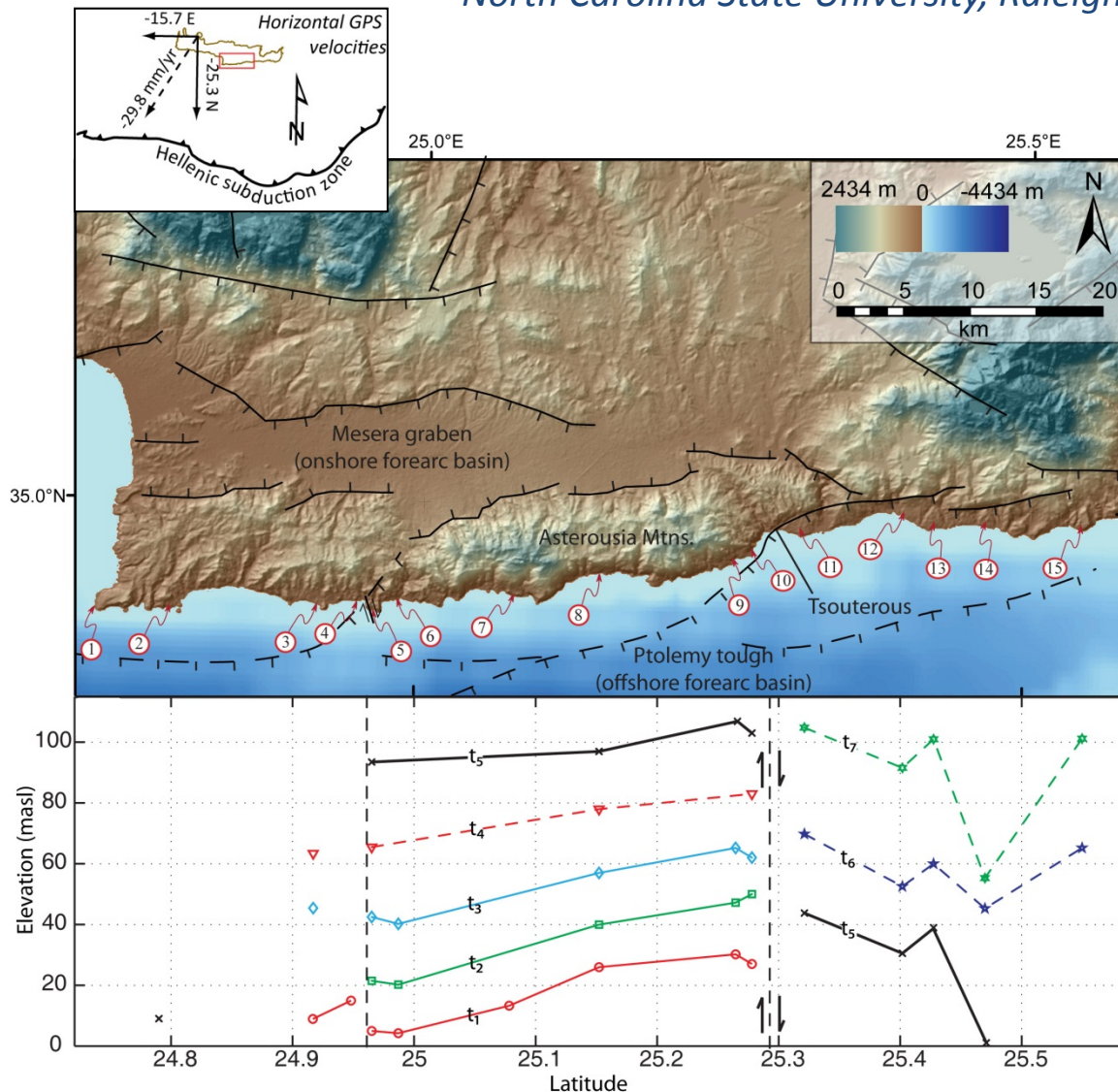


# Active Outer Forearc Basin Formation by Syn-Convergent Extension above the Hellenic Subduction Zone, Crete, Greece

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We are conducting a broadband geodetic experiment to test the hypothesis that the evolution of linked structural escarpments and sedimentary basins found along the southern coast of Crete are controlled by long-lived crustal extension above a convergent, yet retreating subduction zone. This study will improve our understanding of the linkages between subduction processes, the style and intensity of internal deformation of outer forearc basin sedimentary packages, the potential for hydrocarbon migration and retention in these and similar settings, and active seismic hazards in this and similar settings

We mapped, correlated, and dated marine terraces along the southern coastline of Crete. A prominent offset in the terrace profiles correlates to the mapped location of a large normal fault cropping out on-shore near Tsoutsouros. Uplift rates for the Asteroussia footwall block are highest near the fault, decline westward, and have a mean value of  $\sim 1.0$  mm/yr. The hanging wall exhibits mean uplift rates of  $\sim 0.3$  mm/yr, suggesting  $\sim 0.7$  mm/yr of late Pleistocene vertical fault motion. Our initial results imply that the genesis of large forearc escarpments, their paired basins, and earthquake hazards follow from shallow crustal extensional-to-transensional forces above the Hellenic subduction zone.