

## **45<sup>th</sup> Meeting of the EUREF Technical Working Group in Paris, 29. – 30. November 2007**

### **Next events:**

- TWG 2008 Spring Meeting: Helsinki, 31.3. (whole day) - 1.4.2008 (noon), Helsinki
- TWG 2008 Symposium Meeting: Brussels, 17. June 2007 (whole day)
- Symposium 2008: 18. - 20. June (21. June: technical excursion), Brussels

### **Meeting place:**

Institut Géographique National, Salle Delambre, 2, Avenue Pasteur, 94160 Saint-Mandé - Paris

**Time schedule:** Thursday, November 29, 2007 – 13:00-18:30

Friday, November 30, 2007 – 08:30-12:30

### **Agenda**

1. Opening
2. Minutes of the 44<sup>th</sup> TWG meeting in London
3. Applications for additional TWG members
4. Report on Meetings
  - a) IERS convention workshop in Paris
  - b) ICG-2 meeting in Bangalore
  - c) IUGG meeting, IAG structure
5. Collaborations
  - a) MoU with EUMETNET + Guidelines
  - b) MoU with EuroGeographics
  - c) EUREF contribution to INSPIRE
  - d) Aligement of CERGOP results to EPN standards and non-official products
6. ETRS89 realizations
7. EUREF Permanent Network:
  - a) EPN CB Status report
  - b) EPN Reference Frame Fixing
  - c) Status report of the SP "Troposphere Parameter Estimation"
  - d) EUREF-IP Status Report and IGS RT Pilot Project
  - e) ITRF2005 densification
  - f) EPN rapid analysis
  - g) IGS reprocessing and consequences for EPN
  - h) GNSS Antenna calibrations
8. Projects
  - a) EVRS activities
  - b) Continuation of ECGN
  - c) EUVN\_DA status report

9. Symposia 2008
  - a) EUREF 2008, 18-20 June 2008, Brussels
    - Organization
    - Best Poster Award
  - b) Wegener 2008, 15-18 Sept. 2008, Darmstadt
10. Next TWG Meeting
11. Action Items

## Participants

ZUHEIR ALTAMIMI, Paris  
 ELMAR BROCKMANN, Berne  
 CARINE BRUYNINX, Brussels (Chair)  
 ALESSANDRO CAPORALI, Padova  
 WERNER GURTNER, Berne  
 HEINZ HABRICH, Frankfurt a.M. (perm. guest)  
 HELMUT HORNIK, Munich (Sub-comm. Secretary)  
 JOHANNES IHDE, Frankfurt a.M. (Sub-comm. Chair)  
 AMBRUS KENYERES, Budapest

JAAKKO MÄKINEN, Helsinki  
 HERMANN SEEGER, Bad Neuenahr-Ahrweiler (perm. guest)  
 JAROSLAV SIMEK, Prague  
 WOLFGANG SÖHNE, Frankfurt a.M.  
 GÜNTER STANGL, Graz (perm. guest)  
 JOAO AGRIA TORRES, Lisbon  
 GEORG WEBER, Frankfurt a.M.

apologized: CLAUDE BOUCHER, Paris; HANS VAN DER MAREL, Delft

## Minutes

Remark: The presented papers and view graphs are published, as far as available, on the EUREF homepage (<http://www.euref.eu/TWG/EUREF%20TWG%20minutes/44-Paris2007/TWG-Paris2007.html>).

The minutes will be discussed at the next TWG Meeting and after approval be put into the web.

### 1. Opening

Z. ALTAMIMI welcomes the participants on behalf of the Institut Géographique National. C. BRUYNINX as new chairperson opens the 45th meeting of the EUREF Technical Working Group. She thanks the host for the invitation to hold this meeting in the IGN which is already the 6<sup>th</sup> one hosted by the French colleagues.

The agenda was distributed by e-mail, some topics are changed, the plenary accepts the agenda.

