Geophysical Research Abstracts,
Vol. 11, EGU2009-1058, 2009
EGU General Assembly 2009


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Fethiye and Gökova faults (FF and GF respectively) are two long fault zones in SW Turkey, associated with minor to moderate historical seismic activity; their geological and geomorphological characteristics however are indicative of active deformation.
FF is part of the Fethiye – Burdur Fault Zone (FBFZ), the inferred mainland continuation of the eastern part of the Hellenic Arc. FF, as well as FBFZ, is an oblique-slip (normal with significant dextral component) fault of NE-SW strike, dipping to the NW, that forms the SE border of Fethiye basin and controls its extension to the NE, while it also controls the development of the drainage network. Its geomorphological signature is characterized by steep bedrock fault scarps that are accompanied by thick sequences of alluvial fans and colluviums. Although it does not appear to disrupt the most recent generation of alluvial fans, geophysical prospecting showed that the deformation reaches all the way up to almost the superficial layers. Palaeoseismological trenching in selected sites along the fault yielded indications of at least two large, ground rupturing, seismic events in Holocene, as indicated by the inferred age of the trenched material. Indications include surface ruptures, faulted colluvial wedges and palaeosoils and microstratigraphical correlations.
GF forms is divided into two main segments, the partly submarine Gökova-Kos segment trending E-W to NE-SW and the mainland NE-SW trending main Gökova segment, both dipping to the SE to S. They are predominantly normal with dextral component. The first segment defines the northern shore of Gökova gulf, which is the longest fault-controlled shoreline in Turkey. Bathymetric data indicate that its continuation is submarine and continues up to the southern shores of Kos island (Greece), posing a relatively unknown up to now probable seismic source for this part of the Aegean Sea in the Greek territory. The second segment forms a very impressive and dominant scarp that almost totally controls the geomorphology (drainage, alluvial fans and colluviums). Although this fault is not associated with significant historical seismicity, there are some archaeological indications of recent activity. Microstratigraphical analysis of paleoseismological trenches showed that indeed there are no recent earthquakes in the area, at least not any that caused significant ground deformations.
Quantitative results regarding the dating of specific seismic events will be extrapolated after the results of 14C dating of selected samples from palaeoseismological trenches,currently under way, become available.