Inframillimetric slip rate and ∼8kyr long recurrence intervals for Mw ≥ 7.5 earthquakes along the southern section of the Har-Us- Nuur fault (Mongolian Altay)

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Résumé

The Har-Us-Nuur fault corresponds to one of the longest (> 500 km) strike-slip fault in Mongolian Altai. Although the fault clearly affects Quaternary deposits, no major instrumental or historical
earthquake is associated to it and only a few morphotectonic and paleoseismological analyses have been
carried out to date. In this paper, we analyze a previously undescribed surface rupture in the southern section
of the Har-Us-Nuur fault along which we study a 20 km long section of it in detail. A morphotectonic

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analysis yielded a minimum slip rate of 0.32 ± 0.04 mm.yr1 , while paleosismological investigations
suggest a mean recurrence interval of about 8.1 ± 3.4 kyr from the characterization of three surface rupturing
events that occurred over the past 23 kyr. These preliminary results suggest that the Har-Us-Nuur fault slip
rate is inframillimetric and therefore lower than previous published estimates. They also suggest that the
fault is able to produce major earthquakes (Mw ≥7.5) separated by very long period of quiescence.

Mots-Clés: Mongolia / Altay / active fault / Har, Us, Nuur fault / slip rate / paleosesismology