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Coseismically uplifted shorelines along the Gökova Bay in SW Turkey, implications for regional seismic hazard

Cengiz Yildirim (1), Murat Ersen Aksoy (2), Orkan Özcan (1), Peter Salvatore (3), Mehmet İşiler (4), Volkan Özbey (4), Attila Çiner (1), Mehmet Akif Sarikaya (1), Turhan Doğan (5), and Erhan İlkmen (5)

(1) Eurasia Institute of Earth Sciences, Istanbul Technical University, Istanbul, Turkey (cyildirim@itu.edu.tr), (2) Department of Geological Engineering, Muğla Sıtkı Koçman University, Muğla, Turkey (ersenaksoy@mu.edu.tr), (3) Yeşilköy Mah. Halkalı Cad. No:51. D.3. Yeşilköy, Istanbul, Turkey (tasarimci3dmax@gmail.com), (4) Department of Geomatics Engineering, Faculty of Civil Engineering, Istanbul Technical University, Istanbul, Turkey (isiler@itu.edu.tr, ozbeyv@itu.edu.tr), (5) Earth and Marine Sciences Institute, TUBITAK Marmara Research Center, Kocaeli, Turkey (turban.dogan@tubitak.gov.tr, erhan.ilkmen@tubitak.gov.tr)

Gökova Bay is one of the most seismically active regions in the western Anatolia. The latest example of this seismicity is 21 July 2017 Bodrum (Mw:6.6) Earthquake. This earthquake was an offshore earthquake, which had the potential to create coseismic deformation along the shoreline. To check this out we carried out fieldwork in the Bodrum and Karaada right after the earthquake and found uplifted tidal notches as geomorphic markers of coseismic deformation associated with the earthquake. We enlarged our area of interest and visited the entire coasts of the Gökova Bay to check the presence of uplifted shorelines that might be related to paleoseismic events and found that uplifted tidal notches at several locations (especially shores of massif limestone) along the northern and southern coasts of the bay. We identified at least 3 tidal notches which are 40 cm to 120 cm higher than modern sea level along the southern coasts and at least 5 tidal notches which are 20 cm to 170 cm higher than modern sea level along the northern coasts. Unfortunately, these notches are very poor in terms of samples for 14C dating, therefore, it is impossible to provide dates for each of those paleoearthquakes responsible for coastal uplift. Radiocarbon 14C analysis of a lithophaga sample that was taken from 1 m high tidal notch located at the northern coast (between Akbük and Ören) yield 2314±32 yr BP (uncalibrated) and one sample from 0.8 m uplifted beach deposits in Karaada Island (south of the Bodrum) yield 2800±30 yr BP (uncalibrated). In this contribution, we provide evidence of the presence of coseismically uplifted shorelines along the Turkish coasts of the Aegean Sea for the first time and presence of active faults very close to the shoreline and capable to produce large earthquakes and might be important for the regional seismic hazard. This project is supported by TUBITAK 1002 Program (Project No: 118Y116) and Istanbul Technical University Research Fund (Project No. TGA-2018-411184).