EUREF – an Important Component of the European Geodetic Infrastructure

Martin Lidberg (Sweden), Wolfgang Soehne, Martina Sacher (Germany), Juliette Legrand (Belgium) and Ambrus Kenyeres (Hungary)

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SUMMARY

The International Association of Geodesy (IAG) Reference Frame Sub-Commission for Europe, EUREF, merges efforts of National Mapping and Cadastral Agencies (NMCA), Universities and research institute to define, realize and maintain the European Terrestrial Reference System 1989 (ETRS89) and the European Vertical Reference System (EVRS) for scientific and practical purposes in Europe. These systems are the basis for geo-referencing in Europe and have been endorsed by the European Union INSPIRE directive (Infrastructure for Spatial Information in the European Community), Eurocontrol and EuroGeographics.

The realization, maintenance and development of the ETRS89 is primarily done through the EUREF Permanent GNSS Network (EPN). EPN consists of continuously operating GNSS stations (~340 stations), supported by Data and Analysis Centres and a Central Bureau that is responsible for the monitoring and management of the EPN. All contributions to the EPN are provided on a voluntary “best effort” basis, with more than 100 European agencies/universities involved. The EPN operates under well-defined standards and guidelines which guarantee the long-term quality of the EPN products.

In response to an increasing demand both from the National Mapping Agencies and research groups, the backbone EPN has been complemented with additional national CORS networks with rigorously computed station coordinates and velocities. At present, the dense European network incorporates ten times more stations as the core EPN sites and benefits from the contribution of 26 different Institutions.

The physical height system EVRS is realized through common adjustment of the Unified European Levelling Network (UELN) where the vast majority of the European countries

contribute.

In the presentation we will discuss current and future challenges in geodetic reference frames. It is foreseeable an emerging mass market for precise positioning based on centimetre level positioning services worldwide without any regional or national reference frames. There will be also precise point positioning (PPP) service from Galileo and other provides. These worldwide services will most likely use ITRF in current epoch. We also see progress towards a first realisation of the International Height Reference System (IHRS).

At the end we will touch on the future role of EUREF in the emerging organizational landscape. E.g. the European Plate Observing System (EPOS) will enter its operational phase in 2020, and progress are reported from the UN-GGIM sub-committee on Geodesy. This calls for mutual collaborations in order to achieve common goals to the benefit for the wider user society.