SEISMIC FRACTURES RELATED TO THE NW PELOPONNESUS (SW GREECE) EARTHQUAKE (ML=6,5R 8-6-2008)


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On June 8th 2008, and 12:25:28:0 UTC, an earthquake of ML=6,5 and D≈15km stroke NW Peloponnesus. The epicenter was located in the wider Andravida area (Western Greece), according to a formal earthquake announcement from the National Observatory of Athens.

Two people were killed, 214 injured and extensive damage occurred in the Ileia and Achaia prefectures. More than 15 villages and cities reported significant damage and 3 of the villages were evacuated due to rockfall danger in potential aftershocks. As of June 10th, 150 houses collapsed, 500 houses were rated as uninhabitable, and 350 repairable.

The moment tensor solutions of the earthquake (HARV, INGV, USGS, ETHZ, AUTH, NOA) demonstrate a strike slip fault, trending NE-SW. It should be mentioned that as of June 10th the allocation of the aftershocks prove the same trend as the fault.

In the Kato Achagia area, seismic fractures have been observed, trending NE-SW, showing dextral movement and causing deformations and breaks in railway lines as well as breaks in concrete blocks, water supply network and soil fractures. The horizontal displacement of either side blocks is estimated to be around 20cm. The length of the fractures is larger than 300m. In addition, adjacent extensional fractures trending NW-SE were allocated in the misoseismal area.

Taking into account all the information above, a full geometrical, dynamic, kinematic and spatial correlation is being noticed. This indicates that the NE-SW trending seismic fractures should be the strike slip fault zone’s countenance on the surface, a fault which had no surface occurrence until today.

In conclusion, uncommonly severe damage occurred to buildings, infrastructure and residential areas along the fracture’s surface.
Destruction to buildings made out of adobe and stone from June 8th 2008 ML=6.5 earthquake.
Damage to construction of reinforced concrete in earthquake affected area.
Concrete fringe breaks from the seismic fracture
Bending of railway line with 20cm displacement from the transversal seismic fracture.
Railway line break along seismic fracture

Repair works after the destruction of the water supply network from the seismic fracture
Transversal seismic fractures trending NW-SE
Main shock and aftershocks locations with moment tensor solution (NOA-Ganas).
Trends and locations of the observed seismic fractures.