

# Timing of glacier advances during the Last Glacial period in the Terskey-Alatoo Range, central Asia

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The research of the glacier variations during the Last Glacial period was conducted at five areas (Turasu, Alabash, Dengtala, Keksay, Temilkanat) in the north flank of the Terskey-Alatoo Range, Kyrgyz Republic in the summer of 2003, to elucidate paleoclimatic environment in the Last Glacial period of central Asia. Because of the low precipitation throuout the North Tien Shan, the moraines are well preserved in the study area.

Moraines that distribute in each valley are classified into five to four stages by using the relative dating methods. Moraines of the oldest stage (Turasu, Alabash, Dengtala, Keksay, Temil) are located at 2250-2100 m a.s.l in each valley. Moraines of second oldest stage are at 2700-2400 m a.s.l. (Bulak, Sary, Komsomol, Toguz, Boloshil). Thick loess is observed on the moraines of the two oldest stages and their R-values of Schmidt hammer are low for the moraine deposits.

These oldest stages are considered to have formed during the Last Glacial period by the expanded glacial areas and by the large-scaled moraines. Although Grosswald et al. (1994) suggested that the glaciers of the Terskey-Alatoo Range had expanded to the Issik-Kul Lake at 1600 m a.s.l, we could not find any glacial landform below 2100m. The upper altitude of the lateral moraine for the second oldest stage is 3300 m a.s.l. and the present snowline altitude is 3950-3900 m a.s.l. This implies that the snowline declined about 600-700 m during the second oldest stage of the Last Glacial period. Our result of the snowline declination during the Last Glacial period in the North Tien Shan is much smaller than that in the Terskey-Alatoo Range (Grosswald et al. 1994) and in the Alai Range (Zech et al. 2000), where the declination is estimated as 1200 m.

In the study area, the difference in the terminal moraine altitude between the two oldest stages is about 350 m. This suggests the amount of glacier expansion was different between the two stages during the Last Glacial period. It is conceivable that paleoclimatic environment in the oldest stage was cold/humid. The ages of each stage will be shown by OSL and 14C dating of glacial sediments.