EUREF TWG meeting: Nov. 13, 2012 13 :30 – Nov. 14, 2012 12 :00
Location: *"Jungfrau" meeting room of the Federal Office of Topography (swisstopo), Seftigenstrasse 264, 3084 Wabern*

AGENDA
Last update : November 13, 2012

1. Opening (Bruyninx)
2. Approval of minutes of 59th TWG meeting in Paris (all)
3. Review of Action Items of 59th TWG meeting in Paris (all)
4. EPN CB status report (Bruyninx)
5. Multi-GNSS WG (final charter, RINEX3 naming convention) (Brockmann, Dousa)
6. EPN densification (Kenyeres)
7. Comparison national ETRF coordinates with EPN densification solution (Brockmann)
8. Real-time analysis:
    a. Transformation of satellite orbits and EOP into ETRF2000 (Habrich)
    b. Feedback on EPN real-time analysis web pages (Söhne)
9. National Implementation of the Galileo Public Regulated Service (PRS) and EUREF's Potential (Habrich)
10. WG on Geodynamics (Lidberg)
11. EPOS (Dousa, Lidberg)
12. Russian reference frame Sub-commission (Ihde)
13. Status web publication EUREF 2012 papers (Caporali)
14. Divers:
    a. EUREF campaigns - status of deliverables and web pages (Stangl, Bruyninx)
    b. EPN-REPRO1 paper (Habrich, Völksen)
    c. New COST proposal (Dousa)
    d. Next EUREF symposium in Budapest (Kenyeres)
    e. Report of ICG7 meeting in Beijing (Ihde)
    f. EUREF paper IAG Scientific Assembly (Potsdam, 2013) (all)
15. Next meetings
    a. Spring TWGMeeting (all)
16. Action Items (all)

Participants

TWG members:

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

Guests:

C. Völksen	excused

Minutes

1. Opening (Bruyninx)

   In her property as chairwoman of the EUREF Technical Working Group (TWG), C. BRUYNINX opens the 60th meeting of the EUREF TWG and welcomes the participants and expresses her thanks to E. BROCKMANN for the invitation and organization of this meeting. On behalf of the "Swisstopo" of Switzerland, E. BROCKMANN 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 59th TWG meeting in Paris (all)

   The minutes of the 59th TWG Meeting in Paris 05.06.2012, were distributed among the TWG members. The final text is published in the EUREF homepage.

3. Review of Action Items of 59th TWG meeting in Brussels (all)
   - AI1: G. WÖPPELMAN contacted but unavailable. C. BRUYNINX to contact him for next TWG
   - AI2 and 3: done
   - AI4, 5: in progress
   - AI6: done
   - AI7: in agenda
4. EPN CB status report (Bruyninx)

   New web pages and updates are reported: Top menu has been restructured; The station list includes information on Galileo capability; Map of the signals being tracked by each station is available; Original antenna calibration file is available; Information on availability of RINEX V3 data files now provided; Position time series updated to include REPRO1 results; Real time analysis web page updated; On-line site pictures submission by station managers implemented; VLBI minus EPN ZPD time series (differences) added;
5. Multi-GNSS WG (final charter, RINEX3 naming convention) (Brockmann, Dousa)

   Finalized WG charter accepted by TWG. Working Group has been officially created. 'Draft' to be removed from charter and chairperson to be indicated. WG will focus on open issues left from the presentation in Paris. RINEX 3 files are available at BKG and CDDIS. The October 2012 session foresaw 18 sites BKG EUREF and 26 BKG IGS. New file names for RINEX V3 files are proposed within IGS (but still under discussion) in such a way they reflect also satellite system, sampling rate. RINEX 3.02 issues are reviewed. An open question is: how is this new format going to be released?
6. EPN densification (Kenyeres)

   IGS08 and EPN densifications are different and their differences are clarified. IGS08 densification (only using EPN stations) available at this time is C1680. C1695 and C1710 to follow. Periodic effects in the time series have impact on the estimated velocity if short data series (>3 years) is available. The decision on a station being class A or B is therefore affected by the seasonal signal. Currently the allowed peak to peak range in periodic terms is 10 mm.

