[EE] Evening Poster | U (Union) | Union

[U-03]Cryoseismology - a new proxy for detecting surface environmental variations of the Earth -

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Several kinds of environmental signals associated with ocean - cryosphere - solid earth systems have recently been detected in bi-polar regions. Ice-related seismic motions for small magnitude events are generally named ice-quakes (ice-shocks) and can be generated by glacially related dynamics. Such kinds of cryoseismic sources are classified into the movements of ice sheets, sea-ice, oceanic tide-cracks, icebergs and the calving fronts of ice caps. Cryoseismic waves are likely to be influenced by variations in environmental conditions, and the continuous study of their time-space variability provides indirect evidence of climate change. As glacial earthquakes are the most prominent phenomena found recently in polar regions, in particular on the Greenland in this 21st century, the new innovative studies from seismology are expected by long-term monitoring under extreme conditions in the Earth's environment.

Taking these issues into account, the conveners are willing to invite many contributions to a special session on "Cryoseismology", which will cover the recent achievements on glacial related seismic events and associated phenomenon observed in polar regions. It is particularly encouraged to have contributions based on seismic signals involving the dynamics of ice sheets, sea-ice, icebergs and glaciers. Although the glacial earthquakes are the most prominent evidence found recently in polar regions, all related topics involving polar seismology are welcome, such as studies of crust and mantle structure in the area, comparison of tectonic and glacier-related seismicity, recent triggered earthquakes and active volcanoes, glacial isostatic adjustment (GIA), harmonic tremor associated with cryoseismic events, etc.

[U03-P01]Characteristic atmosphere and ocean interaction in the coastal and marine environment inferred from infrasound at Terra Nova Bay, Antarctica - observation and initial data -

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Characteristic features of infrasound waves observed in the Antarctic reveal physical interaction involving surface environments around the continent and Southern Ocean. In December 2015, an infrasound array (100 m spacing) by three sensors (Chaparral Physics Model 25, with a detectable frequency range of 0.1-200 Hz), together with a broadband barometer (Digiquartz Nano-Resolution Model 6000-16B Barometer, with a detectable frequency range of 0-22 Hz) were installed at Jang Bogo Staion, Terra Nova Bay, Antarctica by the Korea Arctic and Antarctic Research Program (KAARP). The initial data recorded by the broadband barometer contain characteristic signals originated by surrounding environment, including local noises such as katabatic winds. Clear oceanic signals (microbaroms) are continuously recorded as the background noises

with predominant frequency around 0.2 s at the austral summer on December. Variations in their frequency context and amplitude strength in Power Spectral Density had been affected by an evolution of sea-ice surrounding the Terra Nova Bay. Microbaroms measurement is a useful tool for characterizing ocean wave climate, complementing other oceanographic, cryospheric and geophysical data in the Antarctic. Continuous infrasound observations in Terra Nova Bay attain a new proxy for monitoring environmental changes such as the global warming, involving cryosphere dynamics, as well as the volcanic eruptions in Northern Victoria Land, Antarctica.