### 2. Minutes of the 44th TWG meeting in London

The minutes of the last TWG meeting were distributed among the TWG members. Some few corrections are to be attached. The final text will be published in the EUREF homepage <[http://www.euref-iag.net/html/twg\\_meetings\\_documentation.html](http://www.euref-iag.net/html/twg_meetings_documentation.html)>.

### 3. Applications for additional TWG members

C. BRUYNINX mentions that three applications for new TWG members have been submitted. The applications are dis-

cussed in detail. In a letter to the TWG H. V. D. MAREL requests clear rules for the nomination of new TWG members. Formerly there was no need to install rules, but meanwhile the number of members has grown to an extend that the group should not be enlarged anymore in order to keep it flexible. H. SEEGER remembers that the first members were indeed elected by the plenary of the EUREF Symposium 1992 in Berne. Later the plenary voted for/against new applications only at a few occasions, the new members mostly were nominated directly by the TWG as experts for special topics.

J. IHDE points out on § 7 of the EUREF Terms of Reference (ToR) which read “The TWG is constituted by members elected by the plenary, ex-officio members and members in charge of specific tasks.” and “The number of members elected by the plenary is defined by the TWG Chair and must be in agreement with the tasks committed to the TWG. The recommended term is 4 years.”

Some of the present TWG members declare that they would be ready to retire from the TWG. In all it is stated that the TWG has to decide on a useful maximum limit of members.

Finally the TWG forms a nomination committee (ALTAMIMI, BRUYNINX (chair), GURTNER, IHDE, V. D. MAREL, TORRES) to work out an idea on the maximum number of TWG members and then submit the proposal to the next EUREF Symposium. The candidates will be informed and can formulate their ideas and plans how to contribute to the TWG at the symposium. The plenary then will elect.

## 4. Report on Meetings

### a) IERS convention workshop in Paris

Z. ALTAMIMI reports on the workshop held in the BIPM in Sèvres, 20.-21. Sept. 2007 (<http://www.bipm.org/en/events/iers/programme.html>). The meeting was organized in 6 sessions, i.e.

- 1: Recent advances and validations of the IERS Conventions models,
- 2: Technique-dependent conventions,
- 3: Conventional contributions to local station displacements: what to include?
- 4, 5, 6: Evolution of the realization of reference systems,
- 7: Evolution of the Conventions.

On behalf of EUREF presentations were given by C. BOUCHER on *Recommended concepts and terminology related to Terrestrial Reference Systems. Implication of IAU, IUGG, IAG and IERS* and J. IHDE on *Consideration of a Global Vertical Reference System in the IERS Conventions*.

J. IHDE mentions that this workshop offered a suitable possibility to present EUREF to a broad publicity, however, the feedback from the public is up to now not satisfying. Therefore EUREF has to take care to present its products at all suitable places e.g. ICG meetings (cf. next chapter).

### b) ICG-2 meeting in Bangalore

J. IHDE presents a report on the second meeting of the International Committee on Global Navigation Satellite Systems (ICG) from 4.-7. Sept. 2007 in Bangalore, hosted by the Indian Space Research Organization (ISRO). The ICG represents a commission of GNSS provider states under the umbrella of the United Nations as a committee on the peaceful uses of outer space (resolution 61/111 of 14. Dec. 2006).

Full ICG members are only those states which provide GNSS, i.e. China, the European Community, India, Japan, the Russian Federation, the United States and Italy. Further EUREF as an international organization is members of the ICG, others are BIPM, EUPOS, FIG, IAG, IAIN, IGS, Office for Outer Space Affairs of the United Nations Secretariat and URSI. Malaysia and the United Arab Emirates are recognized as new members.

The benefit of the ICG can be considered under the view point that all important GNSS providers come together with the users (geodesy, navigation etc.) to exchange information and meet requirements. J. IHDE emphasizes that EUREF as the European part of the IAG for GNSS positioning should cooperate with the ICG in order to process common interests and experiences for the benefit of both sides. Moreover EUREF also speaks for EuroGeographics and thus represents the majority of the European national mapping agencies (cf. Resolution no. 1, EUREF Symposium London, June 6-9. 2007 <<http://www.euref-iag.net/symposia/2007/London/Symposium2007-London.html>>).

