

## **52<sup>th</sup> Meeting of the EUREF Technical Working Group in Vienna, 08.-09. March 2010**

### **Next events:**

- EUREF 2010 Symposium Meeting: Gävle; Tuesday, June 1 (full day)
- EUREF 2010 Symposium: Gävle; Wednesday, June 2 – Friday, June 4; technical excursion: Saturday, June 5

**Meeting place:** Session Room “Ferdinand Eidherr”, Bundesamt für Eich-und Vermessungswesen ( Federal Office for Metrology and Surveying), Vienna

**Time schedule:** Monday, March 8, 2010, 13.00 - 18.00; Tuesday, March 9, 2010, 09.00 - 17.15

### **Agenda**

1. Opening
2. Minutes of the 51<sup>th</sup> TWG meeting in Padua
3. EUREF IE/UK 2009
4. ETRS89 realization of the HEPOS network
5. EUREF Permanent Network
  - a) Update EPN Guidelines
  - b) EPN status report
  - c) Report of EPN Analysis
  - d) EPN Real-time analysis – status report
6. EUREF/ETRS89 web
  - a) Monitoring of official national ETRF coordinates on EPN web
  - b) EUREF campaigns web pages
  - c) EUREF home page
7. Report on ETRS89 Working Group
8. INSPIRE progress report
9. EUVN\_DA
10. ECGN
11. EVRS
  - a) Status EVRS and WHS GGOS action
  - b) What does EUREF considers as a realization of EVRS
12. European contribution to IAG WG “Regional Dense Velocity Fields”
13. ITRF2008
14. EUREF Symposium 2010 Organization
15. EUREF 2011 Symposium
16. Status EUREF 2008 and 2009 proceedings/BGG
17. Divers
  - a) EUPOS combination centre
  - b) IAG Commission 1 Symposium
  - c) IGS workshop 2010
18. Next TWG Meeting
19. Action Items

## Participants

Zuheir Altamimi, Paris  
 GEOFF BELL, Belfast (guest) (08.03.)  
 ELMAR BROCKMANN, Berne  
 CARINE BRUYNINX, Brussels (Chair)  
 ALESSANDRO CAPORALI, Padova  
 JAN DOUSA, Prague  
 MICHAEL GIANNIOU, Athens (guest)  
 MARK GREAVES (guest) (08.03.)  
 HEINZ HABRICH, Frankfurt a.M.  
 NORBERT HOEGGERL, Vienna (guest)  
 HELMUT HORNIK, Munich (Sub-comm. Secretary)  
 JOHANNES IHDE, Frankfurt a.M. (Sub-comm. Chair)

KONSTANTINOS KATSAMPALOS, Thessaloniki (guest)  
 AMBRUS KENYERES, Budapest  
 CHRISTOPHER KOTSAKIS, Thessaloniki (guest) (08.03.)  
 MARTIN LIDBERG, Gävle  
 JAAKKO MÄKINEN, Helsinki  
 MARKKU POUTANEN, Helsinki  
 HERMANN SEEGER, Bad Neuenahr-Ahrweiler (hon. member)  
 WOLFGANG SÖHNE, Frankfurt a.M.  
 GÜNTER STANGL, Graz  
 JOAO AGRIA TORRES, Lisbon  
 MANUELA VASCONCELOS, Lisbon (guest)

apologized: RUI FERNANDES, Covilhã

## Minutes

### 1. Opening

In her property as chairwoman of the EUREF Technical Working Group (TWG), C. BRUYNINX opens the 52th meeting of the EUREF TWG and welcomes the participants. On behalf of the TWG she thanks the Bundesamt für Eich-und Vermessungswesen (BEV), especially N. HOEGGERL and G. STANGL, for hosting this meeting. By proxy of the President of the BEV, Dr. J. PACHER welcomes the TWG. too. In a summarized overview he describes the organisation and tasks of the BEV which serves as the Austrian NMA. He emphasizes the involvement of the Austrian geodesy in international projects since the very beginning with the "Mitteleuropäische Gradmessung". J. PACHER appreciates the excellent relationship to the neighbouring countries which is practised in numerous common projects. He points out that the NMAs contribute considerably to the functioning of modern infrastructure by their work in data acquisition and continuous maintenance. EUREF provides the necessary information for that on the continental level. J. PACHER also remembers that on occasion of the 1991 IUGG General Assembly one of the first meetings of the EUREF Sub-commission has taken place in the BEV. In the following N. HOEGGERL describes the activities of the BEV especially in context with EUREF and shows an example for station Hermannskogel as one of the oldest in the Austrian Network, this station nowadays is equipped with modern techniques especially for RTK.

