



The importance of using ITRF in global positioning applications

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Public and private GNSS networks are established across the world. Reference stations of GNSS networks must have coordinates, which are usually computed in an official local (regional) reference frame. This has been a traditional practice over the years, because positioning applications were limited to local areas. With emerging demands of global applications and requirement of high precision, the local (regional) reference frames are problematic, because there is no smooth transition between local (regional) reference frames. For global positioning applications we need a global reference frame. Using Bernese GNSS software (Dach, 2015), we can process small and large networks in the global reference frame ITRF2014, and we are able to provide homogeneous coordinates on a global scale. 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. For monitoring the stability of a GNSS network, we have applied the Leica Geosystems solution named Leica CrossCheck, which is based on Bernese GNSS software. Within the data processing, we account for the impact of linear and non-linear station motions. Leica CrossCheck constantly monitors different GNSS networks on local and global scales. This includes monitoring of more than 4500 GNSS reference stations, which are part of HxGN SmartNet GNSS network.

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

References:

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