

IPL 106-2 PROJECT (Kokomerren Summer School on Rockslides and Related Phenomena)

The main activity of the IPL 106-2 Project is the annual ICL Summer School on Rockslides and Related Phenomena in the Kokomerren River basin, Kyrgyzstan, that has been arranged since 2006. In 2003 it was held on August 14 - 29, 2023.

This year 29 students and landslide researchers participated in the Summer School: one from Kyrgyzstan, one from Kazakhstan, two from Uzbekistan, one from Belgium, one from India, one from Italy, two from Germany, one from Austria, seven from China, four from Japan, two from Korea, four from Slovenia, one from United Kingdom and one from Russia. Expenses of four participants from Kyrgyzstan, Kazakhstan and Uzbekistan were covered by the UNESCO Almaty cluster office. All participants received the printed version of the detailed full-color Guidebook printed in JSC "Hydroproject Institute". The cost of such printing exceeded USD 2000 and was considered as the ICL annual fee of the "Hydroproject Institute" for 2003. Its most recent version is available at <http://iplhq.org/> (Summer_School_Guidebook-2022.pdf).

After arrival of all participants to Bishkek, on August 14, we transferred to the base camp located near the Aral village (Fig. 1), in the old children summer camp that has been used for this purpose annually since 2011. We stood there for the whole time, driving every day to the different rockslide sites. Next day, on August 15 we started field trips demonstrating various peculiarities of the rockslides (RS) and rock avalanches (RA) as well as manifestations of active tectonics widely distributed in the study region (Fig. 2) to Summer School attendees.



Fig. 1. Base camp near the Aral village

Due to some logistics aspects, first of all due to the extremely poor quality of the road passing along Kokomerren River upstream from the Aral village leading to the Kyzyl-Oi village, we had to rearrange the original schedule, and replaced the trip to Sarysuu rock avalanche in the Kyzyl-Oi depression, by the trip to the Chaartash rock avalanches at the northern slope of the Western Akshiyriak Range, south of the area shown in Fig. 2.

Since we had to register some participants in the local police office located in the Chaek town, we started our field program on August 15 from the trip to Chaek, close to which, besides giant rotational landslide (Fig. 3) expressive manifestations of recent folding and faulting were demonstrated (Figs. 3 & 4).

On August 16 we visited the Seit primary rock avalanche where peculiarities of RA debris motion in laterally confined conditions were demonstrated (Fig. 5). Special attention was paid for molards – conical hills reflecting some peculiarities of the dynamics of rock avalanche motion (Fig. 6).

Next day, on August 17, we visited the Unkursay River valley with the Ak-Kiol rockslide-dammed lake formed by wedge failure of the syncline core from by the extremely deep headscarp that had unfolded during its motion (Fig. 7) and the Lower Ak-Kiol translational rockslide in well-bedded Neogene conglomerates (Fig. 8) with distinct traces of the dammed lake breach that occurred about 6000-7000 years ago.

On August 18 we made one of the longest trips visiting the Southern Karakungey secondary rock avalanche (Fig. 9) and the Northern Karakungey jumping rock avalanche. During this ca. 10 km long

hike with 300 m raise main peculiarities of these important types of rock avalanches were demonstrated to the participants.

