Transboundary Water Cooperation of Mongolia with Russia and China

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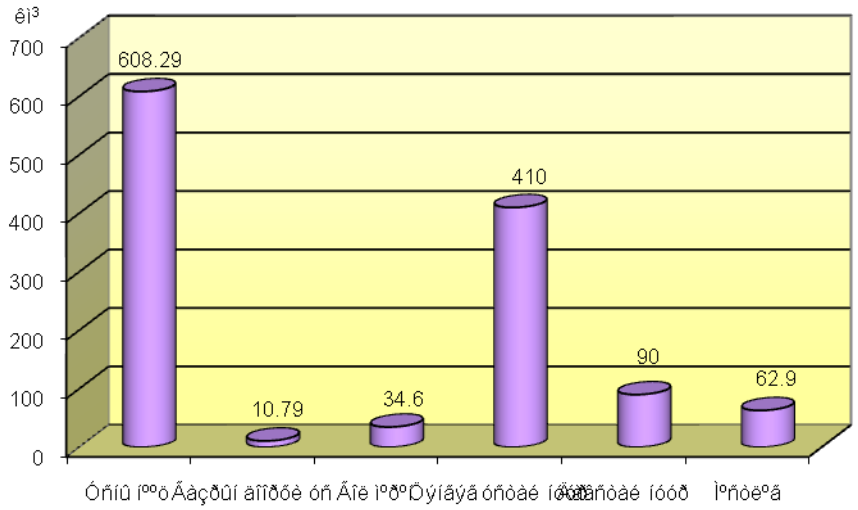
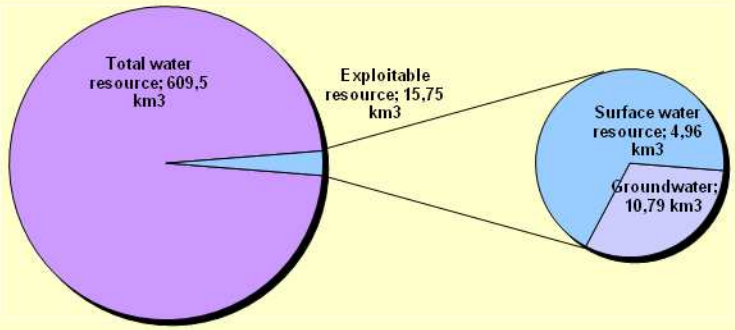
WATER RESOURCES IN MONGOLIA

Total water resources



Available Water Resources to use



Total water resource: 608.29 km³, of which;

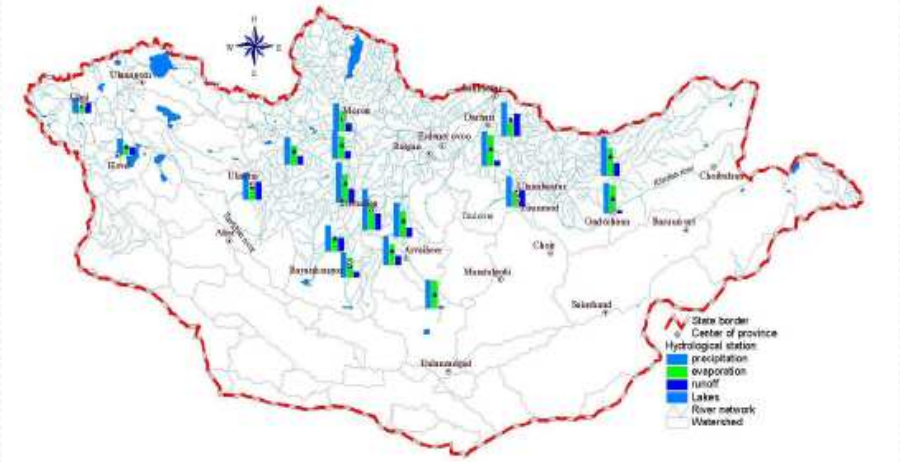
- **Rivers: 34.6 km³**
- **Lakes: 500 km³**
- **Permanent frost, glacier: 62.9 km³**
- **Underground water: 10.79 km³**

Resources of potential consumption:

15.75 km³, of which:

- **Surface water resource: 4.96 km³**
- **Underground water resource: 10.797 km³**

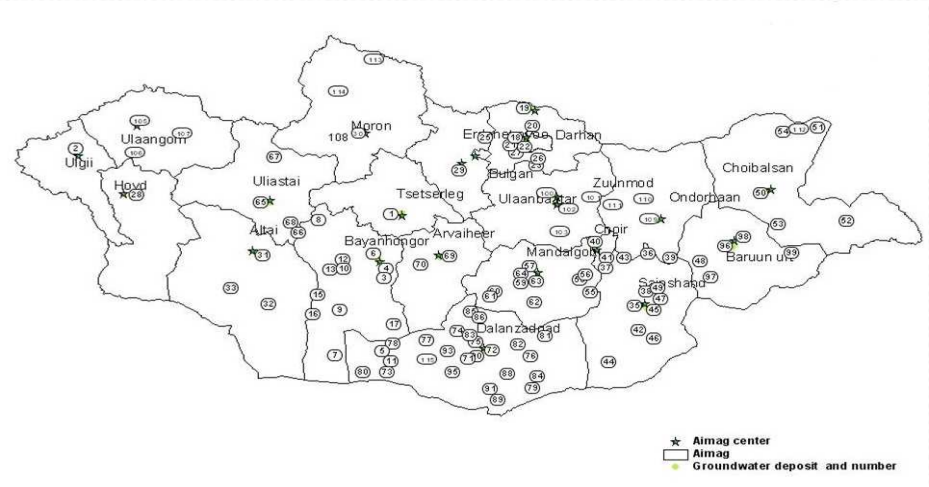
Surface Water Resources



Mongolia has 5121 rivers, 9340 streams and creeks, 3732 lakes and 262 glaciers in total.

