

Monitoring Earth's Dynamic Surface: Unveiling Climate-Induced Phenomena and Volcanic Activities through Long-Period Global Seismic Waves in the context of Environmental Seismology

(Proposer: Dr. Piero Poli)

The Earth's free surface undergoes significant transformations due to climate change, resulting in various phenomena across remote regions such as Greenland and Antarctica. Rapid glacial movements leading to tsunamis and seiches, along with unprecedented underwater volcanic eruptions in locations like Mayotte and Tonga, are indicative of the complex dynamics at play. Seismic waves generated by both climate and volcanic processes serve as crucial tools for unraveling the underlying physics of these remote yet impactful events. In this PhD project, we aim to analyze continuous seismological data spanning the last 30 years on a global scale. Our objective is to identify novel signals associated with physical processes occurring at the Earth's free surface. Through meticulous analysis, we intend to create a comprehensive catalog of these events and perform physical modeling to gain insights into their dynamics, including parameters such as the mass of ice and the forces involved in each process. This research will contribute to a deeper understanding of Earth's surface dynamics in the face of climate change and volcanic activities.

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