



Chronology and uplift rates of the relief in the Altay and the Gobi-Altay mountain ranges (Mongolia)

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Altay and Gobi-Altay mountain ranges are the northernmost expression of the transpressive deformation that affects Central Asia. The formation of these ranges is controlled by the activity of large strike-slip faults (dextral in the Altay, sinistral in the Gobi-Altay) associated with smaller oblique or reverse faults. The age of the onset of the mountain building process due to the India-Eurasia collision during the Cenozoic is still unknown. The morphology of the massifs is characterized by perched remnant surfaces such as flat summit plateaux (generally culminating at ~ 4000 m) or uplifted piedmonts still preserved on the mountain flanks. These features suggest that these massifs are young (≤ 2 Ma?). Furthermore, the preservation of these summit surfaces compared to the sharp topography of the southern Asian mountain ranges supports the hypothesis that Mongolian ranges are younger than southern ranges (e.g. Tien Shan) and that transpressive deformation in Central Asia propagates “in sequence” toward the North from the Himalayan collision front.

To better constrain the timing of the deformation in Mongolia, we reconstruct the thermal history of the bedrock in the shallow crust by a fission tracks analysis on apatites of three selected massifs (Ih Bogd, Baatar Khairhanii and Ih Turgen) from southern Gobi-Altay to northern Altay. This analysis coupled with a morphotectonic study and the dating with in-situ ^{10}Be of abandoned alluvial markers, also enables to compare the uplift rates of the massifs at different time scales. Preliminary results in Ih Bogd massif indicate that the summit plateau corresponds to a Mesozoic peneplain uplifted between 2 and 8 Ma. This yields a long-term uplift rate comprised between

0.25 and 1 mm/yr. In progress analysis on the two other massifs will be presented during this meeting.