



The Global Geodetic Observing System (GGOS) of the International Association of Geodesy (IAG) convened geodetic and geophysical communities to participate in the *GGOS Topical Meeting on the Atmosphere, held in Potsdam, Germany, 7-9 October 2024*. The main objectives were a general brainstorming and in-depth discussions on the challenges and opportunities of integrating geodetic and geophysical technologies for a comprehensive monitoring of the lower atmosphere (i.e. troposphere and stratosphere), the mid atmosphere (mesosphere) and the upper atmosphere (incl. thermosphere, ionosphere and plasmasphere). This Topical Meeting was organised as a main activity of the project *Characterisation of the Ionised Atmosphere in terms of Essential Variables* granted by the International Union of Geodesy and Geophysics (IUGG) for 2024/2025 with the support of the International Association of Geomagnetism and Aeronomy (IAGA) and the IAG. The meeting was attended by 76 participants from 21 countries. 36 participants are early career scientists. Thanks to the generous support of the IUGG, the IAG and the IAG, travel grants were provided to six colleagues to enable them to attend the meeting.



Participants of the GGOS Topical Meeting on the Atmosphere, Potsdam, Germany, 7-9 October 2024 (Photo R. Heinkelmann)

Contributions covered topics from

- GGOS Focus Area “Geodetic Space Weather Research - GSWR”
- GGOS Focus Area “Artificial Intelligence for Geodesy – AI4G”
- GGOS Focus Area “Geohazards Monitoring”
- IAGA Interdivisional Commission on “Space Weather”
- IAGA Division II “Aeronomical Phenomena”
- IAGA Division V “Geomagnetic Observatories, Surveys and Analyses”
- IAG Commission 4 “Positioning and Applications”
- IAG Sub-Commission 4.3 “Atmospheric Remote Sensing”

- GGOS Study Group “AI for GNSS Remote Sensing”
- IAG Working Group “Remote sensing using GNSS reflected signals”
- Study Group “High-resolution probing of the Troposphere and Ionosphere” of IAG Inter-Commission Committee on Theory

56 contributions, 36 oral and 20 posters, were distributed in the following sessions:

- Session 1: *Magnetosphere, Ionosphere, Plasmasphere and Thermosphere, as a coupled system*, convener Michael Schmidt, DGFI-TUM, Germany
- Session 2: *Ionosphere modelling and applications*, convener Paweł Wielgosz, University of Warmia and Mazury in Olsztyn, Poland
- Session 3: *Climate application of geodetic atmospheric parameters*, convener Rosa Pacione, C.S.M. Data Analysis Services, e-Geos/ASI-Centro di Geodesia Spaziale, Italy
- Session 4: *Geohazards monitoring*, convener Michela Ravanelli, Sapienza University of Rome, Italy
- Sessions 5 and 6: *Geodetic Methods for Water Vapor Monitoring and Severe Weather*, convener Kyriakos Balidakis, Helmholtz Centre Potsdam GFZ German Research Centre for Geosciences, Germany
- Session 7: *Atmospheric modelling based on artificial intelligence*, convener: Benedikt Soja, ETH Zurich, Switzerland.

More information at

- Presentations: <https://zenodo.org/communities/ggos-topical-meeting-atmosphere/>
- Event website, meeting summary and photos: <https://ggos.org/event/ggos-topical-meeting-atmosphere/>.

In addition to the technical sessions, a guided tour through the emblematic facilities of the GFZ was organised and a "come together" for all participating young scientists took place. This event was not only restricted to the GGOS Topical Meeting on the Atmosphere, but also included the GRACE/GRACE-FO Science Team Meeting 2024, which took place at GFZ from 4 to 8 October, and the GGOS Days 2024, which followed the Topical Meeting on October 10 and 11. This informal “come together” meeting was sponsored by the IAG and was attended by about 45 young colleagues who had the opportunity to get to know each other, to talk about their work, and to network. We would like to take this opportunity to thank Ludwig Grunwaldt and Christoph Förste from GFZ for the warm welcome and interesting explanations during the visit to GFZ, as well as Julia Koch, PhD student at ETH Zurich, who, as GGOS Early Career Representative, organised the event with the young colleagues.

The GGOS Topical Meeting on the Atmosphere was only possible thanks to the support of numerous colleagues who defined the topics of the meeting, chaired the sessions, gave presentations and participated in the discussions. Special thanks go to GFZ Potsdam for hosting the meeting and to the local organising committee: Kirsten Elger, Robert Heinkelmann, Nataliya Bobenko, Sascha Torkhov and Alexander Brauser. Their tireless work ensured a familiar and comfortable atmosphere throughout the meeting. Special thanks are also due to the IUGG, whose support enabled the meeting to be held free of charge for all participants, thus facilitating the attendance of many colleagues, especially early career scientists. Finally, we would like to thank the Deutsches Geodätisches Forschungsinstitut of the Technical University of Munich (DGFI-TUM) and the Austrian Federal Office of Metrology and Surveying (BEV) for hosting and supporting the GGOS Presidency and the GGOS Coordinating Office, respectively.

*Laura Sánchez, DGFI-TUM, President of GGOS
Michael Schmidt, DGFI-TUM, Lead of the GGOS Focus Area
“Geodetic Space Weather Research”
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