



IUGG



International Association
of Geodesy

Newsletter

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Editor: Gyula Tóth

IAG Communication and Outreach Branch
Department of Geodesy and Surveying
Budapest University of Technology and Economics
H-1521 Budapest, Hungary

Information Service of the International Association of Geodesy

<http://www.iag-aig.org>

newsletter@iag-aig.org

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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

IUGG Berlin 2023

28th IUGG General Assembly (IUGG2023), Berlin, Germany, July 11-20, 2023

www.iugg2023berlin.org

The 28th IUGG General Assembly (IUGG2023) will be held from 11 to 20 July 2023 at the CityCube in Berlin, Germany.

This General Assembly is a special opportunity for participants from around the world to come together and discuss the full range of geodetic and geophysical themes, and further enhance the important interdisciplinary collaboration for a better understanding of our Earth System. IUGG2023 will provide a platform for personal meetings, exchange of ideas and developing new concepts for international science collaboration, all of which have suffered a setback during this pandemic crisis. IUGG2023 will help to create a new spirit to address pressing large societal challenges such as global environmental change and natural hazards and to stimulate novel geoscience research.



Important Dates

14 February 2023

- **Abstract submission deadline**
- Closing of grant application submission

17 March 2023

- Abstract/grant acceptance sent to participants

11 April 2023

- Complete scientific program and guidelines for presenters published

28 April 2023

- Early-bird registration closes

02 May 2023

- Newsletter on field trips and accommodation reservations
- Final Adjustment of program

IUGG2023 Local Organizing Committee and Scientific Program Committee

EUREF Newsletter 2022

Close to the end of 2022, the IAG regional sub-commission for Europe, EUREF, published its latest Newsletter, reflecting the activities of the Coordinators, Working Groups, Central Bureau and the Governing Board throughout this year and looking forward to 2023. The Newsletter is complemented by a report on the "European Alps Geoid Project". It can be downloaded from

http://www.euref.eu/documentation/Newsletters2022/EUREF_Newsletter_2022_01.pdf or
https://epncb.oma.be/_documentation/newsletters/EUREF_Newsletter_2022_01.pdf.

Wolfgang Söhne
Chair of the EUREF GB

Advances In Space Research

Dear colleagues,

for your information, issue 71(1) of Advances in Space Research (COSPAR official journal), was published on January 1, 2023. Elsevier provided a one-year promotional OpenAccess to this first issue of the year. Consequently, all articles published in this issue will remain free-of-charge to anyone without any paid subscription to this journal for the complete year at <https://www.sciencedirect.com/journal/advances-in-space-research/vol/71/issue/1>



While it is a very large issue (80 papers and 1215 pages), the few selected articles related to geodesy below could be of scientific interest to our community.

I remind you that ASR publishes 24 issues per year (2 issues of 30-40 papers each per month), that accepted papers appear online with a DOI in “accepted proofs” only a couple of days after acceptance and that this journal accepts electronic supplements and supports OpenAccess. Review process takes on average about 9 weeks before the first decision is sent back to the authors (4 weeks to find proper reviewers and 5 weeks to get their report and make a first decision). Published articles are referenced in ISI Web of Science, Scopus and many other scientific databases. This journal also accepts Special Issues. Its Impact Factor has been steadily increasing in the past few years and is now 2.611.

Submissions can be done electronically at any time using the EES System (<http://ees.elsevier.com/asr>).

More information on this journal can be found at <https://www.journals.elsevier.com/advances-in-space-research>

Pascal Willis
Editor-in-Chief
Advances in Space Research

EARTH MAGNETOSPHERE AND UPPER ATMOSPHERE

SHAKING: Adjusted Spherical Harmonics Adding KrigING Method for Near Real-time Ionospheric Modeling with Multi-GNSS Observations, Ang Liu, Zishen Li, Ningbo Wang, Yan Zhang, ... and Hong Yuan, Advances in Space Research, 71(1), 67-79, 2023.

<https://doi.org/10.1016/j.asr.2022.07.049>

ASTRODYNAMICS AND SPACE DEBRIS

BeiDou-3 Orbit and Clock Quality of the IGS Multi-GNSS Pilot Project, Peter Steigenberger, Zhiguo Deng, Jing Guo, Lars Prange, ... and Oliver Montenbruck, Advances in Space Research, 71(1), 355-368, 2023.

<https://doi.org/10.1016/j.asr.2022.08.058>

Precise Orbit Determination and Precision Comparison for FY3C and FY3D with Receiver Antenna GPS and BDS PCV Using Spaceborne BDS and GPS Observation Data, Mingming Liu, Yunbin Yuan, Jikun Ou and Guanglin Yang, Advances in Space Research, 71(1), 375-389, 2023.

