

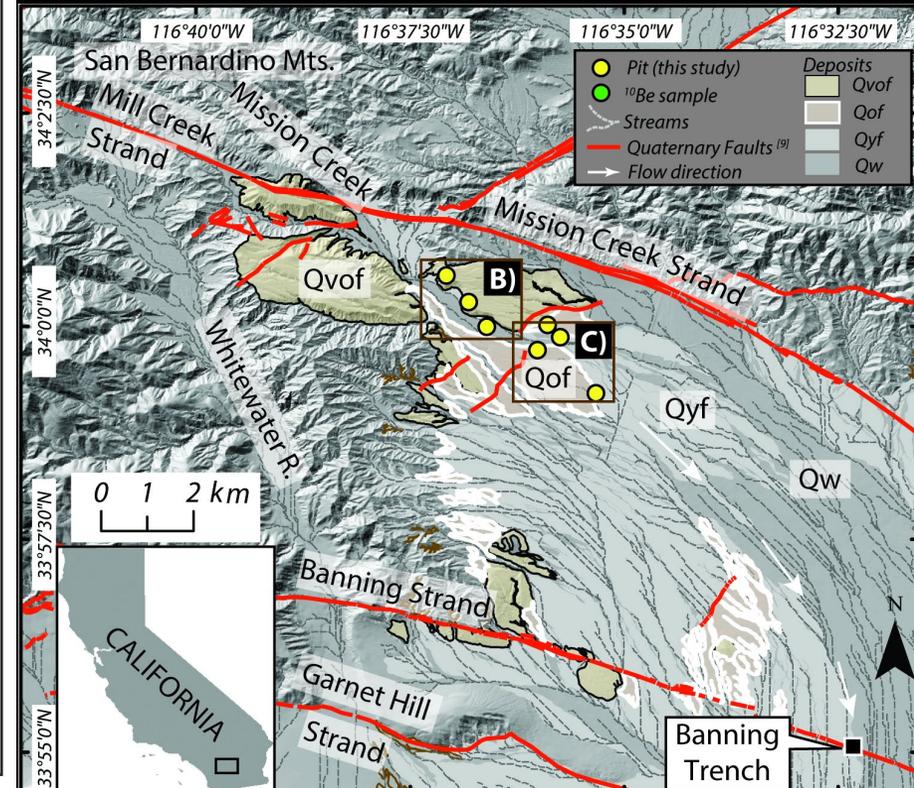
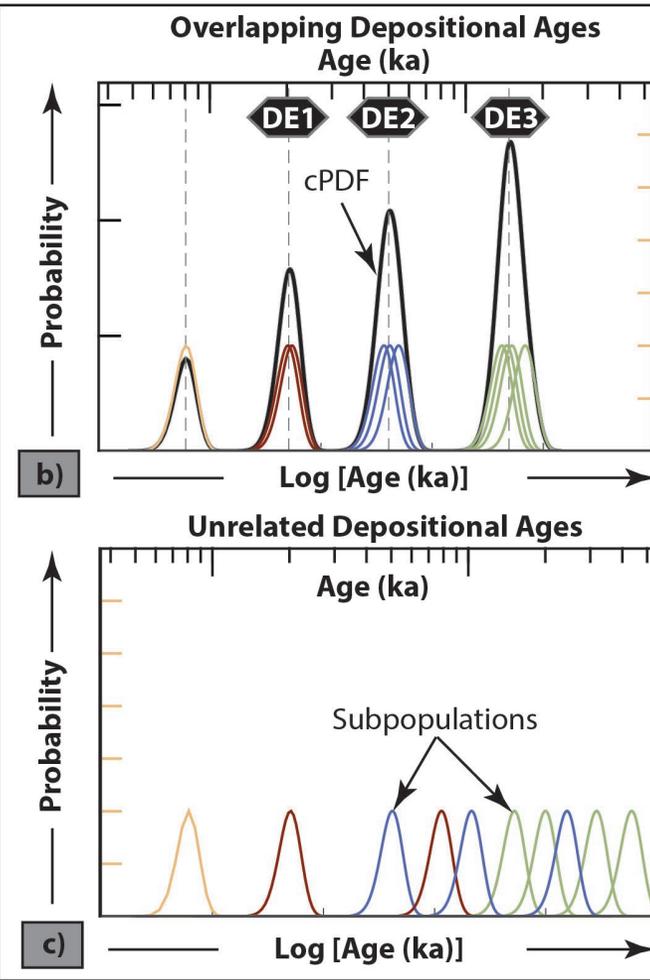
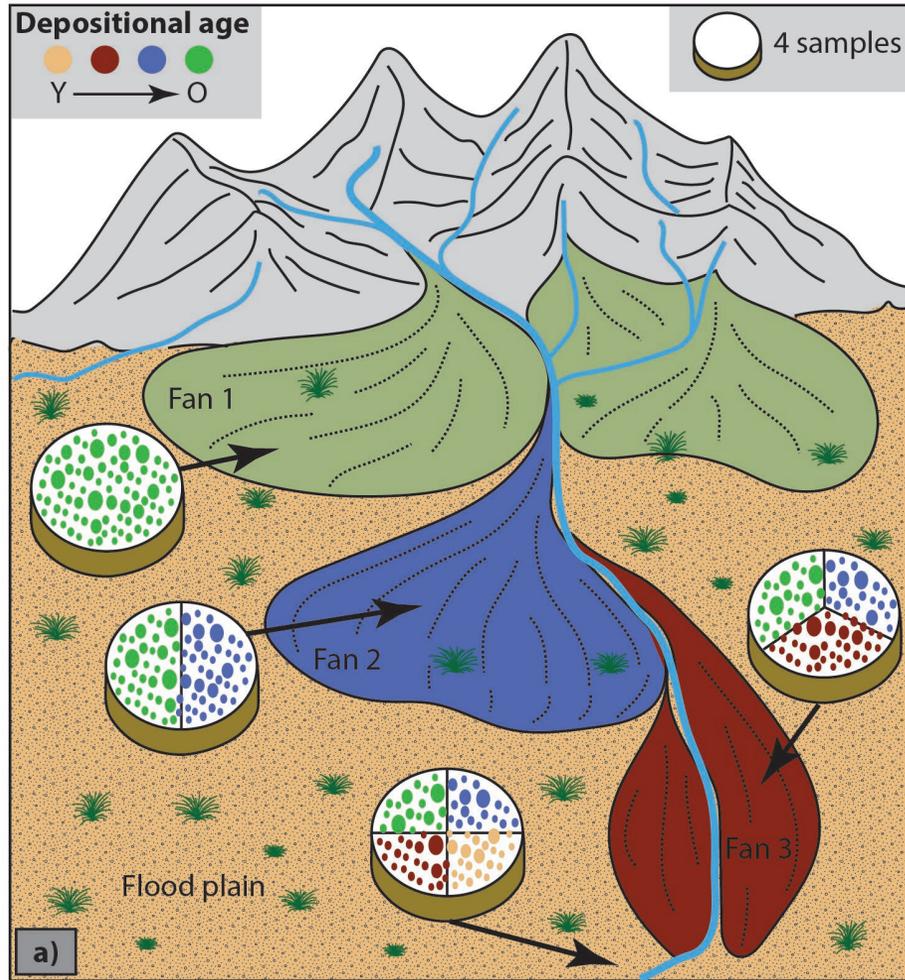
# Sediment Transport and Depositional History from Nested Alluvial Fans to Flood Plains Using Single-grain Luminescence

