

***Изменения климата в
высокогорье Средней Азии
в конце XX века***

***Climate change in
high mountains of
Central Asia in the
end of XXth century***

Г.Е. Глазырин, У.У. Таджибаева

***Национальный Университет
Узбекистана, Ташкент***

G. Glazirin, U. Tajibayeva

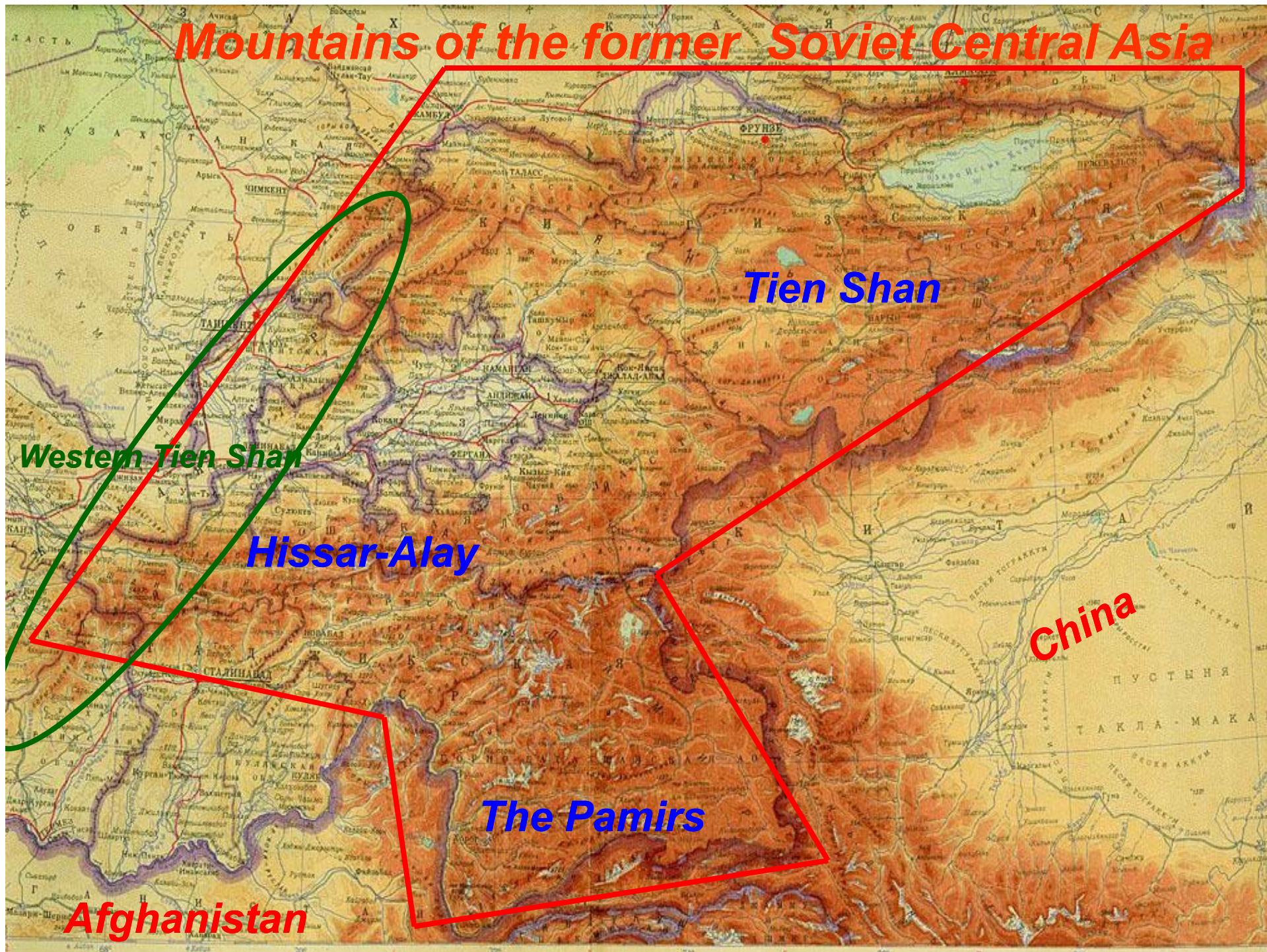
***National University of Uzbekistan,
Tashkent***



Main topics

- *Unexpected regularities in climate change over the mountainous Central Asia.*
- *Some data on real climate change in XXI century.*
- *Consequences for change of glaciation area and run-off.*