   EPN densification (using national densification networks) is a key activity for the next years. Seven countries contribute to date, sending regularly weekly SINEX files. More contributions are hoped for, but a letter needs to be sent to the NMCA to ask for these contributions. Some technical issues concerning analysis strategies, antenna models, logfiles, naming, DOMES numbers etc. are reviewed.
7. Comparison national ETRF coordinates with EPN densification solution (Brockmann)

   Last update was October 2012. More sites from the Czech Republic and Sweden have been added. Currently 161 stations and 28 countries are included. Discrepancies (e.g. in the height of Nordic stations) are consistent with the GIA uplift occurred in the meantime.
8. Real-time analysis:

a. Transformation of satellite orbits and EOP into ETRF2000 (Söhne)

   Kouba's program trnfsp3n.f has been used to transform IGS08 orbits in ETRF2000. This

program is conceived to apply 14 parameter transformations to 3D position vectors of station on the Earth's surface and, in principle, to the position vector of Earth orbiting satellites such as GNSS. To focus on a working example, the coordinates of WTZR are computed in two ways: using IGS08 orbits + transformation of the resulting station coordinates to ETRF2000 ('normal' procedure), and using ETRF2000 orbits to generate ETRF2000 coordinatesof WTZR directly ('tested' procedure). Discrepancies of the order of 30 cm but are probably due to a comparison of positions at different epoch and the scale factor in the transformation ITRF2008-> ETRF2000 which was not taken into account. This scale factor can be taken into account if, in addition to the orbits, also a correction is applied to the clocks. This will be done. The program BNC which is used for the real-time orbit and clock transformation will be updated.The TWG accepts the real-time orbits and clocks as a new EPN product under the condition that it is clearly mentioned that these products only allow computing ETRS89 coordinates at the few dm-level. The EPN CB web site will be adapted to reflect this.

b. Feedback on EPN real-time analysis web pages (Söhne)

The link to the real-time analysis web page will be distributed to the TWG again. Additional feedbacks are requested, then the link will be distributed to the EUREF community.

9. National Implementation of the Galileo Public Regulated Service (PRS) and EUREF's Potential (Habrich, Söhne)

PRS is an encrypted navigation service regulated by a 2011 European decision. Each country nominates the Point of Contact, to properly implement the service nationwide. In Germany a test infrastructure is expected to start in January 2016 for 18 months. A final decision on the adoption of PRS in Germany is expected in 2019. TWG members are encouraged to contact their national Galileo delegates to find out about national plans of implementation of PRS. Could EUREF contribute to the implementation of PRS? Example: orbits, clocks, DCB's, troposphere, reference frame…

The TWG decides to ask HHa/WS to keep them informed about this issue, but concludes that it is presently not concerned.

10. WG on Deformation models (Lidberg)

Updates in the draft charter of the WG on Deformation models are proposed. The TWG accepts these changes. The WG will use as input the velocity field provided by the EPN Reference Frame Coordinator and include an evaluation of station velocities. The WG will work on models of European geodynamic motions and consideration of deformation models in maintenance of national realizations of ETRS89. No general rule can be stated, as eventually each national network will be considered individually. The charter should also mention that the WG can provide specific products. The updated charter document of the WG will be iterated once more among the TWG to get a final charter (including the name of the chair person). The TWG formally establishes this new WG on Deformation models chaired by M. LIDBERG.

11. EPOS (Dousa, Lidberg)

The objectives of EPOS are reviewed. EPOS is also recognized in the ESFRI Roadmap. EPOS is an infrastructure which helps research in Solid Earth in Europe. Networks of seismic stations (notably Orpheus) participate into EPOS, as a legal entity, and as such receive funds from EPOS. EUREF has no legal entity and therefore its formal participation is not foreseen. However individuals could participate, within the contribution to EPOS from their own country. On the other hand, EPOS is soliciting an active contribution from EUREF, because the potential of EUREF to the goals of EPOS are valuable and spread over a wide range of geodetic products. It is concluded that EUREF can contribute to EPOS through the individual agencies involved in the EPN/EUREF. These agencies are a legal entity, can officially participate, receive money, and can use the expertise they have gathered within the EPN to contribute to EPOS. This will guarantee that 'EPN good practices and standards' will be transposed to EPOS.

12. Russian reference frame Sub-commission (Ihde)

An e-mail from S. KAFTAN is reviewed. He informs H. DREWES about the intention of Russia and a number of former SU member states to cover the area of former SU with a new IAG regional reference frame subcommission. However the appropriate frame could alternatively be that of

subcommissions 1.3a Euref and 1.3e Asia Pacific. A compromise could be that stations in overlapping areas (e.g. Ukraine, Belarus ...) could participate in both regional reference frames, thereby providing the necessary link and smooth transition. The situation is unclear as there is no geographical definition of Europe, in relation to the activities of EUREF and the maintenance of an European reference frame.

13. Status web publication EUREF 2012 papers (Caporali)

    The web site of EUREF is awaiting an update with the papers submitted at the Paris Symposium. There seems to be some technical delay. In fact, a part of the papers submitted for the EUREF symposia in Brussels (2008) Florence (2009), Gaevle (2010) are presently published in the BGG, with presentations available in the EUREF Web site. At the 2011 EUREF Symposium in Chisinau it was decided to publish on line on the EUREF Web site both the presentations and full papers, after refereeing. This has been done for the papers presented at the Chisinau Symposium, but not yet for the 2012 Paris, due to some technical delay. The publications concerning the activities of the EUREF Technical Working Group should be published in the BKG series book, according to the decisions taken in Chisinau, but costs are a question. J. IHDE to verify the option of preparing and distributing a CD with these contributions.

