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Design and implementation of the seismotectonic Atlas of Greece v1.0

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Knowledge of the present-day relationships between earthquakes, active tectonics, and crustal deformation is a key for understanding the geodynamics, ongoing surface processes (i.e. erosion, sedimentation, etc.) and is also essential for the risk assessment and management of geo-reservoirs for energy and waste.

Greece is characterized by the most tectonically active regime in the eastern Mediterranean, involving (a) intense crustal deformation and thickening, with an uplift rate of a few mm/yr along the Hellenic Arc due to accretion of sediments of the African plate beneath the overriding Aegean plate, (b) wide-spread extension in the back-arc region (for example in the Gulf of Corinth) due to retreat of the African slab and (c) significant strike-slip motions due to offset between oceanic-continental subduction in the west and the westward propagation of Anatolia in the east. Study of the complexity of the contemporary Greek tectonics has been the subject of intense efforts of our working group during the last decade, employing multidisciplinary state-of-the-art methodologies regarding geological mapping, seismological and geodetic surveying and numerical analyses at various scales. The products of these studies are the pieces of a puzzle that we aim to merge with existing data (topography, bathymetry, land-use, etc) in order to compose the digital version of the modern Seismotectonic Atlas of Greece.

It has been over 30 years since the first edition of the seismotectonic map was published by Greece's Geological Institute in 1989, which emerges the need for an update, as soon as dozens of strong earthquakes have occurred both on mainland and offshore, whose locations and fault kinematics have been studied and this information has to be taken into account in city and infrastructure planning. Moreover, the patterns of active tectonics and stress, the tectonic strain distribution, the annual ratio between seismic and geodetic moment release, the precise location of onshore active faults and the slip-rates of major faults are much better known today than they

were 30 years ago.

Open-source mapping software and GIS tools are being used to showcase important up-to-date seismotectonic features together with critical geospatial information (motorways, railways, gas pipelines, electricity plants, etc) at a nationwide scale of 1:500,000. This updated product aims to reveal a comprehensive image of the regional crustal deformation in a useful manner for scientists, students, and stakeholders to obtain a first-order perception of seismic risk in the Greek territory, but, also, to be used as a basis for other applications in Geosciences.