This report summarizes the activities of the ITRS Combination Centre at IGN during the year 2017.

Research and development activities

The members of the IGN CC, often in cooperation with other scientists, conduct research and developments activities relating to the ITRF in particular and reference frames in general. R&D activities include ITRF accuracy evaluation, mean sea level, loading effects, combination strategies, and maintenance and update of CATREF software. Scientific results of specific data analysis and combination are published in peer-reviewed journals, as listed in the references’ section, but also presented at international scientific meetings.

A dedicated IERS Technical Note (No. 38) on ITRF2014 analysis and results was published in 2017. It summarizes the analysis strategy, the combination model used, and all the products related to the ITRF2014. The technical note describes the main ITRF2014 products: station positions and velocities, the post fit residuals of the least squares adjustment as well as the transformation parameters between ITRF2014 and ITRF2008. The main technical procedure used to generate the ITRF2014, a thorough discussion of its quality as well as most important geodetic and geophysical results were published in this Technical Note.

Using the horizontal velocity field of a subset of the ITRF2014 sites away from plate boundaries, Glacial Isostatic Adjustment regions and other deforming zones, an ITRF2014 Plate Motion Model was derived and published in Geophysical Journal International (Altamimi et al., 2017). Based on several geophysical and statistical criteria, the ITRF2014-PMM was adjusted to the velocity field of a network of 297 ITRF2014 sites and comprises rotation poles for eleven plates intended for geophysical and operational geodetic applications. Following strict criteria of site selection, satisfying the notion of rigid-plate motion hypothesis, at the level of (or better than) 0.3 mm yr\(^{-1}\) WRMS in average, the estimated PMM is fully consistent with the ITRF2014.


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