



Investigation of the 16-year and 18-year ZTD Time Series Derived from GPS Data Processing

Zofia BAŁDYSZ, Grzegorz NYKIEL, Mariusz FIGURSKI,
Karolina SZAFRANEK, and Krzysztof KROSZCZYŃSKI

Military University of Technology, Faculty of Civil Engineering and Geodesy,
Warszawa, Poland; e-mail: zbaldysz@wat.edu.pl

A b s t r a c t

The GPS system can play an important role in activities related to the monitoring of climate. Long time series, coherent strategy, and very high quality of tropospheric parameter Zenith Tropospheric Delay (ZTD) estimated on the basis of GPS data analysis allows to investigate its usefulness for climate research as a direct GPS product. This paper presents results of analysis of 16-year time series derived from EUREF Permanent Network (EPN) reprocessing performed by the Military University of Technology. For 58 stations Lomb-Scargle periodograms were performed in order to obtain information about the oscillations in ZTD time series. Seasonal components and linear trend were estimated using Least Square Estimation (LSE) and Mann-Kendall trend test was used to confirm the presence of a linear trend designated by LSE method. In order to verify the impact of the length of time series on trend value, comparison between 16 and 18 years were performed.

Key words: GPS, ZTD, time series, troposphere.