Mountains of the former Soviet Central Asia



Tien Shan

Western Tien Shan

Hissar-Alay

The Pamirs

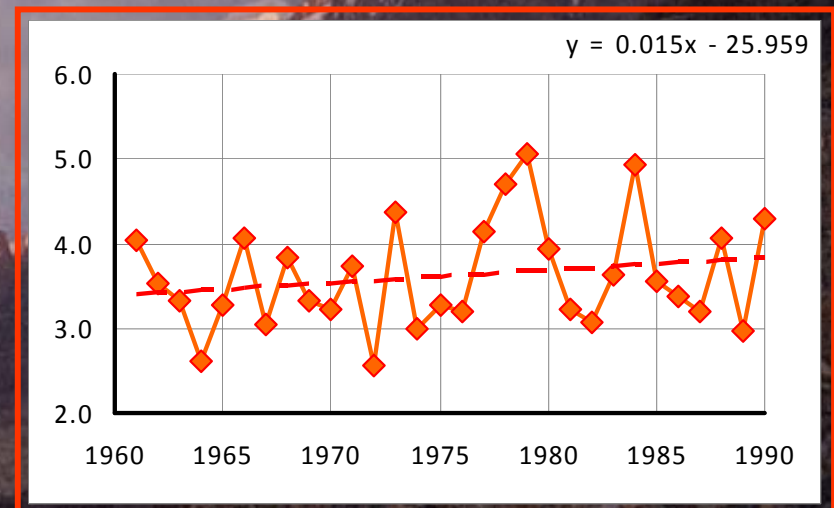
China

Afghanistan

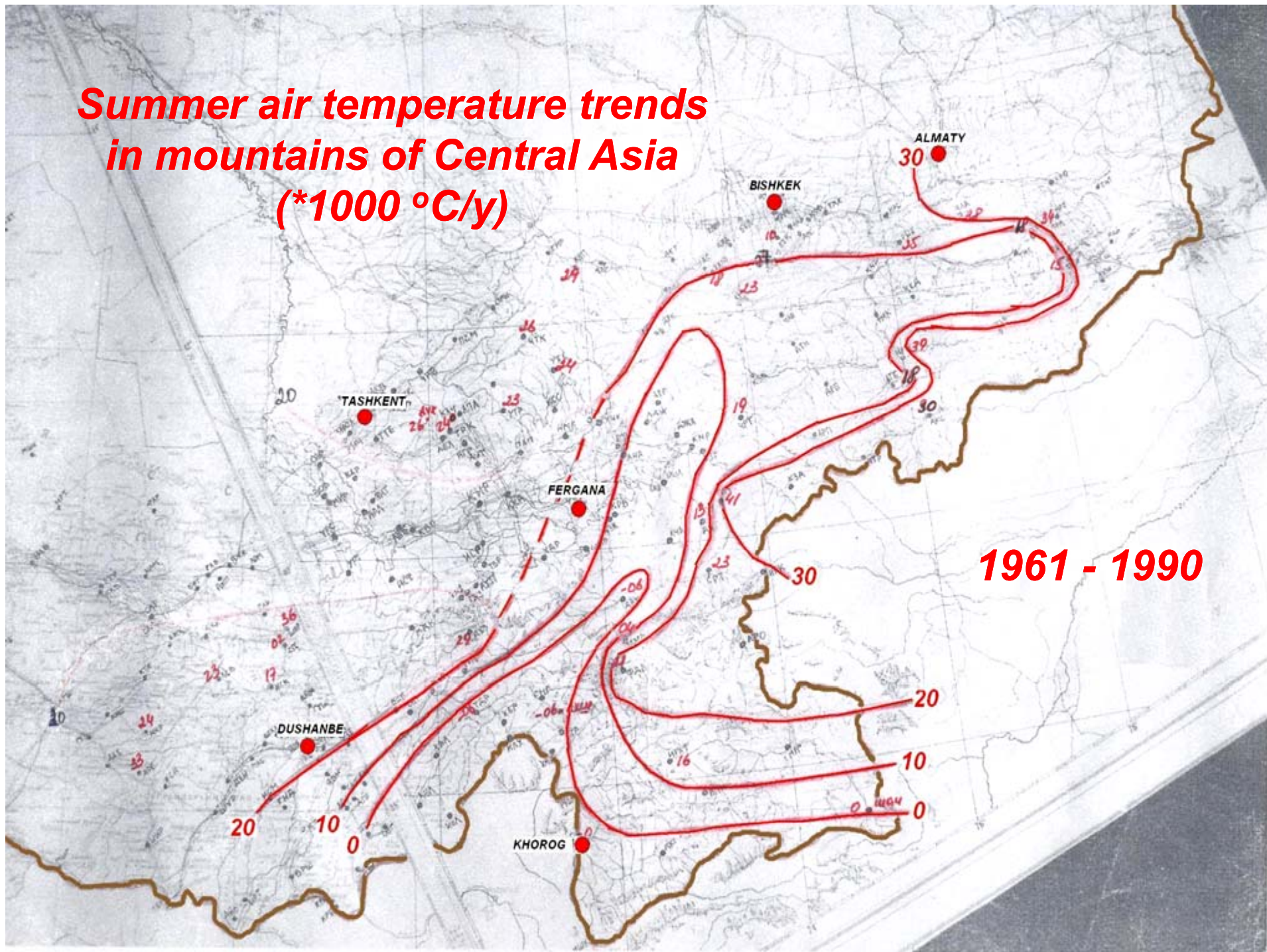
Data set for the whole Central Asia

- Data from 39 meteorological stations located above 1.5 km over the whole Central Asia;
- Data on annual precipitation, summer and winter air temperature for 1961-1990 were used;
- Linear trends of for all stations were calculated.

*Example: Tien Shan Station,
summer air temperature.
Trend is equal to 0.015 oC/y.*



