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Morphotectonic considerations of the offshore Gökova-Kos area affected by the July 20, 2017 M6.6 Bodrum-Kos Earthquake, Eastern Aegean Sea

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A strong, shallow earthquake occurred on July 20, 2017 with the magnitude of Mw6.6 offshore between Kos Island and the Bodrum Peninsula in the Gökova Gulf, SW Turkey. The interpretation of new multichannel seismic profiles and previously published high-resolution swath and seismic reflection data, acquired in this area, revealed the south-dipping E–W-oriented listric normal faults in the northern part of Gökova Gulf. These faults bend to a ENE–WSW direction towards Kos Island, and then extend parallel to the southern coastline. A left-lateral SW–NE strike-slip fault zone is mapped with segments crossing the Gökova Gulf from its northern part to south of Kos Island. This fault zone intersects and displaces the deep basins in the gulf. The basins are thus interpreted as the youngest deformed features in the study area. The strike-slip faults also produce E–W-oriented ridges between the basin segments, and the ridge-related vertical faults are interpreted as reverse faults. This offshore study reveals that the normal and strike-slip faults are well correlated with the focal mechanism solutions of the recent earthquake and of general seismicity of the Gökova Gulf.