— Sourav Saha, Seulgi Moon, Nathan D. Brown, & Ed J. Rhodes

UCLA

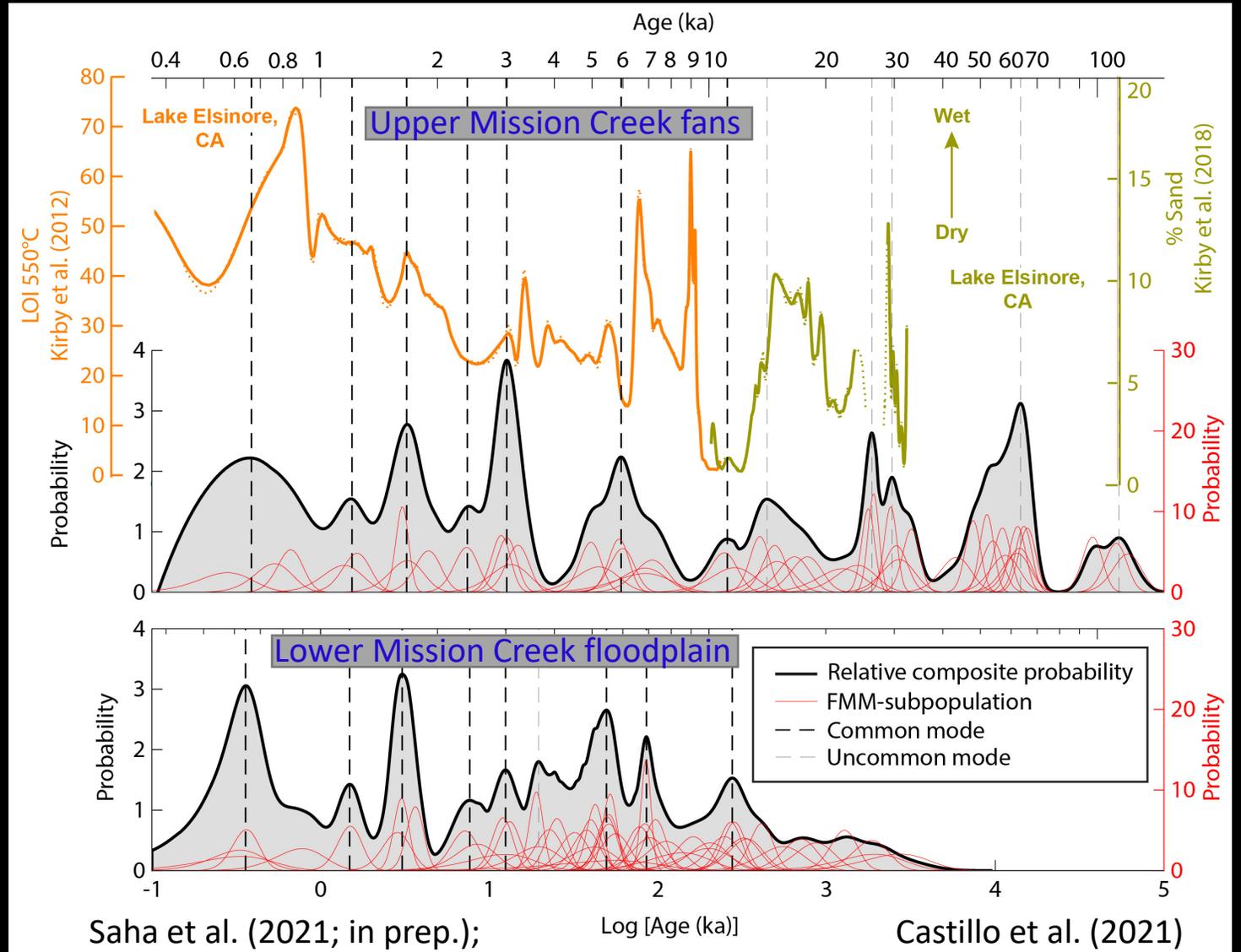
