

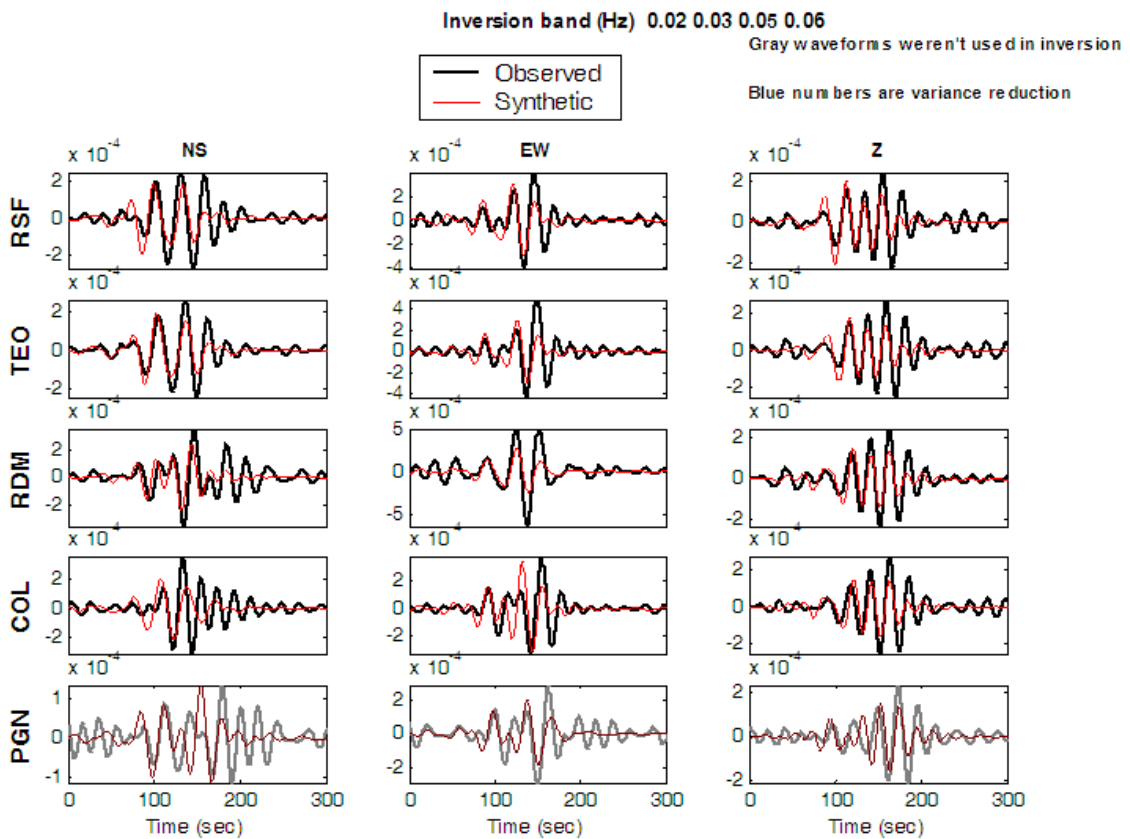
Shallow depth of L'Aquila earthquake

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In order to clarify the source depth of the L'Aquila earthquake of April 6, 2009 we inverted broad-band waveforms recorded by Trillium 40 sensors at the Irpinia Seismic Network (Weber et al., 2007). Stations used are located at epicentral distances 216-284 km. The frequency range of 0.02-0.06 Hz was used for our analysis. Crustal model of Chiarabba et al. (2005) was used. The calculations suggest the centroid depth of 2 to 6 km. The attached plot of the waveform match is for the depth of 5 km. The double-couple percentage in various runs remains very high (> 85 %).



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===== Moment Tensor Solution =====
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Hypocenter Solution (INGV)
Origin Time : 20090406 1:32:39
Lat: 42.334 Lon: 13.334
Depth (km) : 9

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Centroid Solution
Centroid Time : +1.2 (sec) relative to origin time
Centroid Lat: 42.334 Lon: 13.334
Centroid Depth : 5
Mw : 6.4

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No of Stations: 5 (RSF-TEO-RDM-COL-PGN)
Freq band (Hz)
0.03-0.05 tapered 0.02-0.03 and 0.05-0.06
Variance Reduction (%): 44

Moment Tensor (Nm): Exponent 10**18

Mrr	Mtt	Mpp
-4.756	2.526	2.230
Mrt	Mrp	Mtp
-1.277	-0.127	-2.927

DC (%) : 87.2
CLVD (%) : 12.8

Best Double Couple: Mo= 5.215e+018 Nm
NP1: Strike Dip Rake
326 42 -72
NP2: Strike Dip Rake
122 51 -106

Moment Tensor Solution computed using ISOLA
<http://seismo.geology.upatras.gr/isola/>

Reference:

Chiarabba, C., Jovane, L., Di Stefano, R., (2005). A new view of Italian seismicity using a 20 years of instrumental recordings. *Tectonophysics*, 395, 251-268.

Sokos, E. Zahradnik, J., (2008). ISOLA a Fortran code and a Matlab GUI to perform multiple-point source inversion of seismic data. *Computers and Geosciences*, 34, 967-977.

Weber, E., Convertito, V., Iannaccone, G., Zollo, A., Bobbio, A., Cantore, L., Corciulo, M., Di Crosta, M., Elia, L., Martino, C., Romeo, A., Satriano, C., (2007), An advanced seismic network in the Southern Apennines (Italy) for seismicity investigations and experimentation with earthquake early warning. *Seism. Res. Lett.*, 78, 622-634.