A next Planning and Organizational Meeting of the ICG will take place in Vienna, 18.-19. Feb. 2008. The third official ICG meeting will be held in Pasadena, 8.-12.12.2008.

### c) IUGG meeting, IAG structure

On occasion of the XXIV IUGG General Assembly 2007 in Perugia/Italy, the IAG elected Z. ALTAMIMI as President of IAG Commission 1 – Reference Frames. Z. ALTAMIMI presents a sketch of the objectives, structure, steering committee, WGs, SGs and projects. The website of Commission 1, created by H. DREWES as precedent President of Commission 1, will be maintained and updated as far as necessary.

The objectives of Commission are characterized as

- definition, establishment, maintenance and improvement of the geodetic reference frames,
- advanced terrestrial and space observation technique development,
- international collaboration for the definition and deployment of networks of terrestrially-based space geodetic observatories,
- theory and coordination of astrometric observation for reference frame purposes,
- collaboration with space geodesy/reference frame related international services, agencies and organizations,
- promote the definition and establishment of vertical reference systems at global level, considering the advances in the regional sub-commissions.

Commission 1 is structured in 4 Sub-commissions, i.e.

- SC1.1: Coordination of Space Techniques,
- SC1.2: Global Reference Frames,
- SC1.3: Regional Reference Frames,
- SC1.4: Interaction of Celestial and Terrestrial Reference Frames.

SC1.3 comprises sub-groups for all continents, among them SC1.3a – Europe (EUREF), now chaired by J. IHDE.

Among the members of Commission 1 are representatives of the IAG Services IERS, IDS, IGS, ILRS and IVS.

Inter-Commission-Project Vertical Reference Frames, chaired by J. IHDE, is joint with Commission 2 and IGFS.

Further 3 Inter-Commission-Study-Groups

- IC-SG1.1: Theory, implementation and quality assessment of geodetic reference frames
- IC-SG1.2: Quality of sensor networks
- IC-SG1.2: Configuration analysis of Earth oriented space techniques)

and 4 Inter-Commission-Working-Groups

- IC-WG1.1: Environment Loading: Modelling for Reference Frame and positioning applications
- IC-WG1.2: Precise Orbit Determination and reference frame definition
- IC-WG1.2: Concepts and terminology related to Geodetic Reference Systems
- IC-WG1.4: Site Survey and Co-locations

are implemented.

In the following J. TORRES as successor of Z. ALTAMIMI as President of SC1.2 – Global Reference Frames presents the Sub-commission with its terms of reference, objectives, structure and programme of activities.

According to the ToR, SC 1.3

- deals with the definitions and realizations of regional reference frames and their connection to the global International Terrestrial Reference Frame (ITRF),
- offers a home for service-like activities addressing theoretical and technical key common issues of interest to regional organisations.

SC 1.3 comprises the Regional Sub-commissions

- SC1.3a Europe (EUREF)
- SC1.3b South and Central America (SIRGAS)
- SC1.3c North America (NAREF)
- SC1.3d Africa (AFREF)
- SC1.3e South-East Asia and Pacific
- SC1.3f Antarctica (SCAR)

and a

- Working Group SC1.3-WG1: Regional Dense Velocity Fields.

According to the Programme of Activities, SC 1.3 will

- organize inter-regional workshops addressing activities, results and key issues of common interest to the regional sub-commissions,
- develop analysis strategies and compare methods for the implementation of the regional reference frames and their expression in the ITRF, with full interaction with the IGS,
- consider establishing regional dense velocity fields for, primarily, the long-term maintenance of the regional reference frames,
- contribute at regional levels to the realization and improvement of local surveys in the collocation sites, with full cooperation with the Sub-commission 1.2 Global Reference Frames.

