

Minutes of the Meeting of IAG JWG 2.1.1 Development of the International Terrestrial Gravity Reference Frame

**Thursday, 5 September 2024, 15:00 UTC
GGHS 2024, Thessaloniki, and online**

**Chair: Hartmut Wziontek (Germany)
Vice-chair: Sylvain Bonvalot (France)**

Agenda

1. Status of the AGrav database
2. ITGRF Infrastructure
3. Site requirements, Best practices, Wiki
4. ITGRF Workshop 2025

1 Status of the AGrav database

After AGrav was offline at BKG for more than 2 years; it was successfully re-established at BGI with the technical support of Observatoire Midi-Pyrénées (SEDOO service). The whole dataset existing until Feb 2022 is now accessible with a modern web-interface via the following links at BGI and BKG:

- <https://bgi.obs-mip.fr/data-products/gravity-databases/absolute-gravity-data/>
- <https://agrav.bkg.bund.de/>

The current status of the application was reported. The assignment of DOIs for gravimeters and networks is planned for the near future, allowing to reference related absolute gravity (AG) measurements. The new web application was demonstrated. Restrictions on the resolution of gravity values are implemented as before in order to account for the specific restrictions of each institution.

Accounts have not been preserved and need to be re-established. The concept of institution managers is under consideration that allows to organize access for each of the contributing groups by themselves.

Adding new observations based on “project”-files of the g-Software by MGL will be possible soon and a preview of the upload process was given. First, it will allow to insert new observations to a specific station/point. New stations can be created and linked to an institution after login. Batch upload based on csv-tables was requested by several colleagues. This feature is planned and will be realized once the individual upload is completed.

Biases (e.g. from AG comparisons) should in general not be applied to observations. However, in some cases, e.g. when instrumental corrections were determined after processing, the final gravity value is already corrected in AGrav (e.g. measurements by ROB).

Another suggestion was to flag stations that are not existing or cannot be occupied anymore but documented for historical reasons.

2 ITGRF Infrastructure

The ITGRF will be realized by reference stations that allow for a monitoring of temporal gravity changes, either by the operation of a superconducting gravimeter (SG) in combination with repeated absolute gravity observations or a continuously operated absolute quantum gravimeter. If a continuous monitoring is not possible, repeated absolute gravity observations every two months are recommended.

IGETS provides a set of active SG stations, and it is therefore recommended to include these stations as reference stations and support them with repeated AG observations. IGETS would benefit from these measurements to precisely determine the SG drift.

Regional coordination of reference stations was agreed on by:

- for Europe: A. Engfeldt, P. Dykowski
- for North America: D. vanWestrum, J. Crowley
- for Latin America: E. D. Antokoletz
- for Asia: n.n.
- for Africa: t.b.d.

Core stations (within the frame of GGOS) need to be identified, to align with the space geodetic techniques and the ITRF.

To establish a compatible infrastructure of the ITGRF, new AG measurements worldwide are necessary, also in countries that are not operating AGs. Projects need to be established, eventually based on a pool of AGs. Further, the collected data need to be evaluated/assessed. It should be verified, whether the GGCE (Bonn, Germany) of the UN-GGIM can be used to arrange funding for AG measurements.

3 Site requirements, Best practices, Wiki

An initiative is needed to resume the efforts to compile information about site requirements, best practices as started in 2022. A Wiki was started already 2021 at BKG and is still be available:

- <https://wiki.gdi-de.org/x/hADLMg>

4 ITGRF Workshop 2025

In April 2022, the first I(T)GRF Workshop was organized in Leipzig, Germany by BKG and it was discussed if a second workshop would be helpful and supported. The following proposal were made:

- Session in IAG SA 2025 (too late?) or at EGU 2025 (deadline: Sept 9th)
- CCM Meeting is planned for 2025 that could also be used for
- Setup a survey whether a Workshop is of interest

Participants

local:

V. Pálinkáš (VÚGTK, Czech Republic)
E. Antokoletz (BKG, Germany)
N. Darbeheshti (GA, Australia)
J. Crowley (NRCan, Canada)
I. Ochepkov (PLC “Roskadastr”, Russia)
Ch. Förste (GFZ, Germany)
D. vanWestrum (NGS, USA)
K. Matsuo (GSI, Japan)
M. Lederer (Land Survey Office, Czech Republic)
P. Dykowski (IGiK, Poland)
C. Tocho (UNLP, Argentina)
L. Sánchez (GGOS)
J. Mäkinen (FGI, Finland)

U. Marti (swisstopo, Switzerland)
R. Gross (NASA, USA)
R. Barzaghi (PdM, Italy)
T. Lercher (BEV, Austria)
G- Vergos (AUTH, Greece)

online:

M. Bilker-Koivula (NLS, Finland)
A. Villar (IGN, Spain)
W. Subiza (IGM, Uruguay)
A. Engfeldt (Lantmäteriet, Sweden)
L. Moises (IGAC, Colombia)
A. Facello (INRIM, Italy)
A. Germak (INRIM, Italy)
T. Olszak (WUT, Poland)
R. Degoy (IGN France)
J. Kennedy (USGS, USA)
J. Papco (STU, Slovakia)
M. Andrade de Sousa (ON-GOCE, Brasil)
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