E. BROCKMANN informs that WERNER GURTNER has deceased after a long illness on October 24, 2009 in the age of 60 years. WERNER GURTNER was intensively

engaged in EUREF since the beginning, so he was one of the main protagonists in organising and observing the EUREF-89 Campaign which represents the first GPS-Campaign and still forms a basis for EUREF. He also contributed enormously to the development of the Bernese Software which is the most used software for GPS analysis on international level. The development of the Fundamental Station Zimmerwald to the present internationally highly reputable level is to a great extend a merit of WERNER GURTNER, too. WERNER GURTNER participated in nearly all EUREF Symposia and TWG Meetings and presented numerous highly qualified contributions. From 1999-2003 he was chairman of the TWG.

The funeral service took place on November 10, 2009 in Bern. Several colleagues of the EUREF Sub-commission paid their last respects to WERNER GURTNER.

The plenary rises from the seats for a moment of silence for WERNER GURTNER.

A draft of the agenda has been distributed among the TWG, the participants accept the agenda.

### 2. Minutes of the 51<sup>th</sup> TWG meeting in Padua

The minutes of the last TWG Meeting in Padua, 13.10.2009, were distributed among the TWG members. Some few corrections are to be attached. The final text is published in the EUREF homepage.

### 3. EUREF IE/UK 2009

The report *EUREF IE/UK 2009 – EUREF Densification Campaign* compiled by M. GREAVES has been distributed by circular. M. GREAVES explains the details.

The network is built as a national RTK network, the sites are mainly selected due to the practical needs as far as no other restrictions occurred. The IE/UK 2009 is considered to serve as new zero order for Great Britain and Ireland as well. It replaces the previous networks EUREF GB 2001 and EUREF EIR/GB 95. Considering the fact that a considerable number of sites within the previous campaigns does no more exist, the new sites have been selected as careful as possible for long-term access and stability. Some sites have been installed especially to be closely connected with tide gauges and other multi-techniques sites, one site has been put near the Euro-Tunnel to be connected with levelling connections to the European continent etc. The investigation of the vertical components of the new fiducial stations in connection with the whole of Europe shows a tilt which might be caused by systematic influences. This effect has to be investigated in detail. As M. GREAVES informs, a relevant publicity campaign will be made with the release of the new coordinates to inform the public and to urge the use of the results.

In the discussion G. BELL informed on the plans to use two sites within Ireland as permanent sites and thus to enable the extension of the EPN to this country. H. HABRICH appreciates the use of GLONASS data following a recommendation of EUREF.

The TWG states that the new IE/UK 2009 Campaign fulfils the requirements of EUREF. With respect to recommendations of the TWG, M. GREAVES will update the report and submit a final report at the next TWG Meeting and then to be presented to the 2010 EUREF Symposium.

#### 4. ETRS89 realization of the HEPOS network

M. GIANNIOU presents the report *Realization of ETRS89 in Greece by the HEPOS network*. The HEPOS Project is based on a broad CSF-III project *Information and Technology Infrastructure for a modern Cadastre* which is co-funded by the European Regional Development Fund. The derived coordinates form the Greek reference network HTRS07.

HEPOS comprises 87 Networked Reference Stations and further 11 single Reference Stations. For the observations altogether 98 Trimble NetRS receivers with Trimble Zephyr Geodetic antennae with domes were employed. The observation period covered 14 days. The repeatability is estimated to better than 2 mm for the horizontal components and about 5 mm for the vertical component.

