

Seismology at Princess Elisabeth station, East-Antarctica: what seismometers can tell us about the ice-sheet dynamics

by Denis Lombardi (Royal Observatory of Belgium, denis.lombardi@oma.be)

One century after the Amundsen and Scott South Pole expeditions, Antarctica is still regarded as the last unexplored land on Earth. Although this view may be true to some degrees, from a scientific perspective this is drastically changing. Indeed with the growing global warming threat, Antarctica experiences a new era of science investigations aiming at understanding the past, present and future evolution of a continent whose overlying ice sheet represents 80% of fresh water on Earth. With the return of Belgium to Antarctica and the establishment of the new Princess Elisabeth base (PE base) in 2009, the Royal Observatory of Belgium launched a project of geodynamics with the main objective being long term monitoring of the local ground and ice-sheet dynamics.

Within this frame, during the last years, several experiments using seismometers were carried out in the vicinity of the PE base to monitor the local and regional seismicity as a proxy for the behaviour of ice – rock interactions. One of the experiments was focused at the edge of the Antarctic plateau where the ice sheet meets a local mountain range while another, located near the coast, concentrated on the interactions of ice flow and ocean. In this talk I will present the project objectives and describe those experiments in such a harsh environment. I will then show why Antarctica which is usually considered as aseismic is actually not at all and how the recorded seismicity can tell us more about the ice sheet dynamics.