

Time & location: June 3, 2014: 09:00 -18:00; Vilnius, Holiday Inn Vilnius Hotel

AGENDA

Last update: May 13, 2014

1. Opening (Bruyninx)
2. Approval of minutes of 64th TWG meeting in Gävle (all)
3. Review of Action Items of 64th TWG meeting in Gävle (all)
4. Organisation of EUREF symposium in Vilnius
 - a. Organisational aspects (Parseliunas)
 - b. Scientific program (Ihde, Caporali)
 - c. Best students / young scientists presentation award (Ihde)
5. EUREF tutorial (Söhne)
6. EUREF ToR (Ihde, Torres)
7. Latest Developments wrt EPOS (Fernandes)
8. WG on Deformation models (Lidberg)
9. EPN Densification (Kenyeres, Bruyninx)
10. EUREF-CEGRN MoU: status and proposal of coordinate validation (Stangl, Caporali)
11. MoU EUREF-EUPOS, EuroGeographics KEN (Oruba, Ihde)
12. EPN ACC news (Szafranek)
13. Proposal for new EPN LAC (Szafranek)
14. EUREF Troposphere (Pacione, Söhne)
15. EUREF Contribution to ICG (Altamimi, Caporali, Dousa)
16. Guidelines for EPN broadcasters (Söhne)
17. EUREF product catalogue (Söhne et al.)
18. Status of ITRF2013 (Altamimi)
19. Next meetings
 - a. Fall 2014 TWG meeting (all)
 - b. EUREF 2015 symposium (Ihde, Caporali)

20. Action Items (all)

Participants

TWG members:

Z. Altamimi	
E. Brockmann	
C. Bruyninx	
A. Caporali	
R. Dach	
J. Dousa	
R. Fernandes	
H. Habrich	excused
J. Ihde	
A. Kenyeres	
M. Lidberg	
R. Pacione	
M. Poutanen	
W. Söhne	
G. Stangl	
K. Szafranek	
J. Torres	

Guests:

A. Araszkievicz	excused
A. Oruba	
E. Parseliunas	

Minutes

1. Opening (Bruyninx)
In her property as chairwoman of the EUREF Technical Working Group (TWG), C. BRUYNINX opens the 65th meeting of the EUREF TWG, welcomes the participants and expresses her thanks to the National Land Service and the Vilnius Gediminas Technical University for the invitation and organization of this meeting. On behalf of the Local Organizing Committee, Eimuntas Parseliunas welcomes the TWG and submits his best wishes for a successful meeting. A draft of the agenda has been distributed among the TWG. The participants accept the agenda after some minor corrections.
2. Approval of minutes of 64th TWG meeting in Gaevle (all)
The minutes are approved with minor changes.
3. Review of Action Items of the previous TWG meeting (all)

a. Left open from previous TWGs

AI1_62 on ML and JT: The Chairman of the Group should be invited similarly to what was done with PAUL DUNKLEY for Eurocontrol. ML to invite the Chairman of the Baltic Mean Sea Level Commission to the EUREF Symposium in Vilnius. Done, Chairman will be invited; **postponed to fall meeting**

AI6_62 on ML and AC: based on the information available from the literature and recent presentations, propose at the next TWG an updated roadmap on how to proceed. **On agenda**

AI9_62 on ALL: Review EUREF Products on the Web and provide feedback. CB, EB and WS to work on the product catalogue. **Done, product catalogue will be presented at this TWG**

AI1_63 on KS: keep in touch with the Polish NMA to finalize the Polish ETRF2000 Densification Campaign. **In progress.**

AI4_63 on AK: is asked to prepare a document providing a proposal for description and status of the Densification Analysis Centers to be discussed at the next TWG. **Postponed to fall meeting.**

AI8_63 on RP and JD: stimulate WG3 of COST Action to work on issue of SINEX_TRO format standardization. **In progress.**

AI12_63 on KS: solicit the LAC's for GLONASS analysis. **In progress.**

AI13_63 on JI, JT and AC: better outline the role of the EUREF CB, and the duration of the terms. **Postponed to fall meeting.**