M. GIANNIOU emphasizes the fact of the high tectonic activity in Greece, as example the official ETRF2000 velocities of six EPN stations published by EUREF are listed. The fault lines cross the Greek territory, the relative translation vectors are partly on the cm level per year, and abrupt movements occur too. The velocity

field on the Greek territory is rather complex and inhomogeneous. Thus a solution is needed to maintain the coordinates on a consistent level.

In the intensive discussion to this report J. IHDE points out that there exists a law defined by the European Commission to compute the coordinates related to the ETRS89. So the TWG has to reflect how to proceed in such difficult cases as Greece with its considerably high tectonic activity. Moreover, J. IHDE states that since the installation of the ETRS89 about two decades have passed and also in other parts of Europe smaller movements have accumulated up to a level which cannot be neglected especially in relation to the increasing accuracy of the coordinates at the time period of observation. The ETRS89 is defined as a label for the European coordinate system, however, as the example of Greece shows, the practical application can induce big problems.

In this context the land uplift in Scandinavia is mentioned. Although the movements in the vertical are similar to the horizontal shifts in Greece, the case is not comparable as the land uplift is a rather continuous motion whereas in Greece abrupt events are rather normal.

K. KATSAMPALOS states that the HEPOS is intended to serve as a RTK network and will be attached to INSPIRE as well. Therefore reliable coordinate values are needed to fulfil the requirements for an adequate application. The displacements are known, thus a method has to be defined to record and describe the displacements within a sufficient stable frame. Z. ALTAMIMI proposes to fix the system to a certain time epoch and define the velocities as accurate as possible together with a permanent monitoring for the recording of abrupt movements.

Finally the TWG concludes that the data from the HEPOS campaign are to be reprocessed following strictly the EUREF guidelines and the memo to convert to ETRS89 should be applied. The comparison of the ETRS89 coordinates of this campaign and the current ETRS89 coordinates used in Greece will allow assessing the level of agreement of the current HEPOS realization with the ETRS89. The report will include a comparison with the present HEPOS results to assess the level of compatibility of HEPOS with the ETRS89. The results should be distributed among the TWG in time and be discussed at the next meeting. The solution then will be proposed to the next EUREF Symposium for adoption as class B.

#### 5. EUREF Permanent Network

##### a) Update EPN Guidelines

A draft of the updated guidelines based on proposals of the TWG members has been circulated among the

TWG, E. BROCKMANN explains the changes. The TWG discusses the need to restrict the number of EPN sites by introducing a minimum distance between the sites. Up to now sites of special importance have been excluded of this restriction. J. IHDE mentions that RT techniques meanwhile are rather normal and the relevant stations are to be put on the same level as usual ones. The exception should be restricted to those sites which really apply different techniques.

The TWG accepts all changes except item 2.1.17 (antenna+radome calibrations). This item will be discussed at the next IGS-Workshop (end of June 2010) and feedback will be provided at the fall TWG Meeting. If necessary, the station guidelines will be updated. C. BRUYNINX will formulate the accepted items and put them into the EPN website.

Then H. HABRICH explains the updated guidelines for EPN Analysis Centres. The TWG discussed the items. H. HABRICH is asked to update the LAC guidelines according to the recommendations of the TWG and to send the final text to the EPN-CB to be put into the web.

#### **b) EPN status report**

C. BRUYNINX then presents the usual report on the EPN. 5 new sites (Porto Garibaldi/Italy, Patras/Greece, Smile/Ukraine, Angra do Heroismo/Portugal, Venetian/Italy) have been included into the network, further 4 sites (L'Aquila/Italy, San Piero Campo Nell'Elba - Elba/Italy, Evpatoria/Ukraine, Lampedusa/Italy) are presently inactive, finally one site (Pac (Pod Snezkou)/Czech Republic) has been rejected. For altogether 19 sites there are applications to be put into the EPN, they will be tested according to the usual procedures and then be evaluated to be accepted or not.

Demonstrating a graph, C. BRUYNINX shows that since the beginning of the use of GLONASS data in 2004, meanwhile about 50% of the EPN observe GLONASS satellites simultaneously to GPS. Further, real time data are available for about 50% of the sites, too. These data are used since 2006. A great majority of the EPN sites apply absolute antenna calibrations.

