



# **EUREF Products and Services for Positioning and Geo-Referencing**

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**Which EUREF products do we have?**

**Which EUREF services do we have?**

**Who/what are the users and applications of EUREF products and services**

— in positioning?

— in geo-referencing?

**Which EUREF products and services are missing?**



### GNSS data

- GPS + GLONASS (+ Galileo) observational and navigational data
- Available file formatted as well as real-time streams
- Archived (historical) data

### GNSS products

- Weekly coordinate and troposphere parameters
- Cumulative solutions (coordinates, velocities)
- Station position time series
- Station velocities
- Station ZPD parameter time series
- Real-time corrections (satellite orbits and clocks)



## **GNSS meta data / products**

- **Antenna calibration parameters**
- **Station site logfiles**
- **DCBs**
- **Satellite properties and status**



### ETRS89

- Transformation parameters (memo)
- ETRF2000 coordinates (and others)
- Comparison national ETRS89 coordinates with EUREF coordinates?

### EVRS

- EVRF2000/2007
- EUVN?
- UELN data base?
- Transformation parameters between national systems and EVRF2007



- **GNSS datacentres**

- **GNSS data broadcasters real-time datacentres**

- **ETRS89**

- ETRS89/ITRS transformation (EPN CB)

- **CRS-EU**

- For ETRS89, EVRS2000 and 2007



### NM(C)As

- Positioning and geo-referencing
- GNSS data
- Positions & velocities
- Wide range of accuracy levels

### Engineering surveying

- Positioning
- GNSS data
- Real-time products
- Wide range of accuracy levels



### Service provider

- GNSS data

### Navigation, machine guidance etc.

- Kinematic positioning
- Real-time products
- Mainly lower accuracy level

### Scientific users

- Positions & velocities
- Highest accuracy





### GIS applications

- Spatial data for geo-referencing
- Interfaces to GNSS products (e.g. via NMEA)
- INSPIRE directive including Annex I spatial data theme “Coordinate Reference Systems”
- Positions with lower accuracy level
- Datum transformation parameters

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### Re-vitalization of EUREF product catalogue?

- Implemented in reduced form at [www.euref.eu/euref\\_pr.html](http://www.euref.eu/euref_pr.html)
- →Differentiation between products and services necessary?

### Which products on regional rather than or additional to global level?

- Ionosphere parameters / maps
- Ambiguity fixing parameters
- User station coordinates

Do we have user statistics, user feedback?– Yes

Dowe need such? – Yes



### Products at [www.euref.eu/euref\\_pr.html](http://www.euref.eu/euref_pr.html)

- 23 different products listed
- Classification, to cover almost all of the products
  - No.
  - Product (Name/Description)
  - Class (Reference Systems & Frames, Stations, Observation, Satellite)
  - Sub-class (Definition, Transformation Parameter, Coordinates, Velocities, Physical Height, Data Stream, Data File, Troposphere, Orbit, Clock)
  - Accuracy (mm – m, ns)
  - Latency (seconds – weeks)
  - Updates (text; real-time, seconds, hourly, daily, weekly, some weeks, years)
- ...



### Services at [www.euref.eu/euref\\_serv.html](http://www.euref.eu/euref_serv.html)

- 2 different services listed
  - Short or even no description
  - Link
- EUREF-IP -> was EPN Special Project -> operational since 2008 -> remove from here (ersatzlos)
- EUVN-DA -> was ??? -> closed? -> remove from here(find anotherplace)



- **Add a column “Access”**

- **Remove “Services”**

- ...