**Summer air temperature trends
in mountains of Central Asia
(*1000 °C/y)**



1961 - 1990



Data set for Western periphery of Central Asian mountains

➤ *Data from 21 meteorological stations located at the Western periphery of Central Asian mountains were used;*

➤ *Data for 36 years (1970-2005) were collected.*

➤ *Linear trends of for all stations were calculated;*

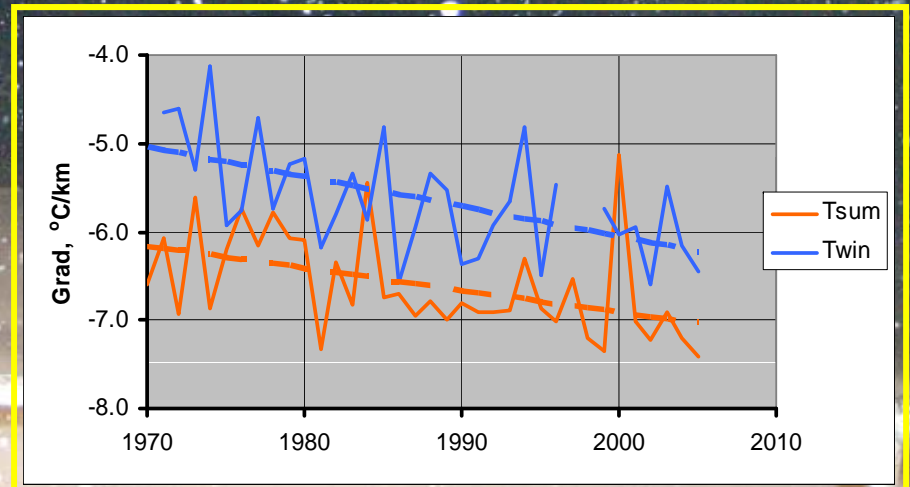
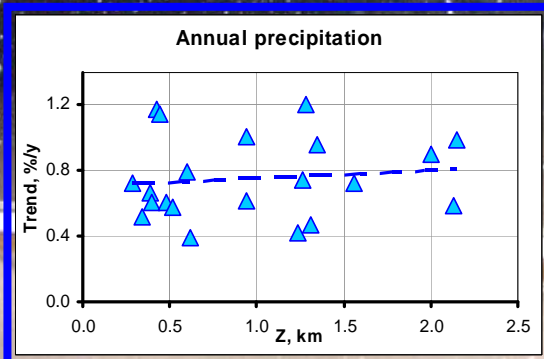
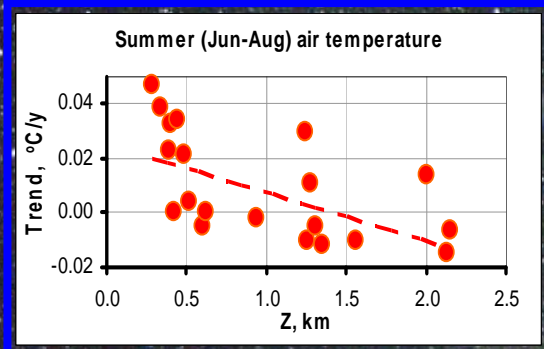
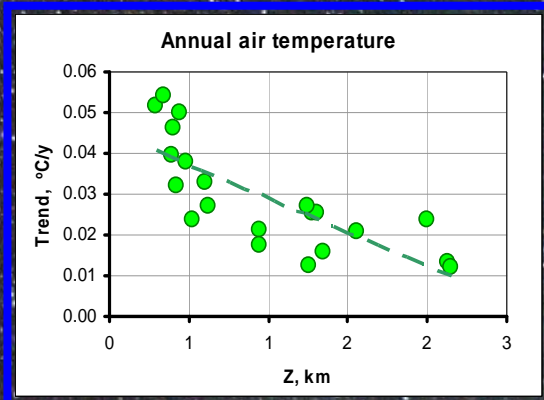