Steppe and desert zone covers 76.6% of the territory and there are do not have permanent-flown rivers or streams.

Ground Water Resources

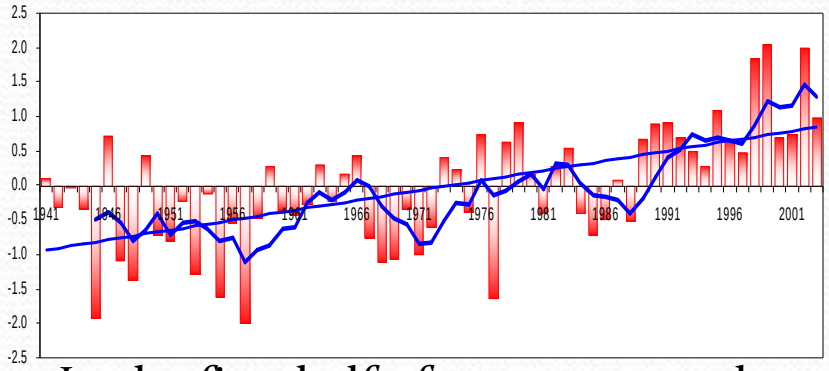


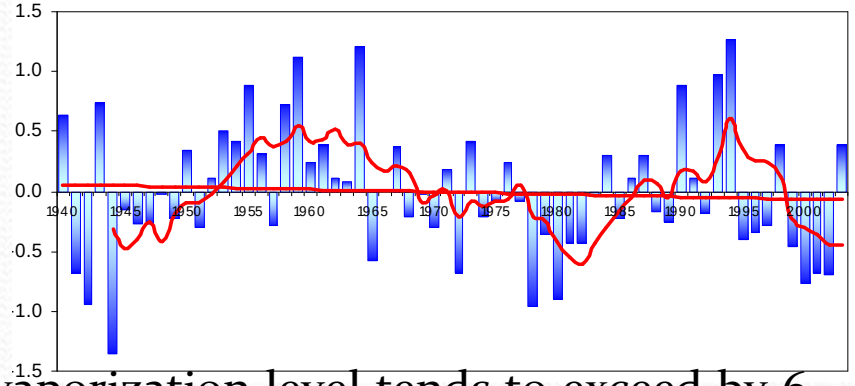
Total inferred ground water source is estimated at 10.79 km³/year.

Detailed Hydrogeological Survey carried out on 140 groundwater accumulation basins and Estimated available Ground Water resources .

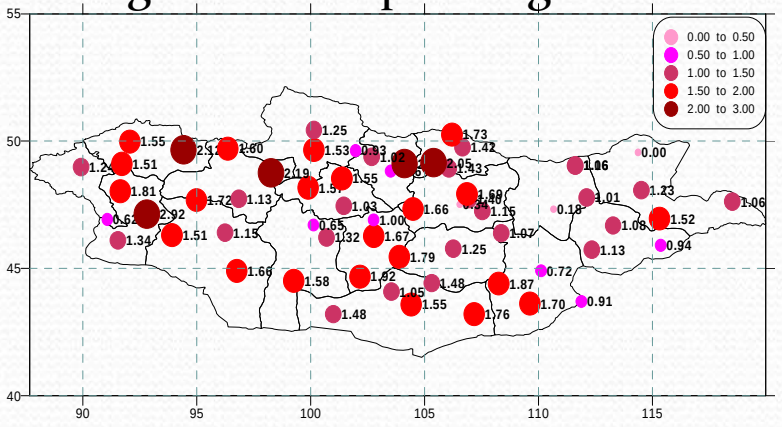
Climate change and water scarcity tendency

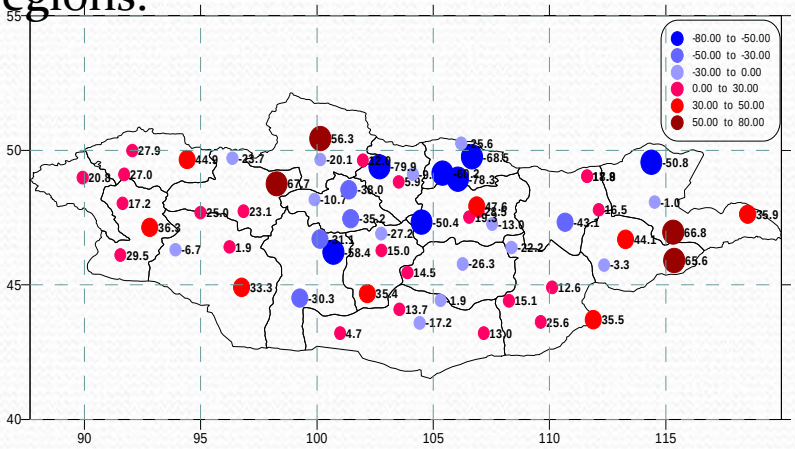
In the last 60 years, the average yearly temperature has warmed by 1.9*C, while the annual precipitation has fallen down by about 10%.