## 5. Collaborations

### a) MoU with EUMETNET + Guidelines

E. BROCKMANN gives some comments on this item. All institutions are invited to take part in EUMETNET. Everybody who signs the contract then gets access to the data for non-commercial use. On occasion of the Symposium in London, 6-9. June 2007 EUREF signed a Memorandum of Understanding (MoU) with EUMETNET ([http://www.euref-iag.net/documentation/OtherDocuments/EUREF\\_EUMETNET\\_MoU.pdf](http://www.euref-iag.net/documentation/OtherDocuments/EUREF_EUMETNET_MoU.pdf)).

Meanwhile 2 EUMETNET Meetings took place, further a GPS expert meeting E-GVAP (Sept. 2007). E. BROCKMANN complains that up to now the relevant institutions which provide meteorological data in large files did not yet agree to install a common data format.

### b) MoU with EuroGeographics

J. IHDE remembers the “Memorandum of Understanding (MoU) between EuroGeographics and EUREF within the Areas of Geodetic Reference Systems and the wider use of Geodetic Products for Geo-referencing of Geo-information” [http://www.eurogeographics.org/eng/documents/MoU-EUREF-JAT-NL-ZA\\_final.doc](http://www.eurogeographics.org/eng/documents/MoU-EUREF-JAT-NL-ZA_final.doc). N. LAND has left his post as Executive Director, now D. LOVEL (UK) replaces N. LAND is chairing EuroGeographics. J. IHDE presents some ideas for the future cooperation between EUREF and EuroGeographics. A next EuroGeographics Meeting will take place in Paris in mid January 2008 to discuss how to proceed basing on the MoU. J. IHDE asks C. BRUYNINX and Z. ALTAMIMI to join the meeting to discuss the relevant cooperation.

### c) EUREF contribution to INSPIRE

H. HABRICH remembers Action Item 43-06 “EUREF/INSPIRE Relationship” of the 43th EUREF TWG Meeting in Lisbon, 5.-6. March 2007, which reads “... will formulate a document to explain clearly what INSPIRE is and what EUREF/INSPIRE expect / can deliver from / to each other. ...”.

On 25. April 2007 INSPIRE published its directives in the Official Journal of the EU which became official on 15. May 2007. EUREF submitted various comments to items D2.3 and D2.5. After the workshop in Ispra (13.-14. Sept. 2007) EUREF nominated 3 experts (J. TORRES, A. CAPORALI, H. HABRICH) for specification development.

As representative of EUREF H. HABRICH participated at the DT DS meeting in Berlin, 23.-24. Oct. 2007. A kick-off meeting of the INSPIRE TWG will be held in Ispra on 14.-15. Feb. 2008.

In the discussion A. CAPORALI emphasizes to follow the decision that EUREF and EuroGeographics should urgently act as one group in the cooperation with INSPIRE. It is discussed whether EUREF could get a benefit from the cooperation with INSPIRE. J. IHDE answers that it was a long way to introduce the ETRS89 in the public and EUREF should use any opportunity to get into contact with groups related to practical applications or/and connected to political institutions.

### d) Alignment of CERGOP results to EPN standards and non-official products

G. STANGL describes the goal of CERGOP (Central Europe Regional Geodynamics Project) which represents the long-term project of the CEI (Central European Initiative). More than 10 countries are participating with GPS campaigns since 1994 on epoch and permanent sites. The work (equipment, campaigns, analysis) is carried out (more or less) according to the EPN guidelines. The main goal is a study of the geokinematics and geodynamics of Central Europe based on a dense velocity and strain field plus tectonic interpretation. The permanent network (EPN and non-EPN stations) is analyzed by the OLG.

As alignment problems G. STANGL mentions that not all permanent stations have log sheets, not all RINEX data are

public, only one AC for permanent stations is available. The CEGRN campaigns are reprocessed and aligned to the ITRF2005 and not to IGS05, the offsets and outliers of EPN are not applied in campaigns, so the interpretation and combination may differ. Finally the observations are not related to the stable Eurasian Plate' but other models (ITRF2000, APKIM).

Therefore the EUREF TWG should handle the question whether the ToR allow an alignment of the CERGOP permanent network, which of its products can be taken into account and which strategies for a combined European velocity field should be used.