#### **c) Report of EPN Analysis**

H. HABRICH informs that the Military University of Technology (MUT) in Warsaw now hosts a new Local Analysis Center (LAC). At present MUT is processing 114 sites.

H. Habrich reports about numerical instabilities in the back-conversion for covariance matrix / solution vector (SINEX format) into NEQ. Therefore a letter will be sent out to the LACs recommending the use of NEQ SINEX instead of COV SINEX.

A new website at the BKG GNSS Data Center <<http://igs.bkg.bund.de/>> has been installed, H. HABRICH demonstrates the new website.

The 7th EUREF Local Analysis Centres will take place in Warsaw at the end of October or beginning of November 2010. The date will be fixed asap and communicated among the concerned colleagues.

#### **d) EPN Real-time analysis – status report**

W. SÖHNE informs that the station Torino now is the first site from which users can receive the data immediately and directly. Further, several new stations have been introduced into the project. At present 106 RT data streams are available. New broadcasters have been installed at the ASI and ROB. The website has been completed by G. WEBER <<http://igs.bkg.bund.de/index/index>>.

The TWG asks W. SÖHNE to provide details on the generation of ETRF2000 orbits and results on the usage at the next TWG to be presented at the EUREF symposium; the report should include descriptive examples of usage of these orbits for computing positions in the ETRS89. Moreover relevant information is on additional broadcasters to be included into the individual station web page at the EPN CB.

In the discussion J. IHDE emphasizes that the real-time technique represents a really new tool. This technique is different to the usual EUREF products which are considered in the traditional way to be stable over a longer time period. Therefore it has to be reflected carefully how to proceed. On the one hand EUREF is a body of the IAG, on the other hand EUREF should take care to be the competent organization for reference networks and relevant applications within Europe. EUPOS e.g. is acting independently of the IAG and is very active especially in Eastern Europe. These activities are very much considered by the users. EUREF has to co-operate with these groups, otherwise EUREF might lose the influence on this important development which opens a huge market of applications. It is recommended to discuss this topic in detail at the next TWG or/and EUREF Symposium.

### **6. EUREF/ETRS89 web**

#### **a) Monitoring of official national ETRF coordinates on EPN web**

At the 2009 EUREF Symposium in Florence E. BROCKMANN had presented a pilot project including 15 countries (cf. Resolution No 3 of the Symposium). At the time of the TWG Fall Meeting (October 2009) already 19 countries participated. Several countries involved in the EPN did not yet answer or allow the publication of their coordinates, respectively, thus the

efforts should be continued to integrate all countries in this project.

E. BROCKMANN states that the cooperation with the countries is very promising. In general no problems occurred except of two sites (GAIA/Portugal: Antenna height reference problem; AQUI/Italy: Abruzzo earthquake). For the site AQUI coordinate differences of more than 10 cm as a consequence of the disastrous earthquake were observed. A. KENYERES emphasizes to keep this Call-A-Level site in the data files but to handle it practically as a new station with new coordinates after the earthquake.

The TWG asks E. BROCKMANN and C. BRUYNINX to put adequate information on this topic into the EPN web page.

#### **b) EUREF campaigns web pages**

G. STANGL reports on the progress to this topic. A test variant has been installed in the web [ftp://olggps.oew.ac.at/pub/EUREF\\_camp/eurefdb\\_variants.html](ftp://olggps.oew.ac.at/pub/EUREF_camp/eurefdb_variants.html). G. STANGL mentions the problems to put the sites into adequate maps. Clickable maps would be independent, but are awkward to establish and need underlying maps. The use of Google maps offers automatic map provision and is easy to create, however, the copyright and data keeping is by Google. G. STANGL will continue this work and report again as soon as useful.

#### **c) EUREF home page**

M. VASCONCELOS presents a draft for the new EUREF Website. She points out that the front page needs to be designed most carefully, all necessary information on EUREF has to be shown to the user in order to urge interest, on the other hand the page should not be overloaded. The TWG therefore should reflect which type of information has to be placed and which design has to be used for that. The need to also include a "search function" is stated.