<https://doi.org/10.1016/j.asr.2022.08.070>

Geosynchronous Satellites Expanding a Future GNSS Satellite Constellation: A Precise Orbit Determination Study, Stefan Marz, Anja Schlicht and Urs Hugentobler, Advances in Space Research, 71(1), 624-644, 2023.

<https://doi.org/10.1016/j.asr.2022.11.009>

SPACE TECHNOLOGY, POLICY AND EDUCATION

An Optimized Strategy for Inter-satellite Links Assignments in GNSS, Bingbing Xu, Kai Han, Qianyi Ren, Wenbin Gong, ... and Jiachao Chang, Advances in Space Research, 71(1), 720-730, 2023.

<https://doi.org/10.1016/j.asr.2022.08.082>

Variational Bayesian Implicit Unscented Kalman Filter for Celestial Navigation Using Time Delay Measurement, Mingzhen Gui, Hua Yang, Xiaolin Ning, Dang-Jun Zhao, ... and Ming-Zhe Dai, Advances in Space Research, 71(1), 756-767, 2023.

<https://doi.org/10.1016/j.asr.2022.09.008>

Analysis of CNES' Scientific Production in Aerospace Research: 60 Years of Commitment with the Future, Ricardo Eito-Brun, *Advances in Space Research*, 71(1), 785-802, 2023.
<https://doi.org/10.1016/j.asr.2022.10.020>

EARTH SCIENCES

Comprehensive Performance Review of BDS-3 After One-year Official Operation, Yongxing Zhu, Qinghua Zhang, Yue Mao, Xianqiang Cui, ... and Ruibin Zhang, *Advances in Space Research*, 71(1), 883-899, 2023.
<https://doi.org/10.1016/j.asr.2022.08.020>

A Real-time Combined Quality Control Method for GNSS Precise Positioning in Harsh Environments, Haijun Yuan, Xiufeng He, Zhetao Zhang, Huan Liu, ... and Zixin Jiang, *Advances in Space Research*, 71(1), 900-911, 2023.
<https://doi.org/10.1016/j.asr.2022.08.026>

An Improved Cyclic Multi Model-eXtreme Gradient Boosting (CMM-XGBoost) Forecasting Algorithm on the GNSS Vertical Time Series, Zhen Li, Tieding Lu, Xiaoxing He, Jean-Philippe Montillet and Rui Tao, *Advances in Space Research*, 71(1), 912-935, 2023.
<https://doi.org/10.1016/j.asr.2022.08.038>

Station-dependent Satellite Laser Ranging Measurement Corrections for TOPEX/Poseidon, Julian Zeitlhöfler, Mathis Bloßfeld, Sergei Rudenko, Denise Dettmering and Florian Seitz, *Advances in Space Research*, 71(1), 975-996, 2023.
<https://doi.org/10.1016/j.asr.2022.09.002>

Good reviewing needs recognition: a new IAG best reviewer award for the Journal of Geodesy

Is peer review important for geodesists?

It is hard to find a fellow scientist who would not agree that peer review is important, to keep the quality standards up in scientific journals, lend credibility, separate the wheat from the chaff and root out bogus papers, educate and support early-career scientists, and to keep the ever-increasing stream of new papers at bay. Yet we, the editors of the *Journal of Geodesy*, find it increasingly difficult to obtain a sufficient number of thorough and constructive reviews. For example, in 2021, the editors had to ask on average more than six colleagues to obtain, finally, the JoG „gold standard“ three reviews. Although everybody agrees that the review process takes too long from submission to acceptance, it seems that less and less geodesists are willing to spend time on reviews for expediting the journal turnover times.

Peer review – a process of evaluating a manuscript prior to publication by some qualified colleagues (three, in case of the JoG) - has been an integral part of scientific publication and knowledge generation since the first scientific journals appeared more than 300 years ago. It may have appeared as an academic pastime to the public, certainly including some geodetic practitioners. Yet in recent years, and certainly with efforts to maintain scientific standards in politically charged topics such as climate change or Covid-19, peer review has become a concept more and more recognized by the public. „Has it been peer-reviewed?“ is today one of the first questions by journalists or institution's press departments. Geodesy topics are no exception to this rule.