## 6. ETRS89 realizations

H. HABRICH presents his ideas on the realisation of ETRS89 in general and especially in the German State Survey. It is stated that jumps between different ETRF<sub>yy</sub> solutions may occur. Furthermore it is emphasized that the user community prefers an at least middle term stable reference frame and will hardly accept changes in too short time intervals. In this case it might happen that user switch to an other reference with possibly worse quality but which seems to be stable for a long period.

In the following a very intensive discussion on the realisation of the ETRS and its implementation into the ITRS arises. Z. ALTAMIMI is asked to formulate together with E. BROCKMANN a more detailed description of the "Memo: Specifications for reference frame fixing in the analysis of a EUREF GPS campaign" by C. BOUCHER and Z. ALTAMIMI especially considering the transformations between the different ETRF<sub>yy</sub> solutions and to distribute the draft by circular. It is insistently emphasized that this procedure must be understandable without any doubts for the users in order to convince them to use the ETRS. C. BRUYNINX will prepare a detailed demonstration on this topic for the next TWG meeting showing the influences by the different ETRS<sub>yy</sub> solutions on the EPN. W. GURTNER comments that due to the permanent improvements of the data accuracy, their density, the modelling and the analysis methods the jumps between the different solutions will become continuously smaller.

Finally a group by Z. ALTAMIMI, W. GURTNER, J. TORRES, J. IHDE (chair), E. BROCKMANN and H. HABRICH is formed to discuss this topic in detail and to report the findings to the next TWG meeting. Basing on these results a detailed report is to be prepared for the next EUREF symposium to inform the community.

## 7. EUREF Permanent Network

### a) EPN CB Status report

C. BRUYNINX presents her regular status report on the EPN Tracking Network. At present the EPN comprises 204 stations, one of them is inactive (Taranto/Italy)). 8 new sites (Roma/Italy, Sopron/Hungary, Chisinau/Rep. Moldova, Albacete, Huelva, Leon, Sonseca, Borriana/all Spain) were involved since the last status report. Station Venezia/Italy had to be withdrawn due to unsolvable logistic problems.

New techniques are continuously introduced, so at present 87% of all stations provide hourly data and 40% even real-time (cf. Resolution no. 4 of the EUREF Symposium in London, 6.-9. June 2007, <<http://www.euref-iag.net/symposia/2007London/Symposium2007-London.html>>). In this context it is proposed to treat the EUREF IP no more as a pilot project but a special project and to present it adequately in the EUREF website. A corresponding EUREF mail will be sent out.

C. BRUYNINX then mentions her recent contacts with S. MIRONOV/Russia, technical director of RNIKP, the main executing organization of the GLONASS project. A main problem for GLONASS is the restricted public access to the coordinates of Russian stations. Up to now manifold attempts to open the access were delayed due to different interpretation of "secret information" by the officers in different levels. S. MIRONOV therefore asked for help of EUREF to provide information on the laws within the EU or some member countries concerning the regulation of free exchange of geodetic, cartographic and geo-information data as well as the activities on installing permanent station and free publishing its data.

G. STANGL mentions in this context that the policy of INSPIRE is based on a free access to the data. W. GURTNER proposes that each country should provide a short description of the respective situation on the rules as well as possible exceptions e.g. in the case of general restrictions to open the data for special cases such as EPN sites.

Considering previous experiences it is stated that much patience is needed to yield positive results and to insist on a strategy also in the case of negative political reactions. A severe problem is caused by the various institutions in Russia being simultaneously responsible for one topic. In all the Russian colleagues mostly would be very eager to collaborate on an international basis, however, the political restrictions generally restrict such efforts completely.

The TWG concludes that E. BROCKMANN, G. STANGL and G. WEBER write short notes on the data policy in their respective countries. C. BRUYNINX will compose a report from these notes and send it together with an invitation to S. MIRONOV to participate in the 2008 Brussels TWG Meeting as well as the Symposium to present a detailed report on the situation in Russia and possibilities to join EUREF.

