



## **Tide-modulated seismicity at the grounding line of the Roi Baudoin ice-shelf, East-Antarctica**

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Ice-shelves are known to be the keystone to better understand the impact of the climate change on ice-sheets. Indeed they are the most vulnerable pieces of the ice-sheet system as they are in direct contact with the ocean. So far only a limited number of seismic studies have been carried out to better understand their dynamics and more particularly their interactions with the ocean. In early 2014, we conducted a field study using 4 experimental coupled seismic-geodetic instruments installed for a month at the transition zone between an ice-rise and the Roi Baudoin ice-shelf in East-Antarctica. These 4 instruments were able to detect continuously and simultaneously ice cracks-induced seismicity and surface ice displacements. While the horizontal displacement is found to be linear in space and time (with a maximum of 35 cm/day), strong periodicity is found for vertical displacement correlating fairly well with regional tide height models. Such a periodic vertical displacement (with a maximum of 1.5 m in 5 hours) can be associated with periodicity in the local seismicity which shows the largest amplitudes for the grounding line area explained by the tide-induced flexure of the ice-shelf. These findings are very promising in regard of an ongoing wider experiment located further inland in the main flow of a tributary ice stream.