

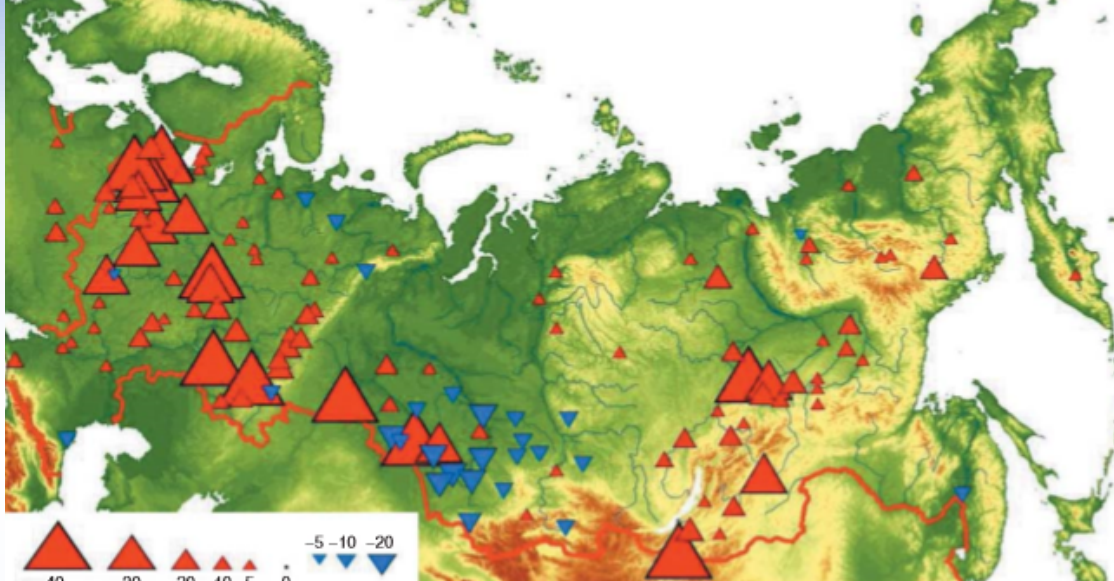


# IMPACT ASSESSMENT OF CURRENT CLIMATE CHANGES ON THE OB RIVER RUNOFF

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**enviromis**  
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**The average anomalies of the annual river runoff for the 1978-2005 years (% Of the norm for 1946-1977) (Ocenochniy doclad..., 2008 ( in Russ.)).**

