
The C4G/UBI contribution for the EPOS GNSS Products Dissemination

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Abstract

Europe is covered by various networks of GNSS stations maintained by different agencies with different technical and scientific objectives. Many of these networks have been installed to provide support for geo-referencing applications such as surveying. We present here the efforts carried out by C4G/UBI in the framework of the EPOS (European Plate Observing System) project to support the harmonization and dissemination of products derived from GNSS data: position time series, velocity fields, and strain rate maps.

At the moment already hundreds of GNSS stations are being analysed by EPOS/EUREF Analysis Centres. CNRS-UGA (France) and INGV (Italy) will produce dedicated daily solutions for all EPOS stations, which will be combined by BFKH with the EUREF solutions produced by WUT, Poland (based on several individual EUREF Analysis Centers) and in the reference frame materialization provided by ROB (Belgium). At velocity level, BFKH (Hungary) will compute a velocity field including stations for which data are not made available (EUREF densified solution). CNRS-UGA and INGV will also produce dedicated velocity field based on their solutions. The latter will also compute a combined velocity field for the EPOS stations. Finally, LM (Sweden) will be responsible for the operationalization of the computation of strain rate maps.

C4G/UBI will intervene in this scheme by validating the velocity solutions computed by the different groups. This is done by 1) comparing the solutions produced by the different methodologies; and 2) analysing each time series by screening for outliers and ensuring that the jumps in the time series are being detected. It will be also responsible for estimating proper uncertainties for the velocities using Hector.

The GNSS products are stored and made available at the GNSS product portal that will be maintained by C4G/UBI in the future in the framework of EPOS-ERIC (operational phase). The complete SINEX files will be accessible through the portal but the actual daily positions and velocities are also stored in a database which can be directly queried and afterwards downloaded in various formats such as PBO, MIDAS and Hector. Another format is XML which is more convenient for IT purposes. This can be done manually using the online

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Graphical Web Application or automatically via scripts and other third party applications using Restful API's.

Finally, the stochastic noise properties of the time series are investigated by fitting a power-law plus white noise model to the data. This information can help to evaluate the stability of the geodetic monument and is helpful to detect remaining periodic signal in the time series.