



# EUREF Web Page

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Reference Frame Sub Commission for Europe

IAG Commission I



EUREF 2008 Symposium Brussesl - Presentations online

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**EUREF Symposium 2009: Florence / Italy - May 27-30**

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## Proposal

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# Overview of EUREF



## Overview of EUREF

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### Overview of EUREF

EUREF is the IAG Reference Frame Sub-Commission for Europe, integrated in the Sub-Commission 1.3, Regional Reference Frames, under [Commission 1 – Reference Frames](#), following the implementation of the new [IAG structure](#) at the IUGG (*International Union of Geodesy and Geophysics*) General Assembly held in Sapporo, 2003. The Sub-Commission EUREF was founded in 1987 at the IUGG General Assembly held in Vancouver.

EUREF deals with the definition, realization and maintenance of the European Reference Frame - the geodetic infrastructure for multinational projects requiring precise geo-referencing (e.g. three-dimensional and time dependent positioning, geodynamics, precise navigation, geo-information) - in close cooperation with the IAG components (Services, Commissions, and Inter-commission projects) and [EuroGeographics](#), the consortium of the National Mapping Agencies (NMA) in Europe.

EUREF has been developing a set of activities related to the establishment and maintenance of [ETRS89](#) (European Terrestrial Reference System) and [EVRS](#) (European Vertical Reference System). A key instrument in maintaining ETRS89 is the [EUREF Permanent Network](#) (EPN), covering the European continent, whose stations observe continuously with high accuracy GPS/GLONASS receivers.

The forum where the activities are discussed and decisions are taken is the annual symposium, organized since the EUREF foundation, in 1987. The last symposia have been attended by more than 120 participants coming from more than 30 member countries in Europe. Current activities are governed by the [Technical Working Group](#).

The results of EUREF are available in the symposia proceedings. Besides the presented papers, the proceedings contain the [resolutions](#) and [documentation](#) (in preparation) for some of the most important activities and database maintenance.



# Overview of EUREF - Projects

## Projects

The projects currently under development are the following:

- **EUREF Permanent Network ([EPN](#))**

Continue to develop the EPN in close cooperation with IGS, for the maintenance of the European Reference Frame, as a contribution to the ITRF and as infrastructure to support other relevant projects, namely the European initiatives related to GALILEO.

- **European Combined Geodetic Network ([ECGN](#))**

ECGN aims at the combination of geometric and gravity-related techniques, and will be developed in close cooperation with IAG Commission and the International Hydrographic Organisation (IHO). It is expected to be a remarkable contribution to the Integrated Global Geodetic Observing System (IGOS).

- **EUVN Dense**

... identified in the combination of the (work) and the gravimetric geoid.

- **European Velocity Field Network ([UEVN](#))**

For UEVN computation, the project aims to extend and densify the European and prepare it to be computed under a geokinematic approach.

- **ETRS89 velocity field model**

The purpose is to establish a dense in Europe for the long-term maintenance of the ETRS89.

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# Overview of EUREF - Connections

The activities and results achieved by EUREF originated connections with other organizations and institutions, namely:

- IGS

IGS is the International GPS Service.

Since May 1996 CODE (Center for Orbit Determination in Europe – a joint cooperation of the University of Berne, Switzerland, the Bundesamt für Landestopographie, Switzerland, the Institut Géographique National, France, and the Bundesamt für Kartographie und Geodäsie, Germany) acts as an IGS Regional Network Associated Analysis Center (RNAAC). This connection resulted from an EUREF proposal and acceptance by IGS, recognizing that the EUREF Permanent Network follows the regulations of IGS.

<http://www.cx.unibe.ch/aiub/igs.html>

<http://igs.cb.jpl.nasa.gov/index.html>

- EuroGeographics Expert Group on Geodesy (ExG-G)

Euro Geographics is the European Consortium of the National Mapping Agencies.

EUREF has a representative in EuroGeographics Expert Group on Geodesy. The representative presently is Dr. Johannes Rothemann, Germany. The group's main objective is to guarantee the coordination of activities between the member states. One of the main areas of cooperation is the adoption of EUREF standards and procedures for the production of common cartographic products.

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- EGNOS – GALILEO

EGNOS (European Geostationary Navigation Overlay System) and GALILEO are the GNSS (Global Navigation Satellite System) projects

Recognizing that the EUREF infra-structure can be useful for EGNOS and GALILEO developments, contacts are being established in order to find possible ways of cooperation.





# TWG



## Technical Working Group

[General Information](#)[Meetings and Documentation](#)

### Technical Working Group (TWG)

The EUREF TWG was created at the EUREF symposium in Berne, 1992.

The TWG meets twice to three times a year to manage current activities. One of these activities is the validation of GPS campaigns under the established guidelines, for approval by the plenary.

The minutes of the meetings are published together with the symposia proceedings.

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### Members (appointed at the EUREF 2008 Symposium held in Brussels):

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# GPS Campaigns

The Database of the Campaigns is currently unavailable for maintenance.

The Table bellow shows the EUREF GPS Campaigns adopted.

