Integrating Cretaceous stories: Sierra Nevada, CA

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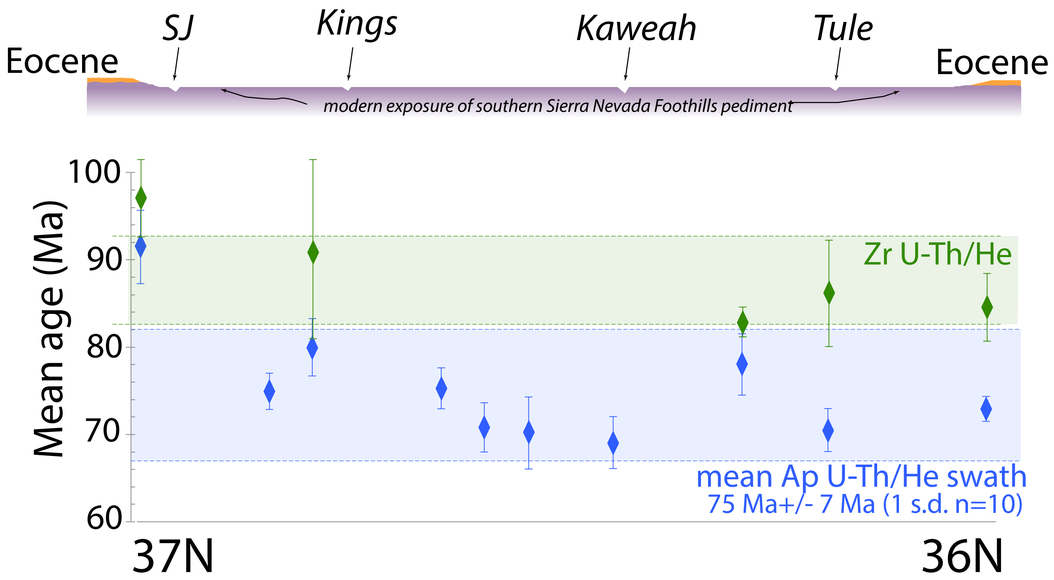
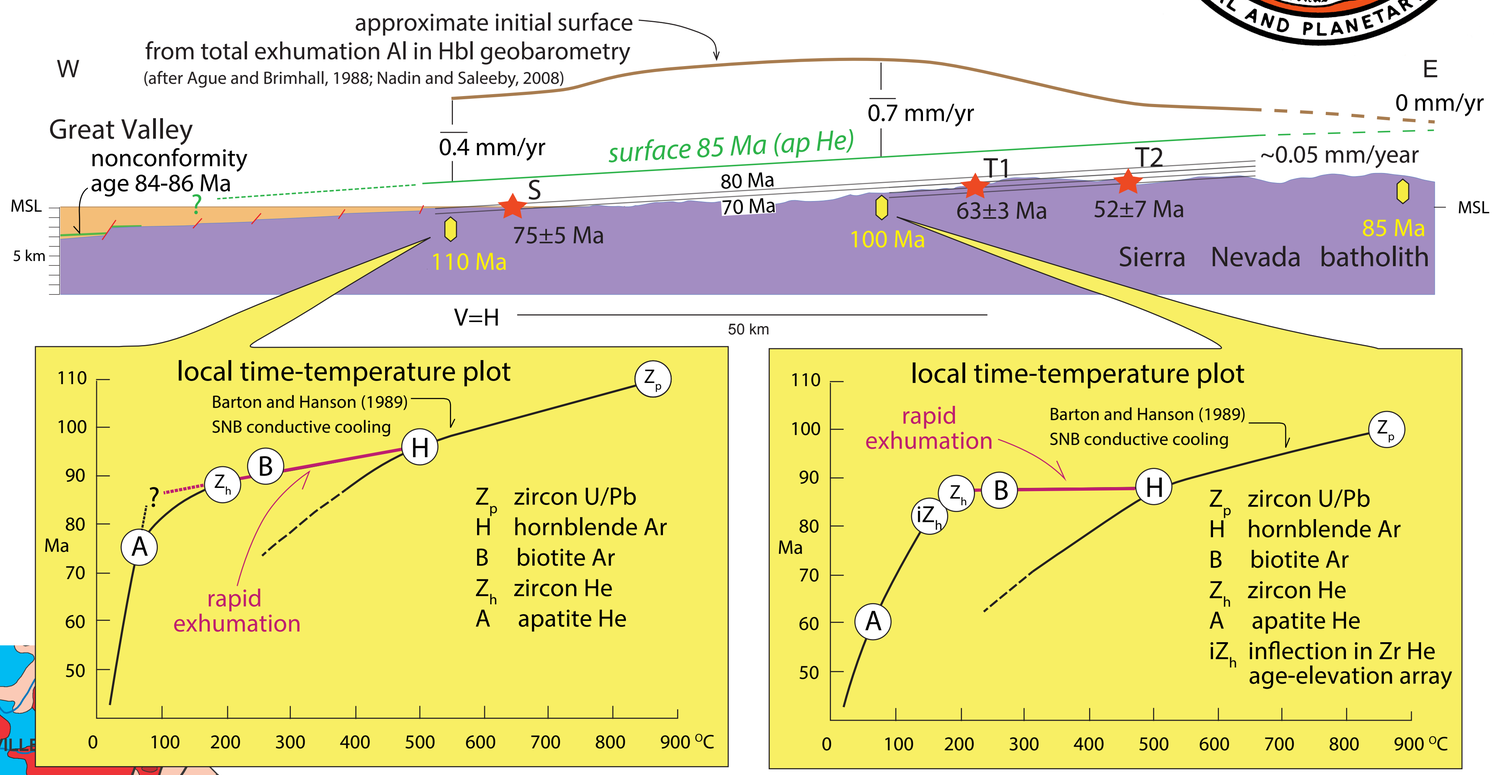
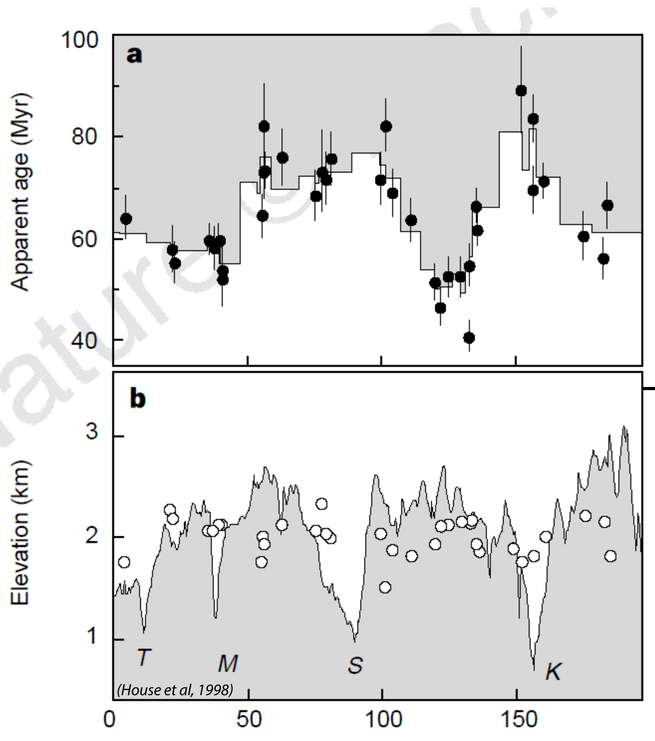
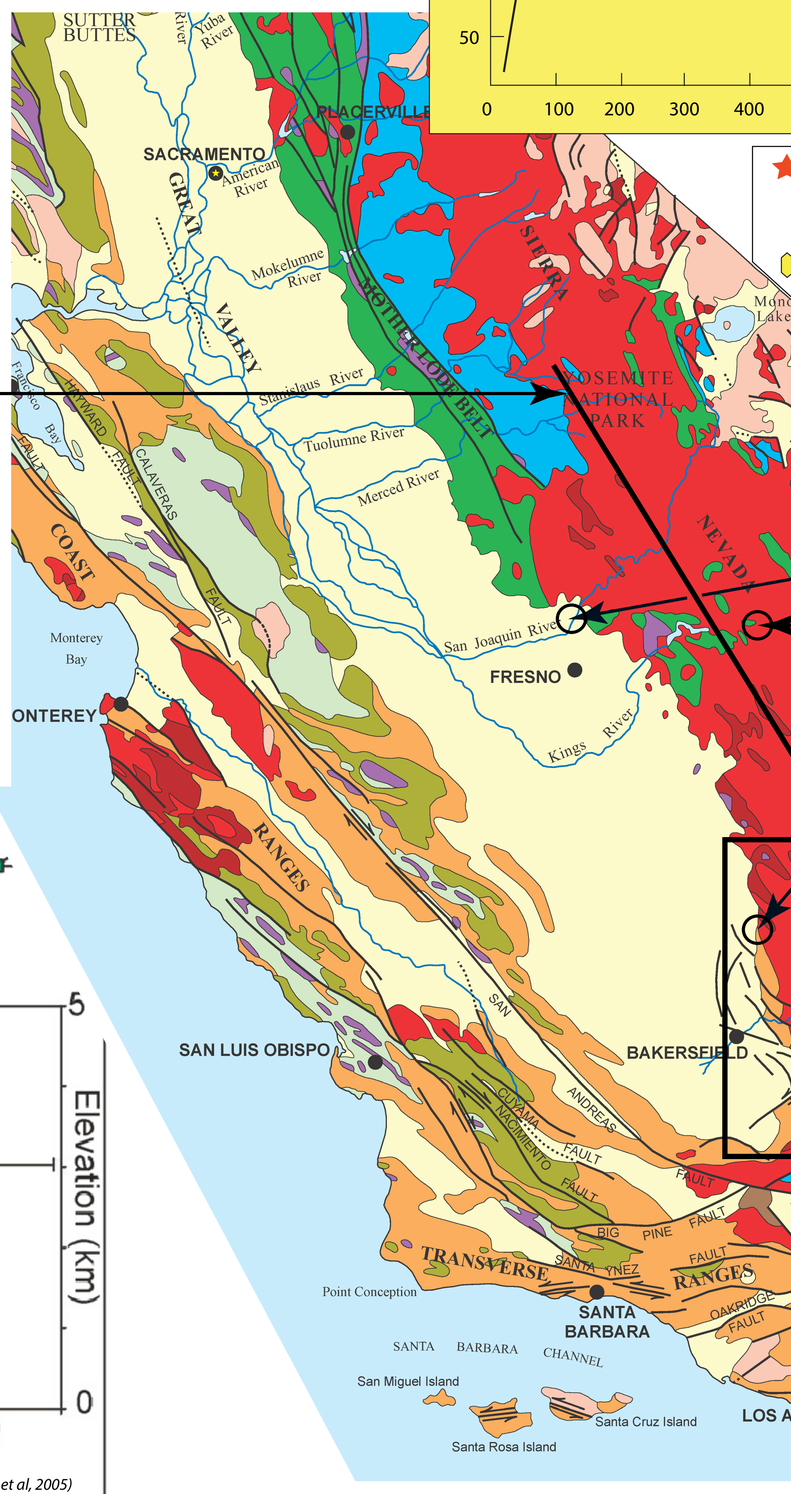
Discovery of the southern Sierra Nevada foothills bedrock pediment is the most recent in a series of findings that document the Late Cretaceous antiquity of significant elements of the geology and geomorphology of the Sierra Nevada, California including several of the major transverse river valleys, the low relief landscapes that comprise much of the interfluvial high country, the major structures that define the distinctive termination of the range in the South, and its membership within the Cretaceous cordilleran plateau called the Nevadaplano.