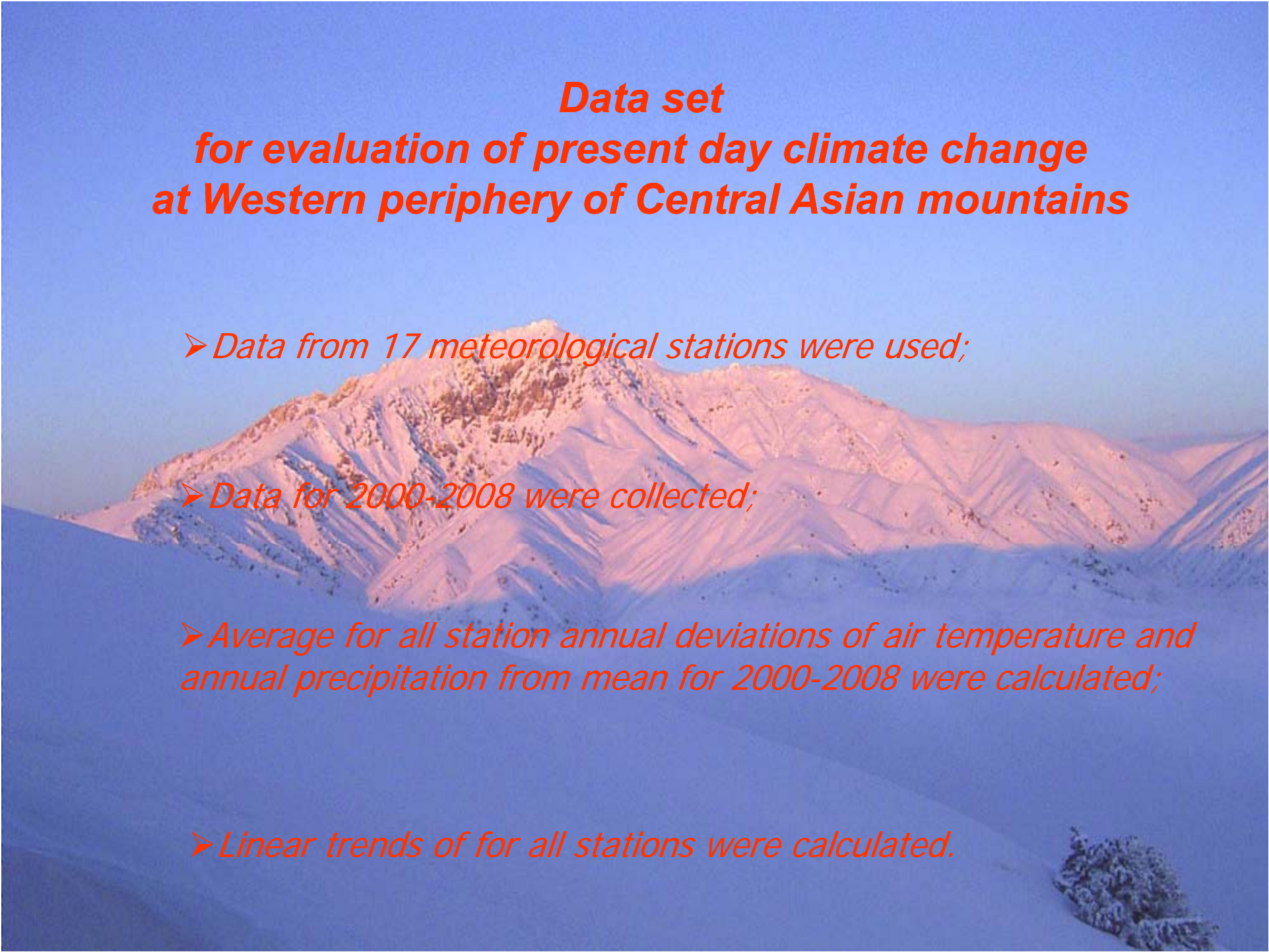
Dependences of trends on altitude (Z)

1970 - 2005

Change of air temperature vertical gradient

Example: Long-term change of the gradients between Kaunchi St. (0.34 km) and Oigaing St. (2.15 km).





