

Time & location:

Part I: Tue, Oct 15, 2024, 1400-1530 CEST (online)

Part II: Tue, Nov 12, 2024, 0930-1220 CET (online)

MINUTES**1. Opening (Söhne)****2. Approval of minutes of 95th GB meeting (Kollo)**

GB95 was a two-part meeting, with first part online and 2nd part in-person during the symposium in Barcelona. The latest version of the minutes of GB95 has been sent to the GB on September 10, 2024.

Action Item to KK: publish minutes of GB95

3. Review of Action Items from previous GB meetings (Söhne)

There were no dedicated Action Items formulated during the GB95 meetings.

4. EUREF Governance**a. Status of 2024 Resolutions (Söhne)**

There were five resolutions formulated at the last symposium:

- 1) derive and insert DOIs: EPN CB announced the option to derive DOIs. 150 EPN stations DOIs assigned.
- 2) support the GGCE – quite vague formulated resolution; UN-GGIM:Europe WG on Reference Frames (Jeffrey Verbeurgt) is engaged and in contact with EUREF; GGCE is currently working on a “First Joint Development Plan for Global Geodesy (JDP)” – on agenda
- 3) EPND Repro3 – Not much progress at the moment, in the agenda for GB96, II part.
- 4) InSAR equipment – status was reported to IGS via poster and IC splinter meeting, not much discussion within the IC so far; CB: not clear if the proposal done by the colleagues from The Netherlands. WS: bring it back to the IGS IC and invite Lennard for short introduction. ML: GeodesyML for colocation information, not only sitelogs. What about non-located InSAR equipment? Should it be listed somewhere? AC: example from Padova we agreed on active transponder from Copernicus satellite, it has been operational next to IGS site. Proper use of this investment is important. CV asks for the InSAR community and the possibility that they maintain their own logsheets, which might contain much more information than in section 7 of the sitelogs. Links in the sitelogs possible (e.g. in the notes)?

Action Item to WS: remind the IGS IC on the InSAR topic for the next IGS IC meeting and suggest to invite Lennard Huisman to the next IGS IC meeting.

- 5) ETRS89 realisation – in progress and on agenda. Meeting on 15th of October.

b. EUREF Symposium 2025 (Lidberg)

No final volunteer for an in-person symposium 2025. ZA repeats the option to have a symposium in Paris. WS describes possible alternatives: 1) skip the 2025 symposium – point to the AC / DAC workshop if this will be done; 2) do a purely online symposium as in 2021 and 2022 – search for a volunteer to perform it; 3) search more intensively for a volunteer for 2025; 4) search intensively for a volunteer for 2026. ML: AC workshop could be in Gävle or Tallinn. KK: optimally positive answer from France until our newsletter is published (end of December). ZA will further investigate, also, if 2026 could be an option. WS: we should have an in-person symposium 2027 when the functions have to be renewed.

5. ETRS89**a. ETRS89 meeting – short summary (Lidberg)**

GB should install a Study Group (or Working Group) on ETRS89 realization. Xavier volunteered to lead a group. All persons interested indicate their interest to Xavier. Good idea to invite persons from outside the GB. Preferably also from south part of Europe. ZA:

follow the ICG guidelines and EUREF bylaws.

Possible ideas:

- 1) Collect topics which should be covered by the SG.
- 2) User perspective covered in the second part.
- 3) Is the idea of a stable (fixed) part of Europe still appropriate? Northern Europe and Southern Europe do not fit.
- 4) Kinematic reference frame? Dynamic reference frame?
- 5) Collection of state-of-the-art: What are the other regions doing?
- 6) Application of various parameter transformations
- 7) What, if we skip ETRS89 and step (back) to ITRS and its realisations?
- 8) What is ETRS89 for and what is it not for? – RD: not for science and research, but for the NMAs.
- 9) ETRS89 inventory from the different countries
- 10) Timeline for a proposal
- 11) JL: changes in the INSPIRE directive for reference frames?
- 12) Geocentric translations as an alternative option? – came into the formula long time ago. (It influences the vertical position which so it is unfortunate for geoid work.)
- 13) Is the way back to ETRF2000 acceptable? –ZA: ETRF2000 is biased, that is its largest disadvantage.
- 14) ZA: come up with a new definition(?), realization(?) within a year?
- 15) ML: Example Latvia with the planned introduction of ETRF2020 would introduce some 7 cm difference in the coordinate level to the neighbours. Currently EUREF don't provide an option that resolve this issue, other than still using the ETRF2000. XC: no change needed for France, for example.
- 16) Joachim: the accumulation of transformation parameters, change in ellipsoidal height
- 17) What, if we do nothing?

