPOS data portal through four dedicated community portals:

1. The GNSS Data Gateway (<https://gnssdata-epos.oca.eu/>), providing access to daily RINEX data of more than 1600 permanently tracking GNSS stations distributed over all of Europe and neighbouring regions (cf. Figure).
2. The GNSS Products Portal (<https://gnssproducts.epos.ubi.pt/>), providing access to accurate station positions, position time series, velocities, and strain rate fields in Europe.
3. The GNSS station metadata portal (<https://gnss-metadata.eu/>), providing access to GNSS station site logs, data access conditions, and DOI (Digital Object Identifier), with the aim to evolve towards FAIR (findable, accessible, interoperable, and reusable) data management.
4. The GNSS data quality monitoring portal (<https://gnssquality-epos.oma.be/>), providing information on the availability and data quality of all GNSS data distributed through the GNSS Data Gateway.



GNSS data available through EPOS

EPOS-GNSS has developed GLASS, a dedicated software package serving as the backend for the dissemination of the GNSS data and products, supporting the workflows between the Data Nodes (most RINEX data are kept at local/national repositories), the dedicated Analysis Centres (to compute the various products), and the mentioned EPOS-GNSS portals.

The EPOS-GNSS efforts are done in close partnership with the geodetic GNSS community represented by EUREF, the IAG sub-commission for the European Reference Frame.

The ultimate goal of the GNSS TCS is to make available all public available GNSS data at the European level (including high-rate data in the near future) and to generate accurate scientific products based on this larger number of stations

to foster open science and progress in Earth Science.

More Information:

EPOS: <https://www.epos-eu.org>

EPOS-GNSS: <https://gnss-epos.eu>

email: [general@gnss-epos.eu](mailto:general@gnss-epos.eu)

Carine Bruyninx  
Rui Fernandes

## Meeting Announcements

### GGOS Days 2024



The next year's GGOS Days 2024 will be held together with the GGOS Focus Areas Topical Meeting in Potsdam, Germany on October 7-11, 2024. Please save the date and stay informed at the event website <https://ggos.org/event/ggos-days-fa-meeting-2024/>.

The GGOS Focus Areas aim to address broader issues that have not been considered by any component of the International Association of Geodesy (IAG) or those that require the agreement of different IAG components to be solved. These Areas are cross-disciplinary and seek to identify

gaps and necessary future geodetic products while also serving as incubators of new research fields. Currently, there are three Focus Areas in operation: Geohazards, Geodetic Space Weather Research (GSRW), and Artificial Intelligence for Geodesy (AI4G). Additionally, there are two new potential Focus Areas under discussion: combining tropospheric parameters and integrating GNSS and InSAR data.

Considering the widespread interest in these topics, and with gratitude to the GFZ (German Research Centre for Geosciences) for the invitation, we are arranging a GGOS Focus Areas Topical Meeting to unite all colleagues invested and engaged in these fields to assess advancements, consider fresh developments, and establish innovative research strategies. Jointly with this Topical Meeting, we will host the GGOS Days 2024 to convene the other GGOS components for reporting advancements and planning future endeavours. This short announcement is to invite you to save the date: October 7 to 11, 2024. We will be providing more details on the format and participation in these meetings in the near future.



Laura Sánchez, GGOS President

Martin Sehnal, Director of GGOS Coordinating Office

## **COSPAR 2024, 45th Scientific Assembly**

July 13-21, 2024, Busan, South Korea

<https://www.cospar-assembly.org>

<https://cospar2024.org>



The next COSPAR meeting in Busan, South Korea will attract about 3000 scientists and engineers from all over the world. More than 100 events will cover all areas of space science: Space studies of the Earth's surface, meteorology and climate, Space studies of the Earth-Moon, Planets and small bodies of the solar system, Space studies of the upper atmospheres of the Earth and Planets including reference atmosphere, Space plasmas in the Solar system, including planetary magnetospheres, research in astrophysics from space, life sciences as related to space, material sciences in space, fundamental physics in space, and several Panel meetings.

Interdisciplinary lectures will also be given by key scientists and several associated events are planned. Please check <https://cospar2024.org> for more details. On <https://www.cospar-assembly.org> you find the entire list of events organized at the assembly.

In particular, we would like to draw the attention of geodesists to two events, organized by the COSPAR Panel on Satellite Dynamics (<https://cosparhq.cnes.fr/scientific-structure/panels/technical-panel-on-satellite-dynamics-psd/>)

### **PSD.1 "Satellite Dynamics: New Developments and Challenges for Earth and Solar System Sciences"**

Convenors: Heike Peter, Francesco Topputo

The aim of the Panel on Satellite Dynamics is to support activities related to the detailed description of the motion of artificial celestial bodies. This goal should be achieved by improving the current theories of motion and by evaluating their determining forces in a more sophisticated way. Detailed theoretical understanding of the dynamics of satellites should coincide with the results of precise tracking in order to obtain the most precise knowledge possible of the orbit and the corresponding orbital positions.

