



Icequakes and microseism in Victoria Land (Antarctica)

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Thanks to the complete lack of anthropic noise, Antarctica can be considered a perfect natural laboratory to investigate seismic signals generated by atmosphere-cryosphere-hydrosphere interaction. In the framework of the ICE-VOLC project (www.icevolc-project.com) funded by the Italian PNRA, Antarctic ice-quakes and microseisms were studied.

In particular, by a temporary installation of two seismic stations in Tethys Bay close to Mario Zucchelli Station in 2016, three icequakes were detected, with dominant low frequencies (below 2 Hz), located in the David Glacier area with local magnitude of 2.4-2.6. These events were likely to be generated at the rock-ice interface under the glacier.

As for microseism study, we quantitatively investigated the relationship between microseisms recorded on the coasts of the Ross Sea, sea ice concentration in the Ross Sea and significant wave height in the southern hemisphere. We show how, according to the different seismic station and frequency band, the areas characterised by the strongest anti-correlation between microseism amplitude and sea ice concentration are distinct. Accordingly, we present an algorithm to infer the sea ice distribution on the basis of the microseismic amplitudes. Finally, we note how the oceanic areas, whose wave activity mostly affects the microseisms recorded in the Ross Sea, are the Antarctic coasts close to Ross Sea and the Drake passage.