M. VASCONCELOS will make available the draft of the new EUREF home page to the TWG for review and additions by TWG members. Then the update will be continued.

### **7. Report on ETRS89 Working Group**

On behalf of the ETRS89-WG M. LIDBERG describes the background to this topic. Within the framework of INSPIRE (Infrastructure for Spatial Information in the European Community) rules have been developed regarding the availability and format of spatial information within the European community. These rules will become mandatory and included in European law. One important theme for such rules are geodetic reference frames. In these rules it is mandatory to use:

- ETRS89 for geographical coordinates, and as a basis for coordinates in map-projections;
- EVRS/EVRF for "gravity related heights".

These demands imply that ETRS89 and EVRS fulfil the request for quality and consistence. Consequently it has to be decided which coordinates and heights can be considered to fulfil the requirements for ETRS89 or EVRS. Regarding ETRS89 there is a mechanism in place where "national" realizations are recognized and accepted by EUREF through resolutions. For the EVRS a comparable mechanism is still missing. Considering that ETRS89 and EVRS are EUREF "products", EUREF should take care regarding its use (also for less demanding applications) and also keep its responsibility on the maintenance and further development which should not be left to organizations which are out of control of EUREF. Therefore M. LIDBERG proposes that EUREF should provide the possibilities for accepting national realizations of height systems as improvements and/or densifications of EVRS e.g. through resolutions:

- EVRF2007 is only available at the nodal points – thus densifications;
- new levellings may be considered as improvements;
- an uncertainty level may be stated in the resolution (similar to the "1 cm" sometimes mentioned for ETRS89).

That would possibly imply a good support for the work of the national authorities and would fit well in to the spirit of the MoU between EUREF and EuroGeographics, too.

In the discussion to this topic J. IHDE emphasizes the urgent need to define clearly how EUREF will proceed in context with IAG and ITRF etc. for next 10 years and which role ETRS89 can play in technical as well as political aspects in the next future. There is a request for global solutions, however, continental solutions are needed, too. Special interest has to be given to problematic zones and how to derive ETRS89 coordinates in the future.

The TWG asks M. LIDBERG and the ETRS89 WG to create and distribute a new questionnaire about the adoption of ETRS89 in the different countries. J. TORRES will prepare a relevant report on the history of ETRS89. M. LIDBERG should prepare a paper to be discussed at the next TWG meeting on how to proceed with ETRS89 in the future. Moreover a list of tasks has to be defined to distribute the workload among the WG members.

### **8. INSPIRE progress report**

On behalf of EUREF the TWG members A. CAPORALI, H. HABRICH and J. TORRES are involved in INSPIRE. J. TORRES summarizes the structure and the relevant details of INSPIRE. The INSPIRE Directive addresses

34 spatial data themes needed for environmental applications, these themes are subdivided in the three annexes of the directive, detailed information cf. [inspire.jrc.ec.europa.eu/index.cfm/pageid/2/list/7](http://inspire.jrc.ec.europa.eu/index.cfm/pageid/2/list/7). In Annex 1 the topic “Coordinate Reference Systems” is treated.

J. TORRES emphasizes that the data are widely used e.g. for environment management, therefore the definition of the data has to be clearly visible for all users who not always are familiar with geodesy, in particular political decision makers. This item especially refers the data accuracy because the majority of all users do not care about accuracy but consider coordinates/heights as given values.

Based on the discussion, the TWG asks J. TORRES, J. IHDE, H. HABRICH, A. CAPORALI and J. MÄKINEN to investigate together with EuroGeographics whether it is useful to introduce a new theme in INSPIRE linked to the idea that to realize the reference frames real data, instead of only definitions, are needed. EUREF and EuroGeographics should also look into the issue of the transformation formulas. Ideally, the EUREF-BKG transformation service should get a more official recognition. It should be tried to make a survey of the identifiers used in the different countries for existing ETRS89 realizations. The topic will be discussed again at the next TWG Meeting.

