Timing and Nature of Late-Stage Gondwanan Assembly and peri-Gondwanan Tectonic Activity: Records from Multiple Continents

The final stages of core Gondwana appears to have been completed by ~530 Ma, yet records from multiple continents indicate subsequent significant tectonic reorganization of the perimeter of Gondwana and associated peri-Gondwanan terranes. One example is the late Early Cambrian tectonic transition in Antarctica on its margin opposite to its suture with India. Here, the Ross Orogenic Belt records a transition from a passive margin to an active continental-margin arc and forearc setting. The northern Indian margin of Gondwanaland was transformed in a similar manner during the latest Cambrian to early Ordovician tectonic Kurgiakh Orogeny, which was characterized by volcanism, mild metamorphism, and granitic intrusions. Stratigraphic, geochronological, and paleontological data along the length of the Himalaya has allowed us to unravel the timing and signal of this event, which our recent work suggests, likely extended >1000 km to the east into Bhutan. The event appears to have also affected many areas across around northern Gondwana region, including areas in Tibet, Myanmar, and the Kathmandu klippe in Nepal. Similarities between the timing and duration of the Cambrian–Ordovician unconformity in Inner Mongolia with that of the northern Indian margin of east Gondwana, suggest a link with the western margin of the North China Block. The global mapping of the timing and signal of these tectonic events may lead to a unified geodynamic model of Gondwanan assembly and peri-Gondwanan tectonics.