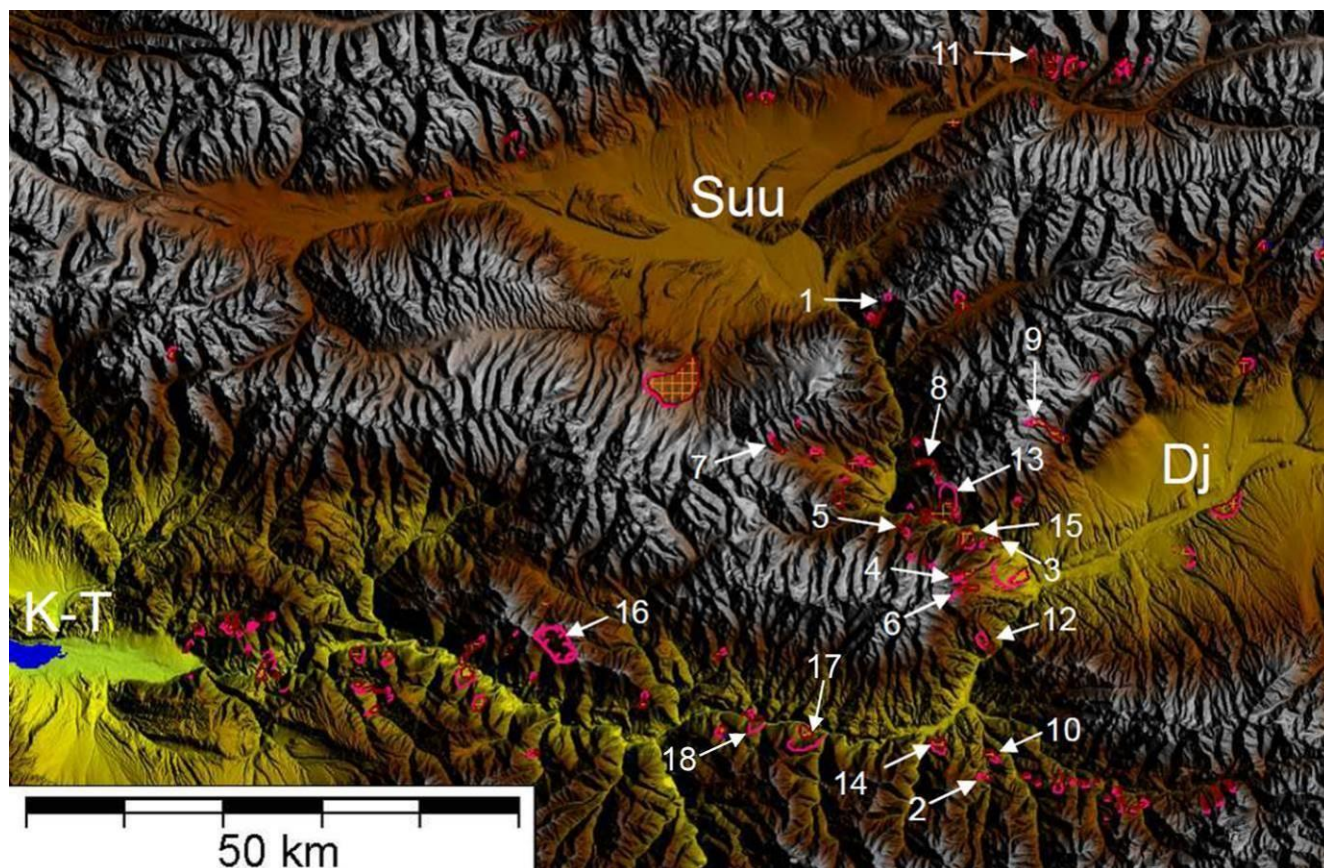


Fig. 2 Large landslides, rock avalanches and caldera-like collapses in the Kokomeren River basin and adjacent part of the Naryn River basin. Suu, Dj and K-T – the Suusamyr, the Djungal and the Ketmen-Tiube intermountain depressions. Selected features most of which are demonstrated during the training course: 1 – Seit; 2 – Ak-Kiol; 3 – Mini-Köfels; 4 – Kashkasu; 5 – Northern Karakungey; 6 – Southern Karakungey; 7 – Chongsu; 8 – Sarysu; 9 – Ming-Teke; 10 – Lower Ak-Kiol; 11 – Snake-Head; 12 – Lower-Aral; 13 – Kokomeren; 14 – Ornok; 15 – Displaced Peneplain; 16 – Kyzylkiol; 17 – Karachauli; 18 – Lower Kokomeren

