



Name and Acronym for the International Gravity Reference System and Frame

Summary by Hartmut Wziontek, Chair of IAG JWG 2.1.1. and
Derek van Westrum, Chair of IAG SC 2.1

Situation

Apr 2018: Meeting of IAG JWG 2.1.1 at EGU General Assembly in Vienna:
In accordance with other geodetic reference systems/frames the acronyms **IGRS / IGRF** were fixed for the International Gravity Reference System/Frame.



Minutes of the Meeting of IAG JWG 2.1.1 Establishment of a global absolute gravity reference system

**EGU General Assembly in Vienna, Austria
Wednesday, 11 Apr. 2018, 10:30–12:00 room 2.61**

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

Situation

Apr 2018: Meeting of IAG JWG 2.1.1 at EGU General Assembly in Vienna:
In accordance with other geodetic reference systems/frames the acronyms **IGRS / IGRF** were fixed for the International Gravity Reference System/Frame.

Jul 2019: IAG Resolution No. 4 uses both acronyms

Resolution 4: Establishment of the Infrastructure for the International Gravity Reference Frame

The International Association of Geodesy,

Considering,

- The IAG Resolution No. 2 for the establishment of a global absolute gravity reference system released at the 26th IUGG General Assembly in July 2015;

Acknowledging,

- The achievements of
 - JWG 2.1.1 “Establishment of a global absolute gravity reference system”,
 - Sub-Commission 2.1 “Gravimetry and Gravity Networks”,
 - International Gravity Field Service (IGFS)
- in realizing this resolution;

Noting,

- That the realization of the International Gravity Reference System (IGRS), the International Gravity Reference Frame (IGRF), is based on measurements with absolute gravimeters (AG) monitored at reference stations and during international comparisons, which needs the support of national and international institutions;

Urges,

- International and national institutions, agencies and governmental bodies in charge of geodetic infrastructure to
 - Establish a set of absolute gravity reference stations on the national level,
 - Perform regular absolute gravity observations at these stations,
 - Participate in comparisons of absolute gravimeters to ensure their compatibility,
 - Make the results available open access.

Situation

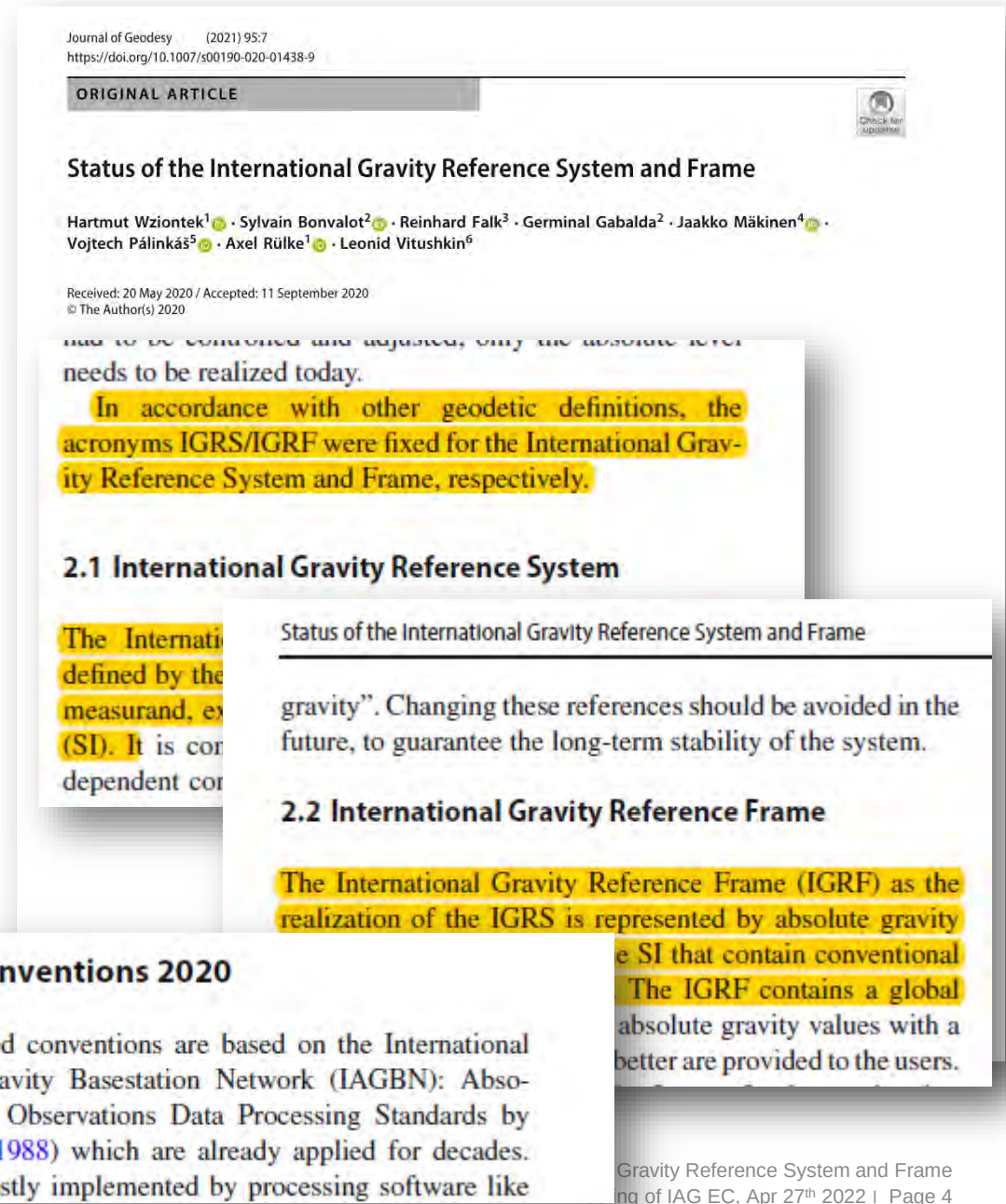
Apr 2018: Meeting of IAG JWG 2.1.1 at EGU General Assembly in Vienna:

In accordance with other geodetic reference systems/frames the acronyms **IGRS / IGRF** were fixed for the International Gravity Reference System/Frame.

Jul 2019: IAG Resolution No. 4 uses both acronyms

Sept 2020: Fundamental Publication in JOGE: *Status of the International Gravity Reference System and Frame*, introducing both acronyms and the “IGRS Conventions 2020” for processing of absolute gravity observations

<https://doi.org/10.1007/s00190-020-01438-9>



Situation

Feb 2022: President of IAG Commission 2, Adrian Jaeggi, informed about an unfortunate coincidence of the acronym IGRF:

- Used by IAGA since the 1960s for the International Geomagnetic Reference Field
- Coincidence was brought to the attention of the IAG bureau from the IUGG president, Kathy Whaler
- The IAG bureau is asking to modify the acronym to avoid identical acronyms within IUGG
- Summary of discussion by members of IAG JWG 2.1.1. sent on Feb 25th to IAG bureau



Discussion of IAG JWG 2.1.1: Name and Acronym for the International Gravity Reference System and Frame

25.02.2022

**Summary by Hartmut Wziontek, Chair of JWG 2.1.1. and
Derek van Westrum, Chair of SC 2.1**

Positions of IAG JWG 2.1.1

- 1) Keep the acronym and name for IAG:
 - Maintain consistency across IAG reference systems and frames:
 - ICRS/F - International Celestial Reference System/Frame
 - ITRS/F - International Terrestrial Reference System/Frame
 - IHRS/F - International Height Reference System/Frame
 - Name and acronym have been in use since 2018:
 - IAG resolution No. 4 of 2019
 - JOGE publication 2020
 - IGRF Workshop 2022, Leipzig/Germany
 - Solve duplication by modifying the acronym IGRF of IAGA?

<https://igrf2022.org/>



Positions of IAG JWG 2.1.1

2) If unavoidable, change the acronym and name:

- a) International **Terrestrial** Gravity Reference System/Frame: **ITGRS/ITGRF**, breaks the usual 4-letter acronyms convention of the IAG
 - b) keep IGRS, but **switch only the sequence** from **IGRF → IRFG**: International Reference Frame for Gravity. (Or, in addition, swap IGRS → IRSG)
 - c) Keep IGRS but use **IGRN instead of IGRF**: “net” instead of “frame”
- a) best compromise: maintain the pattern, The “I” should definitely be kept; interference with the Italian Geomagnetic Reference Field using the same acronym (ITGRF) is unlikely
 - b) second choice, minimal change, but standard pattern, “[observable], Reference System/Frame”, is lost
 - c) demote the gravity reference frame to just a network, detach it from the concept of reference frames, established under the UN-GGIM Sub-Commission on Geodesy

Conclusion and Recommendations

The JWG 2.1.1 recognizes that it was unfortunate that the overlap of the acronyms was not realized earlier.

If it were at all possible to maintain IGRS/F under the IAG, that would be our first choice (and thus either have duplicate acronyms under IAG and IAGA, or ask IAGA if it is possible to change their IGRF).

If, however, that is not possible, our recommendation would be to rename the International Gravity Reference System/Frame to
International Terrestrial Gravity Reference System/Frame (ITGRS/F).