## 9. EUVN\_DA

The draft final report of the EUVN\_DA WG has been distributed, A. KENYERES explains the details. A. KENYERES mentions that this project could be continued for a long time, however, it necessarily had to be concluded, so it is hoped that the present status has reached a reasonable status. A continuation might be possible but should be done under a new label.

Altogether the EUVN\_DA comprises now ca. 1400 points from all 25 UELN countries. The BKG has installed a webpage containing all relevant information on the EUVN\_DA [www.bkg.bund.de/nn\\_166756/geodIS/EVRS/EN/Projects/02EUVN-DA/euvnda\\_\\_node.html\\_\\_nnn=true](http://www.bkg.bund.de/nn_166756/geodIS/EVRS/EN/Projects/02EUVN-DA/euvnda__node.html__nnn=true), the webpage will be completed till end of March 2010.

Since the last report to the TWG, only the Italian data have changed. The comparisons of the EUVN\_DA and the EGG08 for 2009 and 2010 show a significant lower tilt on the Apennines Peninsula. The real reason for these effects is not yet clear, it also might be caused by an incorrect modelling. A. CAPORALI means that this systematic bias is not only caused by the Italian data set, a better insight could only be received by a complete revision of all data. Italy would be ready to contribute to this investigation. As a first step J. IHDE will ask M. SACHER to check the details of the transformation that has been applied on the Italian leveling data and to

provide the information to A. CAPORALI. As future aim new nodal points between the Italian leveling network and the neighbouring blocks should be observed. J. IHDE points out that levelling data generally are problematic due to inhomogeneous reduction procedures and other influences. It can be hoped that with help of other and more accurate data in some years there will be a better knowledge of these effects and that the problem will possibly be solved then.

Similar effects also occur in France, Portugal, Spain and the UK. J. TORRES will check the data of Portugal and inform A. KENYERES for a possible correction of the report. All countries involved in EUVN\_DA should send their feedback on the final report to A. KENYERES until March 19 before issuing the final report.

The final EUVN\_DA report will be presented at the 2011 EUREF Symposium. The results will be distributed to the participating countries. A new project under a new label may be started as far as useful and necessary.

## 10. ECGN

M. POUTANEN presents a circular to the ECGN-members. In this circular, M. POUTANEN raises the question for the future steps and the method how to proceed in general. Considering the present status it has to be stated that up to now only few progress can be shown. It turned out that the ECGN is a rather complex topic and the practical work requires enormously personnel and is time intensive. Especially the modelling would need a lot of input. M. POUTANEN expresses the opinion if the work cannot be really re-activated in the next time, the project better should be closed. J. IHDE mentions that the ECGN cannot be a continental solution of GGOS, but is to be restricted to the needs of EUREF. Therefore it would be better to reduce the goals and to concentrate on the items which realistically can be worked out.

Finally, the TWG asks M. POUTANEN to review the objectives of the ECGN concentrating on limited/realistic questions and formulate a proposal for the next TWG. Further he will make a new attempt to find active co-workers for the ECGN WG. In this context M. POUTANEN should try to extract ideas from the next Meeting of the Nordic Geodetic Commission to be applied for the ECGN. The aim is to improve the accuracy and reliability of EUREF by new aspects. The topic will be discussed again at the next TWG Meeting.

## 11. EVRS

### a) Status EVRS and WHS GGOS action

J. IHDE informs on the delivery of the Russian data including the boarder connections to neighbouring countries. Due to the enormous size of this country, the

loops are rather large. However the availability of the present data is a remarkable step forwards towards the goal of an EVRS for the whole of Europe. Belorussia has announced to participate – if these data really would be available, the European continent would be rather well covered by the EVRS. The announced data of Ukraine are still missing although the authorities have officially declared to participate. Therefore another letter will be written to the authorities of Ukraine to join the UELN with practical work. Further Spain is not yet involved, however it can be hoped to receive the data within the next time. Turkey is working on several projects in this field and has declared to join in 2010 by a connection via Bulgaria because Greece did not yet agree to participate.