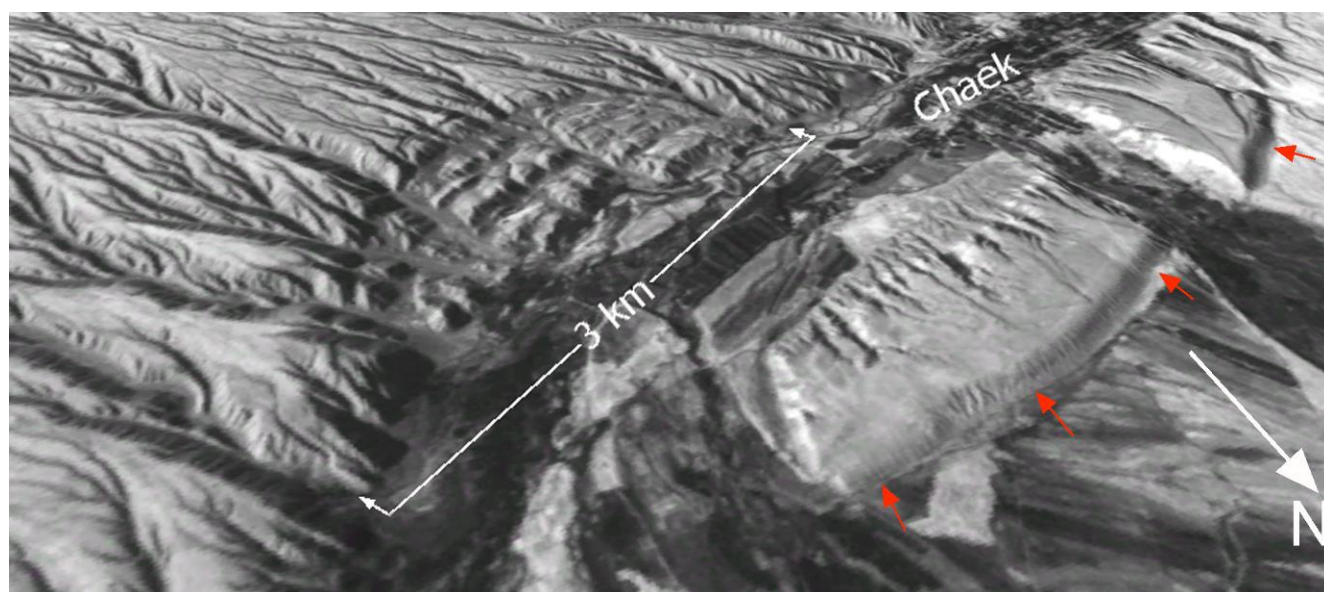


Fig. 3. 3D model of the rotational landslide and neotectonic uplift near the Chaek town



Fig. 4. Evidence of the recent surface faulting in a small clay quarry north of the Chaek town



Fig. 5. Participants of the summer school on the way back from the Seit rock avalanche



Fig. 6. Molard on top of the Seit RA body



Fig. 7. Horizontal layers visible in the erosional gorge crossing the Ak-Kiol rockslide body

August 19 was devoted to the Snake-Head rock avalanche located in the Western Karakol River valley about 100 km far from the base camp (Fig. 10). This unique secondary rock avalanche with bottleneck effect has more than 2.5 km runout despite its relatively small volume of ca. 6 Mm^3 only. On the way back we stopped at the site opposite the Burundu River mouth, about 10 kilometers upstream from the Kyzyl-Oi village at the most distant outcrop of lake sediments of the dammed lake formed by the Kokomeran Rockslide dam.

On August 20 we went downstream along the Kokomeran River valley to see the breached Lower Aral rock avalanche dam and traces of the associated outburst flood, the Lower Kokomeran rock avalanche with ca. 150 m runup and well-preserved succession of the affected rock types in RA deposits, and the gigantic breached Karachauli rockslide dam whose lake was originally more than 35 km long and had extended up to the base camp area.



Fig. 8. Summer School participants at the headscarp of the Lower Ak-Kiol rockslide



Fig. 9. Participants of the 2023 Summer school on the left trimline of the Southern Karakungey RA

On August 21 we visited the 5.5 km long Mingteke rock avalanche of the Secondary type in laterally confined conditions characterized by 90 m frontal runup and impressive trimlines. Part of its body had jumped over a small ridge forming the separate body resting aside the main one (Fig. 11). During this trip we visited yourts of the hospitable local families where the participants could see the traditional life of the shepherds in Kyrgyzstan and tested very popular local drink – koumiss (the fermented mare's milk) and local food.