***Data set
for evaluation of present day climate change
at Western periphery of Central Asian mountains***

➤ Data from 17 meteorological stations were used;

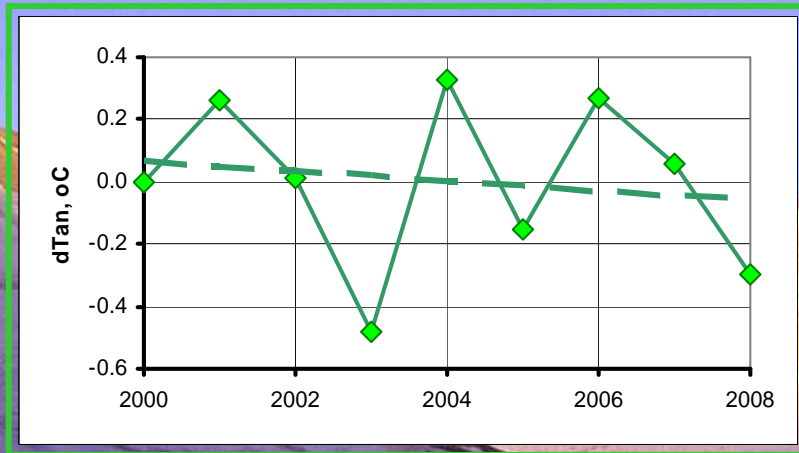
➤ Data for 2000-2008 were collected;

➤ Average for all station annual deviations of air temperature and annual precipitation from mean for 2000-2008 were calculated;

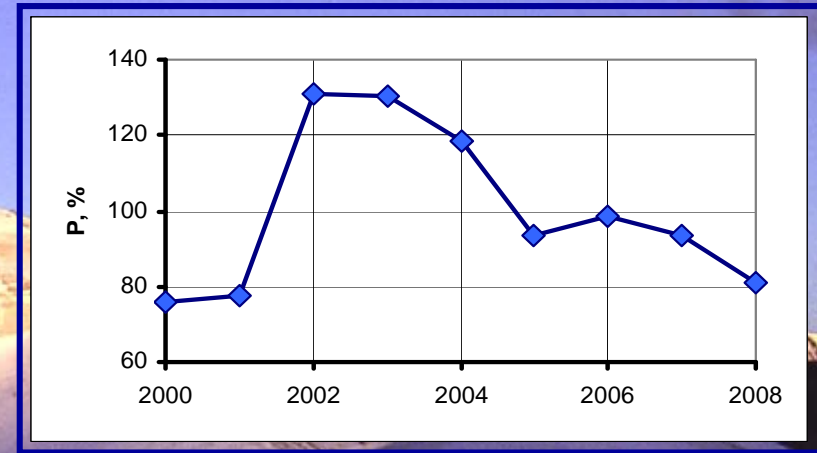
➤ Linear trends of for all stations were calculated.