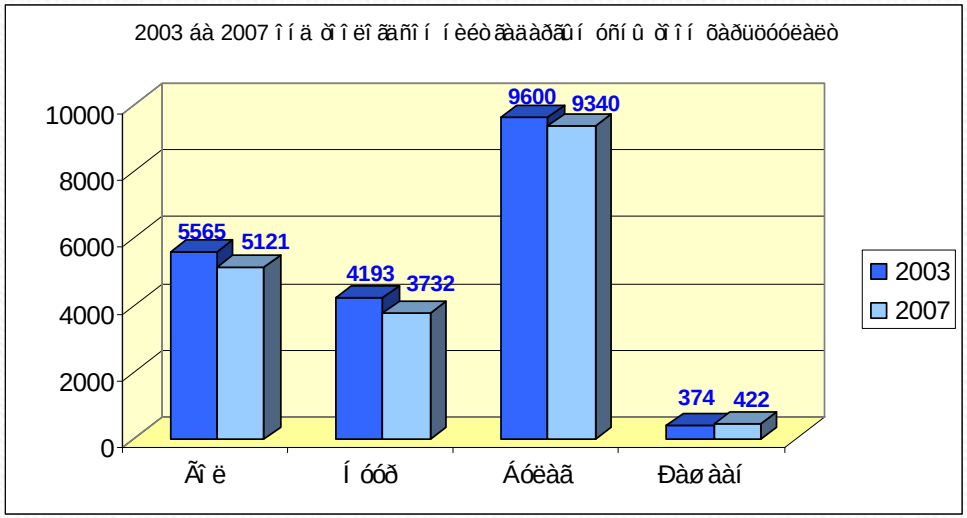


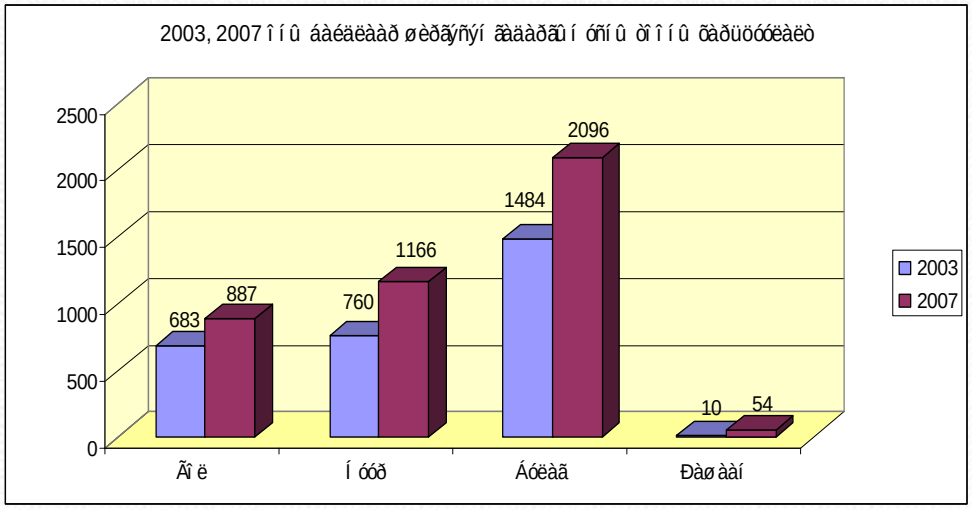
In the first half of 21st century, the accrued vaporization level tends to exceed by 6-10 times over the precipitation growth. Dynamics of temperature and precipitation changes differ depending on location cross regions.





Water Scarcity today in Mongolia





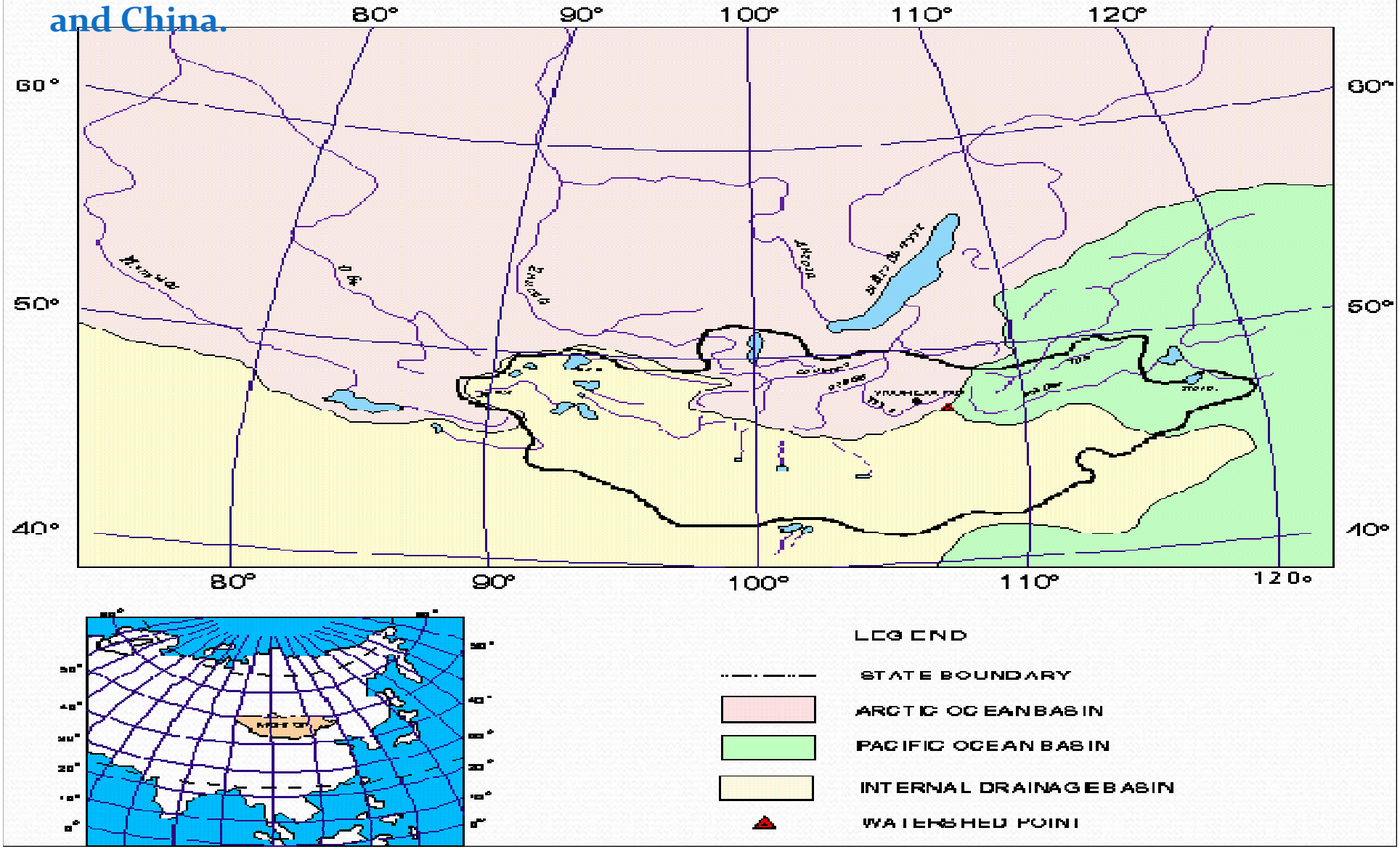
Water statistics of 2007 shows follows:

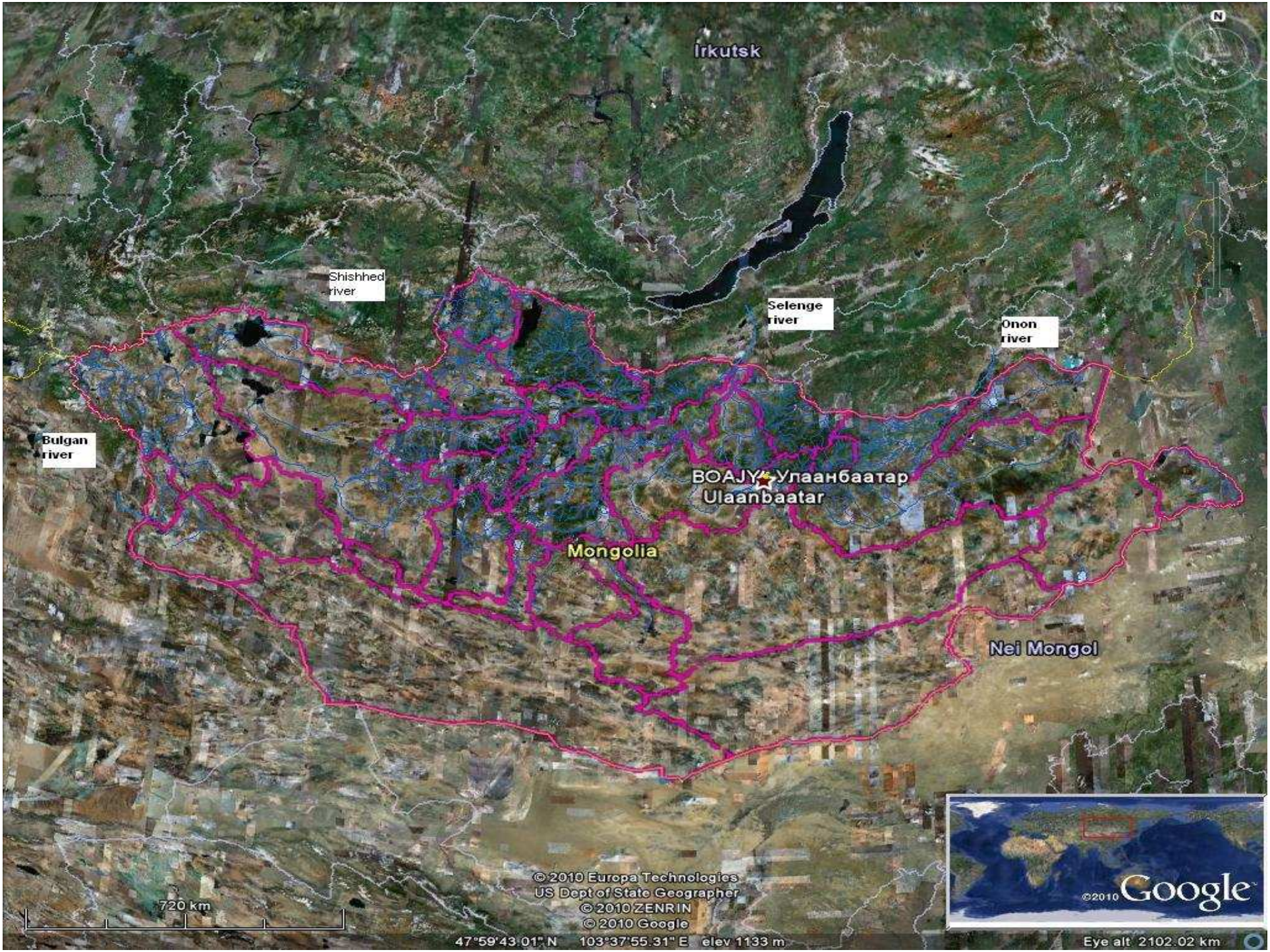
887 rivers, 2096 Springs and 1166 lakes are dried out last ten years. It means 33-38% of surface water resources of Mongolia has shortened.

30% of Glaciers of Altai Mountain reduced or melted during above mentioned period.

