Information about the use of ETRS89 and EUREF Products

J. Ihde, J. Torres, J. Luthardt

INSPIRE
Infrastructure for Spatial Information in Europe

Background

- The European Terrestrial Reference System ETRS89 was defined in 1990
- ETRS89 is recommended for adoption by the NMCA's and European organisations
- In 2005 EUREF and EuroGeographics send out a joint questionnaire to the NMCA's
- ETRS was adopted as official reference frame for geo data of the European Commission (INSPIRE)
- In 2011 EUREF and EuroGeographics send out a new questionnaire to the NMCA's extended to EUREF products

Response

	2005		2011	
	number	percent	number	percent
Countries to whom the letter was sent	41	100%	45	100%
Countries who answered - response	27	65%	28	60%

ETRS89 QUESTIONNAIRE 2011

1. *Is ETRS89 adopted in your country/region?* (mark with **X**)	YES		NO	

2. *If the answer to* ***1.*** *is* ***YES****, please answer to the questions in* ***2.*** *(If the answer is* ***NO****, please answer to the questions in* ***3.***)				
2.1 Year of adoption				
2.2 Designation of the associated Coordinate Reference System (CRS)				
2.3 Description of the basis for ETRS89 adopted in your country/region and provide a bibliographic link				
2.4 Associated campaign validated by EUREF (the list of campaigns is available at http://www.euref-iag.net/html/GPS-Campaigns.html*; if none, write NONE)*				
2.5 Is ETRS89 adopted in your country/region already described in the EUREF CRS data base (the CRS descriptions are available at http://www.crs-geo.eu *)?*	YES		NO	
2.6 If the answer to ***2.5*** *is* ***NO****, can your country provide the necessary information to include it?*	YES		NO	
2.7 Is ETRS89 adopted in your country/region described at another CRS data base (for example, the ESPG data base)?	YES		NO	
2.8 If the answer to ***2.7*** *is* ***YES****, please provide a short description of the data base and a link to the data base, where the description is given*				
2.9 Is your country already contributing to the EUREF-TWG project on monitoring official ETRF coordinates of stations of the EUREF permanent network (http://www.epncb.oma.be/_trackingnetwork/coordinates/pdf/ETRF_Monitoring_Firenze_Brockmann.pdf)				
2.10 If the answer to ***2.9*** is ***NO***, can your country provide the necessary information?				

Adoption of ETRS89

Countries who answere	2005		2011	
	27	100%	28	100%
Countries who adopted already ETRS89	21	80%	23	85%
Countries who will adopt ETRS89	4	15%	3	10%
Countries who will not adopted ETRS89	2	5%	2*)	5%

*) TR - adoption of ITRF96, GR - ETRS89 only in cadastre

Support and use of ETRS89

Countries who answered	2005		2011	
	27	100%	28	100%
Official support: by law	10	35%	17	**60%**
Official support: by standard	6	20%	6	20%
Official support: by recommendation	9	35%	13	45%
Use: always mandatory	6	20%	13	**45%**
Use: in specific situations	13	50%	13	45%
Use: complementary	16	60%	12	45%

Product No.	Product	Class	Sub-Class	Accuracy	Latency	Updates
1	Definition of ETRS89	Reference Systems and Frames	Definition	1 cm		
2	Definition EVRS	Reference Systems and Frames	Definition	1 cm		
3	Transformation between ETRF and ITRF	Reference Systems and Frames	Transformation Parameter	1 cm		
4	CRS - Transformation between national coordinate system and ETRS89	Reference Systems and Frames	Transformation Parameter	1 m		
5	CRS - Transformation between National Height system and EVRS	Reference Systems and Frames	Transformation Parameter	1 - 10 cm		
6	Weekly coordinates of EPN stations	Station	Coordinates	0.5 - 1.5 cm		
7	Daily coordinates of EPN stations	Station	Coordinates	0.5 -1.5 cm		
8	Rapid daily coordinates of EPN stations	Station	Coordinates	1 - 2 cm		
9	Hourly coordinates of EPN stations	Station	Coordinates	5 - 10 cm		
10	EPN station coordinates Class A	Station	Coordinates	1 cm		
11	EPN station velocities Class A	Station	Velocities	1 cm effictive		
12	EPN station coordinates Class B	Station	Coordinates	> 1 cm		
13	EPN station velocities Class B	Station	Velocities	> 1 cm effictive[1]		
14	Station coordinates of adopted EUREF campaigns	Station	Coordinates	1 - 5 cm		
15	EPN sub-network solution as contribution to the TIGA Project of IGS	Station	Coordinates	0.5 - 1.5 cm		
16	EVRF2007	Station	Physical Height	1 - 5 cm		
17	EUVN-DA	Station	Physical Height	1 - 10 cm		
18	Real-time observations using NTRIP	Observation	Data Stream	-		
19	Hourly observation files of EPN stations	Observation	Data File	-		
20	Daily observation files of EPN stations	Observation	Data File	-		
21	Weekly troposphere parameter for EPN stations	Station	Troposphere	-		
22	GNSS satellite orbit correction	Statellite	Orbit	10 – 15 cm		
23	GNSS satellite clock correction	Satellite	Clock	0.3 ns		

Description and projects

Number of countries	#	percent
	28	100%
CRS description of ETRS89 realisation		
in CRS-EU information system	16	55%
in other data base eg. EPSG	17	60%
Monitoring ETRF coordinates	19	70%
ITRF2008 introduction	14	50%

Use of EUREF products

Number of countries	#	percent
	28	100%
Definitions and Transformations	22	**80%**
EPN coordinates	16	55%
EUREF campaign coordinates	13	45%
EVRF2007	8	30%
EUVN-DA	10	35%
Realtime observations using NTRIP	5	**20%**
EPN observations	14	50%
troposphere parameters	8	30%
Realtime GNSS corrections	8	**30%**