Present day climate change at Western periphery of Central Asian mountains

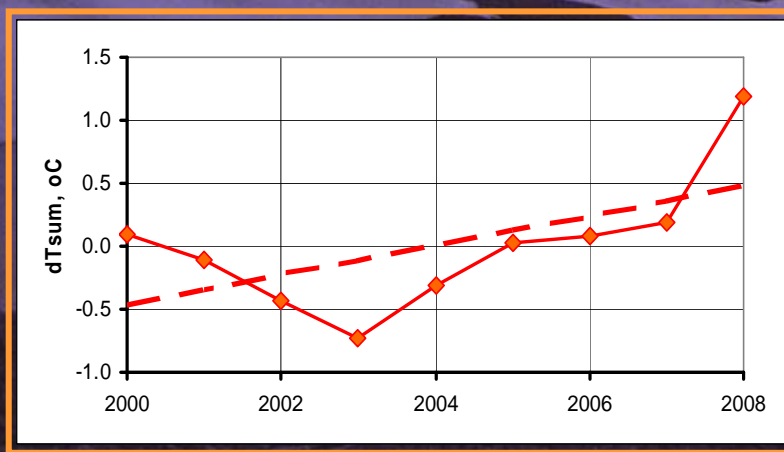
Annual air temperature



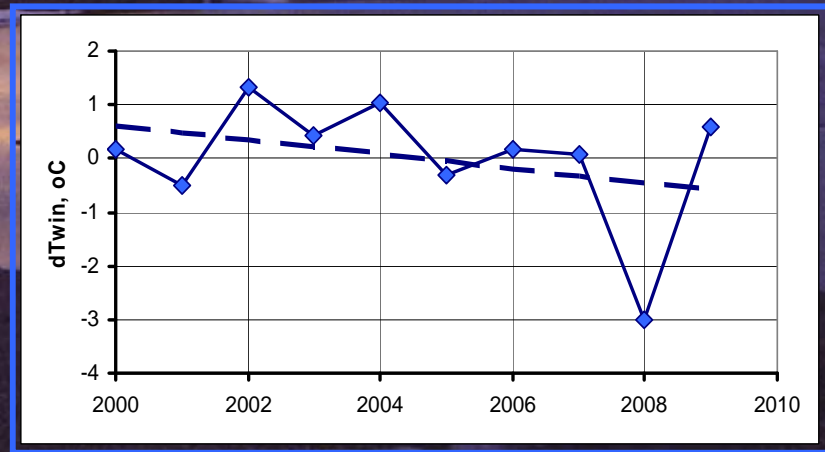
Annual precipitation



Summer air temperature



Winter air temperature



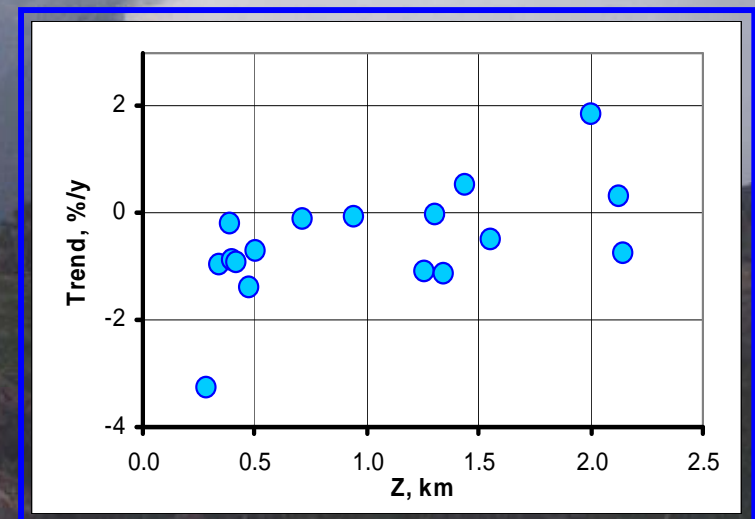
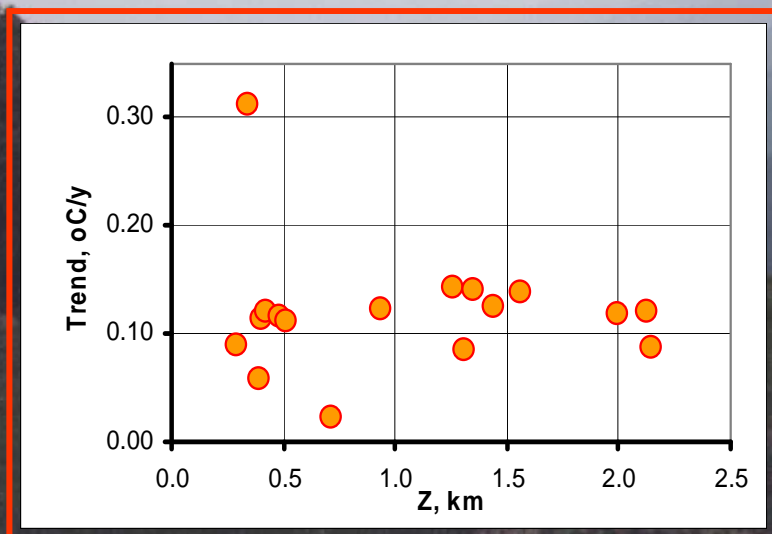
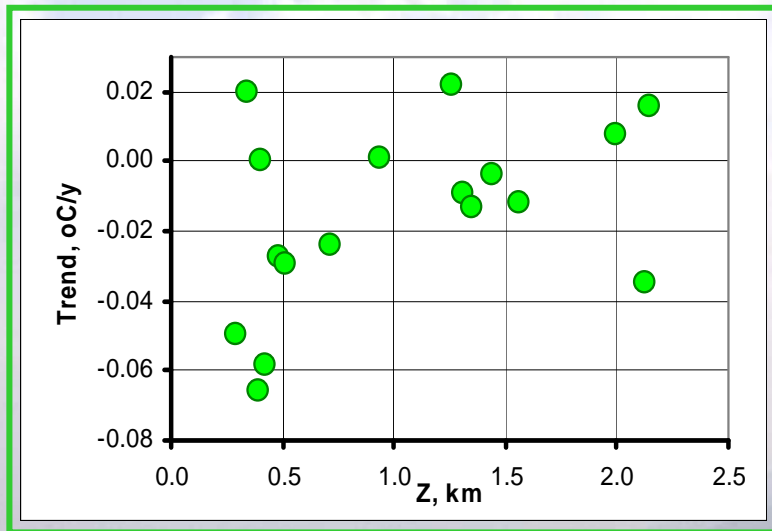
Present day climate change at Western periphery of Central Asian mountains

