

**Time & location:**

Wednesday, February 26, 2020, 1300 – 1800

Thursday, February 27, 2020, 0830 – 1200

Bayerische Akademie der Wissenschaften (BADW)

Alfons-Goppel-Str. 11 (Residenz)

D-80539 München

**MINUTES**

Last update: March 05, 2020

**1. Opening (Söhne)**

The EUREF GB chair, WS, welcomes the members and guests of this meeting and explains in particular the last-minute absence of some members due to the COVID-19 virus.

**2. Welcome (local organizers)**

As local organizer, CV welcomes the participants.

**3. Approval of minutes of 81<sup>th</sup> GB meeting in Warsaw (Kollo, Söhne)**

The EUREF secretary, KK, reviews the latest version of the minutes. Since there are no additional comments, she will send the final version to the EUREF webmaster for publication.

**Action Item to KK: send the final version of the minutes of GB meeting 81 to the EUREF webmaster for publication**

**4. Review of Action Items from previous GB meetings (Söhne, Kollo)**

The review of the action items of the last GB meetings starts with an initiative of BKG presented by MS. It concerns the action item of GB meeting 79 on a “Working Group for a European Height Reference Surface”. The draft version of the proposal has been distributed to the GB members shortly prior to the meeting. The current situation in Europe shows a quite inhomogeneous landscape with various national implementations of geoid or quasigeoid models. Moreover, a database with the official national height reference surfaces is missing. Various regional initiatives exist, mainly with scientific focus on gravimetric geoid models and height system unification. But there is no official EUREF product defined that enables to perform height transformations between ETRS89 and EVRS realizations. Heiner Denker, who joined the GB meeting 79 in Budapest, already indicated his willingness to contribute to this initiative. The GB asks MS to invite her colleague Joachim Schwabe to the next GB meeting to give more details on the planned activities and encourages both to give a presentation during the symposium.

Action item 4 from GB80 document storage: CV announces that there will be change in the web-service for EUREF, restricted area for the EUREF GB, Helena will report when it is ready. Two new action items from GB81: contribution to IGC Technical report 2019, Participation on FIG WG.

**Action Item to MS: invite Joachim Schwabe from BKG to the next GB meeting to explain in more detail the plans on a European Height Reference Surface**

**5. EU PSI directive (Bruyninx)**

CB explains the “Directive (EU) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on open data and the re-use of public sector information (recast)”<sup>1</sup>. She emphasizes that the directive is not new but a thorough reformulation of the directives 2003/98/EG and 2013/37/EU. However, the updated directive now includes a dedicated article (no 10) on scientific data sets. The EU member states are forced to transform the directive into national laws or regulations until 17 July 2021. Of special importance are the so-called high-value datasets. Six categories of the high-value datasets are explicitly named in Annex I: Geospatial – Earth observation and environment – Meteorological – Statistics – Companies and company ownership – Mobility. Some participants were already confronted with the request to provide information on the high-value datasets, in particular in the first

<sup>1</sup> <https://eur-lex.europa.eu/eli/dir/2019/1024/oj>, CELEX\_32019L1024\_EN\_TXT.pdf and published in many other languages

two categories. The GB discusses whether it is possible and worthwhile to report on the directive during the next symposium, in particular as part of the tutorial.

## 6. EUREF symposia

### a. EUREF symposium 2020 (Berk, Medved)

*KM reports on the status of the preparations for the next symposium end of May in Ljubljana, Slovenia. The web page is open since end of January 2020. Few registrations so far. The program of the tutorial is finished and published. There are seven talks confirmed but there is still room for one or two more contributions. EB as one of the presenters at the tutorial is proposing a questionnaire. So far, two invited talks for the symposium are confirmed. MS proposes to add one or more questions on the height reference surface for the national report. This should be communicated to the countries by EUREF mail before the registration deadline.*

*Discussion on how to distribute the abstracts. Discussion on whether to publish abstracts or not. Election and voting: paper or electrical?*

*Discussion on COVID-19. When to cancel the symposium at the latest? Postponement to autumn? GB not in favour since there are no free spots in autumn. In case the symposium has to be cancelled, Slovenia should be the priority candidate for 2022.*

**Action Item to EB: provide more details on the proposed questionnaire for the tutorial 2020**

### b. EUREF symposium 2021 – venue and scientific program (Lidberg, Kollo, Söhne)

*The place for the EUREF symposium in 2021 is already fixed. There could or even should be some slight changes in the sessions. CV proposes a dedicated session on ETRS89 realizations in the different countries. NMAs could report on problems they have. The GB discusses the balance between research organizations and national mapping agencies, in particular during the symposia and in the symposia's program. GB has some ideas as following: CV: Height systems for NMA's perspective. CB: Symposium should have some added value, more scientific presentations. MP: What people are expecting from us? Practical needs versus science. Information from NMA's what to request from science? CV: EUREF is an umbrella for Europe and combined networks.*

