EUREF TWG meeting: June 5, 2012 09 :00 – 18:00
Location: *Institut national de l'information géographique et forestière, 2 avenue Pasteur, 94165 Saint-Mandé*

AGENDA

1. Opening (Bruyninx)
2. Approval of minutes of 58th TWG meeting in Bruxelles (all)
3. Review of Action Items of 58th TWG meeting in Bruxelles (all)
4. Draft proposal for GNSS WG (Dousa, Brockmann)
5. Proposal for new EUREF WG on Geodynamics (Lidberg)
6. Real-time analysis:
    a. Transformation of satellite orbits and EOP into ETRF2000 (Habrich)
    b. Feedback on EPN real-time analysis web pages (Söhne)
7. Updates of EPN CB web site (Bruyninx)
8. IGS08 densification (Kenyeres)
9. Assessment of Repro1 results and impact of IGS08 models (Dousa)
10. Relationship between EUREF and EuroGeographics (Ihde)
11. INSPIRE Transformation services and CRS metadata (ISO19111 / registry) (Brockmann, Ihde)
12. EUREF TWG membership/elections (Torres)
13. EUREF symposium 2012
    a. General organisation (Duret)
    b. Best student poster award (Torres)
    c. Organisation of the sessions (Ihde)
    d. Proceedings (Caporali)
14. Proceedings of previous EUREF symposia (Ihde)
15. Divers :
    a. Report from UNOOSA Workshop on GNSS applications, May 2012, Latvia (Habrich)
    b. EUREF campaigns - status of deliverables and web pages (Stangl, Bruyninx)
16. Next meetings
    a. TWG Meeting (All)
    b. EUREF retreat (Ihde, all)
17. Action Items (all)

Participants

TWG members:
Z. Altamimi
E. Brockmann
C. Bruyninx
A. Caporali
J. Dousa
R. Fernandes unable to attend
H. Habrich
J. Ihde
A. Kenyeres
J. Makinen unable to attend
M. Lidberg
M. Poutanen
W. Söhne
G. Stangl
J. Torres

Guests:
C. Calvert
A. Duret
B. Garayt
G. Weber

Minutes

1. Opening (Bruyninx)

   In her property as chairwoman of the EUREF Technical Working Group (TWG), C. BRUYNINX opens the 59th meeting of the EUREF TWG and welcomes the participants and expresses her thanks to Z. ALTAMIMI for the invitation and organization of this meeting. On behalf of the"Institut national de l'information géographique et forestière" of France, Z. ALTAMIMI 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 58th TWG meeting in Brussels (all)

   The minutes of the 58th TWG Meeting in Brussels 27-28.02.2012, were distributed among the TWG members. The final text is published in the EUREF homepage.

3. Review of Action Items of 58th TWG meeting in Brussels (all)

   BRUYNINX gives an overview of the progress made with respect to the AI of previous meetings. Concerning TIGA, HABRICH reports that he has checked the stations located in Europe that are co-located with a tide gauge using the information from the SONEL data center. In order to discuss the added-value of EUREF in the TIGA activity, it is proposed to invite GUY WÖPPELMANN to the next TWG.

4. Draft proposal for GNSS WG (Dousa, Brockmann)

   BROCKMANN presents the draft charter of the EPN GNSS WG after a first review. Contents include background information, introduction of GLONASS in the routine analysis of all the LAC's. RINEX v3.xx is the proposed future format, but it is not clear if IGS will adopt it or go for an extension of RINEX v2.xx. DOUSA reports that manufacturers will mostly support only RINEX v3 in future. HABRICH points out that the development of RTCM v3.xx and the HP MSM (High Precision Multi Signal Message) is going on within the RTCM. TEQC is still widely used for data conversion, data editing and quality check at several stations, but it is sure that TEQC will not be updated to handle RINEX v3.xx in a close future.

   Proposed activities of the WG include the stimulation of tracking of GLONASS, Galileo and other GNSS. However, the issue of antenna calibration for GLONASS is not yet resolved. Only certain processing software are not able to correctly handle the PCV's for antennas tracking both GPS and GLONASS. SOEHNE recommends that the WG generates detailed guidelines for the analysis. DOUSA emphasizes the benefit of GLONASS for Real Time work.

   BRUYNINX mentions that she does not agree with the explicit statement on how to upgrade an existing station. TORRES agrees and it is decided to reformulate that part in the charter.

   IHDE recommends more focus on Galileo, on consideration of the input from European NMA's. SOEHNE is willing to add a section about the motivation especially for Galileo.

   At the end of the discussion, it is agreed that the draft charter of the WG will be revised by BROCKMANN based on the input received at the TWG and the preliminary WG members. Iteration by email will follow in order to find an agreement on the charter before the next EUREF TWG meeting.

