

Borehole permafrost data, Kumtor and Taragai Valleys, Tienshan, Kazakhstan, Version 1

USER GUIDE

How to Cite These Data

As a condition of using these data, you must include a citation:

Gorbunov, A., E. Ermolin, E. Seversky, A. Nemov, M. Popov, S. Titkov, and S. Marchenko 1998. *Borehole permafrost data, Kumtor and Taragai Valleys, Tienshan, Kazakhstan, Version 1*. [Indicate subset used]. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center. <https://doi.org/10.7265/wp0n-8e23>. [Date Accessed].

FOR QUESTIONS ABOUT THESE DATA, CONTACT NSIDC@NSIDC.ORG

FOR CURRENT INFORMATION, VISIT <https://nsidc.org/data/GGD499>



National Snow and Ice Data Center

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Notice: This data set was first published on the 1998 CAPS CD.
 The text for this document was taken unchanged from that CD.

1 DETAILED DATA DESCRIPTION

1.1 Coverage of data set

1.1.1 Summary Description

Observations of the permafrost temperatures in the Inner Tien Shan were started in 1986 by Kazakhstan Alpine Permafrost Laboratory. Observations are carried out on more than 40 boreholes, at altitudes between 3300-4200 m. The depths of the boreholes vary from 30 to 600 m. The boreholes are located in both loose (moraines) sediments and bedrock. Several boreholes are situated in the territory of the "Kumtor" goldmine. The geocryological conditions of goldmine "Kumtor" and nearby territory have been discussed in scientific reports 1988, 1989 and articles (see references). Two boreholes were drilled in body of glacier "Davydov" and located in the central and lateral parts of the glacier (depth - 30 m). A third borehole passed through the glacier, moraine and bedrock to a depth of 600 m. In the Kumtor and Taragai valleys, permafrost temperature in 14 boreholes from 25 to 50 m depth, between 3300-3750 m ASL were observed. The distance between outermost boreholes is about 40 km.

Temperature measurements in 9 geological prospecting adits [tunnels] (lengthwise 1500-1900 m) located in the four neighboring valleys (altitudes from 3920 to 4010 m) were carried out. At the same sites, but in natural conditions, the thermal conductivity of the bedrock was determined by the cylindrical sounding method. Grain size, soil moisture content, cryogenic structure and depth of seasonal thaw were also obtained from 15 pits located in differing altitudinal levels and exposures. At two further sites, ground temperatures measurements at depths of 0, 2, 5, 10, 15, 20 and 40 cm were taken every hour during daylight hours every 5 days over a two year period. Air temperature, wind velocity and duration of daylight were measured at the same time as the ground temperature measurements.

Current storage of data - Mark with X as many as are appropriate, or delete those that do not apply:

CD-ROM	
Paper	X
Spreadsheet	
Wordprocessor file(s)	
Database	
Data center:	
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Other (please describe)

Are your data at risk of being lost? Yes or No *** YES ***

1.1.2 Study location

Inner Tien Shan, Akshiyarak Range, Kumtor River Valley, Taragai River Valley

1.1.3 Geographic extent - Describe the corners of the box representing data coverage:

Northwestern latitude: 41o 56'N

Northwestern longitude: 77o 49'E

Southeastern latitude: 41o 39'N

Southeastern longitude: 78o 14'E

1.1.4 Period of investigation - Years covered, with months if appropriate

Active layer Temperature 1988-1989

Permafrost temperature 1986-1992

Glacier Temperature 1988-1989

Ice Content 1986

Grain Size 1986

Bedrock Thermal Conductivity 1988

Air Temperature 1988-1990

Snow Depth 1986-1992

2 REFERENCES AND RELATED PUBLICATIONS

Gorbunov A.P. The Warming of Permafrost of Tien Shan. // Global Changes and Geography, Moscow, 1995, pp.125 (Abstract).

Ermolin E.D., Atakanov U. Cryogenic Structure and Temperature Regime of Quaternary Deposits in Kumtor and Taragai. //Acad. Sc. Kirghiz.SSR, J:"Geology", 1988, N 6, pp. 89-102 (In Russian).

Ermolin E.D., Nemov A.E. About Mountain Rock Temperatures in the Upper Naryn and Akshiyarak Valeys in the Inner Tien Shan. // Thermicity of Soil and Mountain Rock in the Cold Regions. Yakutsk, 1982, pp.126-134. (In Russian).

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Ermolin E.D., Seversky E.V., Titkov S.N., Nemov A.E. and Popov M.V. Periglacial-geological Conditions and Prediction of its Changes by Kumtor Deposit Exploitation. Scientific-Technical Report, Yakutsk - Alma-Ata, 1988, 111 p. (In Russian).

Marchenko S.S. Heat Conditions of Tien Shan Cryolithozone During the Holocene and Contemporary Tendencies of its Changes. // Proceeding of the International Conference: Mountain Research - Challenges and Directions for the 21st Century, Bishkek, 1996, pp.115-116. (Abstract).

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4 DOCUMENT INFORMATION

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