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In this study, we present the vertical co-seismic deformations of the Samos-Izmir Earthquake using an indirect approach based on GNSS, InSAR and Tide Gauge data.







- The Samos-Izmir Earthquake (Mw=6.9) of October 30, 2020 is among the strongest earthquakes that occurred in recent years throughout the Eastern Aegean.
- The epicenter of this earthquake was 14 km away from Samos Island and 25 km away from Gümüldür-Izmir region.
- > The local tsunami with the wave heights reaching ~2m was triggered by the mainshock.
- The most affected areas were Sigacik and Akarca in Turkey (Yalciner et. al.,2020) and Vathy Town (NE Samos Island) in Greece (Triantafyllou et. al.,2020).







• Uplift

SAMOS Island Town of Gümüldür Town of Özdere

• Subsidence

Mykonos,Lesvos, Chios, Naxos Island Town of Çeşme, Urla, Sığacık and Didim

• Maximum Uplift

SAMO : 86 mm

Maximum Subsidence

URIS : 87 mm







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• Ascending pass

First : 23.10.2020 Second : 10.11.2020

Descending pass

First : 24.10.2020 Second : 11.11.2020













• ISDL/JRC NETWORK

ISDL-41 (Plomari) Tide Gauge ISDL-25 (Kos) Tide Gauge Data Period : 1 minute

TUDES NETWORK

MNTS Tide Gauge

Data Period : 15 minute







*One-Minutes of Data









*One-Minutes of Data





MNTS (MENTES) Tide Gauge Station



*15 Minutes of Data





Some Observation Points because of Tsunami













E





Sea water reached Agricaltural area.







Results

- The vertical components of GNSS stations have shown 10 cm uplift in Samos Island and 10 cm subsidence in the coast of Turkey.
- The results of the geodetic (GNSS, InSAR) analysis are consistent with each other. (Correlation coefficient : 0.84)
- It has been seen that whereas relative sea level in KOS (ISDL-41) and PLOMARI(ISDL-25) tide gauge stations are affected by the local tsunami, but relative sea level changes could not be observed in the MENTES (MNTS) station.





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Thank you for your attention.