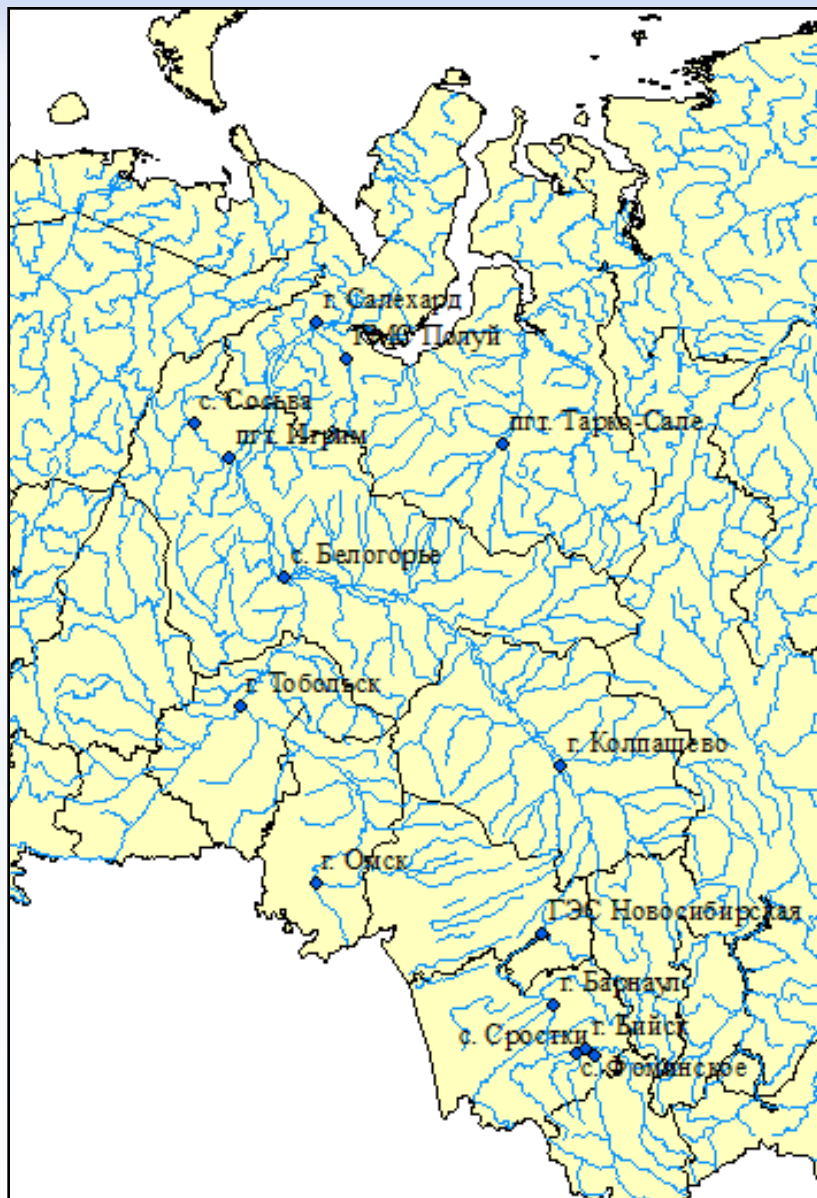


**Anomalies of spring river runoff (%) in Russia (Georgievsky et al., 2013).**

# Assessment of long-term river runoff variability

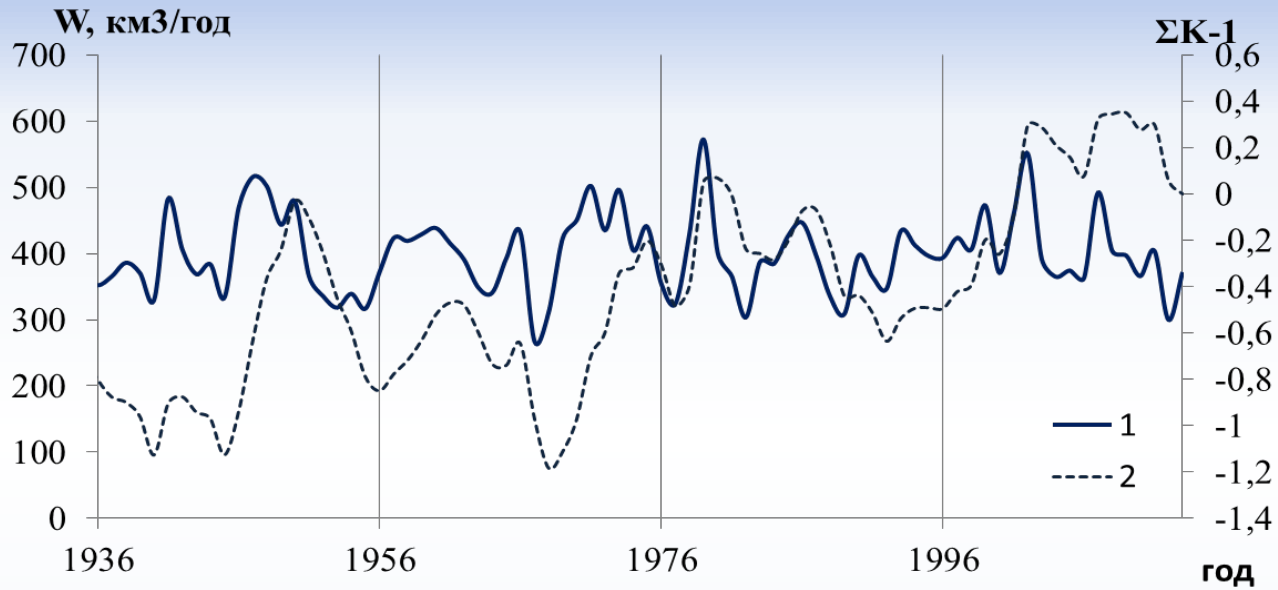
## Data

- **Rivers:** Ob, Irtysh, Biya, Katun, Tom, Chulym, North Sosva, Polui.
- **Period:** 1936-2005 years.
- **Materials:** electronic database of hydrological data A Regional, Electronic, Hydrographic Data Network For the Arctic Region; Hydrological yearbooks.

