



GEOS  
Asian Water Cycle Initiative



THE UNIVERSITY OF TOKYO

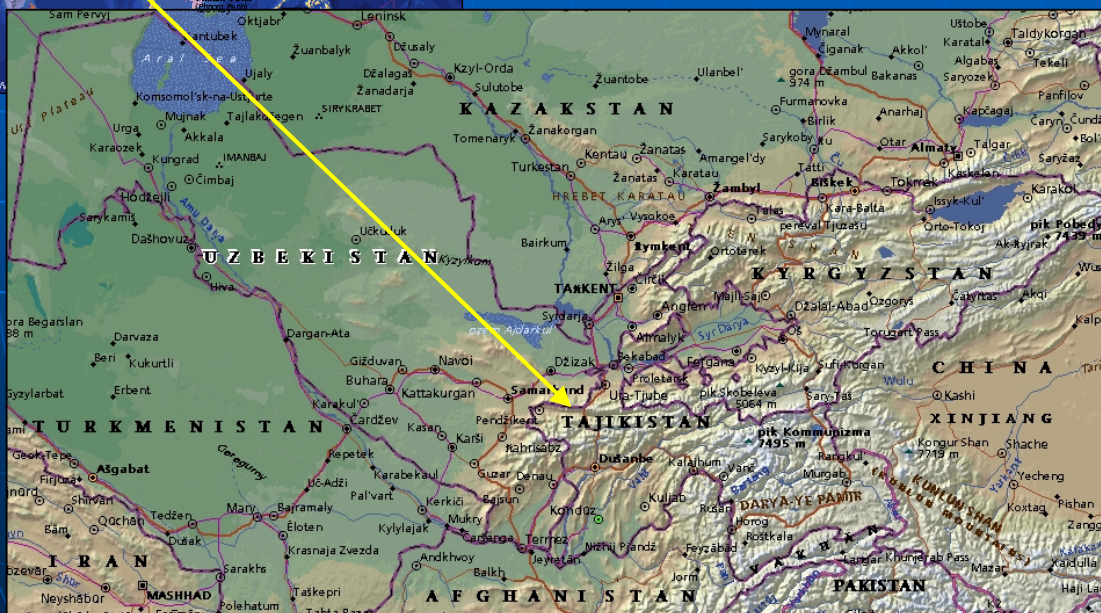
# The 3rd GEOS Asian Water Cycle Symposium