In fact, it is true that peer review often slows down the publication process. It is generally believed but difficult to prove whether peer review really, objectively, helps improve the paper quality (e.g. Heesen and Bright, 2021, although their discussion contains little quantitative analysis). On the other hand, reviewers remain often (as in the JoG) anonymous to the authors and this may indeed open the door to abuse. However, blind (as with the JoG) and double-blind reviewing are just two of many models (e.g. Kelly et al., 2014). Prepublication servers, which the JoG also encourages authors to use, and new models such as the open review process with the European Geophysical Union journals allow a more rapid dissemination of papers. Nevertheless, the final publication in a journal is still understood by most researchers to „crown“ the pre-published work, because it has been peer-reviewed. And open review models seem to show (prove) that papers get improved during review, which is also confirmed for the JoG from several years of first-hand experience with editors, reviewers, and authors.

Modern geodesy has achieved great advances along the interfaces with other sciences, like mathematics, statistics, remote sensing, data sciences, geophysics, hydrological sciences, oceanography, atmospheric and space sciences, and so on. Indeed, through the interfaces with these neighboring disciplines, geodesy went from a data-providing auxiliary technique to the science of geodesy. Review allows the editors to involve specialists from other disciplines; other sciences require peer-review and geodesy must commit to similar standards. Responding to reviews in the scientific way, i.e. not blindly agreeing to what reviewers and editors state but

entering a scientific debate, helps to educate young scientists and trains them not only in writing but also in critical thinking and pushing boundaries. Of course, it also prepares them for more mundane things such as writing proposals and grant applications.

Why is it then so difficult to find good reviewers?

What is actually a good review? Many guidelines exist and we do not intend to repeat them here; reviews should be professional, fair, constructive, thorough, timely, realistic, and conclusive in their advice (see also Kelly et al., 2014)

Indeed, it takes time providing a good review. We know that good reviewers are overcommitted, as editors are getting frustrated and tend to ask those few experienced colleagues who seldom refuse to accept, instead of the younger colleagues. Some topics are developed among a rather small (sub-) community of researchers such that finding reviewers without conflict of interest may be difficult. On the other hand, we know that some reviewers may feel their work and judgement are not always valued by the editors. For the JoG, decisions are not necessarily always made based on arithmetic. Some manuscripts contain typos and language problems. At the JoG, we send them back if we feel the review process would be compromised. This will take some time as well for authors to make corrections.

While the above seem individual reasons, we feel the problem is deeper rooted, on a structural level. In broader terms, while writing (in particular high-profile) papers puts authors in the spotlight, reviewing happens largely in the dark. Many institutions happily count publications when people apply for jobs or tenure. We are concerned that reviewing, one of the finest services that geodesists provide to our community, is overlooked in such assessments. The authors of this letter have been angered by the fact that some geodesists apparently are interested in publication but reluctant to spending work time on reviewing or editing papers by other researchers – this is selfish. Similar, it has been suggested to us on more than one occasion that some geodetic institutions apparently discourage junior or senior staff from spending work time on reviewing or editing papers – this would be a disservice to the community.

Without quantitative evidence, we speculate that while scientific writing is part of many graduate curricula in geodesy and related programs, scientific reviewing is probably not. This is a pity and a missing scientific training, as it has been recognized that both doing and receiving scientific review have multiple formative benefits for students (Geithner and Pollastro, 2016), not limited to honing their own writing skills.

We call on thesis supervisors, geodesy lecturers, but also organizers of (IAG) conferences, workshops and summer schools to not only include scientific writing but also scientific reviewing in the educational packages for early career scientists. We call upon geodetic institutions to encourage (allow) staff scientists spending time for reviewing or editing papers as a service to the community. Job and tenure applications should recognize reviewing as a valuable service and applicants should be encouraged to demonstrate reviewer service (e.g. through Publons).

After all, peer review *is* important for the science of geodesy and beyond.

To promote and recognize good reviewing practice, the IAG has decided to establish an IAG best reviewer award for the Journal of Geodesy, which will be first decided upon in 2023.

Jürgen Kusche and Peiliang Xu

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- Heesen, R. and Bright, L. K. (2021): Is Peer Review a Good Idea? *British Journal for the Philosophy of Science*, 72 (3):635-663
- Kelly, J., Sadeghieh, T., and Adeli, K. (2014): Peer review in scientific publications: benefits, critiques, & a survival guide. *The Journal of the International Federation of Clinical Chemistry and Laboratory Medicine*, 25(3):227-243

Meeting Announcements

Meetings Calendar

IAG Sponsored Meetings

2nd Workshop of Inter-Commission Committee on Geodesy for Climate Research (ICCC)

