

THE 2017 ULA (MUĞLA) EARTHQUAKE SEQUENCE

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In 2017, three moderate sized events took place near the town of Ula (Muğla) on eastern edge of Gokova Bay. Seismologically reported values in catalogs especially the depths of earthquakes do not generate sufficient deformation to explain geodetically observed motion but InSAR data shows that significant surface deformation. In order to better assess the location informations, we relocated all the aftershocks by using the DD. Source mechanisms of events are estimated by utilizing the generalized gCAP for regional body and surface waveform inversion. Fault mechanism solutions indicate that the events are associated with different striking normal faults at shallow depths.

Surface deformations of earthquakes were obtained from Sentinel-1A/B satellites. Inversion of geodetic data cannot be performed because of the atmospheric noise. We need additional analysis to minimize tropospheric noise. Results of seismological analysis were used as constrain for forward models (Beat Tool (Vasyura-Bathke et al, in press)) to stay in error margins. Modeling result of April 2017 activity indicates a S-dipping NE-SW trending fault at shallow depths and the second seismic sequence forward modelling indicates an almost EW trending, S-dipping normal fault geometry.

Results from seismology and geodesy both indicate that the 2017 activity occurred along a previously unknown normal fault instead of the southeastern branches of the nearby Muğla Fault as proposed earlier. The new fault structure, which was recently mapped by Akyuz et al. (2018) on the surface follows the trend of active faults in Gokova Bay to the east and could shed light on the active tectonics of the Gokova fault zone.

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