5. Proposal for new EUREF WG on Geodynamics (Lidberg).

   LIDBERG reports that the first step of the WG is to include station velocities based upon the work of KENYERES. Next it needs to be established if the pattern of station

velocities represents a status of crustal deformation. A third point is the proposal of models that can be geophysical models or simple interpolations. National realizations need to be considered. E. g. Nordic countries use a vertical model for GIA. ALTAMIMI reports that a plate motion within ITRF2008 has been finalized and is in publication. The study shows that rigid rotation includes continental Europe, but excludes areas south of the Alps and Fennoscandia, because of their large geokinematic signal. NMA's in these areas should come up with a proposal to track the local kinematics relative to ETRF2000 for national frame maintenance and compliance to INSPIRE.

The TWG further discusses the objectives of the WG. It is decided that the WG would not deal with GNSS data analysis, but use the EPN densification products provided by KENYERES in order to be able to fully focus purely on modeling issues. In that frame, the name of the WG is changed to "Deformation Modeling". It is decided that LIDBERG will adapt the charter accordingly and distribute it among the TWG in order to finish it before the next TWG. It is also recommended to invite members to the WG coming from countries dealing with large deformations.

6. Real-time analysis

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

      HABRICH reports about station position differences (obtained with PPP) found when on one hand using satellite orbits in ETRF2000 (as the one provided in real-time by BKG) and on the other hand satellite orbits in the IGS05 where obtained station position is converted afterwards to ETRF2000. One could expect both station positions should be expressed in a consistent frame. Using satellite orbits in the ETRF2000 is particularly attractive for Real Time analysis using PPP as it would allow users to directly express their positions in the ETRF2000, without any additional coordinate transformation on the user side. The original idea came from BKG (G. WEBER), HABRICH reports. However, the approach could lead to inconsistencies in height, as reported by Australian groups and HABRICH questions in the Memo would require an update. The height biases and the neglect of satellite clock transformation should also be better understood. A program of transformation provided by J. KOUBA is already available for testing and should be used to verify the ETRF2000 orbits.

      TORRES points out that the Memo should be used for coordinates only, not to transform orbits. The need to transform clocks is questioned, due to their scalar character.

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

      Comments on the Web pages concerning the RT analysis have been provided by BROCKMANN. DOUSA points out the need for regional products, such as ionosphere, troposphere products, regional PPP ambiguity resolution or regional augmentation, which could be of interest for RT PPP users in Europe. The involvement of other organizations besides BKG is proposed. In general it is expected that RT PPP (called also a PPP-RTK) will compete against network RTK. The role of EUPOS should also be considered in this respect. It is decided that the TWG members urgently provide feedback about the web pages to SOEHNE.

Especially DOUSA formulated some proposals for improvement.

7. Updates of EPN CB web site (Bruyninx)

   BRUYNINX shows the new menu structure of the EPNCB. New quality check software (QualCheck) has also been installed. TEQC is less focused than Qualcheck on requirements specific of the EPN. Validation and comparison of the two softwares is underway.

8. IGS08 densification (Kenyeres)

   KENYERES reports on the relation between ITRF and IGS frames, and their densification, along with development of antenna models. As a first step the SINEX files before week 1632 have been corrected to be consistent with the epn_08.atx antenna model. Extensive comparison between IGS08 and its densification has been made for European stations. Different velocities reflect stations with a short time span, especially in the last solution numbers. ALTAMIMI suggests that class A stations have a minimum of 3 years continuous time series. After a discussion it is decided to remove the one-year rule from the requirement used by KENYERES for Class A stations. In any case, KENYERES reports that the preliminary version of the IGS08 densification be completed up to week 1680 including the SINEX conversion from epn_05 to epn_08 antenna model. It is decided that KENYERES will distribute all files associated with the densification asap to the TWG in order to allow iteration/validation. The goal is to distribute the IGS08 densification to the EUREF community by the end of July.

9. Assessment of Repro1 results and impact of IGS08 models (Dousa).

   DOUSA reported at TWG in Brussels GOP Repro1+ as a validation solution for official EPN solution . The BSW was used and the cumulative solution it tied to IGS08 using only three translations (due to a problem with no-net-scale condition). DOUSA focused now more on individual LAC's contributions looking directly into the SINEX files and he reported a number of incorrect (probably individual) PCV's. This problem has no significant impact, but it should be corrected in repro2. Looking into individual SINEXs revealed also many single LACs' contributions of specific stations. Some problems on a combination level, and thanks to a possibility to go back to a daily/weekly processing level, led to identify data quality problems for a number of stations . Monitoring RINEX content of EPN historical data archive at ROB has also shown problems with some stations. These will be proposed for elimination from the combination or directly marked in the historical data center. In this context, J. Dousa suggested to emphasize the role of such historical data centre which could be recommended for any reprocessing effort. For this purpose a historical data archive should be well monitored and kept in correspondence with the EPN site-logs and stations' validity periods. In general, recommendations for repro2 included: a) to check consistency of antenna models (done now only for a routine solution), b) to verify and to revise EPN stations' validity periods, c) to maintain carefully RINEX data in the historical archive (to be used by all LAC), d) to avoid the combination of repro and routine solutions (if possible), e) to use different software and probably smaller number of LACs if they can provide full EPN solutions.

