



NATIONAL REPORT OF LITHUANIA TO EUREF 2017

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Outline





- CORS Network LitPOS
- LitPOS Reprocessing
- Gravity survey
- Geomagnetic observatory



LitPOS(1):



LitPOS (Lithuanian Positioning System), the network of permanent reference GNSS stations, became operational in July 2007. It provides data both for real-time and post-processing applications.

LitPOS stations cover the whole territory of Lithuania. Total number of LitPOS GNSS stations is **30**. LITPOS users can use **3** ASG-EUPOS Polish stations and **6** LATPOS Latvian stations





LitPOS(2)





Coverage of LitPOS stations (R=35 km)

LitPOS(3)



Users statistics (2017-05-01):

- Number of LitPOS registered users: 1229 (+84)
- Numbers of active users: 611 (+63)



LitPOS(4)





Total users connections every month of 2016

LitPOS(5)





Users connections during 2016 year (red dots)





LitPOS Reprocessing



LitPOS_Repro(1):





LitPOS_Repro(2):





LitPOS_Repro(3):





LitPOS_Repro(4):

NŽT

Main characteristics:

- Software: **BSW5.2** update 2016 01 08
- Network: 25+6+3 LitPOS stations +10 IGS/EPN fiducial stations
- GNSS: GPS
- Antennas PCV: absolute and individual calibration
- Precise orbits, etc.: CODE
- Tropospheric refraction: VMF
- Ocean tide model model: FES2004
- Baselines processing strategy: OBS-MAX
- Ambiguities resolution strategy: QIF
- ITRF realisation: IGb08 (EPN_A_IGb08_C1845.SNX) (ITRF2014 -GPS week 1934 (29 January 2017)
- Cut-off angle: 3, 10, 25
- Period: 2008-2014; (2015-)
- Products: Daily and weekly SNX (NEQ + COV)
- Coordinates Time Series: analysis by GITSA, FODITS

LitPOS_Repro(5):

- Outlier analysis with **GITSA** is performed by setting the confidence level parameter (percentage). Confidence level for LitPOS network analysis (for 2008-2016) was set to 95%.
- The detected outliers are marked in coordinate time series plots for north, east and up components.



Station
nameNumber of
epochsNumber of outliersVGTU
10830M001303595117107

LitPOS_Repro(6):



The program **FODITS** (Find Outliers and Discontinuities in Time Series), which is embedded in the **Bernese GNSS Software Version 5.2**, has been designed to analyze and clean coordinate time series in an automated way.



LitPOS_Repro(7):







LitPOS_Repro(8):



- 2008-2015 weekly SINEX files (with COV matrix) was uploaded to EPN ftp server with intention to fill the gap of Lithuania in European dense velocity field.
- Reprocessing of 2008-2016 daily solutions is finished and weekly solutions (with NEQ matrix) was uploaded to NKG ftp server.

Gravity survey (1)





Gravity survey









Project "GRAVIMETRIC SURVEY OF THE LITHUANIAN TERRITORY"

- The gravity survey is based on the Lithuanian state gravity control network, which consists of 686 points. The standard deviations of the gravity acceleration at these points are not bigger than 10 µGal.
- 5 Scintrex CG-5 gravimeters employed.
- Total number of gravity points: 30 000.
- Density of gravity points: **1 point in 2 km²**.
- The average distance between gravity points should be about **1.5 2 km**.
- RMS error of the gravity acceleration at the gravity survey points < 60 µGal (20 µGal)
- RMS error of Bouguer anomalies < 80 μ Gal (23 μ Gal).
- RMS error of interpolated values of Bouguer anomalies <100 µGal (30 µGal).
- The accuracy of the gravity points coordinates < 0.20 m, the accuracy of the normal heights, applying geoid model LIT15G, < 0.15 m.

Gravity survey (3)



The points of gravity survey are coded by six digits identifier

Gravity survey (4)





Regions of disturbed gravity field

Gravity survey (5)



Displacements of designed and measured points

Gravity survey (6)





Geomagnetic observatory (1)





Geomagnetic observatory (2)



Geomagnetic observatory (3)



Geomagnetic observatory (4)







Magnetometer dldD



THANKS FOR YOUR ATTENTION !

www.gi.ap.vgtu.lt www.nzt.lt www.geoportal.lt www.litpos.lt www.zis.lt