Beppu, Oita, Japan, 2-4, December 2007

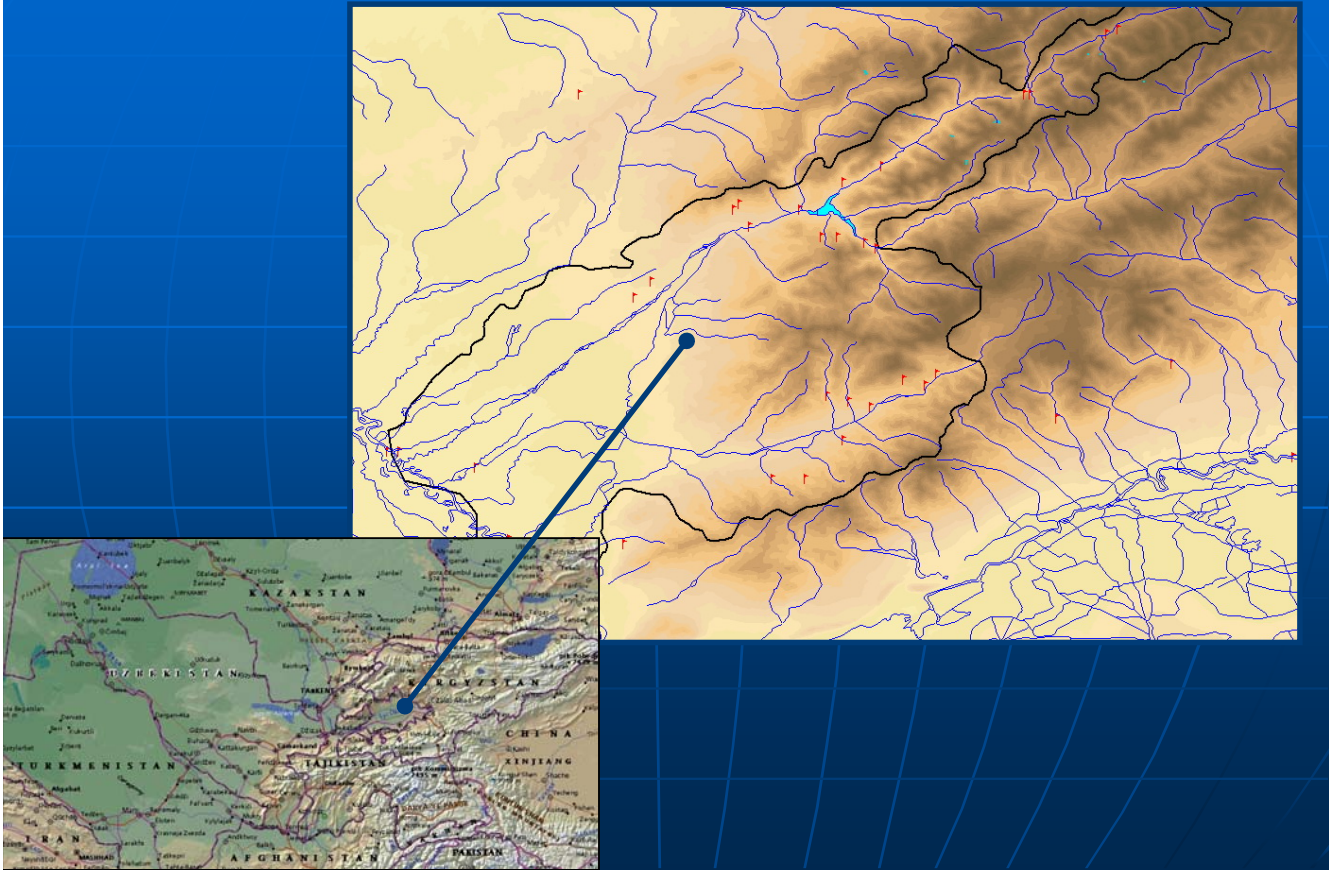
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## Republic of Uzbekistan



# Chirchik-Akhangaran River Basin



Chirchik -Okhangaran river basins is located in the Tashkent province. It is the most developed industrial province in the country. Located in northeastern part of Uzbekistan, between the Tian Shan Mountain Ranges. Administrative center of the province is Tashkent city (2156,3 thousand people).

This river basin include many different goods. Irrigated area, towns and cities, hydropower stations, water reservoirs.

Tapping the water resource of the basin to generate power would mean a sizeable contribution to the income of the country. Nevertheless, there are issues which need to be addressed in the development of this basin.

