Geophysical Research Abstracts
Vol. 16, EGU2014-4410-1, 2014
EGU General Assembly 2014

Small scale ground deformations observed in the western rift of Corinth by exploiting multitemporal interferometry and GPS measurements

Panagiotis Elias (1) and Pierre Briole (2)

(1) IAASARS, National Observatory of Athens, Athens, Greece (pelias@noa.gr), (2) CNRS, Ecole Normale Superieure, Paris, France (briole@ens.fr)

The rift of Corinth has been long identified as a site of major importance in Europe due to its intense tectonic activity. It is one of the world's most rapidly extending continental regions and it has one of the highest seismicity rates in the Euro-Mediterranean region. The GPS studies conducted since 1990 indicate a north–south extension rate across the rift of about 1.5 cm/yr around its western termination.
The western termination of the rift in the Patras broader area presents a major scientific and socio-economic importance, with the Psathopyrgos and the Rion-Patras faults being located very close to the city of Patras.
We processed ascending and descending acquisitions of ASAR/ENVISAT in the period between 2002-2010, to produce Persistent Scatterers and Small Baseline Subsets deformation rates maps. We have combined and constrained them with a number of GPS observations in order to extract the precise Up-Down and East-West deformation components. We verified the results and compared them with other independent studies.
We present and discuss the deformation rates along cross sections inside the city of Patras, around the Rion-Antirion Bridge, around the areas or creeping faulting and river deltas.
Significant complex ground deformations are observed and interpreted.
The Aigion fault seems very active with uplift rate of about 2mm/yr.
The Movri, 2008 and Efpalio, 2010, seismic events are modeled, constrained by the seismic, the GPS and the SAR interferometry data.
The studied tectonic features are pieces of a diffused triple junction at the junction of the Corinth rift and the northwestern termination of the Hellenic arc, which are investigated and discussed.
This research is performed as part of the ANR-SISCOR project in close connection to the CRL working group and with the support of CNRS-INSU.