On behalf of the GGOS R. NEILAN has asked J. IHDE for contributing by the EVRS to the Global Unified Height System. A call for participation to GGOS and the IAG Intercommission Project will be sent out in the next future.

#### **b) What does EUREF consider as a realization of EVRS**

This topic will be discussed again at the next TWG Meeting, M. LIDBERG, J. MÄKINEN, J. TORRES and M. SACHER are asked to prepare a draft and distribute the text among the TWG.

### **12. European contribution to IAG WG “Regional Dense Velocity Fields”**

In his property as member of the Working Group on Regional Dense Velocity Fields within IAG Sub-commission 1.3 on Regional Reference Frames, A. KENYERES reports on the organisational structure and activities. As representatives for EUREF, A. KENYERES and J. LEGRAND have been nominated. Within Europe various regional coordinate sets are available from which relevant information on the velocities could be received. AGNES, AMON, ASI, INGV, IGN and CEGRN have been analyzed. A series of other networks might contribute, too, however the data sets do not yet cover a time period long enough to derive reliable velocity information.

A. KENYERES emphasizes the enormous manual work to check each station. In all the project is still in the status of learning and gathering experience. On the comment of C. BRUYNINX that the project is planned to end in 2011, A. KENYERES states that a second term would be useful to yield realistic results.

### **13. ITRF2008**

Z. ALTAMIMI, President of IAG Commission 1, informs on the progress. At present, two Combination Centres, i.e. the French IGN and the DGFI, are intensively working on this topic. A first solution was completed in

November 2009, however, the comparison between the two solutions showed numerical discrepancies and differences in terms of frame definitions which have to be solved before the release of an official solution. Up to now there is no final agreement on the strategy how to deal with the important weighting of local ties, so the discussions and investigations are going on. It is intended to contact the IERS in this matter to come to an agreement on this problem.

### **14. EUREF Symposium 2010 Organization**

On behalf of the LOC for the 2010 EUREF Symposium in Gävle/Sweden, M. LIDBERG, reports on the preparations. The homepage [http://www.lantmateriet.se/templates/LMV\\_Entrance.aspx?id=15789&lang=EN](http://www.lantmateriet.se/templates/LMV_Entrance.aspx?id=15789&lang=EN) has been installed and most of the work has been done already. J. IHDE and H. HORNIK will clarify asap the attribution of financial support by EuroGeographics for EUREF2010 participants from economical weak countries. In the positive case, M. LIDBERG will announce that in the Symposium webpage. J. IHDE remembers the rules of EuroGeographics, so the support can only be given to participants from countries which are full members of EuroGeographics and one person per country, further the support is limited and normally cannot cover the full expenses.

The TWG will decide by circular about the Symposium Programme one week after the deadline of the submission of abstracts. The relevant information will be submitted by M. LIDBERG and H. HORNIK.

### **15. EUREF 2011 Symposium**

J. IHDE informs on an official invitation letter from Moldova to hold the 2011 EUREF Symposium in Chisinau. There already was an invitation for 2010, in this case, however, it was decided to follow the invitation of the Swedish colleagues. The TWG discusses the invitation and concludes to accept. J. IHDE will write a relevant letter to the authorities in Moldova.

### **16. Status EUREF 2008 and 2009 proceedings/BGG**

Some articles presented to the 2008 Brussels Symposium are not published in the BGG volumes, A. CAPORALI will check the situation. The texts of the 2009 Florence Symposium are not yet gathered completely, so an e-mail for submission of the files will be sent out.

### **17. Divers**

#### **a) EUPOS combination centre**

The topic is postponed.

#### **b) IAG Commission 1 Symposium**

The topic is postponed.

**c) IGS workshop 2010**

C. BRUYNINX and J. DOUSA suggest to revitalize the 'EUREF-IP mail' for information of general interest, e.g. RTCM format changes etc.

**18. Next TWG Meeting**

The next Meeting of the EUREF TWG will take place in Gävle as usual on the day before the beginning of the annual Symposium, i.e. on Tuesday, June 1 (full day).

**19. Action Items**

C. BRUYNINX and H. HORNIK will complete the action items and distribute them among the TWG by circular in the next days.