

EGU2020-17353

<https://doi.org/10.5194/egusphere-egu2020-17353>

EGU General Assembly 2020

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



ITRF use for global applications and estimation of linear velocities of dense networks

Francesco Matonti, Adam Miller, and Nejc Krasovec

Leica Geosystems AG, Geomatics and Structural Monitoring, Heerbrugg, Switzerland (francesco.matonti@leica-geosystems.com)

GNSS networks are required to continue meeting the ever-increasing demand for global positioning applications operating in a global reference frame. Meanwhile, the requirements of applications based in a local (regional) official reference frame must still be met. Using Bernese GNSS software (Dach, 2015), we can process GNSS networks in the ITRF2014 reference frame and, using Leica GNSS Spider, deliver GNSS corrections in ITRF2014, whilst continuing to serve those with local demands. To maintain high precision of the GNSS network we perform a daily solution, which is computed based on precise orbits and following the guidelines of the EPN Analysis Centres. To ensure the daily solution runs with correct data, we maintain a database of all reference station equipment changes. Using the daily solution, we are estimating the linear velocity of reference stations within GNSS networks, and are also considering jumps due to equipment changes. The estimated velocities give the opportunity to monitor the long-term stability of the network as well as the quality of reference station coordinates. The daily solution and monitoring of GNSS networks are executed by the Leica Geosystems solution named Leica CrossCheck, which is based on Bernese GNSS software. Leica CrossCheck is capable to monitor GNSS networks of all scales. This includes the computation and monitoring of approximately 5000 GNSS reference stations worldwide, including those part of the HxGN SmartNet GNSS network.

KEYWORDS: GNSS reference station network, Bernese GNSS 5.2, Leica CrossCheck, Leica GNSS Spider, HxGN SmartNet

References:

Dach, R., S. Lutz, P. Walser, P. Fridez (Eds); 2015: Bernese GNSS Software Version 5.2. User manual, Astronomical Institute, University of Bern, Bern Open Publishing. DOI: 10.7892/boris.72297; ISBN: 978-3-906813-05-9.