



Crustal velocity changes associated to the Central Italy seismic sequence of 2016-2017

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We investigate the temporal changes of crustal velocity associated to the seismic sequence of 2016-2017 which struck Central Italy with a series of moderate to large earthquakes, by cross-correlating continuous recordings of more than one year of seismic ambient noise from a network of stations surrounding the area. The changes of the travel times measured from the noise cross-correlations corresponding to different dates reflect variations of the elastic properties in the propagation medium, i.e. in the Earth's crust.

This technique has been proven in the last decade to be an appropriate tool for monitoring the relative seismic velocity variations associated to the occurrence of large earthquakes. It is applied here to estimate the co-seismic velocity changes driven by the three largest mainshocks of the seismic sequence, to determine the extent of the area interested by the co-seismic damage, how it is modified by the combined effect of subsequent events and how it compares to the horizontal deformation seen by geodetic data. Performing this analysis at different frequency bands we can put some constraints on the depth of crustal perturbations, and using sufficiently long recordings of ambient noise we can investigate if the co-seismic velocity changes display gradual healing towards pre-earthquake conditions. The resolving power of this technique is finally studied, in order to estimate the quality of our results.