

ABSTRACT

Based on IGS MGEX observation data the potential of recent GNSS observations for determination of Earth rotation parameters (ERP) at subdaily periods with the high precision currently achieved by this technique has been investigated. Techniques, based on GPS observations are currently the most important techniques to derive pole coordinates x, y and also provide high quality Length Of Day (LOD) estimates. Other GNSS measurements, such as those from Galileo, might be combined with GPS data to improve the precision of the parameter determination. This presentation discusses the quality of the achieved multi-GNSS ERP solution in the high frequency domain and details differences to a GPS-only solution as well as to the IERS reference model. Moreover we investigate the influence of different parametrizations of the tropospheric delay on the estimated Earth Rotation Parameters.

GLOBAL NETWORK DATA PROCESSING

data automated An processing was set up for a global network of 191 (157 34 GPS only and GPS+Galileo) GNSS stations starting from February 2017 until July 2017.



A minimum number of 13 and a maximum number of 15 active Galileo satellites in contrast to the complete GPS constellation was observed. The stations were selected in terms of stability, data availability and geometry. All calculations were carried out with the Bernese GNSS Software v.5.2. Observation data of network stations was retrieved from the IGS and CDDIS directories.

solution The was baseline calculated currently The mode. recommended IERS2010XY was utilized as model sub-daily polar apriori motion model considering the corresponding nutation model IAU200R06, as well as the Ocean tidal loading model FES2004.

Campaign	Erpnet
Software	Bernese v5.2
Processing Period	Feb - Jul 2017 (doy 3
Type of Solution	1-Day/3-Day Solutio
Satellite System	GPS-Galileo / GPS
Observations	Phase and Code
A priori Orbits	ESOC Multi-GNSS Fi
A priori EOP	ESOC Multi-GNSS Fi
Station Position and Station Velocities	ITRF2014
Absolute Antenna Model	IGS14
Station Network	191 Sites (NNR → 76
Processing Mode	Double Differences
Ambiguity Resolution	QIF & WL/NL
Earths's Gravity	EGM2008_SMALL
Planetary Ephemerides	DE405
A priori Solar Radiation Pressure	C061001 (Code Mod
Subdaily Pole Model	IERS2010XY (based (
Nutation Model	IAU2000R06
Solid Earth Tide Model	TIDE2000 (IERS2000)
Ocean Tides	OT_FES2004

Out of the 191 sites, 76 were used to tie the solution to the ITRF2014 datum by means of a NNR condition.

GNSS-BASED DETERMINATION OF HIGH FREQUENCY EARTH ROTATION PARAMETERS UTILIZING GPS + GALILEO OBSERVATION DATA

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