March 28 – 30, 2023, online

URL: <https://iccc.iag-aig.org/iccc-workshops/ws23>

EUREF Symposium 2023

May 22 – 26, 2023, Gothenburg, Sweden

URL: http://www.euref.eu/euref_symposia.html

IUGG Berlin 2023

July 11 – 20, 2023, Berlin, Germany

URL: <https://www.iugg2023berlin.org/>

GGOS Days 2023

September 20 – 22, 2023, Yebes, Spain

URL: <https://ggos.org/event/ggos-days-2023/>

IAG Related Meetings

Tour de l'IGS GNSS for Disaster Risk Reduction in the South Pacific

February 14, 2023, online

URL: <https://igs.org/tour-de-igs/>

Reports

IAG Commission 1 International Symposium – REFAG 2022

“Reference Frames for Applications in Geosciences”

17-20 October 2022, Thessaloniki, Greece

The IAG International Symposium on Reference Frames for Applications in Geosciences (REFAG 2022) was held in Thessaloniki, Greece, from 17 to 20 October 2022. The venue of the symposium was located at the Electra Palace Hotel in the heart of downtown Thessaloniki, overlooking the beautiful Aristotelous Square and the city's magnificent seafront. A total number of 96 participants from 22 countries attended the symposium which took place in traditional form with on-site only participation. The event was organized by the Department of Geodesy and Surveying of the Aristotle University of Thessaloniki, under the scientific coordination of IAG Commission 1 and its four sub-commissions.

REFAG 2022 carried on the well-established tradition of IAG dedicated symposia on Reference Frames that were previously held in Munich (2006), Marne-la-Vallee (2010), Luxemburg (2014) and Pasadena (2018). The primary scope of the symposium was to address current theoretical concepts, advancements and open problems related to reference systems and their practical implementation by space geodetic techniques and their combinations, underlying also limiting factors, systematic errors, infrastructure-related aspects and novel approaches for future improvements. The scientific program of REFAG 2022 covered all main topics in relation to the activities of IAG Commission 1 and its subgroups, including also other initiatives and ongoing projects which endorse the role of geodetic reference frames in Earth science applications. The symposium's program was organized into 5 thematic sessions as follows:

- Session 1. Global Reference Frame Theory, Concepts and Computations (chaired by *X. Collilieux* and *E.C. Pavlis*)
Session 2. Space Geodetic Measurement Techniques (chaired by *U. Hugentobler* and *K. Sosnica*)
Session 3. Regional Reference Frames and their Applications (chaired by *C. Bruyninx* and *M. Craymer*)
Session 4. Celestial Reference Frames and Earth Orientation Parameters (chaired by *B. Soja*)
Session 5. Usage and Challenges of Reference Frames for Earth Science Applications (chaired by *J-P. Boy* and *S. Glaser*)

A total of eighty eight papers were presented during the four days of the symposium by leading experts and young scientists from academia, research institutions and public authorities. The presentations are freely accessible through the symposium's website at www.refag2022.org, while the symposium proceedings will soon be published, after a peer-review process, in Springer's IAG Symposia Series (IAGS) with open access to the entire community.

REFAG 2022 was also complemented by a social program which included an ice-breaker reception on Monday evening at the rooftop of the Electra Palace Hotel, and a visit and guided tour on Wednesday evening in the Museum of Byzantine Culture, followed by a nice social dinner in the premises of the Museum. The Museum of Byzantine Culture in Thessaloniki is considered one of the best works of public architecture in Greece and it has been listed as a national historic monument by the Ministry of Culture.

The success of the symposium was made possible thanks to the efforts and hard work of the local organizing committee through the support of NbEvents Co. and its great personnel.

For more information on the REFAG 2022 symposium, please visit the following website: <https://www.refag2022.org>.

Christopher Kotsakis
Chair of REFAG 2022 LOC
President of the IAG Commission 1 "Reference Frames"



Participants of the REFAG 2022 Symposium, 17-20 October 2022, Thessaloniki, Greece.

Obituary

Bjørn Engen (1941-2022)



It is with sadness we announce that Bjørn Engen passed away on July 19 th 2022 after several years of illness. He was 81 years old.

Bjørn was born in Trøndelag county in Norway. He was educated at the Norwegian Army's College of Engineering and Bergen college of engineering, followed by a Master's degree from the North East London Polytechnic.

He was married to Elsa who passed away in 2018, and together they have two children, Bergljot (Bella) and Håkon.

Bjørn was Director of the Norwegian Mapping Authority's Geodetic Institute from 1986 to 2007, then special adviser until his retirement in 2011.

Before joining the Norwegian Mapping Authority, Bjørn worked, among other things, on mapping and surveying assignments abroad, including several assignments in Africa for around 20 years.