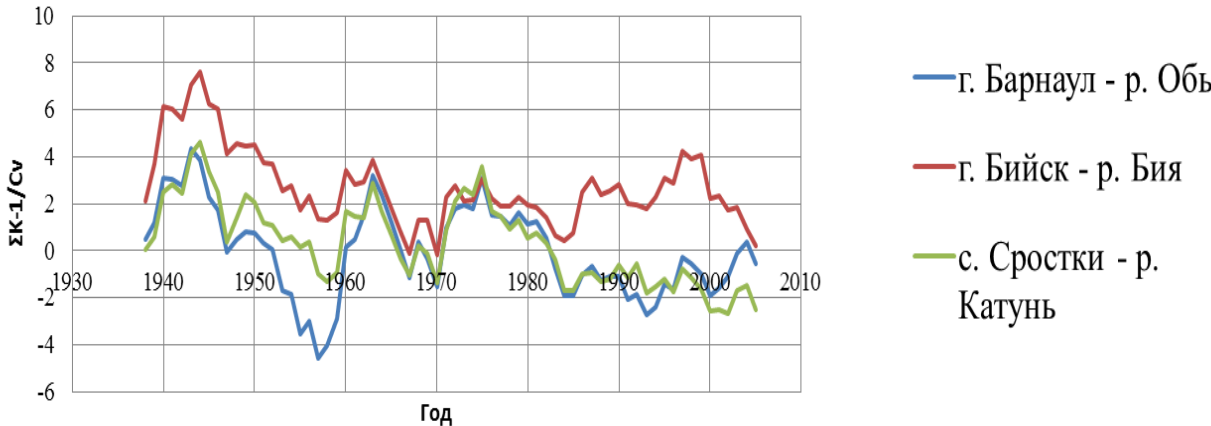


1. Ob - Salekhard;
2. Ob - with. Belogorie;
3. Ob - Kolpashevo;
4. Ob - Novosibirsk HPP;
5. Ob - Barnaul;
6. Ob - Fominskoe;
7. Polui - HMS Polui;
8. Pyaku-Pur - Tarko-Sale;
9. Severnaya Sosva - Sosva;
10. North Sosva - Irim village;
11. Irtysh - Tobolsk;
12. Irtysh - Omsk;
13. Biya - Biysk;
14. Katun – Srostki.