The scope of the Panel on Satellite Dynamics entails the positioning of a wide range of objects in space, including Earth orbiting satellites for Earth observation such as GRACE-FO, Swarm, Jason series, the Copernicus Sentinels, the future GENESIS mission and navigation satellite systems such as GPS, GLONASS, Galileo, Beidou, QZSS or tracking systems such as SLR and DORIS. In addition, positioning plays an important role in the success of the continuously growing number of today's and tomorrow's missions to explore the Solar System. Recent and future missions have to deal with complex trajectories and innovative propulsion and breaking techniques to visit multiple bodies (e.g., Cassini, Dawn, JUICE), small unconventional bodies (e.g., Hera, OSIRIS-REx, Lucy), and harsh and unknown environmental conditions challenging our technical capabilities (e.g., Messenger, Venus Express, BepiColombo, JUNO). Both advances in the modeling of spacecraft dynamics and the theoretical understanding of space observables (e.g., range, Doppler, VLBI, optical) are required to allow for a more efficient exploration and a deeper understanding of our Solar System.

Limiting errors in Precise Orbit Determination (solar radiation pressure, time variable gravity fields, phase center corrections, attitude variations, etc...) are of critical interest for many stakeholders. Moreover, formations of satellites are being realized and proposed for Earth observation and fundamental sciences, that impose very severe constraints on (relative) positioning and orbit and attitude control solutions (e.g. micro-propulsion).

Satellite orbit determination requires the availability of tracking systems, well established reference frames and accurate station coordinate solutions, detailed force and satellite models, and high precision time and frequency standards.

Contributions covering all recent developments and plans in ground, satellite or probe positioning and navigation are solicited as well as contributions on current progress on establishment, maintenance and improvement of reference systems in Geo- and planetary sciences.

### **PSD.2 "Precision Orbit and Attitude Determination of Small Satellites, CubeSats, and Constellation and their Scientific Applications"**

Convenors: Shin-Chan Han, Adrian Jäggi

The recent paradigm shift in space technology toward miniaturized sensors, smaller spacecraft, and more affordable launches is opening an unprecedented level of accessibility to data collection from space-based platforms. The technology sector has realized the concept of operating numerous small satellites with different payloads for spatially and temporally dense in situ data collection and for operational purposes. Information

from these platforms is becoming increasingly reliable and relevant not only to the scientific community but also to the public.

Integrity of these space-borne measurements, however, is not warranted without knowledge on geolocation and orientation of satellite platforms.

With the size of satellites decreasing, maintaining stability of small platforms becomes more challenging and, thus, knowing precise orbit and attitude becomes more important.

This session welcomes presentations discussing technical advances in precision orbit and attitude determination, particularly for small or nano satellites, as well as scientific results from small satellites.

Important dates:

9 February 2024: Abstract submission deadline

3 May 2024: end of early registration fees

Heike Peter  
Chair of COSPAR PSD

### **34th Conference on Mathematical Geophysics**

*Mathematical Geophysics for Sustainable Development*

June 2 - 7, 2024, Bombay, Mumbai, India

<https://www.cmg2024.org>

The Commission on Mathematical Geophysics (CMG) is a Union Commission of the IUGG. It aims to encourage exchange of ideas and information in all areas of geophysics, with emphasis on the application of mathematics, statistics and computer science to geophysical problems, and promote the development and application of mathematical methods and theoretical techniques for the solution of problems across the various geophysical disciplines.

We invite you to attend the 34th International Conference on Mathematical Geophysics (CMG 2024) being organized by Department of Earth Sciences, Indian Institute of Technology Bombay, Mumbai, India, during June 2-7, 2024.

The main theme of the conference is "Mathematical Geophysics for Sustainable Development". The conference covers many interdisciplinary topics and relevant mathematical approaches, including inverse problems, artificial intelligence, machine learning, natural hazards, climate and environmental changes. CMG2024 is a contribution to the United Nations General Assembly-proclaimed International Decade of Sciences for Sustainable Development (2024-2033).

Shin-Chan Han

### **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>

##### **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/>

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

August 25 – 30, 2024, Strasbourg, France

URL: <https://g-ets2024.sciencesconf.org/>



### **IGAG Scientific Assembly 2025**

September 1 – 5, 2025, Rimini, Italy

URL: <https://www.iag-aig.org/events/107>

### **IGAG Related Meetings**

#### **AGU Fall Meeting**

December 11 – 15, 2023, San Francisco, CA, USA

URL: <https://www.agu.org/Fall-Meeting>

#### **Recent Achievements and Future Perspectives in Geodesy**

February 21 – 22, 2024, Potsdam, Germany

URL: [https://leibnizsozietaet.de/wp-content/uploads/2023/09/Colloquium\\_in\\_honor\\_of\\_Harald\\_Schuh-save-the-date.pdf](https://leibnizsozietaet.de/wp-content/uploads/2023/09/Colloquium_in_honor_of_Harald_Schuh-save-the-date.pdf)

#### **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>

#### **34th Conference on Mathematical Geophysics**

June 2 - 7, 2024, Bombay, Mumbai, India

URL: <https://www.cm2024.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.cospas2024.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/>