## 7. EUREF

### a. EUREF Strategy (Lidberg, Poutanen)

*ML introduces the discussion with some slides, one on technical issues and one on "political" issues. Unlike in other parts of the world, the activities on GRF-Europe are unclear. Idea of so called "Future landscape of EUREF". CB and CV emphasize the focus of EUREF on the core business, in particular the reference frames for Europe. MP: Contribute to global level – part of IAG, EUREF shall be visible and useful, products created shall be used widely, as well new technologies shall be adapted. CB: Sustainable, high quality products are essential. Second priority is to provide side products, for example troposphere products. ML: formulate challenges for the future, besides the core business. CB: Challenge: (1) border of the network, (2) to have a sustainable long-term infrastructure for reference frame maintenance. InSAR: could use our products. Stable infrastructure. MS: yes, but not completed for the height.*

**Action Item to ML, MP, CB and WS: work on a new and concise version of the EUREF strategy until the next GB meeting with the goal to present it at the symposium**

### b. Election of GB members 2020 (Söhne, Bruyninx)

*WS outlines the derivation of the proposed text for a EUREF mail to the public concerning two new positions for the GB. No concerns to the text were reported prior to this meeting. JZ expresses his general concerns to the means of election*

as the appropriate method for getting experts to the GB. For the future, CV proposes a new position for the GB which could cover GNSS software aspects. The GB agrees on sending out the EUREF mail asap.

**Action Item to KK: within one week from this meeting, send out the EUREF mail on the open positions for the Governing Board**

#### 8. InSAR-Geodesy Study Group (*tbd, invited*)

The GB discusses the importance of co-located InSAR infrastructure to the GNSS permanent stations. It is not clear whether all so far existing active and passive InSAR responders are reflected in the site logs.

**Action Item to CB and CV: prepare a EUREF mail to the station provider/operators to update the site logs with InSAR information on InSAR reflectors in the vicinity of each GNSS site.**

#### 9. EPN

##### a. Data distribution strategy: EPN stations in global IGS data centers (Söhne, Bruyninx)

End of last year, CB recognized that the IGS global data centre at ESA, GSSC, provides non-IGS stations, in particular those of EUREF. She had a discussion with them concerning GSSC's request on the distribution of EPOS stations. WS proposes to urge GSSC for changes on the introductory text on their web page reflecting the contribution of EUREF but the GB does not agree on this. The GB identifies a need for a general clarification concerning the separation of global versus regional data centres.

**Action Item to CB: informal contact to Nacho Romero to find out who is the right person to contact within GSSC**

**Action Item to WS: discuss again within BKG as one of the EUREF data centres and decide on the next steps to continue w.r.t. GSSC**

##### b. Coordinates in real-time streams – update (Bruyninx, Söhne)

CB reports on the discrepancies between the “official” coordinates of the EPN stations and those included in the real-time streams. 54% of EPN stations provide RT data. After bilateral communication, some stations improved but many still did not change the coordinates so far. CB proposes to add the information on the reference frame used in the stream metadata; possibly, the last record parameter <misc> of the sourcetable record ‘STR’ could be used for this. In particular the height shows discrepancies, clearly coming from the not correctly implemented relation between antenna height, the ARP and the marker. CB shows two examples for Septentrio and for Leica which implement it differently. For other manufacturers, e.g. Trimble, Javad, the implementation is not known.

#### 10. Coordinators

##### a. Status report of ACC (Liwosz)

TL recalls the introduction of Galileo in the analysis. Since the workshop in October 2019, CODE rapid products should be used. Concerning Galileo E5, he reports on differences shown by the CODE AC. TL informs on the end of the financial support for the ACC by the end of 2020. They are working on an application for a new project, until July this year, which probably should last for three years. A decision should be available by end of 2020. The GB offers the support of EUREF for the application.