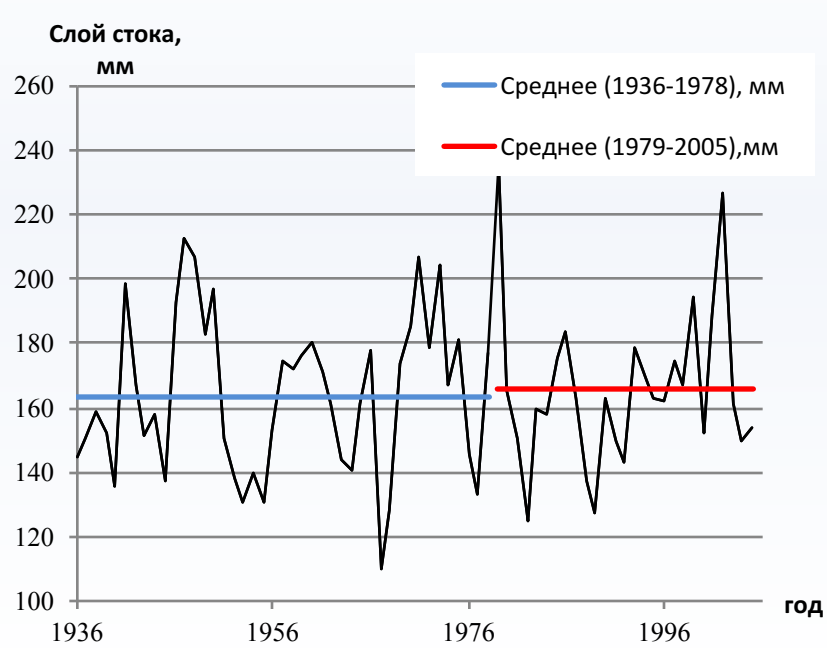
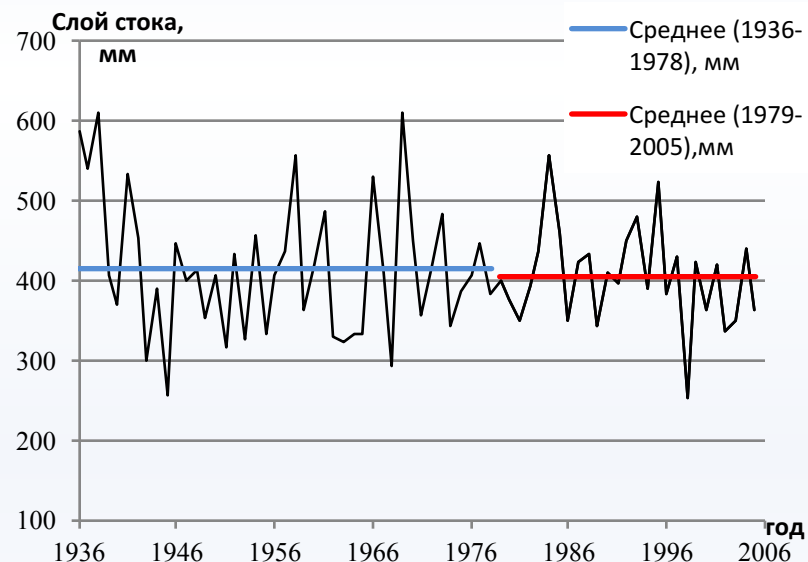
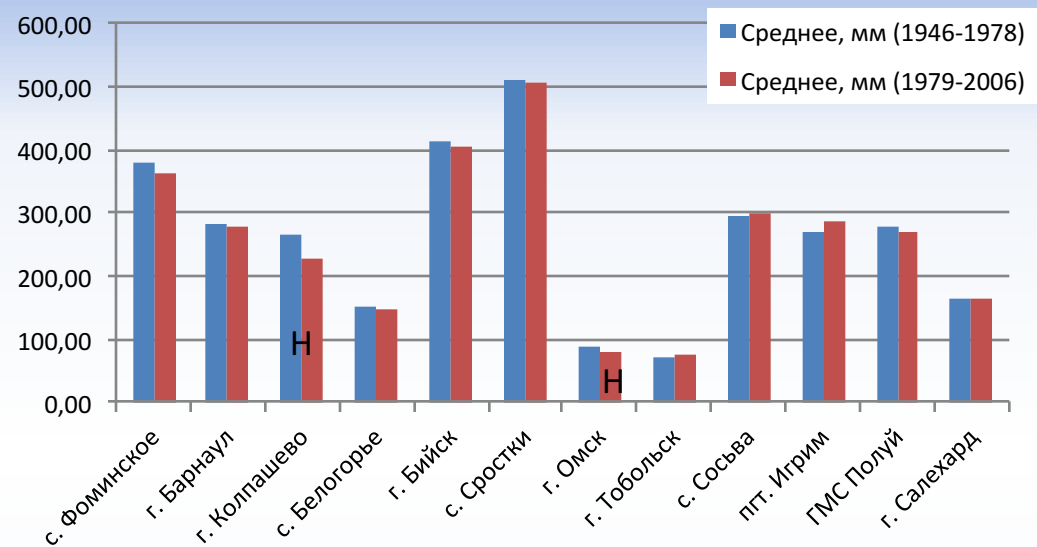
**Location hydrological stations on the rivers Ob, Irtysh, Polui Pyaku-Pur, Severnaya Sosva, Biya and Katun**



The time schedule of the annual volume of runoff (Ob – Salekhard, 1930-2013) (1) and the difference integral curve (2).