14. Divers :

a. EUREF campaigns - status of deliverables and web pages (Stangl, Bruyninx)

   Item already discussed under point 3. Maintaining the information on present-day campaigns is possible, but the information of historical campaigns is not available in a form suitable for web publication. Doing this will require a considerable effort.

b. EPN-REPRO1 paper (Habrich/Völksen)

   An EPN paper describing reprocessing is foreseen, targeted to e.g. GPS World. This paper aims at valorizing the work of the EPN analysis centers performing the EPN reprocessing so it is important to involve them in the publication. TWG encourages the authors to proceed with preparation for the publication.

c. New COST proposal (Dousa)

   GNSS4SWEC: final decision expected November 21, 2012. MoU is in preparation. Goals include multi GNSS solution, nowcasting, Real Time.

d. Next EUREF symposium in Budapest (Kenyeres)

   Organization is well underway. Funding is being requested to complement the contribution of the fees. Web site must be ready by January 2013. Titles of sessions need to be identified, as well as the chairs and call for the papers. Invited speakers are foreseen. It is encouraged that the program is finalized and available sufficiently in advance.

e. Report of ICG7 meeting in Beijing (Ihde)

   J. IHDE and Z. ALTAMIMI participated. ICG is established under the auspices of UNAOOSA and the Providers include US, Russia, EU, China, India and Japan. Provider forum is restricted. An User forum should be established. A proposal was submitted, but at the draft level. The spectrum of users should be sufficiently wide, to support the activity of the Providers. An ICG multi GNSS experiment was endorsed. J. IHDE made a presentation on EUREF which is attached to the minutes. Z. ALTAMIMI reports the activity of Working Group D (Reference Frames, Timing and Applications) to ICG7 to agree on interoperability issues, as non binding recommend-ations. Specific improvements were noted in the alignment of the Russian PZ90 to ITRF2008. The main point is the adoption of ITRS by the ICG for the alignment of GNSS reference frames to the ITRF. A second recommendation concerns the calibration of satellite antenna before launch, adding Retro Reflectors to GNSS satellites for SLR, and adding an accelerometer to new satellites. Next meeting is foreseen in November in Dubai. The acceptance of these recommendations will be verified.

f. EUREF paper IAG Scientific Assembly (Potsdam, 2013) (all)

   Deadline for abstracts is April, 21. A draft will be prepared by J. IHDE and C. BRUYNINX.

15. Next meetings

a. Spring TWG Meeting (All)

   Brussels is proposed, pending approval, 21-22 of March.

16. Action Items (all)

AI1: EB/RD should investigate how the Multi-GNSS Working Group can contribute to the routine

EPN monitoring tasks performed by the EPN CB. Deadline: next TWG

AI2: CB will check possible date/locations for a new EPN LAC analysis workshop in 2013 (it should have been normally in 2012). Deadline: end 2012

AI3: AK to contact JULIETTE LEGRAND for convention on virtual Domes used within IAG WG on the Integration of dense velocity fields in the ITRF

AI4: AK/JI will propose a new letter, to distribute to NMCAs, to DAVE LOVELL. Deadline: End of Nov. 2012.

AI5: RD will provide to WS the method to take into account the scale difference between ITRF2008 and ETRF2000 through a correction of the real-time IGS08 clocks. Deadline: ASAP

AI6: CB will distribute the link about the updated real-time analysis web pages to the TWG. TWG members should review the web pages. Once this is done, CB will add the EPN real-time orbits&clocks to the EPN CB as a new EPN product. Deadline: end of Nov. 2012

AI7: ML will distribute the updated WG charter among TWG and TWG will propose final correction. Deadline: Dec; 1, 2012.

AI8: AC will check how ORFEUS is working as a legal entity. Deadline: next TWG

AI9: CB will contact OLEG KHODA to inquire about situation. After that JI will reply to HERMANN DREWES. Deadline: ASAP

AI10: JI will look into the possibility of publishing contributions of TWG to previous EUREF symposia on CD. Deadline: ASAP

AI11: JI to contact HELMUT HORNIK and ask for all papers from previous symposia missing on EUREF web site. AC to put these papers on EUREF web site. Deadline: ASAP

AI12: JI propose titles + session chairs for EUREF symposium in Budapest to CB. Deadline: end of Nov. 2012.

AI13: Session chairs (TBD) propose session description to AK to be published on symposium web site; Deadline: end of Dec. 2012

AI14: AK prepare Symposium web site. Deadline: Jan. 2012

AI15: JI/CB to submit an abstract for IAG. Deadline: March, 2013

AI16: CB to invite DAVE LOVELL to next TWG

AI17: CB to invite GUY WÖPPELMANN to next TWG