AI14_63 on JI: to write a letter to a number of high ranking Officers of European Organizations highlighting the role and activity of EUREF. **Not recommended to be pursued at present.**

b. For TWG 64

AI1_64 on GS: GS is asked to keep in contact with Michail Gianniou about the historical RINEX data for the EPN densification at Greece (Item AI4_63). **In progress.**

AI2_64 on AC: remind JI to make the necessary arrangements for organization of Best Student Award and Support from EuroGeographics to participants from economically weak Countries for the next EUREF symposium. Participants from Ukraine, Belarus, Georgia and Northern African Countries should be solicited (Item 4). **Done.**

AI3_64 on AK: to make available, especially for scientific users, time series of the EPN coordinates outcome of his cumulative solution (Item 5). **Postponed.**

AI4_64 on AC: to contact ML and EB

to provide the description of their WG for the TWG page of the EUREF web site (Item 5). **Done.**

AI5_64 on WS: Update EUREF product catalogue and distribute to the TWG for review (item 5). **On agenda.**

AI6_64 on ZA, WS, AC, ML: to set up the program of the ETRS89 tutorial to be announced at the next EUREF symposium: titles and names of the speakers, and timing wrt symposium (Item 6). **On agenda.**

AI7_64 on JD, ZA and AC: to provide GNSS position data for the next ICG conference in Prague (Item 8). **On agenda.**

AI8_64 on KS: ACC will provide status report on reference frame fixing of combined EPN solution (item 9). **On Agenda.**

AI9_64 on CB and JD: Update EPN CB web site to reflect new status of GOP analysis center. **Done.**

AI10_64 on CV: contact the LAC's for possible contribution to the REPRO2 activities (Item 10). **Done.**

AI11_64 on CV: report on benchmark at the Symposium (Item 10). **Done.**

AI12_64 on WS, RP, JD and CB: to set up guidelines for EPN broadcasters and revive the EUREF–IP mailing list (Item 12). **In progress.**

AI13_64 on CB and AK: update the EPN CB web site to give more visibility to EPN densification activities. **In progress.**

AI14_64 on AK, ML, AC, ZA: to update the roadmap of the WG on Deformation modelling in time for the next TWG (Item 15). **On agenda.**

AI15_64 on AK, JI: to prepare the MoU between EUREF and EUPOS which will be included in a EuroGeographics joint KEN (Item 17a). **Done.**

AI16_64 on AC: to make a Doodle to propose a date end of

October/beginning November (Item 18a). **Done.**

AI17_64 on JI: to inquire on possible locations for the 2015 EUREF Symposium (Item 18b). **Done.**

4. Organisation of EUREF symposium in Vilnius

a. Organisational aspects (Parseliunas)

Parseliunas describes the program.

b. Scientific program (Ihde, Caporali)

The scientific program is finalised and updated.

c. Best students / young scientists presentation award (Ihde)

Carl Calvert is unable to participate but will financially support the prize. Following IAG rules, participants below 35 years of age are eligible.

5. EUREF tutorial (Söhne). The arguments of the tutorial are reviewed on the basis of the results of the questionnaire. The target people of the tutorial should take into account EUPOS and EuroGeographics, as well as geodesists from NMCA's in charge of defining national reference frames complying with ETRS89. It is pointed out that the focus of the tutorial is related to the host Nation. For example, for a EUREF symposium in Leipzig the focus would be height and gravity, while if in Greece the focus could be ETRS89. One open question to be addressed is how the geoid model + GNSS data can be used to obtain physical heights.

6. EUREF ToR (Ihde, Torres). This item results from the discussion on the future EUREF. The opinion of CB and JI should be made available to the

follow up chairs of the TWG and EUREF. The next chairs will then propose the new ToRs to be approved by the Plenary Assembly of EUREF. Small changes are anticipated. For example, is a Vice Chair useful? It is pointed out that the new organization should be implemented before the elections, so that people are elected for the new positions. ZA proposes, following IAG, that the past president works to propose changes to the bylaws to be adopted by the new executives. A nominating Committee should be identified for the Chair of TWG and Chair of EUREF. JI will announce this Committee. The Committee will be formed by JT (Leader), ZA, RP, ML, and GS.