The difference integral curve for Upper Ob, Biya and Katun rivers

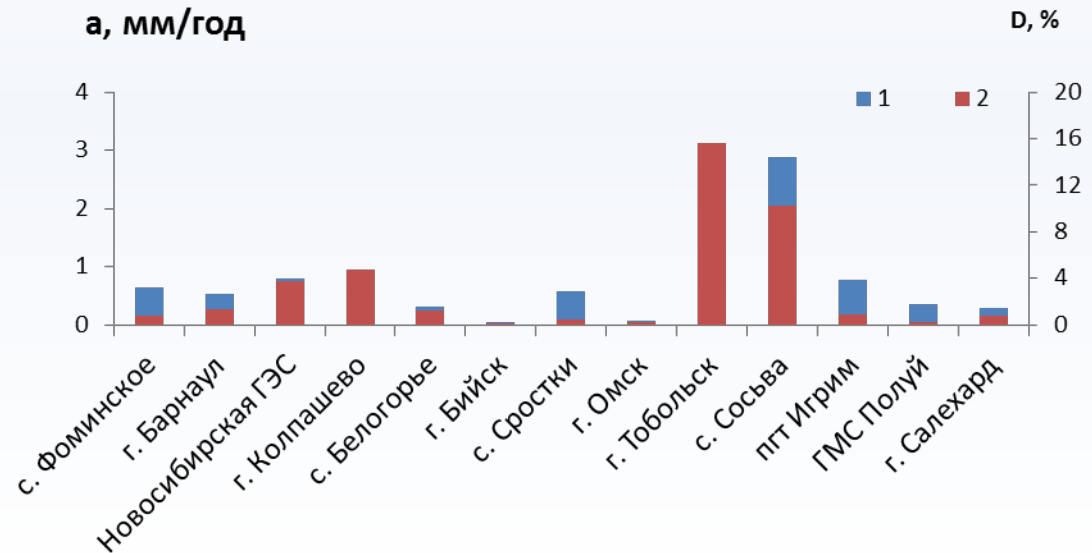


Biya - Biysk

Ob - Salekhard



The values of the linear trends coefficients of Ob river runoff (Salekhard) for 30-year periods.



