Bundesamt für
Kartographie und Geodäsie

# EUREF Products
# - A Draft Catalogue -

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# Introduction

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# Background

- EuroGeographics objective is to achieve interoperability of mapping and other GI data within 10 years.
- The Expert Group Geodesy (ExG-G) of EuroGeograpics will cover the issues related with the definition, understanding and implementation of geo-reference systems (Terms of Reference).

***It became obvious that....***

- Discussions within EuroGeographics requires to know about the activities of the various groups.
- The results of the EUREF projects must be visible and understandable for persons outside the EUREF community, e.g,
  - for geodetic and non-gedetic users,
  - for persons responsible for European politics.

***.... we need a compilation of the EUREF results, products and services!***

# Motivation

- A **Product Catalogue** fulfils the requirements for „inter-group“ and public information.
- It is mandatory to use **one uniform** catalogue for the diverse discussions and publications around EUREF
- A catalogue must be clearly understandable in first respect. The completeness of all details is of less importance.
- A catalogue serves as basis for decisions around EUREF and EuroGeographics.

# Terminology

- Definition of a terminology to classify each particular product.
- The terminology consists of
  - the important characteristics
  - and of the corresponding quantities that could be valid
- It explains the multiple possibility to use the products
- The products of the catalogue are divided into main- und sub-groups, where a uniform scheme of features is used within each main-group.

# Terminology

| Feature | Quantity | Outline |
|---|---|---|
| Product | ▪Description | The product description includes all details that are not identified through the listed features, such as<br>▪Sample interval<br>▪Station distance<br>▪Product coverage<br>▪Adoption as EUREF Class A/B/C<br>▪Formats |
| Accuracy | ▪Quantity | The estimated range of accuracy in the corresponding unit. |
| User Profile | ▪„m“ - Accuracy<br>▪„dm“ – Accuracy<br>▪„cm“ – Accuracy<br>▪all | There are roughly 3 profiles distinguished. |

# Terminology

| Feature | Quantity | Outline |
|---|---|---|
| Latency | ▪Real-time<br>▪Hour<br>▪Day<br>▪Week<br>▪Year | It describes the time from the end of observations to the product availability. |
| Geodetic Technique | ▪GNSS<br>▪VLBI<br>▪SLR<br>▪DORIS<br>▪Leveling<br>▪Gravity<br>▪Combined | This is the observation technique that is used to generate the product. |