7. Latest developments wrt EPOS (Fernandes). Focus is on the interaction between EPOS and EUREF. End of March a meeting of the WG's took place. WG4 focuses on GNSS data. Other geodesy data which can be related to Solid Earth (e.g. gravity) are considered less crucial, at moment. Data Dissemination and Products are also important pillars in the Coordination. The next phase is the Implementation. There are good chances of financial support from the EU. Cooperation with UNAVCO is foreseen in the GSAC themes. ZA asks for clarification on the role of EUREF within EPOS and WG4. Orpheus is a similar transnational network but has a legal status while EUREF does not. It is recommended that the people which contribute to EUREF are recognized as contributors also to EPOS. It is agreed that this view will be reflected in the TCS (Thematic and Core Services) document to be ready by October.
8. WG on Deformation models (Lidberg). ML reviews the goals of the WG. Examples are Switzerland, Fennoscandia, Central Europe, Greece and Poland. The roadmap should include models to describe quantitatively the deformations in various areas (vertical in Fennoscandia and Switzerland, horizontal in other Mediterranean areas). A grid e.g. by kriging/collocation should be considered as a viable option. AK points out that gridding could over-smooth active tectonic discontinuities.
9. EPN Densification (Kenyeres, Bruyninx). AK reports that data are available from several contributors, both as RINEX and SINEX. Strong overlaps among regional networks ensure link between networks. A total of 2630 sites are included. Best data are from 1400 (2007) on. CPU time is a problem but a parallelized version of CATREF is announced to be available soon. At the moment, the total network is divided into three subnetworks, with overlaps. IGS05/08.atx offsets are within 4 mm except for sites with the TRM41249.00 TZGD antenna. RD points out that the major effect comes from the scale introduced by the GLONASS calibrations in the newer IGS08.atx antenna model. 2D horizontal and 1D vertical maps in ETRF2000 are presented. It is recommended that velocities are shown only for sites with 3 or more years of data.
10. EUREF-CEGRN MoU: status and proposal of coordinate validation (Stangl, Caporali). AC reviews a document on the CEGRN multiyear computation 1996-2013, which is ready for delivery to the TWG together with the supporting files for validation as 'EUREF campaign'. It is recommended that the material is delivered in due time to the TWG members in due time, for discussion at the next meeting of the TWG. It is

also noted that the stations submitted for validation should make freely available their coordinates.

11. MoU EUREF-EUPOS, EuroGeographics KEN (Oruba, Ihde). JI reports that cooperation with EUPOS and EuroGeographics is on the way since many years. It should be formalized with a MoU. A Knowledge Exchange Network (KEN) is the form selected by Eurogeographics to improve capabilities and tools of each Member. A positioning KEN (POSKEN) shall be established with EUREF, EUPOS, and CLGE (Council of European Geodetic Surveyors) as participating organizations. Oruba reports that EUPOS was established in 2002 as an occasion to better integrate and have common standards for geodetic viewpoint among Central European Countries. The German SAPOS standard was adopted. Over 20 Countries have joined. EUPOS participates in RTCM and EuMetNet. Cooperation with scientific institutions is encouraged. The goals of the MoU are then reviewed. EUPOS deals with RTCM, EUREF with Science and Reference Frame, EuroGeographics is the interface to NMA's and EU Institutions and ELGC represents the users' community, particularly surveyors. JI points out that users should be provided with the best means of operating positioning measurements. The discussion focuses on how to make the MoU truly effective and operational, and how users can make the highest benefit. User feedback should play an important role in the positive development of the MoU. An option could be to make common Symposia EUPOS/EUREF. At the end of the discussion the MoU is signed.

12. EPN ACC news (Szafranek). Combined solutions are published:

final weekly/daily, rapid daily, hourly (ultra rapid). No submission of TIGA solutions. Time series of daily solutions are interesting for monitoring purposes. To participate to the combination a station must be processed by at least 3 LACs. Same for rapid solutions. Since 1788 only IGB08 reference stations used by BKG are used as reference for a total of 41 stations. No systematic shift relative to the previous datum made of 82 EPN Class A stations can be seen, within 2 mm. Metadata of LAC solutions are going to be verified operationally. Emails can be generated in case of inconsistencies, which relate mostly to antenna/receiver/firmware changes. Analysis Centers can be reoriented to LAC's and DAC's (Dedicated Analysis Centers).