Status: August 2008

<b>CAMPAIGN</b>	<b>REMARKS</b>	<b>ADOPTION (Resolution – Plenary)</b>
EUREF 89	Class C	R1 - Berne 1992
EUREF 1992 Baltic States	Class C - Estonian points replaced by EUREF-Estonia-1997	R2 - Budapest 1993
EUREF-CS/H 91	Some H points replaced by EUREF-Hungary-2002. S points replaced by EUREF-Slovakia-2001	R1 - Warsaw 1994
EUREF-POL 92	Replaced by EUREF-POL-2001	R1 - Warsaw 1994
EUREF-D/NL 93		R1 - Warsaw 1994
EUREF-GB92	Replaced by EUREF-GB2001	R1 - Helsinki 1995
EUREF-Cyprus93		R1 - Helsinki 1995
EUREF-LUXBD94		R1 - Helsinki 1995
EUREF-CRO/SLO 94		R1 - Helsinki 1995
EUREF-DK94		R1 - Helsinki 1995
CH92/93		R1 – Ankara 1996
EUREF-BG92/93		R1 - Ankara 1996
EUREF-Iceland94		R1 - Ankara 1996
EUREF-A94/95	Some points replaced by EUREF-Austria-2002	R1 - Ankara 1996
EUREF-EIR/GB95	GB points replaced by EUREF GB2001	R1 - Ankara 1996
Iberia 95		R1 - Bad Neuenahr – Ahrweiler 1998
Malta 96		R1 - Bad Neuenahr – Ahrweiler 1998





# Symposia



## Symposia

[Resolutions](#)[Next Symposium](#)[Photo Gallery](#)

The EUREF Symposium is the forum where the EUREF activities are discussed and resolutions are taken. It has been organized every year since 1990, with an exception in 1991, when it was replaced by the 'Common Meeting of the IAG-Sub-commissions EUREF, UELN, CRCM-WE (Commission on Recent Crustal Movements, Sub-commission Western Europe) and the CERCO-Working Group VIII'.

Place	Date	Publication
Brussels	18-21.06.2007	<a href="#">Contributions available</a>
London	06-09.06.2007	<a href="#">Contributions available</a>
Riga	14-17.06.2006	<a href="#">Contributions available</a>
Vienna	01-04.06.2005	<a href="#">Contributions available</a>
Bratislava	02-05.06.2004	<a href="#">Contributions available</a>
Toledo	04-07.06.2003	<a href="#">Contributions available</a>
Ponta Delgada	05-08.06.2002	<a href="#">Contributions available</a>
Dubrovnik	16-19.05.2001	<a href="#">Contributions available</a>
Tromsø	22-24.06.2000	<a href="#">N. 9</a> (Proceedings on-line)
Prague	02-05.06.1999	<a href="#">N. 8</a> (Index)
Bad Neuenahr – Ahrweiler	10-13.06.1998	<a href="#">N. 7</a> (Index)
Sofia	04-07.06.1997	<a href="#">N. 6</a> (Index)
Ankara	22-25.05.1996	<a href="#">N. 5</a> (Index)



# Documentation



## *Documentation*

1. [Guidelines](#)
2. EUREF Publications
  - 2.1. [Symposia Proceedings](#)
  - 2.2. EUVN - Final Documentation [Volume I](#) [Volume II](#)
3. [Minutes](#) of the Technical Working Group
4. [Reports](#)
5. [Memoranda of Understanding](#)
6. [Papers](#) in Magazines
7. [Other](#) Documents



# Documentation



## Guidelines

The guidelines for different purposes within EUREF objectives are under preparation and will be soon placed here for consultation.

However, the guidelines for the EUREF network can be found [here](#).

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# Documentation



## Other Documents

The following documents can be seen and downloaded:

update	
EURE	
EURE Applications using GALILEO	
Germ (Deutsche Geodätische Kommission - DGK) - Workshop "Fundamental problems of the vertical and height system", University of Bonn, 12.09.2006	<a href="#">presentations</a>



## Documentation



### *Papers in Magazines*

#### ARTICLE

Altamimi Z., Sillard P., Boucher C: " [ITRF2000: A new release of the International Terrestrial Reference frame for earth science applications](#)" J GEOPHYS SOLID EARTH, OCT 2002

Ilde, J., Baker, T., Bruyninx, C., Francis, M., Gipman, S., Simek, J. and Wilmes, H. (2005): "Determination of the International Terrestrial Reference Frame (ITRF) using GPS data". [Journal of Geodesy](#)

Torres, J. (2003): "The European Geodetic Reference Frame 1989". [Geoinformation Science](#)

Bruyninx, C. (2003): "The European Geodetic Reference Frame 1989: A multidisciplinary network serving surveyors as well as scientists". [Geoinformation Science](#)

Torres, J. (2003): "Referencial Geodésico Europeu". [Proceedings of the Lusophone Conference on Geodesy and Geophysics](#), Volume 1, pp. 98-102, Editorial de la UPV, Ref. 15.2449, Valencia, 2003. (in portuguese)

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