



EARTH & SPACE SCIENCES

UNIVERSITY of WASHINGTON

College of the Environment

July 14, 2023

RE: PhD thesis review for Ms. Iwona Kudłacik

Iwona Wenda-Zajac and Jan Kaplon
Wroclaw University of Environmental and Life Sciences
Faculty of Environmental Engineering and Geodesy
55 Grunwaldzka Street, 50-357 Wroclaw

Dear Drs. Wenda-Zajac and Kaplon,

I have reviewed the Ph.D. thesis prepared by Ms. Iwona Kudłacik entitled “Research on natural and anthropogenic seismicity with the high-frequency GNSS observations”. My overall review is **Positive**; in my opinion, the doctoral dissertation fulfills the requirements for a doctoral degree in particular under Article 13 of the Act of March 14, 2003 Ustawa o stopniach naukowych i tytule naukowym oraz o stopniach i tytule w zakresie sztuki (tekst jedn. Dz.U. z 2017 poz. 1789).

In general, the thesis studies many aspects of GNSS processing techniques and time series analysis, focusing on extracting the smallest signals out of the noise. Small magnitude earthquake detection and characterization is very important for real-time and high-rate GNSS since it improves our confidence in recordings for earthquakes of societal importance; moreover, improving the noise characteristics on high-rate GNSS will have downstream impacts on other industries outside of seismology. I believe that Ms. Kudłacik has thoroughly studied and mastered the current methodologies in high-rate GNSS time series analysis and presented many new methods that will be used by many research groups in the future.

Sincerely,

Brendan Crowell, PhD
Assistant Research Professor
Department of Earth and Space Sciences
University of Washington