### b) EPN Reference Frame Fixing

C. BRUYNINX gives a short description of a paper together with J. LEGRAND to be submitted to the coming AGU 2007 Fall Meeting. A comparison of a computation using only EPN sites versus a solution with additional global stations shows that the Bernese Software minimal constraints solution causes small deformations of the network. The size of the deformation further depends on the precision of the estimated site coordinates. So the minimal constraints solution is not recommended for fixing the frame of daily solutions.

On the global level, no difference between IGS05 and ITRF2005 occur, on regional level, however, a bias of about 3 mm in the vertical between both solutions can be seen.

The EPN station coordinates differ when only EPN stations are processed wrt the solution complemented with global IGS Stations. The differences depend on the frame to which solutions are tied.

In a short discussion it turned out that the usage of the minimal constraint solutions of the Bernese software was not verified in a proper way. E. BROCKMANN asked the author of the study (J. LEGRAND) to contact the Bernese group prior to the publication of the paper at the AGU2007.

#### **c) Status report of the SP "Troposphere Parameter Estimation"**

W. SÖHNE presents a short status report on this project. Several EPN stations have been involved during the last months, various equipment been changed and firmware updated. In the following W. SÖHNE shows the chronology of the project, accompanied by viewgraphs demonstrating the respective data results. First solutions were computed in GPS 1110 week with 4 contributing LACs (ASI, BKG, COE, UPA), then continuously other LACs joined the project (presently 16). The EUREF processing options were updated as well as the ITRF 2000 used as new reference frame (GPS week 1143). Later the 5.0, Wet Niell was introduced and the APCV applied.

Special interest is dedicated to twin stations closely located to each other. As the results should be identical, any differences are to be analyzed carefully to detect possible errors in the modelling or analysis procedures.

#### **d) EUREF-IP Status Report and IGS RT Pilot Project**

G. WEBER explains the recent progress of the BKG activities to the real time project. Near real-time support with 15min highrate (1sec) RINEX is provided now from 90 IGS and 80 EUREF stations, real-time streams available from 50 IGS and 80 EUREF stations.. GLONASS also involved at the moment with 25 stations in Europe. An agreed archiving policy is urgently needed. The RTCM v3 standard for orbit and clock transport is under development and is proposed to be used as general format.

G. WEBER urgently recommends to all users to buy only such receivers which allow a definite access to the data format.

The TWG concludes to declare the EUREF-IP pilot project as finished and to consider EUREF-IP further on as a special project. The EUREF homepage is to be updated.

#### **e) ITRF2005 densification**

H. HABRICH has distributed a detailed paper on the EUREF Regional Densification of ITRF2005. Cumulative solution of EPN weekly results were computed to realise a European densification of ITRF2005. The product files available at <ftp://igs.bkg.bund.de/MISC/ITRF/ITRF2005/>.

The weekly SINEX files were converted to NEQs (mandatory to start with 1 solution per week), beginning with week 860 up to week 1355, in all 496 contributing files. For the reference station selection initially all ITRF2005 sites of EPN have been considered as reference sites, after a residual screening 44 stations with 57 solution numbers were

selected for the definition of minimum constraint conditions. Comparisons with other combined solutions are presently difficult, because new velocity parameters were setup after every station equipment change. A relative constraining of the station velocities of the same site was identified as an important prerequisite of this densification product.

G. WEBER states that this work represents a core of the EUREF activities and thus a detailed report should be worked out to be presented to the next EUREF symposium. The TWG asks H. HABRICH, A. KENYERES and Z. ALTAMIMI to perform a comparison between the ITRF2005 Densification Solution with the Time Series SP solution and the ITRF2005 solution, the findings are to be presented at the next TWG meeting.

#### **f) EPN rapid analysis**

H. HABRICH summarizes the activities for EPN Rapid Analysis Products. The scope is the monitoring of high resolution coordinates. The LACs process the SINEX files from both, IGS final and rapid orbits.

The TWG asks H. HABRICH to prepare a more detailed report for the next TWG meeting. All TWG members are asked to provide their suggestions/ideas to H. HABRICH.