#### 11. Working Groups

##### a. Different methodologies in EPN Densification – feedback (Zurutuza)

JZ reviews the combined time-wise stacked SINEX files. He applies two different approaches – weekly-wise and AC-wise (not to confuse with the two solutions of the Working Groups chaired by AK and EB). The differences between his solutions

*in the horizontal velocity exceed +1.25 mm / year only for one site out of 1557 velocity estimated values (8 velocity differences exceed this threshold for the vertical component).– The GB suspects a biased solution or even a tilt. JZ explains that for some stations the time span was roughly 2 years and this is the reason of getting some differences of about 0.25 mm/year: the agreement between the two different approaches, with zero means (positions and velocities) is at the sigma level of both solutions, he states. Which one of both approaches is easier and / or faster? – Multi-year one with combination of velocities. CB argues that the weekly-wise combination has the advantage that JZ has full control himself on the applied discontinuities, but generating such a solution is extremely time consuming. The quicker AC-wise solution can be of equivalent quality if the ACs agree to use a common set of discontinuities for the stations common in their networks. JZ would like to have more individual solutions as input to his investigations. The GB proposes to ask the chair of the EPN densification, AK, to provide such individual contributions.*

**Action Item for AK: contact JZ on the provision of individual solutions for continuation of JZ's investigations**

**b. WG of deformation models – (Lidberg)**

*As a late-minute addition to the agenda, ML recalls the status of the progress in the WG, in particular the least-squares collocation (LSC) method for interpolation done by Rebekka Steffen. Collocation with plate boundaries. Some changes necessary. Priority discussion on the product release, on collocation modelling and on the transformation – could be done by different persons. CV proposes one person, which has to be consulted with the agency. The GB agrees on the schedule to have a first product ready for the symposium 2021. This should cover horizontal velocities as well as vertical ones.*

**12. EPOS – status and contributions from EUREF (Bruyninx)**

*CB reviews, without showing her slides, the status of EPOS. There are several official member countries, also some observer countries. With respect to the TCS on “GNSS”, there are 202 EPN stations and 436 EPN Densification stations registered, at all more than 800 stations as EPOS stations. On the other hand, there are more than 2200 stations with site logs. Gipsy, GAMIT solutions as independent solutions from within EPOS. CV expresses his concern that EUREF must not be obsolete in the coming years. However, the core business of EUREF, the reference frame, is completely out of the scope of EPOS and therefore EUREF will continue to be very relevant.*

**13. AOB**

**a. CRS.eu – status and possible developments (Sacher)**

*MS recalls the CRS-EU (CRS-EU: Coordinate Reference System in Europe) portal which started in 2000. 2005 the vertical component was added. Since then, no general changes. She explains some technical issues, in particular with the software. A review of the content seems to be necessary. MS mentions some new components in the new ISO standard 19111, e.g. dynamic reference frames. In contrast, there is well-established and frequently used EPSG. But CRS-EU cannot and will not compete against the European Petroleum Survey Group Geodesy (EPSG). A revision of the CRS-EU system (technical, contents, functionality) is planned. Contrary to EPSG, in CRS-EU online transformations are available. Transformations between national vertical CRS and EVRF2019 will be provided as grids. A new transformation grid as ASCII file is presented. Some discussion on the cell-size, which is the same for longitude and latitude – should it be different instead? Necessary to have the grid in meter instead of degree? – Should be in the responsibility of the user.*

*In a next step, national geoid solutions, similar to IGS – International Service for the Geoid (<http://www.isgeoid.polimi.it>), but with additional information, will be*

*integrated in CRS\_EU.*

**b. EUREF “Proceedings” (Söhne)**

*WS proposes to “revive”, to some extent, the former EUREF proceedings. Could be done similar to the IGS annual Technical Reports, ending in a DOI or ISBN number, for referencing. Discussion on pros and cons. CV recalls that the work done by the former EUREF secretary and his secretary to compile and reformat the contributions was enormous amount of work. Is there a budget to publish? – Not necessary if the publication is just electronical. Serious publication would need much more papers than just copies of the power point presentations. The GB estimates the willingness to invest in such paper versions to be low. Proposal to ask the participants of the upcoming symposium on their opinion.*

**c. GB skype meeting**

*A dedicated skype meeting shall take place in March with the Reference Frame Coordinator on the new classification scheme and the web page.*

**d. Next GB meeting**

*Next GB meeting 83 is scheduled for Monday / Tuesday 25 / 26 May 2020 (noon-to-noon) at the premises of the Faculty of Civil and Geodetic Engineering, prior to the symposium as usual.*

**PARTICIPANTS**

Z. Altamimi (excused)  
 E. Brockmann (excused)  
 C. Bruyninx  
 A. Caporali (excused)  
 R. Dach (excused)  
 A. Kenyeres (excused)  
 K. Kollo  
 J. Legrand (excused)  
 M. Lidberg  
 T. Liwosz  
 R. Pacione (excused)  
 M. Poutanen  
 M. Sacher  
 W. Söhne  
 J. Torres (excused)  
 C. Völksen

A. Araszkievicz  
 J. Zurutuza  
 S. Berk  
 K. Medved