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Relationships between interseismic and coseismic deformation in the area of the 2009 L'Aquila earthquake (central Italy)

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The source of the April 6, 2009 mainshock of the L'Aquila seismic sequence (Mw = 6.3), has been well modeled using a large variety of co-seismic geodetic and seismological observations. Although the precise aftershock locations clearly show the presence of another small fault plane NE of the main source, less attention has been given to this fault, which caused a small amount of co-seismic deformation. We use various interferograms and some GPS data to model this secondary fault plane and to interpret its meaning in the tectonic context of the Abruzzi region.
We also carried out an investigation of the inter-seismic ground deformation from 1992 up to April 6, 2009 using SAR and GPS displacement time series. We used the SBAS algorithm to analyse over 150 ERS/ENVISAT images, combined into about 300 interferograms. We compared the SAR time series and the GPS data to filter out residual orbital components in the SAR displacements, and then analyse the long term interseismic deformation patterns of the L'Aquila area and their relationships to the coseismic deformation.
We will present a preliminary interpretation of our results.