Natural Hazards and Earth System Science
An Open Access Journal of the European Geosciences Union

Nat. Hazards Earth Syst. Sci., 10, 1617-1627, 2010
www.nat-hazards-earth-syst-sci.net/10/1617/2010/
doi:10.5194/nhess-10-1617-2010

Source modeling and inversion with near real-time GPS: a GITEWS perspective for Indonesia

A. Y. Babeyko, A. Hoechner, and S. V. Sobolev
Deutsches GeoForschungsZentrum GFZ, Section 2.5, Potsdam, Germany

Abstract. We present the GITEWS approach to source modeling fo tsunami early warning in Indonesia. Near-field tsunami implies spe requirements to both warning time and details of source character To meet these requirements, we employ geophysical and geologic information to predefine a maximum number of rupture parameter discretize the tsunamigenic Sunda plate interface into an ordered patches (150×25) and employ the concept of Green's functions for and inverse rupture modeling. Rupture Generator, a forward mode additionally employs different scaling laws and slip shape function construct physically reasonable source models using basic seismic information only (magnitude and epicenter location). GITEWS runs of semi- and fully-synthetic scenarios to be extensively employed b system testing as well as by warning center personnel teaching ar training. Near real-time GPS observations are a very valuable comp to the local tsunami warning system. Their inversion provides quic a few minutes on an event) estimation of the earthquake magnitu rupture position and, in case of sufficient station coverage, details distribution.

Full Article (PDF, 13216 KB)

Citation: Babeyko, A. Y., Hoechner, A., and Sobolev, S. V.: Source and inversion with near real-time GPS: a GITEWS perspective for Indonesia, Nat. Hazards Earth Syst. Sci., 10, 1617-1627, doi:10.5194/nhess-10-1617-2010, 2010. Bibtex EndNote Reference Manager XML