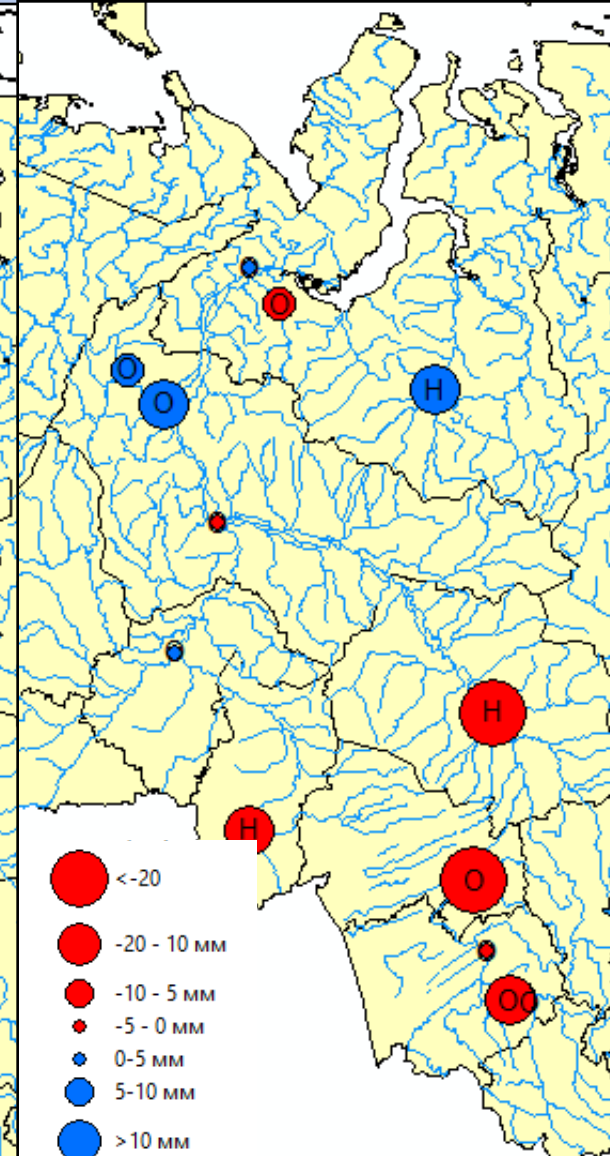
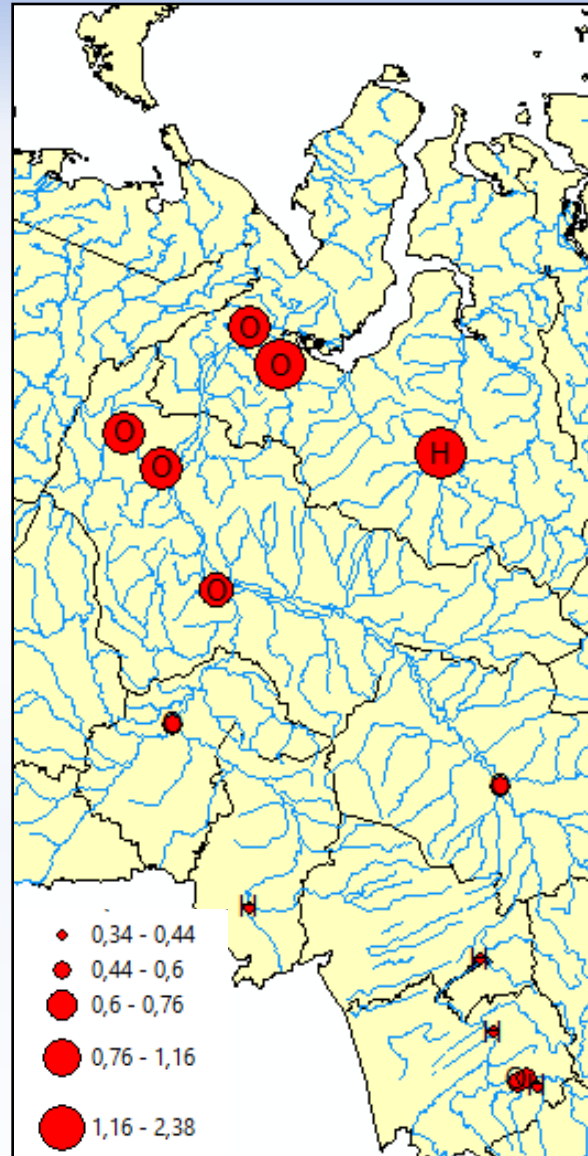
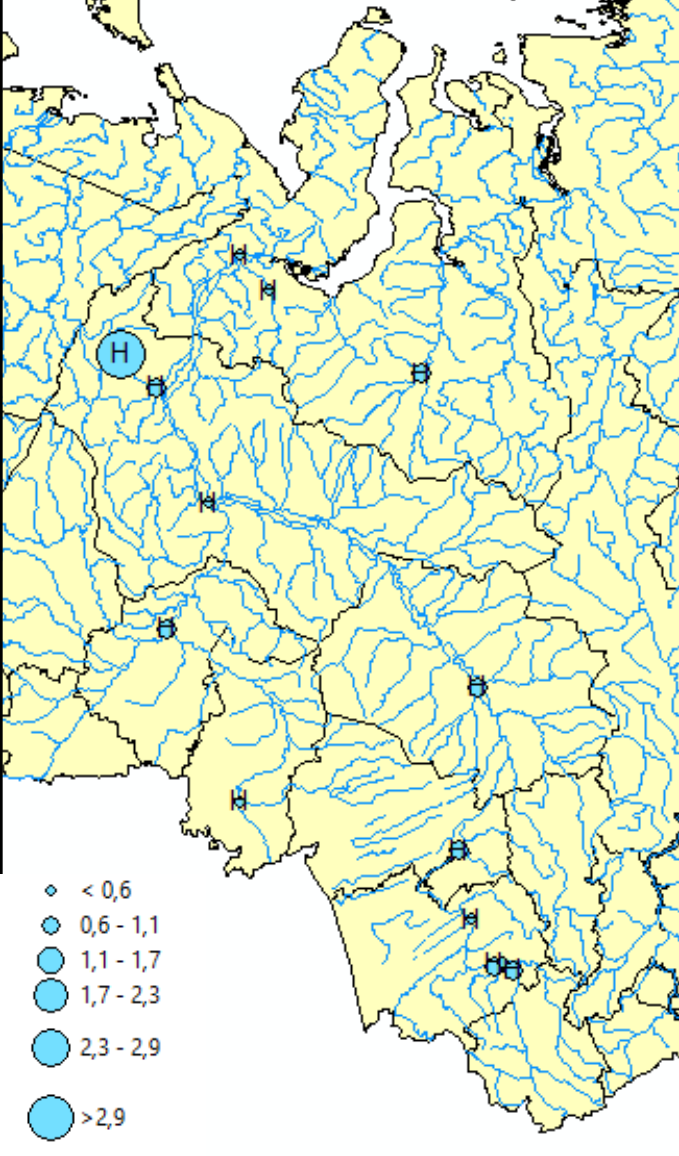
The coefficients of the linear trends (1979-2005) of the average annual runoff layer (1) and their contributions to the variance (2).