(dependence of trends on altitude)

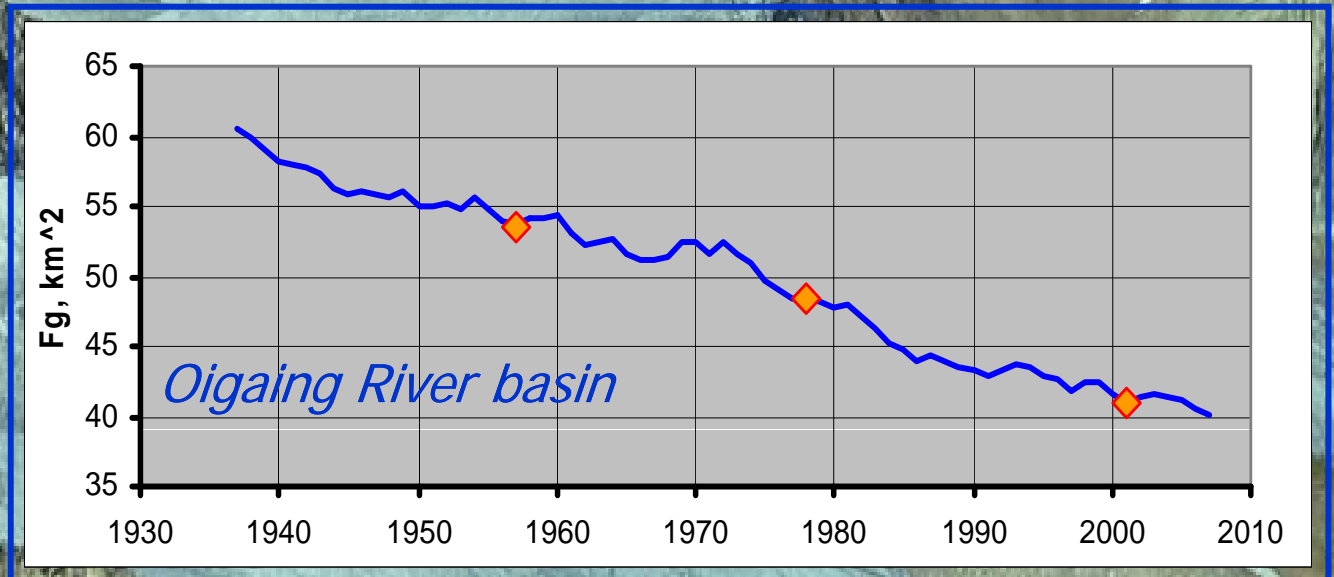
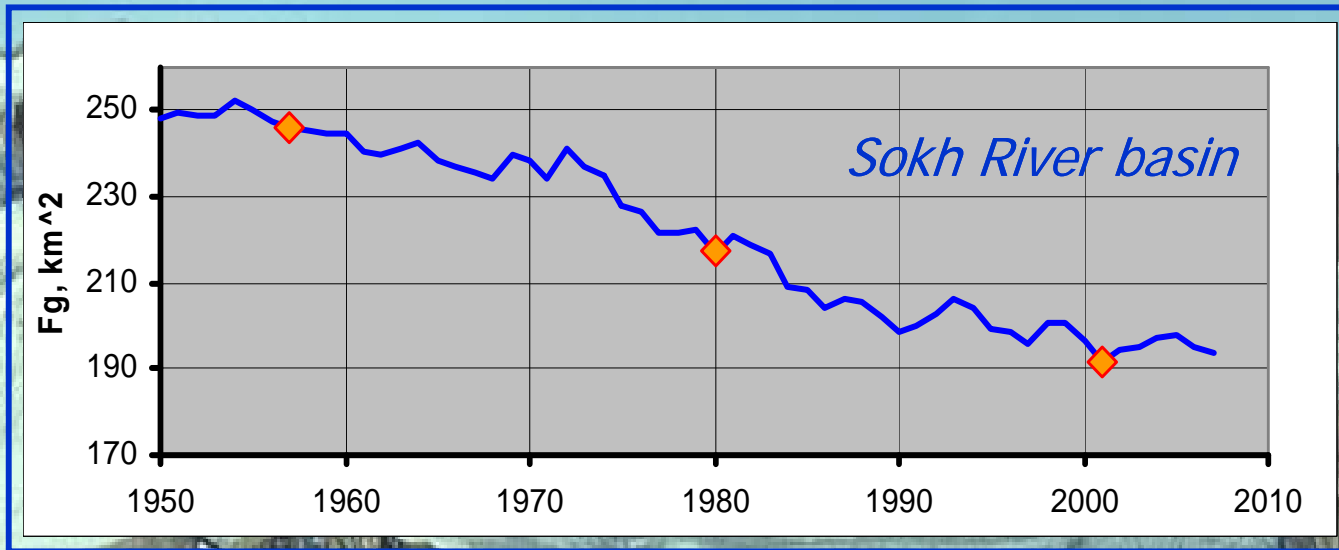
Annual air temperature

