



## 162-1 - TRENCH VERSUS FOREARC: LATE CRETACEOUS TRENCH SEDIMENT ACCUMULATION AND FOREARC EROSION ALONG THE SOUTHERN MARGIN OF TIBET AS REVEALED BY PROVENANCE ANALYSIS



Tuesday, October 12, 2021



9:00 AM - 1:00 PM



Oregon Convention Center - Exhibit Hall A

**Booth No. 113**

### Abstract

Trench and forearc basins preserved along the southern margin of the Lhasa Terrane, Tibet are sedimentologic records of convergent margin processes prior to Cenozoic India-Asia collision. We present new sedimentologic, petrographic and geochronologic data from the Rongmawa Formation and surrounding strata near Dênggar, Tibet to constrain the depositional environment, provenance and age of investigated trench strata. In turn, these records are compared to sedimentary and provenance data from the neighboring Xigaze forearc to reconstruct periods of accretion and erosion along the Late Cretaceous subduction margin. Stratigraphic ages from the Rongmawa Formation range from ~92-87 Ma and lithofacies are consistent with deposition by low- and high-density turbidity currents and suspension settling of pelagic detritus in a deep-marine, trench basin setting. Sandstone modal analyses and U-Pb geochronology indicate trench basin detritus in this region was derived from the Lhasa Terrane, including from Triassic-Jurassic plutons located ~ 500 km to the east of the study region. We propose a model in which the Cretaceous subduction trench received detritus from an axial sediment dispersal system that transported sediment from headwaters in the central-southern Lhasa terrane near Lhasa City directly to the trench and then flowed westward parallel to the trench, depositing detritus in trench basins. Preservation of trench basin strata deposited during Late Cretaceous time compared with the lack of trench deposits prior to ~ 90 Ma and after ~ 80 Ma suggests the margin experienced a period of significant accretion during this interval. A period of decreased convergence at ~90-85 Ma followed by a period of increased convergence ~ 80 Ma may have promoted trench sediment accumulation and subsequent erosion, respectively. In addition, deposition of trench basin strata is coeval with tectonic models that propose subduction of an oceanic ridge at this time, in an area where no forearc basin stratigraphy is preserved. Subduction of this ridge may provide a mechanism to potentially erode forearc basin strata and promote increased sediment delivery directly to the trench during Late Cretaceous time.

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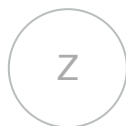
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