

## Using publicly available GPS solutions for fast estimations of first-order source details from coseismic deformations

Valentina Cannelli, Daniele Melini, Roberto Devoti, Antonio Piersanti

### Abstract

We here explore the potential use of publicly available GPS solutions to obtain first-order constraints on a source model immediately following an earthquake, within the limits of GPS solution timeliness and near-field coverage. We use GPS solutions from the Scripps Orbit and Permanent Array Center to carry out simple inversions of the coseismic displacement field induced by the 2010 Maule earthquake (Chile), by inferring the seismic moment and the rake angle of a fixed-geometry seismic source. The rake angle obtained from the inversion ( $m = 117.8^\circ$ ) is consistent with seismological estimates. The seismic moment, which corresponds to a moment magnitude  $MW = 8.9$ , is about 1.6 times greater than seismological estimates. This suggests that as in other recent megathrust events, a consistent fraction of the energy was released aseismically. In this respect, the additional information obtained from GPS can help to provide a better estimate of the weight of the aseismic contribution to the energy release.

### Keywords

GPS; Coseismic deformations; Source inversion; Maule earthquake

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### References

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
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di  
vulcanologia,

Sezione Roma 1, Rome  
Italy

*Daniele Melini*  
Istituto Nazionale di  
Geofisica e Vulcanologia,  
Sezione Roma 1, Rome  
Italy

*Roberto Devoti*  
Istituto Nazionale di  
Geofisica e Vulcanologia,  
Centro Nazionale  
Terremoti, Rome  
Italy

*Antonio Piersanti*  
Istituto Nazionale di  
Geofisica e Vulcanologia,  
Sezione Roma 1, Rome  
Italy

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