b. Status of the EUREF Study Group on alternatives to ETRS89 (Collilieux)

JC provides an update of the ToR of the Study Group. He proposes a member list of up to 20 members, according to the IAG rules, and a group of corresponding members, e.g. from national organisations. JS proposes to provide a list of potential candidates for the corresponding members coming from the questionnaire of his WG. Plan a meeting before the end of the year.

Action Item to JS: provide XC with a list of potential candidates for the corresponding members of the new ETRS89 Study Group.

c. EUREF-EUROSDR joint workshop Oct, 22+23, 2024 (Lidberg)

ML gives a short summary of the workshop. Workshop had the title “How to increase use of spatial data & sharing data across borders – relating to reference frames”, then focused to “Georeferencing in the digital era”. About 35 participants in-person. There were oral presentations and breakout sessions.

Per-Erik Opseth opened the meeting by discussing the need for turning to using “the global reference frame”. In some groups almost all discussion was on issues they see today with reference frames and “EPSG-codes”¹. And paths for transformations between reference frames or CRS's. Also the widespread use of WGS84 as “transformation hub” in some software is problematic. The last day the questions were narrowed to: (1) Do we have a problem? (2) Three aspects of the problem? (3) The way forward?

A report derived by EuroSDR is going to be expected. A second workshop is planned, maybe

in fall 2025.

¹*Explanation: The EPSG registry and EPSG codes (as well as the ISO Geodetic registry) describe so called “Coordinate Reference Systems”, CRS’s. A CRS describe in detail how coordinates are represented numerically, e.g. if it is geocentric cartesian, geographical or in a map projection. Therefore, a Geodetic Reference Frame may be the geodetic base for several CRS’s.*

6. Height Reference (Sacher)

MS reports on the continuation of the work with the hydrodynamic levelling which has been presented in Barcelona. There will be support by C. Stobbe, e.g. on the investigation of the remaining tilts. There is a request by German Railway for levelling connections between Germany, in particular Saxony, and Czech Republic. Only three out of six border connections are still existing. Both countries are willing to investigate on their sides. The results could be useful also for the UELN.

7. Coordinators

a. Report of the Analysis Centre Coordinator (Liwosz)

Since week 2314 EPN operational based on all 17 Acs. Reprocessing of older weeks by RGA and IGN almost finished. Some others ACs are also doing some reprocessing (BEV, BKG). EPN Repro3. 8 Acs (of 11) completed. (UPA just the last years available so far). Discussion on the WRMS values of individual ACs and the influence of the different softwares.

b. Report of the Troposphere Coordinator (Pacione)

All 17 ACs are included in the combined final troposphere solution. Compared ZTD based on daily v.s. weekly position solutions. RP proposes two options for additional station-wise solutions coming from EPN Repro3, which may lead to a huge number of additional files. GB not sure if this is really necessary. EPN Data Centres should be contacted. Discussion on the used coordinates in the final troposphere solutions, daily versus weekly. Especially in the early years the impact of weekly coordinates is larger. RP asks TL for reminding the ACs to reprocess troposphere solutions in case of reprocessed coordinate solutions.