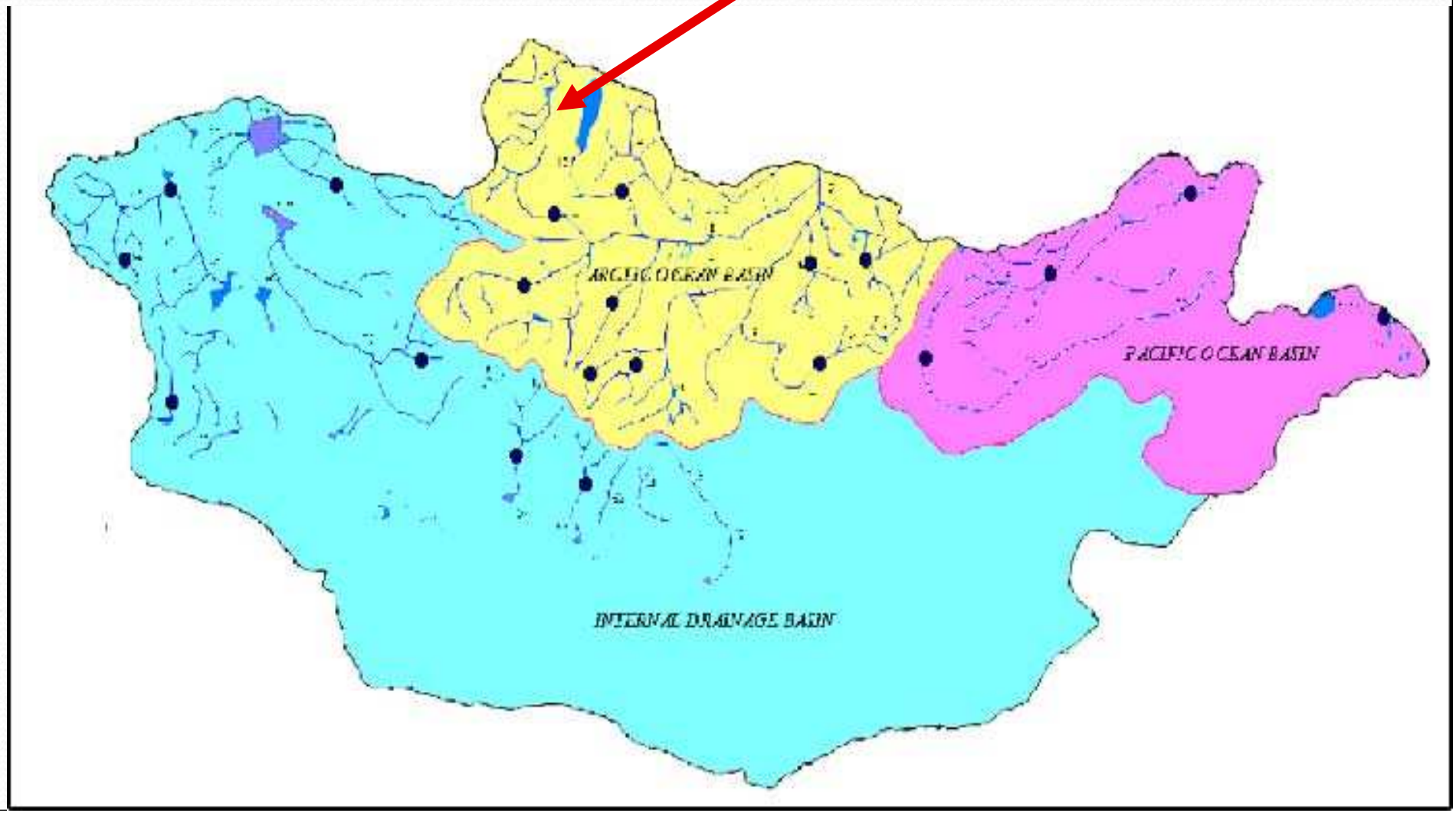
Main Water Basin in Mongolia

There are three Main Water Basins of Asia located in the Mongolian Territory as Arctic Ocean (to Russia), Pacific Ocean(to Russia and China) Central Asian Land Locked Basins. It shows Transboundary Water Issue of Mongolia, Russia and China.