Summer air temperature

Annual precipitation

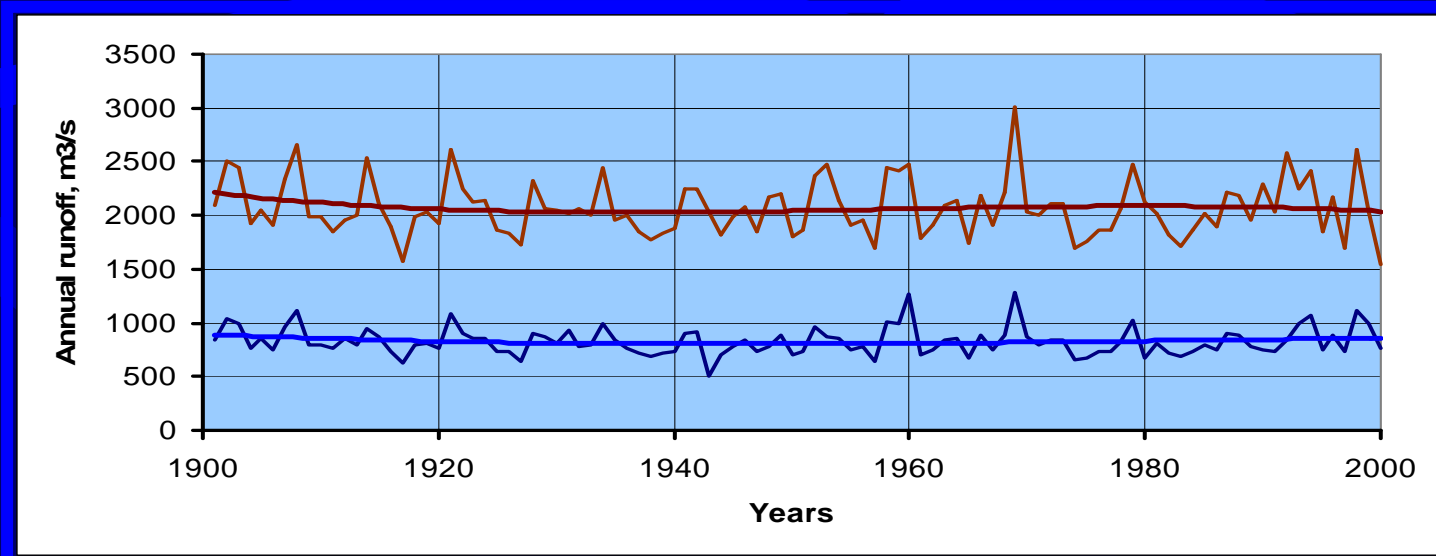


Glaciation area change



Long-term water resources change (by Yu. Ivanov)

River	Gauging st.	Watershed area, km ²	Mean annual runoff, m ³ /s	Glaciation area rate, % (1960)	Fraction of glacial feeding, % (1960)
Syrdarya	Bekabad	142,000	829	1.8	7
Amudarya	Kerki	309,000	2070	~2.6	9



Amudarya

Syrdarya

Thank you for kind attention!

