



## **The glacial history during the Last Glacial in Fergana and Kungoy Ala-Too ranges in the Tien Shan mountains, Kyrgyz Republic by OSL dating**

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In the Fergana Range of central Tien Shan and the Kungoy Ala-Too Range of northern Tien Shan, optically simulated luminescence (OSL) dating was applied to glacial deposits from moraines, which have different glacier advance stages during the Last Glacial. The moraines of the both ranges are confined to within 10 km of the present glacier termini. Moraine distributions were mapped on 1:50,000 topographic maps and based on field observations. Moraines in each valley were classified into two stages using elevation, size, and geographical position, and named using local geographic names. The moraines of the oldest stages, Arpa I stage (Fergana Range) and Kungoy I stage (Kungoy Ala-Too Range) have relative heights of 100-150 m and the moraine termini are located at 2850-3050 m and 2100-3080 m. The moraines of the younger stage, Arpa II and Kungoy II stages, have 40-60 m relative height and the moraine termini are located at 2950-3600 m and 2530-3230 m. We took samples from supra-glacial melt-out tills on the top of moraine ridges for OSL dating. The samples were collected under a black plastic sheet or by pushing opaque plastic tubes to sediment at each outcrop. Equilibrium line altitude (ELA) using AAR method (0.65) declined 400-500 m a.s.l. in the Arpa II stage of the Fergana Range and ~600 m in the Kungoy

stage II of Kungoy Ala-Too Range. These ELA declines in outer ranges of the Tien Shan mountains which have high annual precipitation are larger than those in the interior ranges. In the previous studies on the glacier history in the eastern and northern Tien Shan and Gissar-Alay using numerical dating method, it has been suggested that the glaciers had advanced in MIS2 and late-MIS3-MIS4. We present the result of OSL dating and timing of glacier advance in these study areas.