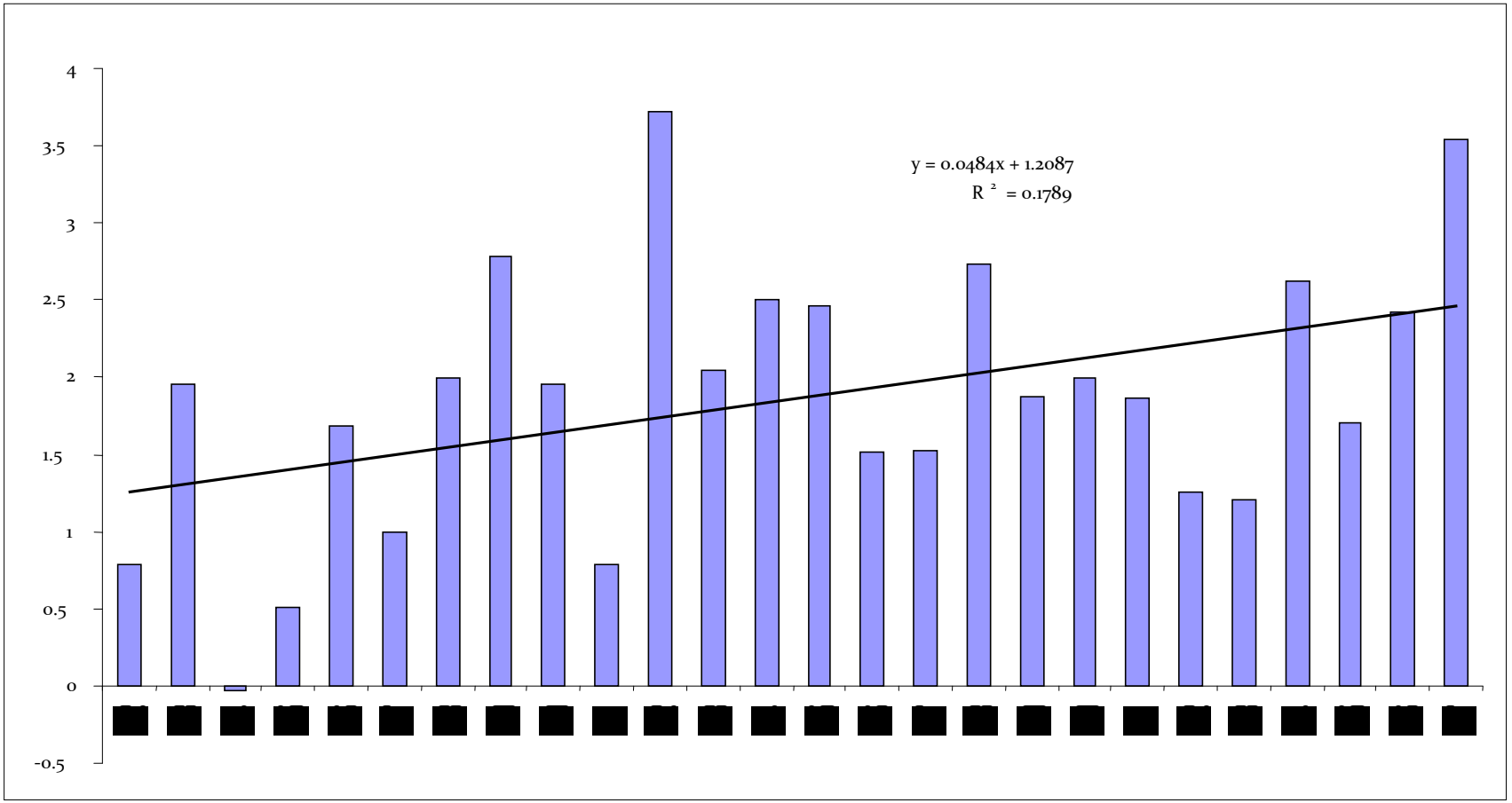



Irkutsk
Shishhed river
Selenge river
Onon river
Bulgan river
ВОАЈУ Улаанбаатар
Ulaanbaatar
Mongolia
Nei Mongol
720 km
© 2010 Europa Technologies
US Dept of State Geographer
© 2010 ZENRIN
© 2010 Google
47°59'43.01" N 103°37'55.31" E elev 1133 m
©2010 Google
Eye alt 2102.02 km

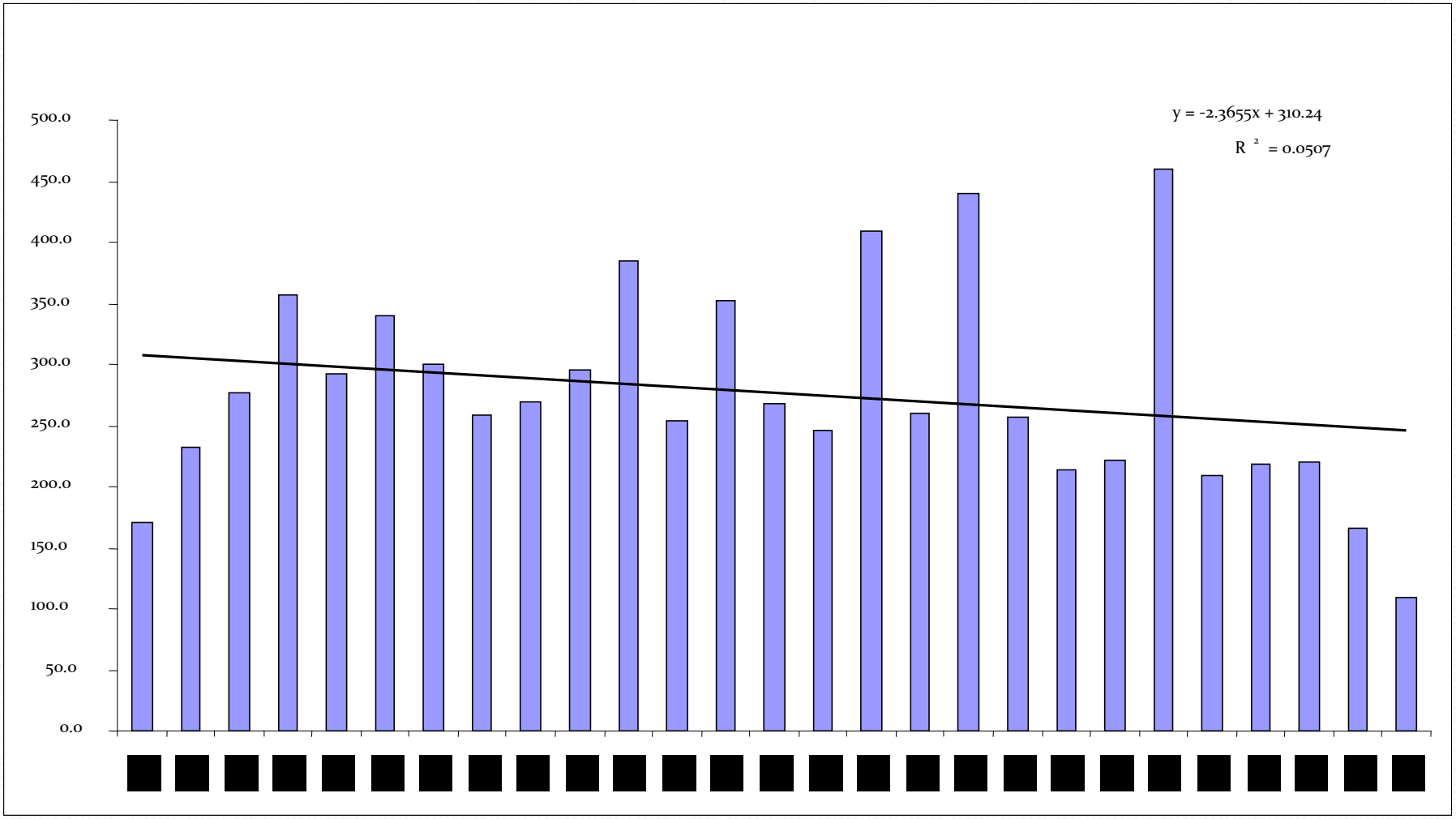
Arctic Ocean Basin (or Selenge River Basin) covered roughly 280 000 km² (about 18% of territory). The area covered Arkhangai, Bulgan, Orkhon, Ovorkhangai, Khovsgol, Darkhan-Uul, Selenge, Tuv and Ulaanbaatar.