# Analysis of the trends statistical significance

(Polyak, 1975)

Пост	Река	Тренд (1946- 1978), мм/го д	Значимость (1946-1978)	Тренд (1979- 2006), мм/год	Значимость (1979-2006)	Вклад тренд а а1 в диспе рсию	Вклад тренд а а2 в диспе рсию
с. Фоминское	Р. Обь	-1,44	Н	0,65	Н	2,13	0,77
г. Барнаул	Р. Обь	-0,01	Н	0,52	Н	0,00	1,32
г. Колпашево	Р. Обь	-1,59	З	0,96	Н	18,64	4,78
с. Белогорье	Р. Обь	-0,10	Н	0,30	Н	0,27	1,24
г. Салехард	Р. Обь	0,13	Н	0,28	Н	0,44	0,75



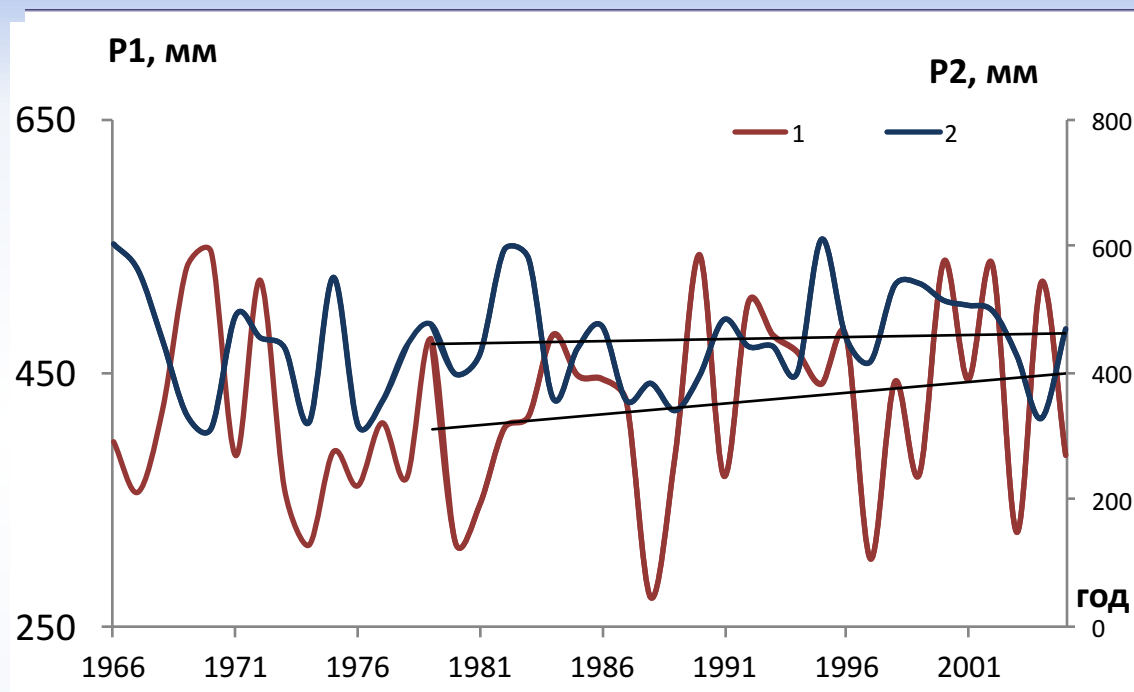
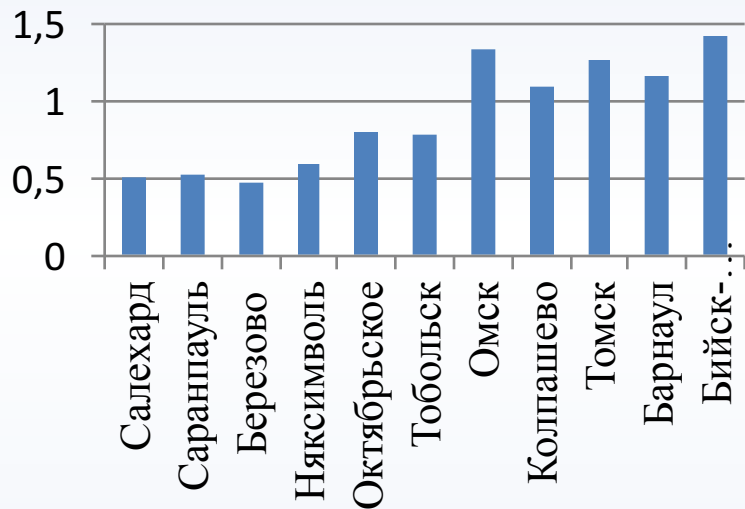


