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Paper No. 118-3

Presentation Time: 8:00 AM-5:30 PM

**PRELIMINARY 1:200,000 SCALE GEOLOGIC MAP OF THE BHABA PASS-PIN
VALLEY REGION, HIMACHAL HIMALAYA, NW INDIA**

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Tectonic models for the development of the Himalaya, Earth's largest active collisional mountain belt, have been developed and tested through pressure, temperature, and time (P-T-t) information collected from exposed metamorphic rocks. Inferred deep burial and subsequent exhumation of these rocks are usually justified by observable structures (e.g., Main Central thrust) and mapping relationships. However, regions where pressure estimates are at odds with field-based reconstructions are reconciled with hypothesized cryptic structures that have since been completely eroded. Such field versus thermobarometric discrepancies significantly impact interpretations on the geometry, magnitude, and distribution of deformation. Here, we conducted detailed field mapping of the Paleogene Tethyan fold-thrust belt in the Himachal Himalaya, NW India, which is the structurally highest part of the Himalayan orogen and deforms a ~10–15 km thick Neoproterozoic–Cretaceous passive margin section. In this region, P-T estimates yield 6–8 kbar and ~650°C, which suggests burial to depths of ~25–30 km. To assess the viability of this deep burial, we constructed a 1:200,000 scale geologic map of the Bhaba Pass-Pin Valley region. Geologic mapping was focused on the stratigraphy, structural configuration, and metamorphic isograds of the basal Tethyan strata. Detailed field mapping aided the construction of balanced cross sections, which guided subsequent multi-method analytical approaches that fit into a coherent structural framework. Our field observations and map relationships show no major structures, abrupt changes in metamorphic grade or composition that would suggest deep burial of the stratigraphically continuous basal Tethyan group. Balanced cross sections throughout the study area suggest moderate amounts of shortening strain (~30–36%). This contribution highlights the importance of detailed field mapping to interpret P-T estimates. Ongoing analytical methods are being conducted to constrain the thermal architecture and metamorphic history of the Tethyan fold-thrust belt.

Session No. 118—Booth# 226

[T167. Best Student Geologic Map Competition \(Posters\)](#)

Monday, 23 September 2024: 8:00 AM-5:30 PM

Hall D (Anaheim Convention Center)

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