



Rotational ground motion induced by mediterranean sea storm activity

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In fall 2018 we observed by means of an underground ring laser gyroscope, the microseismic activity induced by mediterranean sea in the 2 to 5 seconds period range. A clear peak highly correlated with a collocated seismometer appeared during a large storm activity ranging from 25 to 28 Nov 2018.

The peak of the spectra, both for rotation rate and acceleration, are located at 3.3 seconds. The peak amplitudes are of $8e-10$ rad/s and $3e-6$ m/s² respectively for vertical rotation rate and horizontal acceleration.

We performed the source direction estimation by maximizing the correlation of the vertical rotation rate with the transverse acceleration.

Our observation period ranges from 25 November to 29 November 2018. During those days we could measure a variation of the diction of a source that is consistent with the evolution of a stormy system located in the south west part of the mediterranean sea then switching to the Adriatic sea.

A cross validation of the source direction is obtained by comparing our results to the real time significant wave height data of the sea.

For the first time was possible to observe the rotational part of the mediterranean generated seismic noise. An array derived rotations (ADR) campaign is actually in progress in order to compare ADRs to the direct observations from the ring laser gyroscope.