8. Working Groups

a. EPN Reprocessing WG (Völksen)

CV reports on the status of EPN Repro3. Solutions: 10 Bernese, 1 EPOS, 1 GAMIT. There is certain delay in our schedule with respect to resolution no. 3 of 2023. Hopefully by end of this year all daily files of the contributing ACs will be available at the DCs. ML mentions an initiative at NKG for combination of the individual Repro3 solution of NKG with IGS, done by Tobias Nilsson. Discussion on the availability of the individual Repro3 solutions. All solutions are so far publicly available on the EPN DCs. So everyone could use them, e.g. for combination and publication.

Action Item to WS: ask both EPN DCs if there is an option to restrict access to the respective directories and results.

b. WG on EPN Densification (Kenyeres)

AK reports on some new or announced contributions to EPND. The largest one is coming from UGA-EPOS. Additionally, UK included, and Poland, Portugal, Spain, France, Italy. The files and the amount are too large for a full combination. EPND D2237_E, possibly extension in IGB14. To be completed Q1 2025. EPND Repro3: A benchmark test of one week. Seems successful.

c. European Unified Height Reference (Schwabe)

JS summarizes the status of the work of the WG. No final decision on a possible EVRF202x (2025). He proposes to add a new product to our products & services list on the EUREF web page. He also proposes to publish a EUREF Technical Note on the transformation parameters collected by the questionnaire. GB asks for a draft of the paper – the DOI is <https://doi.org/10.71603/NatRefEurope>.

9. EUREF collaboration / external interfaces

a. **EUREF-EPOS collaboration (Bruyninx)**

CB recalls the work plan 2024/2025 between EUREF and EPOS, in particular with EPOS TCS on “GNSS data and products”. EPOS is updating their data policy. She outlines some topics under discussion within the TCS, e.g. highrate data, campaign data, realtime data and extension of the consortium with new partners and services. Several EUREF GB members are also members of the EPOS TCS Consortium Board, but a consolidated position of the EUREF GB is missing. The GB asks CB to provide the presentation of today for homework.

Action Item to CB: distribute the presentation of today on EUREF-EPOS collaboration and work on the proposed document of mapping EUREF and EPOS activities.

Action Item to WS and KK: reserve a longer portion of time during the next GB meeting for the discussion on the EUREF-EPOS relation.

b. **UN-GGIM : Europe – GRF**

There is an update or next draft version of the development plan by GGCE. Moreover, there is an announcement to a sequence of meetings on the strategy etc.

Action Item to WS: the GB chair shall distribute the letter from Jeffrey Verbeurgt to EUREF partners.

c. **GGCE workshop 2025**

Workshop should take place 17 to 21 February 2025 in Bonn. Announcement for workshop, deadline is Nov 1st. Zuheir helps to organize this WS. Similar WS proposed to other regions. Actual content might be focused depending on the region. ML and CB: a bit annoyed on the fact that it looks like EUREF is obsolete. Jeffrey did not contact regional reference frames.

10. Divers

a. **EUREF Newsletter 2024**

As in the last years we should work on a EUREF newsletter to be ready around mid of December. We could write a short summary of the last symposium. We could ask the colleagues on a section about InSAR. Repro3? All the other topics as usual. AA prepared the directory for the contributions on Onedrive. Contributions via email are also welcome.

Action Item to All: provide contributions on your component for the 2024 EUREF Newsletter until mid of December

Onedrive link to newsletter:

<https://1drv.ms/f/s!ApS4tJf9oLD0jKxZ6uhBAHgKriXRWQ?e=mZwjsj>

b. **ISO TC 211 – 19 161-2 Universal Identification for Ground Geodetic Stations (Legrand)**

JL contacted as EUREF reference frame coordinator and invited to a meeting. Want to standardise geodetic stations, e.g. replace DOMES numbers. Not the way ISO is working. MP is official member of the Working Group. ZA explains a bit more, that all geodetic stations in the world. Action Item to JL and XC to inform the GB on the progress.

11. AOB

a. **Action Items (Kollo, Söhne)**

b. **Next GB meeting(s) (Kollo)**

For the spring meeting, GB members are in favour of having an in-person meeting, but no volunteers so far.