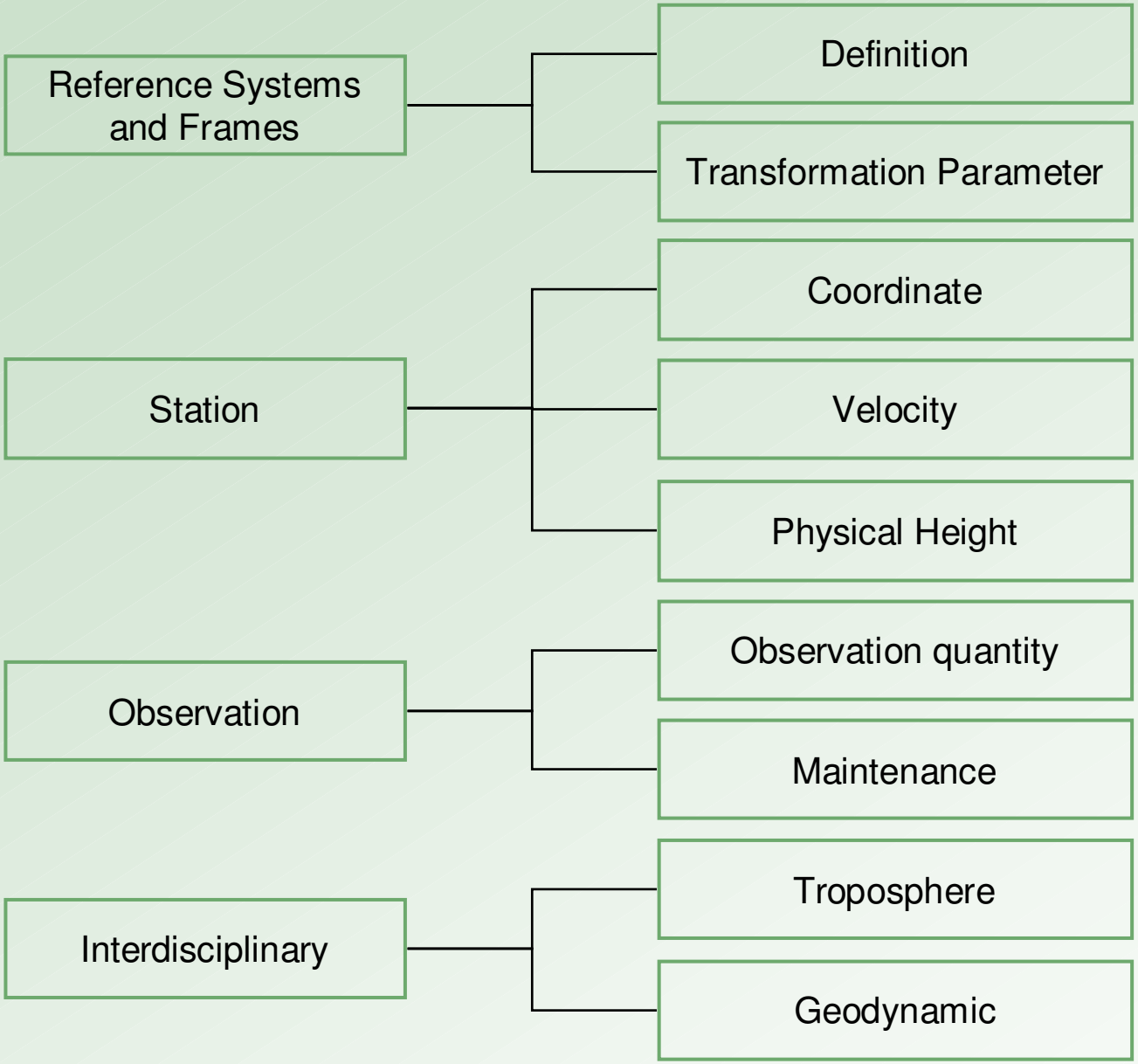
# Terminology

| Feature | Quantity | Outline |
|---|---|---|
| Updates | ▪Real-time<br>▪Hour<br>▪Day<br>▪Week<br>▪Month<br>▪Year<br>▪Decade | It describes the frequency of the product generation. This is the time between two successive product makings. |
| Availability | ▪Public<br>▪Restricted | It describes the authorization to access the products. |
| Reference Frame | ▪ITRF<br>▪ETRF<br>▪National | The products is given in the specified reference frame. |

# Terminology

| Feature | Quantity | Outline |
|---|---|---|
| Certification | ▪Yes<br>▪No | It describes whether a certifacation procedure through EUREF is available |
| Validation | ▪TWG<br>▪Others | It describes the responsibility to validate the product |
| Registry | ▪EUREF Secretary<br>▪Other | It describes the authority to register for the product |

# Catalogue Basic Structure



# Product Catalogue

| Reference Systems and Frames | | | | | |
|---|---|---|---|---|---|
| No. | Product | Accuracy | User Profile | Updates | Availability |
| | Definition | | | | |
| 1 | Definition of a Coordinate Reference System for Europe, the ETRS89 | cm | all | - | public |
| | Transformation Parameter | | | | |
| 2 | Transformation between ETRF and ITRF | cm | all | Some years | public |
| 3 | CRS – Transformation between National Coordinate System and ETRS89 | cm - dm | all | - | public |
| 4 | CRS – Transformation between National Height system and EVRS | cm - dm | all | - | public |

# Product Catalogue

| Station | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| No. | Product | Accuracy | User Profile | Latency | Geodetic Technique | Updates | Availability | Reference Frame |
| | Coordinates | | | | | | | |
| 5 | Weekly coordinates of EPN stations in the ITRF provided in SINEX files | 0.5 - 1.5 cm | cm | 3 weeks | GNSS | weekly | public | ITRF |
| 6 | Multi-year solution of EPN stations provided by recent ITRF realization, e.g. ITRF2000 | 0.5 - 1.5 cm | cm | some years | combined | some years | public | ITRF |
| 7 | Station coordinates of adopted EUREF Campaign with classification A, B or C | 1 - 5 cm | cm | some years | GNSS | - | public | ETRF |
| 8 | EPN sub-network solution as contribution to the GPS Tide Gauge (TIGA) Benchmark Monitoring Pilot Project of the IGS | 0.5 - 1.5 cm | cm | 3 weeks | GNSS | weekly | public | ITRF |

# Product Catalogue

| Station | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| No. | Product | Accuracy | User Profile | Latency | Geodetic Technique | Updates | Availability | Reference Frame |
| | Velocity | | | | | | | |
| 9 | ITRF velocities from ITRF realization | 1 – 2 mm/ year | cm | some years | combined | some years | Public | ITRF |
| 10 | ITRF velocities from special projects | | | | | | | ITRF |
| 11 | ETRF velocities from special projects | | | | | | | ETRF |
| | Physical Height | | | | | | | |
| 12 | Definition of a Height Reference System for Europe, the EVRS | | | | | | | |
| 13 | UELN | | | | | | | |
| 14 | EUVN | | | | | | | |

# Product Catalogue

| Observation | | | | | | |
|---|---|---|---|---|---|---|
| No. | Product | User Profile | Latency | Geodetic Technique | Updates | Availability |
| | Observation Quantity | | | | | |
| 15 | Real-time observations disseminated through the Internet using the NTRIP protocol | dm | real-time | GNSS | real-time | public |
| 16 | Hourly observation files of EPN stations available at EUREF data centers | cm | 5 – 15 min | GNSS | Hourly | public |
| 17 | Daily observation files of EPN stations available at EUREF data centers | cm | 30 min | GNSS | daily | public |
| | Maintenance | | | | | |
| 18 | Maintenance information of EPN stations available at the EPN central bureau | all | - | GNSS | - | public |

# Product Catalogue

| Interdisciplinary | | | | | |
|---|---|---|---|---|---|
| No. | Product | Latency | Geodetic Technique | Updates | Availability |
| | Troposphere | | | | |
| 16 | Hourly troposphere parameter for EPN stations | hourly | GNSS | hourly | public |
| 17 | Weekly troposphere parameter for EPN stations | 3 weeks | GNSS | hourly | public |
| | Geodynamic | | | | |
| 18 | Inconsistencies from time series | | GNSS | weekly | public |

# Outlook

- A new EUREF „Product Catalogue“ is in preparation
- The catalogue informs groups within EuroGeophraphics and the public about EUREF products.
- Comments on the catalogue are welcome.

**Thank you!**