

# Surface ruptures of the recent Mw 6.3 (June 08, 2008) earthquake event in the northwestern Peloponnese: a preliminary field report

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Up to now, mapping of the fault rupture surfaces of the recent strong earthquake that struck in northwestern Peloponnese, depict a complicated pattern, comprising NNW-SSE, NNE-SSW and WNW-ESE striking segments.

Significant vertical displacements, up to 25 cm (Figs 1, 2) have been identified along a major high angle NNW-striking, 6 km long segment of the co-seismic rupture around the Nisi village area (8 km SE of Varda). Along this rupture zone we also observed several secondary on fault coseismic features, such as landslides and liquefaction phenomena (Fig 3).



**Figure 1** (left) Part of the NNW-striking surface rupture zone. The rupture zone is segmented and displays left stepping step-over zones. In this zone a paleoseismological study is already in progress.

**Figure 2** (right) A closer view in the same rupture surface showing vertical displacements on the order of 25 cm and aperture of 10 cm.



**Figure 3.** Liquefaction phenomena close to the surface ruptures in Nisi area

The NNE-trending ruptures in the Petrochori area (18 km ENE of Varda) were mainly observed along a ~500 m wide zone of diffused deformation, accompanied by many landslide phenomena. This rupture zone has a length of ~4km and aligns with the up to now aftershock distribution.

The third set of WNW-striking surface ruptures has been identified throughout the broader epicentral area. However, a major 3 km long WNW-trending zone was mapped west of Michoi village. This orientation displays significant left-lateral component of horizontal motion.



*Figure 4. The composite WNW-striking surface rupture zone west of Michoi village.*

Based on the preliminary onsite kinematic analysis in the area it seems that the WNW-trending zones develop in step-over zones between the segmented NNW and NNE-striking zones. The linkage and geometric relationship of the observed surface ruptures with the seismologically determined NNE-trending fault plane at depth needs further investigation.