#### **g) IGS reprocessing and consequences for EPN**

In the following H. HABRICH gives a summarizing report on the IGS Reprocessing Initiative. IGS is running a test analysis for the first quarter of 2000 to evaluate a strategy for analysis and combination. Parallel to these activities an EPN reprocessing strategy should be developed. EUREF has to decide whether a similar project for the EPN sites is to be carried out and which new reprocessing facilities are necessary. A call for participation has to be sent out.

G. WEBER mentions that the reprocessing is a useful project, however, the future main efforts should be concentrated on real time positioning.

#### **h) GNSS Antenna calibrations**

E. BROCKMANN describes in his contribution the status of antenna handling within EUREF/IGS and actual conflicts. Concerning the switch from relative to absolute antennae, Resolution # 3 of the EUREF Symposium 2006 in Riga reads "... requests EPN station managers to only use absolutely calibrated antenna types on new EPN stations or when a replacement antenna radome combination is introduced to a EPN station ..." (<http://www.euref-iag.net/symposia/2006Riga/Symposium2006-Riga.html>). A conclusion of the TWG meeting in Frankfurt, Nov. 2006 reads "... to use individually absolutely calibrated antennas if available (maintained by the EPN CB) or group mean values of the IGS05.ATX file." IGS and EUREF switched to absolute PCVs in November 2006 (week 1400) for all processing products. As antenna models directly influence the coordinate estimates, jumps in the time series after week 1400 consequently occurred. For the practical verification an intensive collaboration with Geo++ was started.

E. BROCKMANN explains that the EUREF procedure (individual PCVs) is slightly inconsistent with the IGS procedure, so slightly other coordinate estimates will be received which

are to be considered for the EPN densification. Therefore the central boards of IGS and EPN should closely collaborate together. E. BROCKMANN proposes to assign C. BRUYNINX as responsible person in the antenna working group.

Moreover, a decision is necessary, if also converted NGS values or values of other organisations can be used for new stations in IGS/EPN. The TWG should realize the possibility to make all antennae of IGS05.ATX be usable within EUREF.

## 8. Projects

Due to the lack of time the topics

### a) EVRS activities

### b) Continuation of ECGN

### c) EUVN\_DA status report

are postponed to the next meeting. The respective ppt files can be found in [http://www.euref-iag.net/html/twg\\_meetings\\_documentation.html](http://www.euref-iag.net/html/twg_meetings_documentation.html).

## 9. Symposia 2008

### a) EUREF 2008, 18-20 June 2008, Brussels

C. BRUYNINX as head of the LOC of the EUREF 2008 Symposium in Brussels reports on the organizational preparations. The homepage will be updated very soon, registrations are already possible. The EUREF Secretary will send out concerning information by EUREF mails as well

as in the IAG Newsletter remembering the participants to register as soon as possible.

At the 2007 EUREF Symposium in London, C. CALVERT has offered a *Best Poster Award* for young scientists. J. TORRES explains C. CALVERT's proposal the TWG discusses the procedure how to announce the award and to carry out the procedure of evaluation. The award will be published in the website for the 2008 Symposium.

### b) Wegener 2008, 15-18 Sept. 2008, Darmstadt

The XIV Assembly of Wegener will be held from 15.-18. Sept. 2008 held in Darmstadt/Germany (<http://www.tu-darmstadt.de/wegener2008>). J. IHDE announces to present a report on behalf of EUREF covering the topics EPN, ECGN and EUREF relation. Further reports are highly welcome, e.g. on European velocity field, intra-plate motion, EUREF multi-year solution, time series analysis.

## 10. Next TWG Meeting

J. MÄKINEN has invited the TWG to hold its 2008 Spring Meeting in Helsinki. The TWG will meet in the "House of Arts and Sciences" of the "Federation of the Learned Societies in Finland" from Monday, 31.3. (whole day) – Tuesday, 1.4.2008 noon.

## 11. Action Items

H. HORNIK and C. BRUYNINX will compose a common text for the Action Items to be distributed asap among the TWG.