

T/SD1/MO/05 - ACTIVE DEFORMATION IN THE BROADER AREA OF THE W. CORINTH GULF (GREECE)

P. Papadimitriou¹, A. Agalos¹, A. Moshou¹, V. Kapetanidis¹, A. Karakonstantis¹, G. Kaviris¹, I. Kassaras¹, N. Voulgaris¹, K. Makropoulos¹

¹Department of Geophysics, University of Athens

The rapidly opening rift of the Corinth Gulf is dominated by normal faults and high level of seismicity. Recently, an important number of moderate earthquakes occurred in the western part of the gulf and the surrounding region. In April 2007, 4 events with magnitudes 5.0-5.2 occurred near Trichonis Lake, in SE Aitolokarnania. A temporary network of 12 stations was installed for 3 months. Several thousands of aftershocks were recorded and about 1200 were located with high precision. The seismicity pattern showed activation of several main and minor faults surrounding the lake. Reliable focal mechanisms indicated a complex pattern of deformation including mainly normal and strike-slip faulting. In February 2008, two earthquakes of $M_w=4.6$ and 4.5 occurred SE of Patras. Both the distribution of aftershocks and the focal mechanisms of the main events exhibit sinistral strike-slip faulting in N-S direction, in contradiction with the prevailing N-S extension pattern in the area. It is worth mentioning that the polarization analysis employed, revealed a decrease of the time delay values between the two split shear waves after the occurrence of the first main event, implying variation of the medium properties. On 8 June 2008, a large earthquake ($M_w=6.4$) occurred NE of Andravida. The focal mechanisms of the mainshock and selected aftershocks provided by body wave modeling showed strike-slip faulting. The spatial distribution of the aftershocks, as well as the calculation of the slip distribution indicated dextral strike-slip faulting in NE-SW direction. Static Coulomb stress changes were computed using the produced slip model to investigate possible stress transfer to a neighboring area and the observed large dimensions of the deforming area. The most recent seismic activity was in January 2010 near Efpalio, with the occurrence of two earthquakes ($M_w=5.1$). Computed focal mechanisms indicated normal faulting in an almost E-W direction, also evident by the aftershock distribution. More than 2000 aftershocks were located with sufficient accuracy and relocated using a master event method. Relocation procedure revealed a complex deformation pattern comprising of at least 5 distinct aftershock clusters. The detailed analysis of the above mentioned recent seismic sequences reveals that the central part of the Corinth gulf is dominated by normal faults striking E-W, while the area to the NW of the gulf by a combination of E-W normal and NNW-SSE sinistral strikeslip faults. The SW area of the Corinth rift is characterized by dextral strike-slip faults striking SSW-NNE.