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Holocene kinematics and slip rate of the Sayan fault (Southern Siberia, Russia)

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The Sayan fault is located at the boundary between the northernmost mountain belt of Central Asia (the Sayan-Baikal ranges) and the Siberian platform. This outstanding $\sim$ 500 km crustal structure defines an obvious and sharp morphotectonics feature easily recognizable on satellite imagery. Inherited from the Palaeozoic orogenes, the Sayan fault has been working as a left-lateral transform fault during the opening of the Baikal Rift in the Cainozoic time. Despite a very low instrumental seismic activity and few historical earthquakes, Holocene morphotectonics features along the fault attests of its activity and its capacity of producing strong earthquakes. The Sayan fault represents therefore a strong hazard for the city of Irkoutsk, which is located 70 km northwards of its south-eastern tip, and where more than one million people are living. In order to quantify the present kinematics of the fault, to estimate its slip rate and the potential magnitude of earthquakes, we carried out a morphotectonics study within its south-eastern part, between the Baikal Lake and the Irkut River (the only part of the fault relatively accessible, while further west the fault stands in a mountainous area covered with dense forest without any easy access). A reconnaissance trip allowed us finding out a small catchment basin cut by the fault and showing a cumulative offset of several tens of meters. We surveyed the site with a total station to produce a Digital Elevation Model, and we collected samples of the offset surface and the trapped sediments for radiocarbon and OSL dating. In progress analyses should allow us to provide a first estimate of the left-lateral slip rate along the Sayan fault.