Geophysical Research Abstracts
Vol. 16, EGU2014-556, 2014
EGU General Assembly 2014
© Author(s) 2013. CC Attribution 3.0 License.

Numerical reconstruction of Late-Cenosoic evolution of normal-fault scarps in Baikal Rift Zone

Leonid Byzov and Vladimir San'kov

Institute of the Earth's Crust, Russian Academy of Sciences, Siberian Branch, Irkutsk, Russian Federation (leo302011@gmail.com)

Numerical landscape development modeling has recently become a popular tool in geo-logic and geomorphic investigations. We employed this technique to reconstruct Late-Cenosoic evolution of Baikal Rift Zone mountains. The objects of research were Barguzin Range and Svyatoy Nos Upland. These structures are formed under conditions of crustal extension and bounded by active normal faults. In our experiments we used instruments, engineered by Greg Tucker (University of Colo-rado) – CHILD (Channel-Hillslope Integrated Landscape Development) and "Bedrock Fault Scarp". First program allowed constructing the complex landscape model considering tectonic uplift, fluvial and hillslope processes; second program is used for more accurate simulating of triangular facet evolution. In general, our experiments consisted in testing of tectonic parameters, and climatic char-acteristic, erosion and diffusion properties, hydraulic geometry were practically constant except for some special runs. Numerous experiments, with various scenarios of development, showed that Barguzin range and Svyatoy Nos Upland has many common features. These structures characterized by internal differentiation, which appear in height and shape of slopes. At the same time, individual segments of these objects are very similar – this conclusion refers to most developing parts, with pronounced facets and V-shaped valleys. Accordingly modelling, these landscapes are in a steady state and are undergoing a uplift with rate 0,4 mm/yr since Early Pliocene (this solution accords with AFT-dating). Lower segments of Barguzin Range and Svyatoy Nos Upland also have some general fea-tures, but the reasons of such similarity probably are different. In particular, southern segment of Svyatoy Nos Upland, which characterized by relative high slope with very weak incision, may be formed as result very rapid fault movement or catastrophic landslide. On the other hand, a lower segment of Barguzin Range (Ulun segment, for example) probably has small height and relative weak incision over later beginning of uplift.