



Regional Densification of the ITRF through the Integration of National Active GNSS Network Products

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The actual realization of the ITRS represents the most precise station positions and velocities at selected set of sites. The scientific and practical applications may require the access to the global 3D reference frame in a dense network without loss of consistency and reliability. Relying on the long term homogeneously analyzed data the dense national permanent GNSS networks shall be the ideal tool for such reference frame densification.

In the frame of the ongoing EPN densification the national active networks are integrated and a homogeneous, dense position and velocity product is being derived based on the actual ITRS realization and using the EPN as backbone infrastructure. In order to minimize inconsistencies (e.g. site naming, discontinuities, constraint handling) the only way to get a uniform, homogeneous cumulative solution from national to global scales is the integration done relying on the weekly SINEX product level.

The integration is being performed using the CATREF software (Altamimi et al, IGN) and based on the Minimum Constraint approach. The derived position and velocity product will be an essential material for various geokinematic studies (PGR, intraplate and plate boundary zone investigations), and also for the better definition and realization of ETRS89. This work is very well inline with the goals of relevant European initiatives in the frame of EPOS, EUREF (WG on Deformation Models), CEGRN, EUPOS, IAG (WG on Unified Dense Velocity Fields).

The work is well in progress, up to 15 years of weekly SINEX files are already available and analyzed from 17 countries, and considering the countries in negotiation phase the full continental coverage will be reached within few years. The actual database contains more close to 3000 sites.

In this presentation a status report is shown and the first version of the position/velocity product with related interpretation options are introduced as well.