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## Spatio-temporal variation of Anelastic and Scattering Seismic Attenuation during the 2016-2017 Central Italy Seismic Sequence

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Between August and October 2016, the Central Apennines in Italy have been struck by a long-lasting seismic sequence, known as the Amatrice (Mw 6.0) - Visso (Mw 5.9) - Norcia (Mw 6.5) sequence. The cascading ruptures occurred in this sequence have been considered connected to the fluid migration in the fault network, as suggested by previous studies. The behaviour of fluids in the crust is crucial to understand earthquakes occurrence and stress changes since fluids reduce fault stability. It has long been understood that the seismic attenuation is strongly controlled by the structural irregularity and heterogeneities; micro-cracks and cavities, either fluid-filled or dry, temperature and pressure variations cause a decrease in seismic wave amplitude and pulse broadening. Hence seismic attenuation imaging is a powerful tool to be a relevant provenance of information about the influence and abundance of fluids in a seismic sequence.

The aim of this work is to separate scattering and absorption contributions to the total attenuation of coda waves and to provide their spatial and temporal variations at different frequency bands of these quantities using two datasets: the first one comprising 592 earthquakes occurred before the sequence (March 2013-August 2016) and the second one comprising 763 events (ML > 2.8) from the Amatrice-Visso-Norcia sequence. Scattering and absorption have been measured through peak-delay and coda-wave attenuation parameters (the latter inverted using frequency-dependent sensitivity kernels).

The preliminary results show a clear difference between the pre-sequence and sequence images, mainly at low frequencies (1.5 Hz), where we can define a spatial increase of scattering with time attributed to rock fracturing and fluid circulation. The coda attenuation tomography also demonstrates a clear variation between the pre-sequence and the sequence over series of time windows being before and after the largest main shocks of the seismic sequence, with an increase of the attenuation in space with decreasing time. The peak delay indicates a high scattering area corresponding to the Gran Sasso massif and L'Aquila zone, where an important seismic sequence (Mw 6.3) occurred in 2009.

