

UPLIFT AND SUBSIDENCE OF CATALINA ISLAND: TRANSPRESSIONAL BASIN INVERSION IN MONTEREY FORMATION

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Abstract

The marine terraces of Catalina Island provide key evidence for understanding the evolution of transpressional popups, many of which act as structural traps for hydrocarbons. The marine terraces of the Channel Islands record paleo-sea level by leaving characteristic beach deposits that are preserved when a region subsides or uplifts. Unlike most Channel Islands, Catalina has no uplifted terraces, but instead a series of gently seaward sloping surfaces between depths of 33 and 362 m below mean sea level. Glacial sea-level fluctuations are incapable of producing terraces deeper than -150 m, thus Catalina must have subsided ~200 m. The terraces contain a long-term sea-level record possibly extending for >1 Ma. I request funding to date fossils from Catalina's terraces, some collected in 2014, and others to be collected in 2015. Radiometric dating of fossils contained in the marine terrace deposits will enable us to constrain the timing of uplift and subsequent subsidence of Catalina Island, and provide information about the formation and abandonment of restraining bends that act as structural traps for hydrocarbons sourced from the Monterey Formation.

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