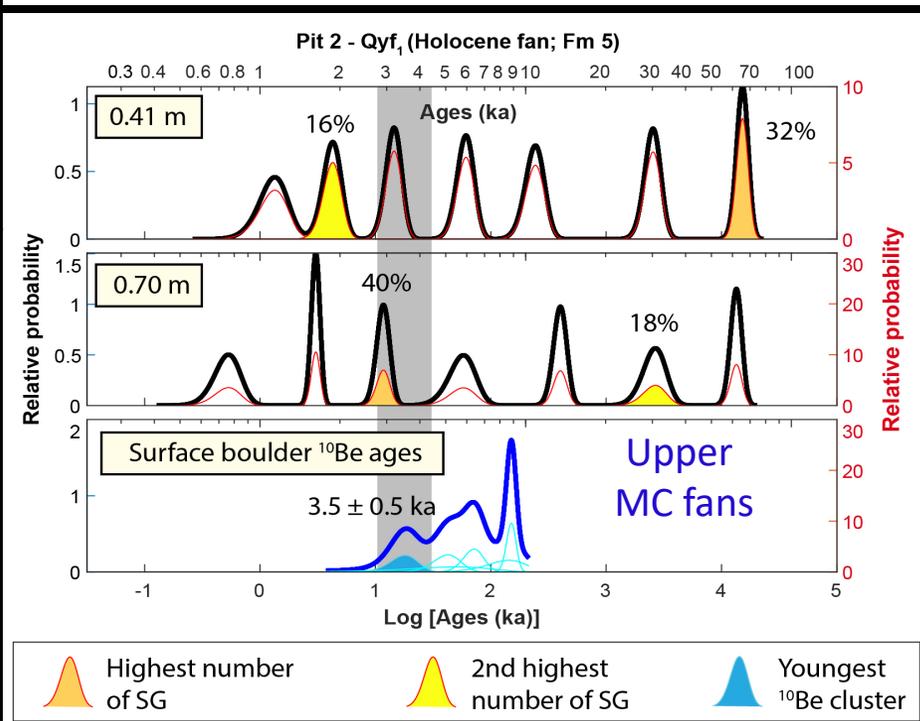
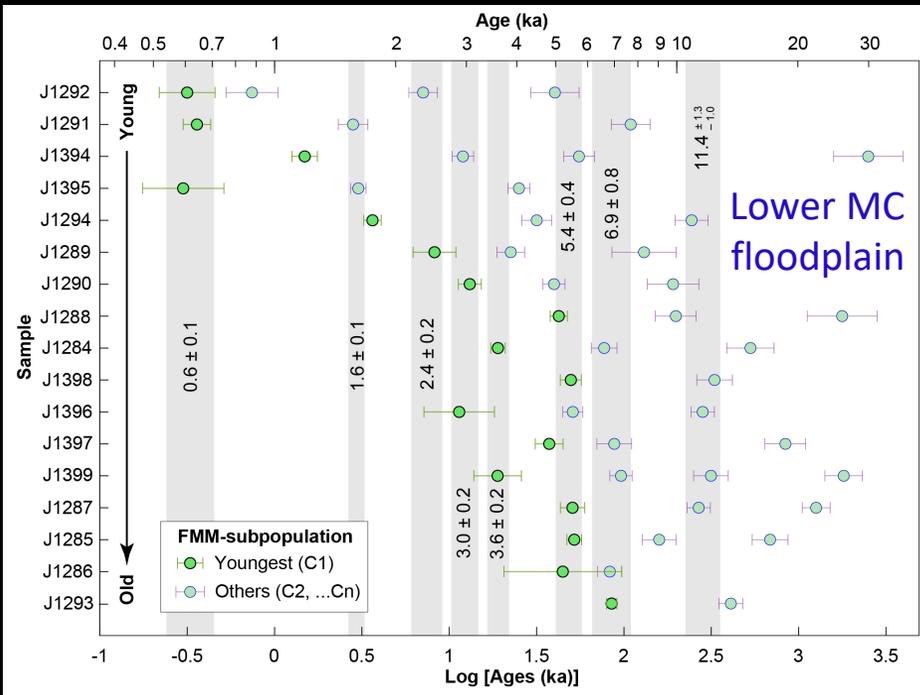
Earth, Planetary, and Space Sciences