Tendency of Temperature in the Northern Part of Mongolia (Selenge River Basin) during 1982-2007гг



Tendency of Precipitation in the Northern Part of Mongolia (Selenge River Basin) during 1982-2007гг



Flora or Plants in the Selenge River Basin (by P.D. Gunin, 2007)

Ecosystems	Flora Species	Percentage , %
Steppe	638	23,6
Forest	589	21,8
Forest-steppe	535	19,8
Wetland	183	6,8
Mountain tundra	272	10,0
Terrace	130	4,8
Гидроморфные	159	5,9
Галофильные	64	2,4
Рудеральные	134	4,9

Selenge River Parameters

- Total watershed area 425245 êì^2 and of which 282050 êì^2 or 66% falls in Mongolia Territory.
- The length of Selenge up to Mongolia-Russia Border reaches 593 km.
- Width of valley varies 2-25 km there is low meandering in the narrow sections.
- Some area makes wide valley with several streams
- During low runoff period width of river reduced to 50-150 ì.

Selenge River Parameters

- The average depth of water 1.0-1.5 m, and max 4-5m, min 0.5 m in some sections.
- Flow speed during low runoff period reaches 1 m/sec, in some sections 2.0-2.5 m/sec.
- The average discharge reaches of Selenge River 290 m^3/sec on the Border Section.

TDS in Selenge River Water and other main ions average contents

TDS, mg/l	Ca^{2+}	Mg^{2+}	$Na^{+}+K^{+}$	HCO_3^{-}	SO_4^{2-}	Cl^{-}
222.9	32.8	8.0	23.3	159.6	19.4	7.6

Selenge River Water Balance

Station	Precipitation, mm	Runoff, m3/sec	Evaporation, mm	Total Moisture,mm
Selenge Hutag	310	49	261	276
Selenge-Hiyagt	280	34	246	256

Shishkhed River

- The river starts from Guna river located in Ulaan Taiga Mountain of Hubsugul Province.
- Shishkhed River flows 296 km and joined to the upper Yenisei Tributary River.
- Watershed area in Mongolia reaches 20 605 km^2, averege runoff 16.0 m^3/sec.

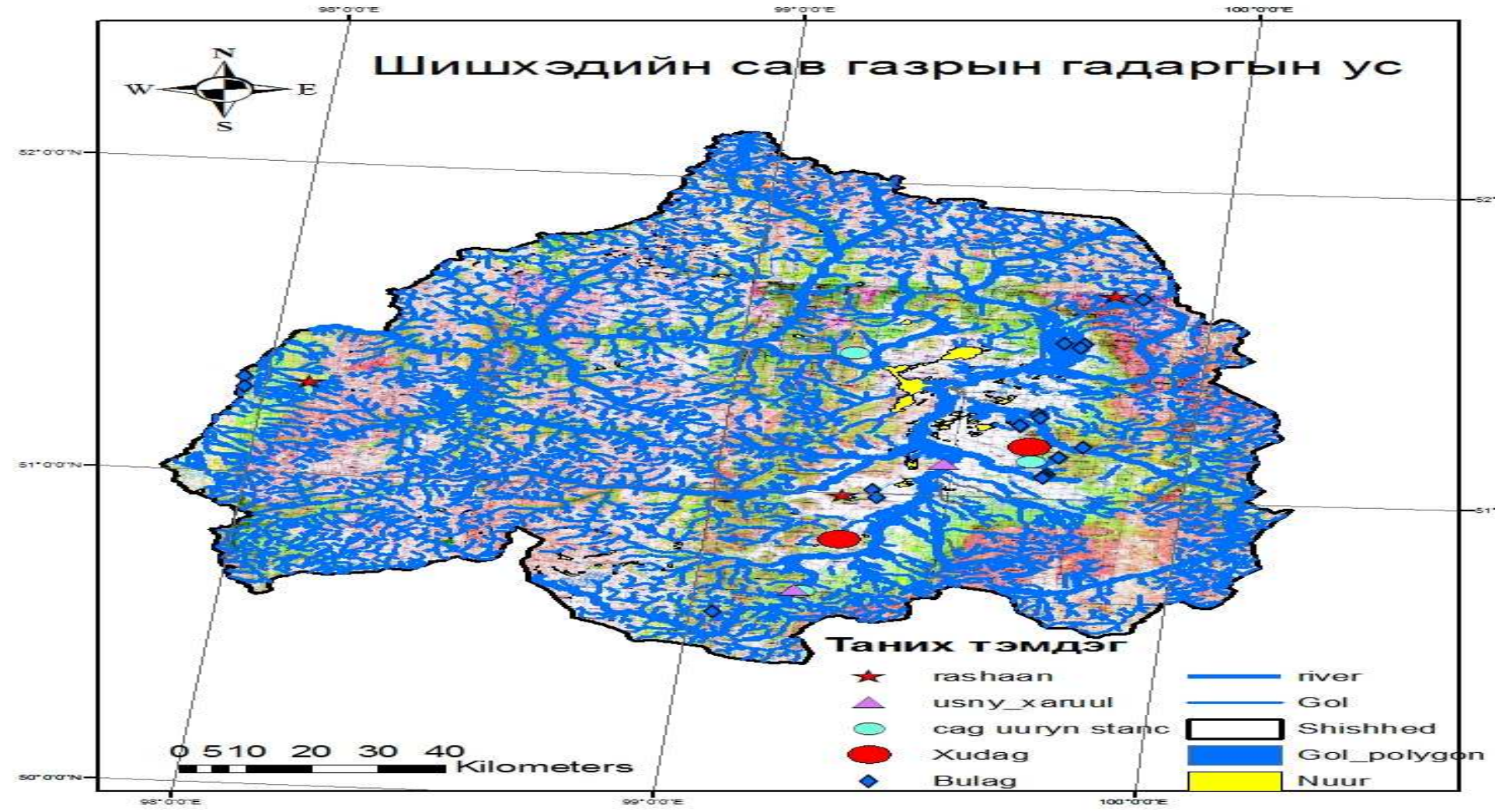
Some hydrological parameters of Shishkhed River Basin