The coefficient of linear trends (1979-2006) the average annual runoff layer (mm / year)

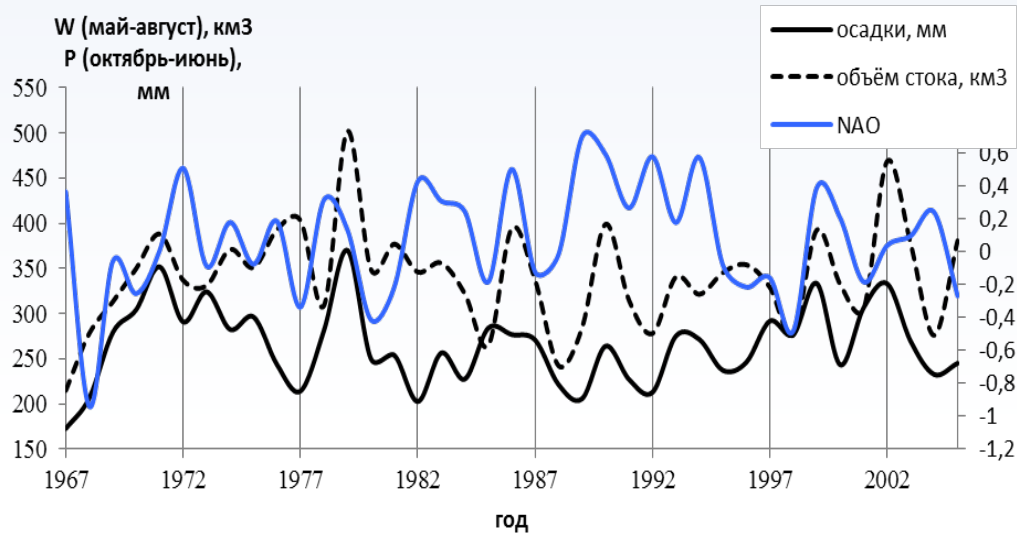
The ratio of the variances (1979-2006 / 1946-1978)

Absolute change in the average value (mm)

### Absolute change of the average temperature (1979-2006 and 1946-1978rr), °



Time variation in annual precipitation: Barnaul (1) and Salekhard (2).



# Спасибо за внимание!

