

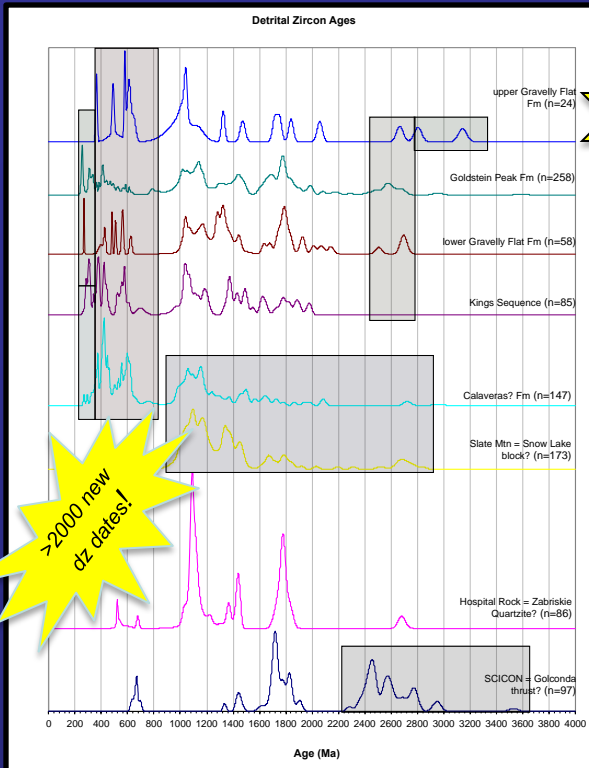
Age and provenance of the fluvial Goldstein Peak unit

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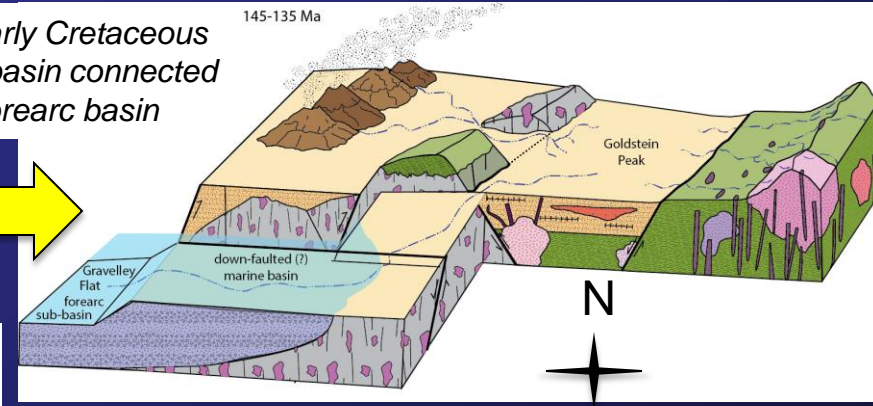
To study the extent to which new forearc basins are filled with purely arc-derived sediment, we used an LA-ICP-MS at the Arizona Laserchron Center to measure the U-Pb dates of ≈ 60 -100 detrital zircons from samples of

- Early Cretaceous Goldstein Peak Formation (GP) = fluvial-lacustrine interarc basin fill
- Early Cretaceous Gravelly Flat Formation (GF) of the Great Valley Group (GVG) = marine forearc deposits, &
- older metamorphic rocks = the framework of the Sierra Nevada arc and likely sources of older, pre-arc zircons.

comparison of PZ to PC detrital zircon dates from the metamorphic framework rocks to determine sediment correlations & provenance



Reconstruction of the Early Cretaceous Goldstein Peak interarc basin connected to the Great Valley forearc basin



CSU Fullerton students "zapping" zircons at ALC



Scientific Findings--Mesozoic Sediment Pathways

- Deposition of the newly discovered Goldstein Peak Fm. (GP) occurred in the Early Cretaceous (141 ± 3 Ma).
 - *this is the first nonmarine record west of the arc*
- The first marine forearc sediments (GF) are approximately coeval (143 ± 5 Ma) and have a similar arc-derived provenance as the GP, one that is distinct from that of forearc sediments in the northern Great Valley.
 - *By the Late Cretaceous, sediments of the entire Sierra Nevada forearc basin were well mixed.*
- The provenance of Jurassic Kings Sequence turbidites include reworked Paleozoic passive margin sediments (to the E) & zircons from the Klamath Mtns (from the N).
 - *This provenance is similar to the Triassic marine sediments of the Calaveras Fm.(?)*
 - Zircon provenance characterization of arc framework rocks lead to the discovery of a sliver of the Golconda Thrust belt (from N. NV), probably translated southeast in the Permian, prior to MZ arc construction.

Educational Outcomes

6 BS theses (Crystal Castellanos, Kevin Tomita, Isaac Shirley, Josh Sobolew, Hector Fernandez, Natalie Hollis) and **2 MS theses** (Mike Martin, Chris Buchen)

4 funded research experiences: undergrad Michael Prior (now in the PhD program at UT Austin), grad students Michelle Gevedon, Megan Murphy, Randal Morlan (CSUF)

8 student-faculty abstracts: presented at American Chemical Society, GSA, AAPG