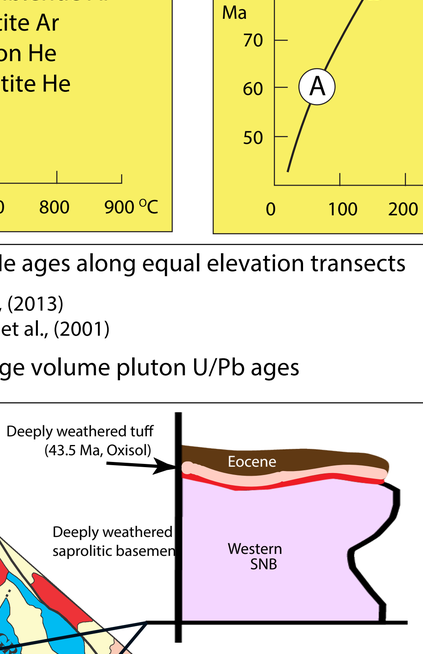
Integrating new data from our study area with published thermochron from the southern Sierra Nevada as well as basement petrographic and U/Pb zircon data from the subsurface of the San Joaquin Basin, several fundamental elements of the evolution of the southern Sierra Nevada/Great Valley province as recorded in the scientific literature are found to be untenable: 1) The critical western boundary condition used in modeling efforts focusing on the southern Sierra Nevada's high topography is wrong. 2) The regional tectonic paradigm explaining the entire San Joaquin Basin subsurface as an obducted ophiolite that terminates eastward against the modern foothills of the Sierra Nevada mountain is wrong.