Bjørn was an exceptionally strong relationship builder, and in his career he gained an impressive network in the Norwegian professional community as well as in Europe and the USA. He was full of ideas and courage, and he became an important promoter for the development of the geodesy profession in Norway. He took the profession from classical national geodesy to a profession that

benefits from, and contributes to global space geodesy. It was thanks to Bjørn and some skilled employees that the Norwegian Mapping Authority in 1993 got its first VLBI station in Ny-Ålesund on Svalbard, a great achievement at the time.

He was president of the Nordic Geodetic Commission from 1998 to 2006.

He was an active and socially engaged person and was also involved in the local community where he was on the board of several organizations.

In 2015, Bjørn Engen was appointed Knight of 1st Class of the Royal Norwegian Order of St. Olav for his outstanding efforts in the field of geodesy.

Bjørn's efforts for the Norwegian Mapping Authority have left a deep mark, both in Norway and abroad, and he will be greatly missed by family, friends and colleagues.

Per Erik Opseth

József Ádám (1950-2022)



We are deeply saddened to inform international scientific community that Prof. József Ádám, member of the Hungarian Academy of Sciences, president of the IAG National Committee and IAG National Representative, the former President of the COB/Member of the EC has passed away on December 29, 2022. Both the Hungarian and the international geodetic community has lost a remarkable scientist, an outstanding professor and a good friend.

József Ádám was born in 1950 in Kocsér, a small village in Central Hungary. He was enchanted as a child by the work and the instruments of land surveyors, who were taking observations on the 3rd order geodetic control point in his home village. In the 1960s his teenage years coincided with the evolution of the space era. He read lots of articles about the artificial satellites, that also determined his future

activities. He studied land surveying at the Technical University of Budapest (now Budapest University of Technology and Economics, BME) and earned his PhD in 1977 with the thesis „Determination of station coordinates using satellite laser ranging”.

He started his professional career in 1974 at the Satellite Geodetic Observatory of the Institute of Geodesy, Cartography and Remote Sensing in Hungary. He started to work on the application of the emerging satellite geodetic observation techniques in the development and refinement of geodetic networks. The datum transformation parameters between the Hungarian Datum 1972 and WGS-72 as well as WGS-84 were determined by him using Doppler and GPS observations, respectively. Later he joined to the research group studying VLBI and space-VLBI techniques. He has held an Alexander von Humboldt Fellowship in Stuttgart in 1985 and a research associate position in the late 1980s at the Ohio State University, where he did fundamental research in the geodetic applications of space VLBI observations and wrote his well-known work „Estimability of geodetic parameters from space VLBI observables”. In 1995 he held a research associate position at The Observatoire de Paris, too.

He was continuously active in teaching even during this period. He was the lecturer of Geodetic Control Networks and Satellite Geodesy at BME. In 1992 he earned his DSc in Geodesy at the Hungarian Academy of Sciences and was appointed as professor to the Department of Geodesy at BME. He taught several generations of land surveyors and geodesists in the next more than 30 years.

His research activities focused on the application of satellite geodetic techniques in the establishment and maintenance of geodetic control networks, on geoid determination as well as on the development of continental and international reference frames. The Hungarian Academy of Sciences appointed him as a corresponding member in 1998 and as a regular member at 2004. He was a very enthusiastic member of the HAS, acted as vice president and later president of the Department of Earth Sciences for 6-6 years. As the member of the HAS he turned his interest into the history of earth sciences and technology as well as into the conservation and further development of the Hungarian technical and scientific language.

He was also active in the international geodetic community. He served as the Hungarian National Representative of the IAG since 1991, as the chairman of the IAG Special Study Group 2.109 (Application of Space VLBI in the Field of Astrometry and Geodynamics) and as the president of its Communication and Outreach Branch between 2003-2019. He was a member of the IUGG Working Group of History (2014-2019) and the Member of the IUGG Permanent Council (2015-2019). He organized several IAG conferences in Budapest, such as the 3rd EUREF Symposium in 1993; the 2nd Continental Workshop on the Geoid in Europe in 1998; the IAG Scientific Assembly in 2001 and the IAG International Geoid School at 2005. He was the convener and/or co-convener of IUGG union and Inter-Association Symposia in 2011, 2015 as well as in 2019 as well as the Fellow of the IAG since 1995.

Due to his long-term commitment to advancing geodetic research as well as to the promotion of international geodetic cooperation, the Bayerische Akademie der Wissenschaften elected him as the corresponding member of the German Geodetic Commission in 2001, while he became the member of the Leibniz Society of Sciences at Berlin in 2021.

He was devoted to the science of geodesy and to serving the geodetic community both on the international and on the national level. He was an appreciated member of the geodetic community due to his knowledge, his deliberate and patient personality and positive, supporting attitude. May he rest in peace!

Szabolcs Rózsa