## Mission Creek, California



**HYPOTHESIS:** If a sedimentary system is driven by significant external environmental perturbation, single-grain luminescence subpopulation ages from different deposits are expected to show multiple overlapping ages likely driven by the shared perturbations.

# At least six major corresponding depositional periods may be identified in both the upstream & downstream deposits in the past 12 ka at MC



Saha et al. (2021; in prep.);

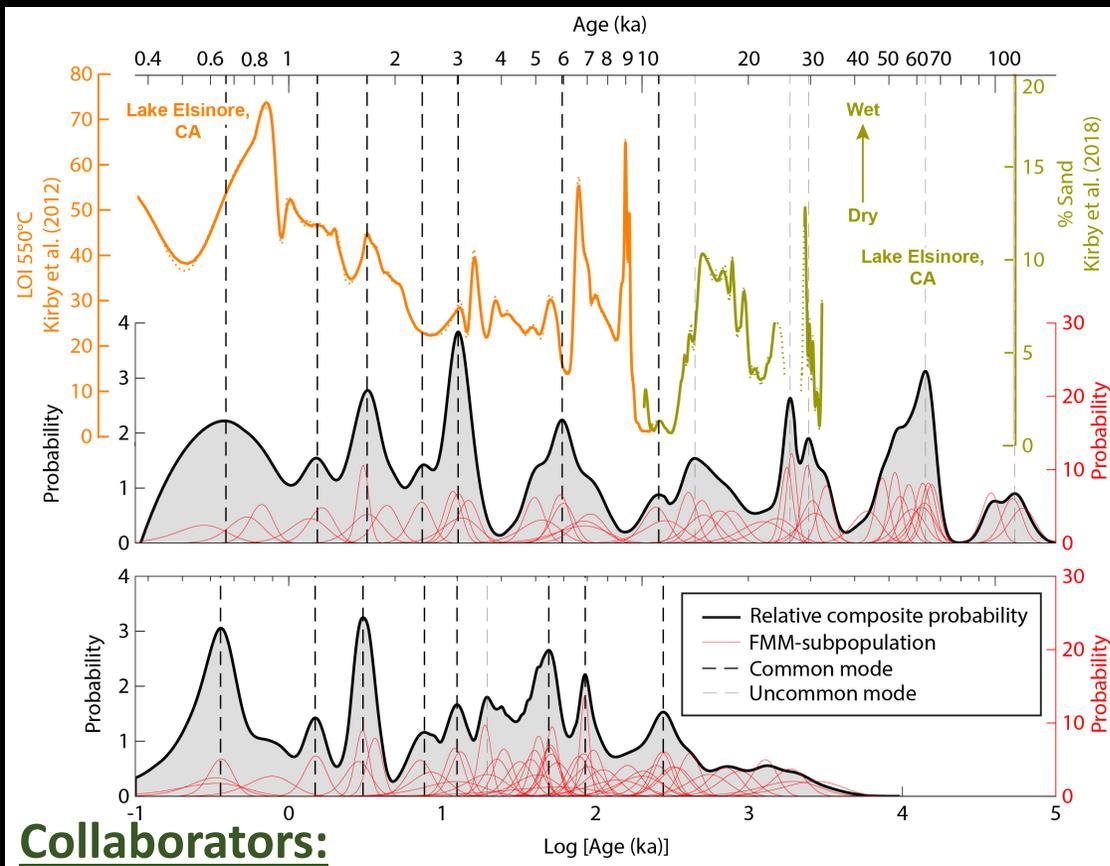
Castillo et al. (2021)

# Summary

sahasv@mail.uc.edu



- I. K-feldspar SG luminescence has the potentiality to date both the most recent & older depositional history
- II. A total of 29 sediment samples with >1,400 SG luminescence ages suggests at least 6 depositional periods both in the upstream & downstream deposits during the Holocene



- III. No Significant lag is observed from the nested alluvial fans to the ~12-km-downstream in the flood plains of the MC catchment
- IV. Wetter than average Holocene climate has the 1<sup>st</sup> order control on sediment flux & deposition in southern California
- V. This has important implications also for tectonic or paleoclimatic studies that rely on stratigraphic completeness, especially in terrestrial settings

## Collaborators:

Katherine Scharer, Devin McPhillips, Sally McGill, Bryan Castillo, Doug Yule, & James McNeil