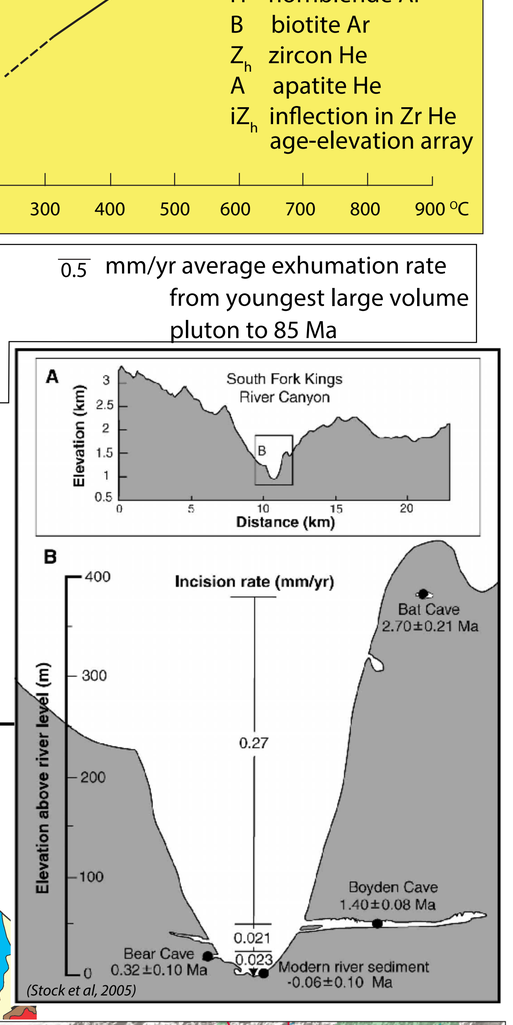


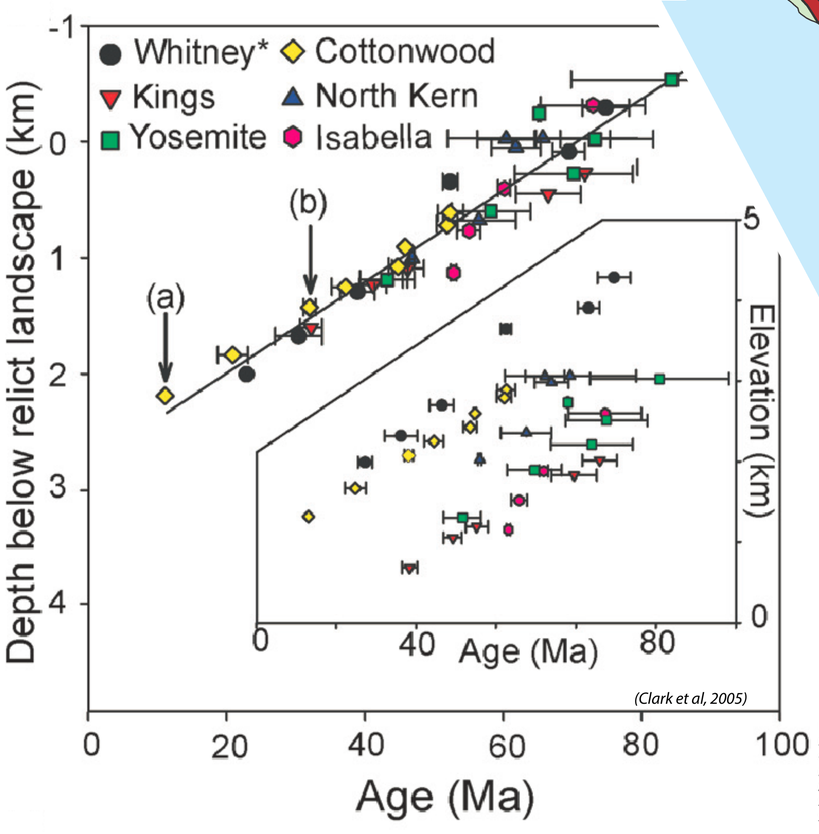


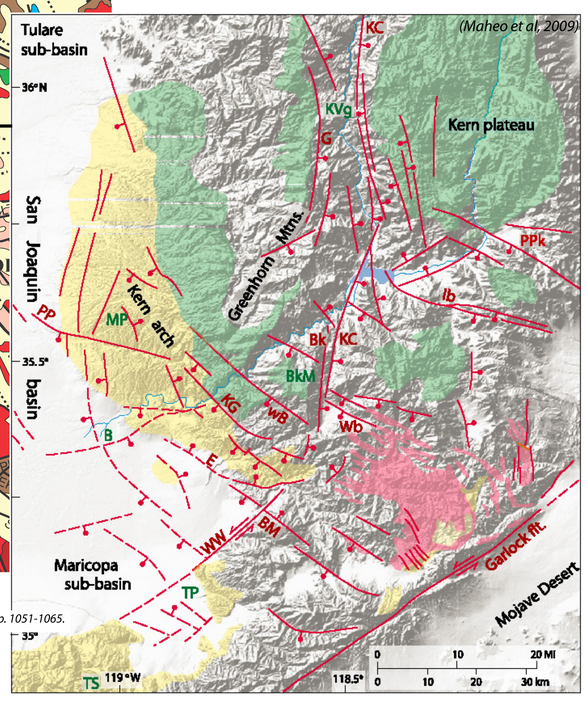












★ average ApHe ages along equal elevation transects
S: Sousa et al., (2013)
T1, T2: House et al., (2001)

youngest large volume pluton U/Pb ages

$\overline{0.5}$ mm/yr average exhumation rate from youngest large volume pluton to 85 Ma

References:

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