TO seminar – Nov. 19th – Katie Snell

How high: Using paleoclimate proxy data to estimate and reinterpret paleoelevation in the Western US

Elevation of orogens at different times in the past provides information that is critical for testing geodynamic models of mountain building. Paleoclimate proxy data is the most common source of paleoelevation estimates, in particular the stable isotope composition of precipitation as recorded in depositional and authigenic minerals. However, the field of paleoaltimetry is currently evolving in response to new paleoclimate proxy techniques and there is increased concern about the effects of climate change on elevation estimates. In this talk, I will provide an overview of the current techniques and issues within the field of paleoaltimetry; I will present a reinterpretation of previous paleoelevation estimates in the western US based on new paleoclimate data; and then will present a new approach for constraining climatic effects and quantifying uncertainty in paleoelevation estimates. Within this paleoclimatic framework, the new and reinterpreted data indicate that basin elevations were 2 km or higher from the Late Cretaceous through the Eocene in the northern Basin and Range province, with some possible elevation loss starting in the Oligocene.