On August 22 we visited the Ornok rotational rockslide whose frontal part converted into rock avalanche with distinct pseudostratified body. It is one of the most interesting features visited during the entire field training course. We first came to the headscarp of the rotational rockslide (Fig. 11) and then crossed its body studying the internal structure of both the rotated blockslide and of the pseudo-stratified rock avalanche body.



Fig. 10. Start of the hike to the Snake-Head RA



Fig. 11. Along the path leading to the headscap of the Ornok Rockslide

On August 23 we visited the Kokomeren rockslide (more strictly - rock avalanche in frontally confined conditions). We started this trip from the road cut downstream from the Kyzyl-Oi village and the Chongsu River mouth where the succession of the deposits accumulated after blocking of the Kokomeren River by this giant rock slope failure about 1.5 km^3 in volume can be observed. Special attention was paid to the outcrop just at the junction of the Kokomeren and the Koviuksu River valleys where evidence of the recurrent tectonic deformations and of rockfall, likely simultaneous with formation of the Kokomeren rockslide dam were demonstrated to the Summer School participants. After that the peculiarities of the internal structure of the Kokomeren Rockslide (rock avalanche) were demonstrated too. Finally, we stopped to see the outcrop of an active fault (marked by red arrow in

Fig. 12), which motion could trigger the Kokomeren Rockslide/ Terrace here was covered by big boulders, likely indicating outburst of a dam located somewhere upstream (Fig. 12).

On the way back we also stopped to see the Mini-Köfels rock avalanche with an impressive runup. Its body that had crossed the river is composed of debris of two different lithologies resting aside – crushed red gneiss at the upstream side and crushed dark grey mafic rocks from the downstream side.



Fig. 12. Participants of the Summer School sitting on big boulders opposite distinct active fault (marked by red arrow)

On August 24 the participants of the 2023 Summer School were brought to the western part of the Kyzyl-Oi intermontane depression to see the Chongsu secondary rock avalanche (Fig. 13) and, likely much older Southern Chongsu rock avalanche. Besides, the participants were acquainted with neotectonic structure of the area and with manifestations of the flexural toppling visible on the ridge bounding the depression from south-west.