10. Relationship between EUREF and EuroGeographics (Ihde)

    IHDE informs about conversations between DAVE LOVELL and himself. What is the role of geodesy within geoinformation, in the context of NMA's? A positive sign of improved understanding is LOVELL'S participation at EUREF Symposium 2012. Likewise there will be a presentation about EUREF at the next Symposium of EuroGeographics. Positioning is crucial to

give the correct reference for geoinformation. So a fruitful cooperation between EuroGeographics and EUREF is foreseen. CALVERT offers to contribute to the improved mutual understanding.

11. INSPIRE Transformation services and CRS metadata (ISO19111 / registry) (Brockmann, Ihde).

    IHDE points out that these activities related to TC211 are somehow outside EUREF reach. ALTAMIMI reports that attempts are being made for providing ISO standards for coordinates. BOUCHER is expected to give a paper about geodetic standards at the upcoming EUREF Symposium.

12. EUREF TWG membership/elections (Torres)

    TORRES summarizes the EUREF terms of references concerning elections and the two positions which are open. There will be an electronic vote and password, to avoid duplications in the vote. Observers from outside Europe will have no voting right. Four candidates have replied for the Galileo position. No candidate for the Gravity/Height position. A better distribution of the information is hoped for the future.

13. EUREF symposium 2012

    a. General organization (Duret)

       DURET outlines the last details and arrangements.

    b. Best student poster award (Torres)

       No application is reported. CALVERT suggests giving the prize to the best presentation given by a person under the age of 30.

    c. Organization of the sessions (Ihde)

       The session list of approx. 35 talks is ready. Chairs need to be nominated. Opening speech will be given by the IGN General Director.

    d. Proceedings (Caporali)

       According to the new rules, papers directly relevant to EUREF and EPN will be printed in the EUREF proceedings managed by BKG. The others will be published only in the EUREF website. Deadline for submission of papers is August 31, 2012. CAPORALI will inform the participants to the symposium of the deadline.

14. Proceedings of previous EUREF symposia (Ihde)

15. Divers :

    a. Report from UNOOSA Workshop on GNSS applications, May 2012, Latvia (Habrich)

       HABRICH reported about the "United Nations/Latvia Workshop on the Applications of Global Navigation Satellite Systems" that took place in Riga, May 14 to 18, 2012. The discussion how GNSS-enabling technology can strengthen a network of national reference stations and promote the interoperability of navigation, positioning and timing systems in the European region may be considered as the main objective of the workshop. HABRICH presented the "Role of EUREF in a Changing GNSS Landscape" at the workshop and focused on multi-GNSS as well as real-time activities of EUREF. During a talk with SHARAFAT GADIMOVA from UNOOSA (HANS HAUBOLD retired from UNOOSA and acts now as a consultant) about future UNOOSA and EUREF cooperation she proposed to reserve a half or even full day for training courses given by EUREF representatives at the next UNOOSA workshop (May 2013, Rijeka, Croatia). UNOOSA offered to publish papers from

such training courses and to circulate it among UN member states (addressed to governments). HABRICH invited GADIMOVA to present UNOOSA activities at the next EUREF symposium.

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

BRUYNINX reports on the status of the relevant Web page. Makpos 2010 and Faroe Islands 2007 are in place. In order to continue the development of the EUREF Campaign web page at ROB, STANGL is asked to provide additional campaigns to BRUYNINX. STANGL asks for help in order to get the reports of older campaigns. They should be kept by HORNIK.

16. Next meetings

a. Next Symposium: Budapest, Hungary, 29.05-31.05.2013, with TWG on the 28.05.2013.

b. TWG Meeting (all)(All): Bern, 13-14.11.2012

c. EUREF retreat (Ihde, all) 12.11.2012 in Bern

17. Action Items (all)

AI 1 (BRUYNINX): Invite Guy Wöppelmann from University of La Rochelle to the next TWG togive a presentation on his work on processing of theTide Gauges/ GPS network.

AI 2 (BROCKMANN): work out a finalization of the charter of the WG on GNSS, to be circulated among the TWG members before the next TWG.

AI3 (LIDBERG): the charter of the WG should be better defined. A proposal will be circulated among the TWG members and approved before the next TWG. The name of the WG should also be revised. It is proposed EUREF Working Group on Deformation Models.

AI4 (KENYERES): KENYERES to distribute all files associated with the densification asap to the TWG in order to allow iteration/validation. The goal is to distribute the IGS08 densification to the EUREF community by the end of July.

AI5 (STANGL): STANGL is asked to provide additional campaigns to BRUYNINX, in order to continue the development of the EUREF Campaign web page at ROB. STANGL asks for help in order to get the reports of older campaigns. They should be kept by HORNIK.

AI6 (All): It is decided that the TWG members urgently provide feedback about the web pages on the RT Analysis to SOEHNE. Especially DOUSA formulated some proposals for improvement.

AI7 (BROCKMANN, SOEHNE, ALTAMIMI, HABRICH, LIDBERG, DOUSA and G. WEBER): BROCKMANN, SOEHNE, ALTAMIMI, HABRICH, LIDBERG, DOUSA and G. WEBER to test the pros and cons of a program of frame transformation of GNSS orbits. A program provided by J. KOUBA is already available for testing and should be used to verify the ETRF2000 orbits.