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Velocity changes across the Ganos segment of the North Anatolian Fault Zone in NW Turkey from systematic variations in body wave arrival times

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Imaging and characterizing transform fault sections that are capable to produce large earthquakes is crucial for evaluating seismic hazard and subsequent risk for nearby population centers. The Marmara Fault near the megacity of Istanbul is one of the best defined seismic gaps in the world and its complexity is captured by seismological, geodetic and geological data. A local dense seismic array (MONGAN) provides a high resolution data set allowing to image the Ganos fault separating two different geological units in the western Marmara region. First results of the waveform analysis from this array present systematic early-phase arrivals at the seismic stations located on the northern block of the Ganos fault which comprises geological units including older and more compact materials than that of the southern block. This difference in the arrival times causes the earthquake epicenters to shift further north than the real locations. In this preliminary results, the early-arrivals will be evaluated according to source azimuths and distances, and possible earth models and wave paths will be discussed. The results have implications for rupture directivity during future earthquakes as input for hazard and risk models for the Marmara region.