13. Proposal for new EPN LAC (Szafranek). Proposal of Institut Cartographic I Geologic de Catalunya to become LAC is considered. It is emphasized that Real Time analysis or Multi-GNSS analysis or ionospheric work is welcomed.
14. EUREF Troposphere (Pacione, Söhne). RP will take over the task of Troposphere Coordinator from WS. The task of the Tropospheric Coordinator are reviewed. Tropospheric Summary Files format is reviewed. Format has been simplified by removing some tables. Switch is proposed for GPSweek 1800 (July 6, 2014). First combined tropo SINEX is expected end of August/beginning of September. Switch from BKG to ASI will be announced at the Symposium.
15. EUREF Contribution to ICG (Altamimi, Caporali, Dousa). GNut Anubis 1.2 is publicly available. Several types of information are available: repeatability, accuracy, for combined or individual GNSS solutions, at various time scales.

Combined analysis of GPS, GLONASS, Galileo and BeiDou are shown. AC presents results of **M**ulti-GNSS positioning of a number of EPN/MGEX sites with different receivers. The problems related to Time scale alignment and receiver specific biases are reviewed.

16. Guidelines for EPN broadcasters (Söhne). These guidelines could fit into Data Centers or Operational Centers Guidelines. An alternative would be dedicated Guidelines.

17. EUREF product catalogue (Söhne et al.). The catalogue is reviewed. Time series of coordinates should become available as a product. The discussion then focuses on how to make available physical heights.

18. Status of ITRF2013 (Altamimi). Some information is anticipated. Full report will be given at the Symposium. There is some delay from the techniques. LLR from Hannover does not comply with specifications. IDS, ILRS and IVS are not yet delivered. IGS solutions are available. Non Tidal loading will be applied at the combination stage. A by-product will be the unique annual term for co-located stations.

The WG of UN GGIM is briefly presented. Nations will be encouraged to join the WG.

19. Next meetings

- a. Fall 2014 TWG meeting (all): 3 and 4 November in Padova, noon to noon.
- b. EUREF 2015 symposium (Ihde, Caporali). Leipzig, 03 to 05 June 2015.

20. Action Items (all)

AI1_65_Item5 on WS: ML, MP, Guenter Liebsch will help WS in setting up the

program of the Tutorial

AI2_65_Item6 on JT: to report on this nominating Committee.

I thought we would also form a small committee to formulate an update to the ToR to be submitted to the next chairs?

AI3_65_Item7 on CB, AK and JD: to prepare sentences on how the contribution to EUREF can be a contribution to EPOS, and how can this be recognized. The document will have to be reviewed by WG4.

AI4_65_Item8 to ML: to set up a web site self managed on the WG activities, to be linked to the WG slot in the EUREF web site.

AI5_65_Item9 on AK: to check with providers of SINEX data that all the information on discontinuities, antenna changes etc. of the densification sites are available and included into the analysis.

AI6_65_Item10 on GS, AC: Distribute the relevant documentation and solicit **M. Mulic** to approve publication of the coordinates of Bosnian sites.

AI7_65_Item11 on JI and AO: to identify common topics for a joint Symposium.

AI8_65_Item13 on KS: to contact ICGC for further discussion on their role as LAC.

AI9_65_Item14 on RP, WS: to figure out how to implement the inter-technique combined solution, including VLBI and radiosonde data.

AI10_65_Item15 on JD AC and ZA plus RD: to prepare contributions to

the ICG meeting in Prague 10-14 November.

AI11_65_Item16 on WS: to prepare the Guidelines for the next TWG.

AI12_65_Item17 on Martina Sacher: check out the decision on the

distribution of the results of EVRF2007 computation, and do what was decided.

AI13_65_Item17 on AK: investigate the availability of EUVN DA data.