No	Density of population, person/km²	Agriculture, %	Livestock , unit/km²	Livestock per people, number	Mining area, êì²	Mining Licence	
						Exploration license, number	Exploatation License, number
1.	0.4	0.00	37.8	87159	83.0	21	2

Socio Economic parameters of Shishkhed River Basin

¹	Total Area, km²	Total length of rivers, êì	Springs , number	Lakes above 0.1 km² square, number	Rivers and Tributaries in the basin, number	Main Rivers
4.	20095.8	11102.9	21	366	145	Arsai, Sargai, Tengis, Baranga, Jagash

SHISHKHED RIVER BASIN



Transboundary Water Cooperation with Russia

- The Mongolia and Russia Government have signed Agreement of Transboundary Water on Februray 15, 1995.
- Within this Agreement regulates following Transboundary Waters as Selenge, Kiran, Minj, Onon, Kira, Ulz, Hyagt and Zelter rivers which mainly flows from Mongolia to Russia.
- According to this agreement Mongolian Government appointed Ambassador for Transboundary Water who Vice Minister of Ministry of Nature and Environment.

Transboundary Water Cooperation with Russia

- The Ambassadors meets each year in the Mongolia and Russia and discusses Transboundary Water Working Group Reports of given year and decides challenges faced. This year have organized ninth meeting of Transbondary Water Ambassadors in the Yekaterinburg, Russia.

- Transboundary Water Working Groups established by order of Ministers of Nature and Environment Mongolia and Russia through Transboundary Water Agreement. Mongolia working Group headed by Director of Water Agengy of Government, Mongolia. Russian Working Group heading by Regional Water Director of Federal Water Agency, Russia.

- The working groups meets regularly two times in a year and exchange information about Results of Transboundary water activities of each sides in the given year. The working groups consisted various field water specialists from government, scientific research institutes and inspectors

Transboundary Water Cooperation with Russia

- The key activities of Transboundary waters are information exchange information relating water discharge, regime, quality monitoring results and flood and emergency situation.

- During last years carried out together some surveys as Selnge River Water regime, fishery survey and pollution sources in the upper Selenge basin. Now Russian side developing General Scheme of water use and Mongolia side Integrated Water Resources Management Plan for Selenge Basin.

- Concluding, Transboundary Water Cooperation Mongolia and Russia have going full friendly and transparent way during more 15 years.

Transboundary Water Cooperation with China

- The Mongolia and China Government have signed Agreement of Transboundary Water in 1994.
- Within this Agreement regulates following Transboundary Waters as Kherulen, Halh, Bulgan and Buir Lakes which mainly flows from Mongolia to China.
- According to this agreement, first meeting of Transboundary Water Commission held in 1998, Ulaanbaatar and approved Guidelines of Commission. The Commission heading by Vice Minister of Ministry of Nature and Environment Mongolia and Vice Minister of Water Resources, China.
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- Key issues of Transboundary Water Cooperation with China are monitoring data exchange on transboundary water discharge, regime, quality and flood. Also, Buir Lake issues.

Transboundary Water Cooperation with China

- The Head of Commission meets each two year in the Mongolia and China and discusses Transboundary Water Working Group Reports of given year and decides challenges faced. Last year have organized fifth meeting of Commission in the Beijing, China.

- Transboundary Water Working Groups established by order of Minister of Nature and Environment Mongolia and Minister of Water Resources, China. Mongolia working Group heading by Director of Water Agency of Government, Mongolia. Chinese Working Group heading by Water Institute Director of China.

- The working groups meets regularly one times in a year and exchange information about Results of Transboundary water activities of each sides in the given year. The working groups consisted various field water specialists from Government, Scientific Research Institutes and Inspectors same as above mentioned.

Mongolia Policy for Transboundary Water Cooperation

- Mongolia Government fully responsible for the Transboundary Water Agreements with Two Great Honorable Neighbors Russia and China.

- During the long time history we had not serious problem until today. And hope continue to future.

Thank you very much for your attention and invitation

We are glad to exchange information and experience