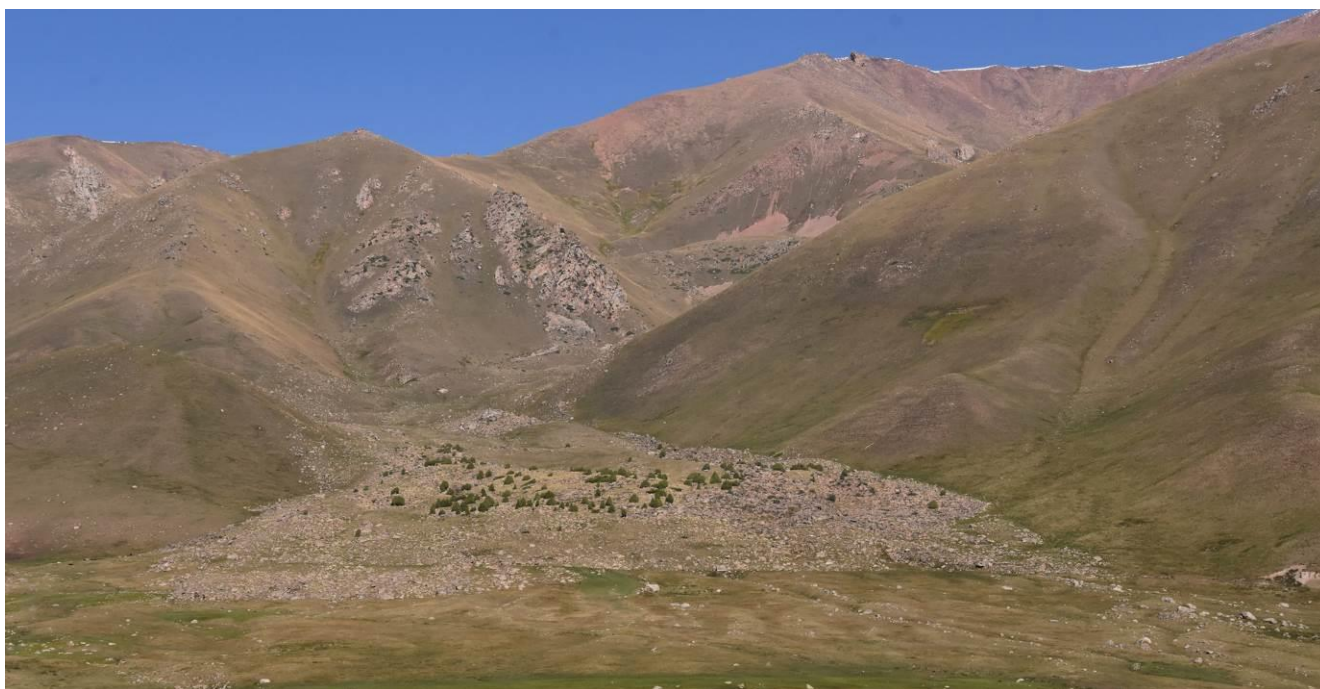


Fig. 13. The Chongsu rock avalanche

On August 25 we visited the Kashkasu rock avalanche of the Jumping type that had blocked the river valley. During this trip participants had to hike for about 450 m up along the path to reach the

site. The dammed lake was silted completely forming quite unusual landscape with flat, well forested valley bottom (Fig. 14).

On the way back we stopped at the old giant Displaced Peneplain rockslide more than 0.5 km^3 in volume whose body had dammed the Kokomeren valley forcing the river to cut a new bypass gorge. Characteristic peculiarities allowing recognition of this old and poorly recognizable feature and its univocal interpretation as rockslide/rock avalanche were demonstrated and explained.



Fig. 14. View on the Kashkasu River valley from the rockslide body

On August 26, we decided to skip the trip to the Sarysu rock avalanche near the Kazyl-Oi village due to extremely bad condition of the road from the base camp to Kazyl-Oi – it took about 1 hour to drive for 20 km and such driving almost damaged our cars. Instead, we decided to test a new site with several impressive Chaartash rock avalanches south of the Kazarman town where the new road has been constructed recently. We could reach the site and observe the frontal part of the Chaartash-2 rock avalanche with extremely long runout of ca. 9 km (Fig. 15).



Fig. 15. Frontal part of the Chaarash-2 rock avalanche that had crossed the Kugart River valley and had stopped on its left bank. River terraces of the Rugart River upstream from this breached dam



Fig. 16. Participants of the 2023 SummervSchool on the bridge constructed at the new Bishkek-Djalalabad road

However, on the way to this area it appeared that the new road (Fig. 16) was blocked by a rockfall and, despite we were allowed to go one way (Fig.17), on the way back the road was closed by the police and we were forced to find a round way to return back. It was about 600 km long trip via Naryn town, to Kochkorka and Chaek and we had to cross 6 passes including the Dolon one 3030 m high.

Considering that we returned very late in the evening and drivers had to drive for about 15 hours we decided to make the next day – August 27 – free. It was used by participants to exchange photographs, and to gather their equipment.



Fig. 17. Crossing the temporary road made across the rockfall

All participants received Certificates of the attendance of the Kokomerren Summer School as it can be seen on the group photo on Fig. 18. Three of them – Prof. Havenith from Belgium and Profs. Zeng and Zhou from China had to leave few days earlier, and they are missing on this group photo.

Next day, on August 28, we collected the camp and went back to Bishkek via Chaek, Kochkorka and Kemin. All participants stopped in the Alpinist Hotel in Bishkek and this night was included in the registration fee. On August 29 departure of the participants had started.



Fig. 18. Our drivers, cooks and participants of the 2023 Kokomerren Summer School with Certificates

In 2024 the IPL 106-2 Project will be continued. About 20 persons have confirmed their participation in the 2024 Kokomerren Summer School. This year we will arrange the base camp in the tourist Guesthouse in the Kyzil-Oi village.

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