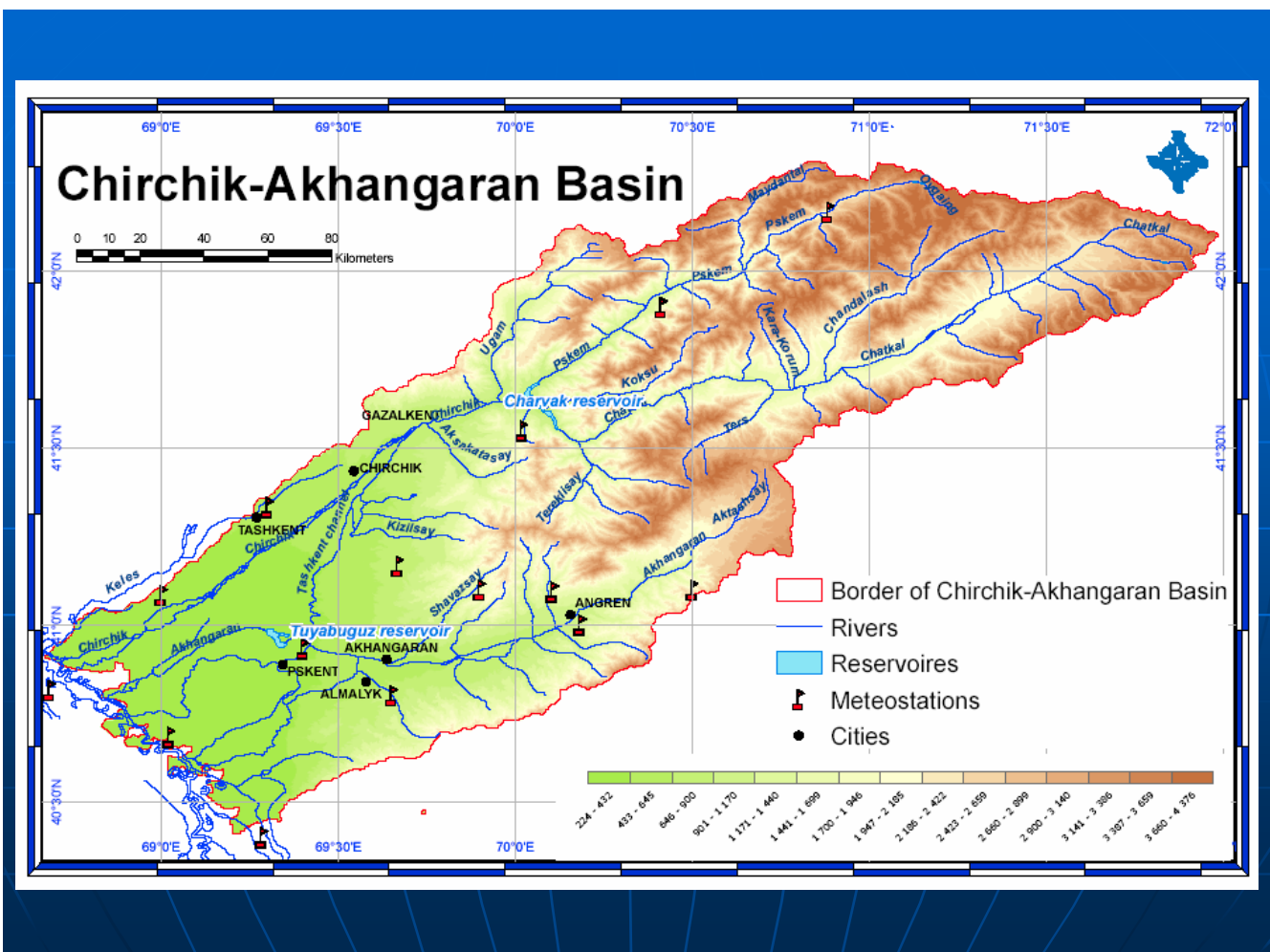


## Socio-Economic Information

**Agriculture:** cotton, grapes and grain, horticulture, poultry and cattle farming, as well as the silkworm breeding. The valleys are planted with oaks, wild grapes, pistachios, and peanut trees. The province is the only place in the area to cultivate ambary – a plant out of which rope is made.

**Industry:** The province has the most developed industry in the country. All of the heavy metallurgy industry and a major part of the non-ferrous metallurgy enterprises are located here. Machinery, chemical, food and construction material industries are well developed.

**Social Infrastructure:** More than 250 state enterprises, 45 joint ventures and 2632 small and 328 cooperative enterprises are operating in the province. Railroads and automobile roads cross the territory of the province contributing to the intense international and interstate economic activity. The total length of the railroad network is 354,2 km. Automobile roads are 6,600 km long, 5,900 km of which is covered with asphalt.



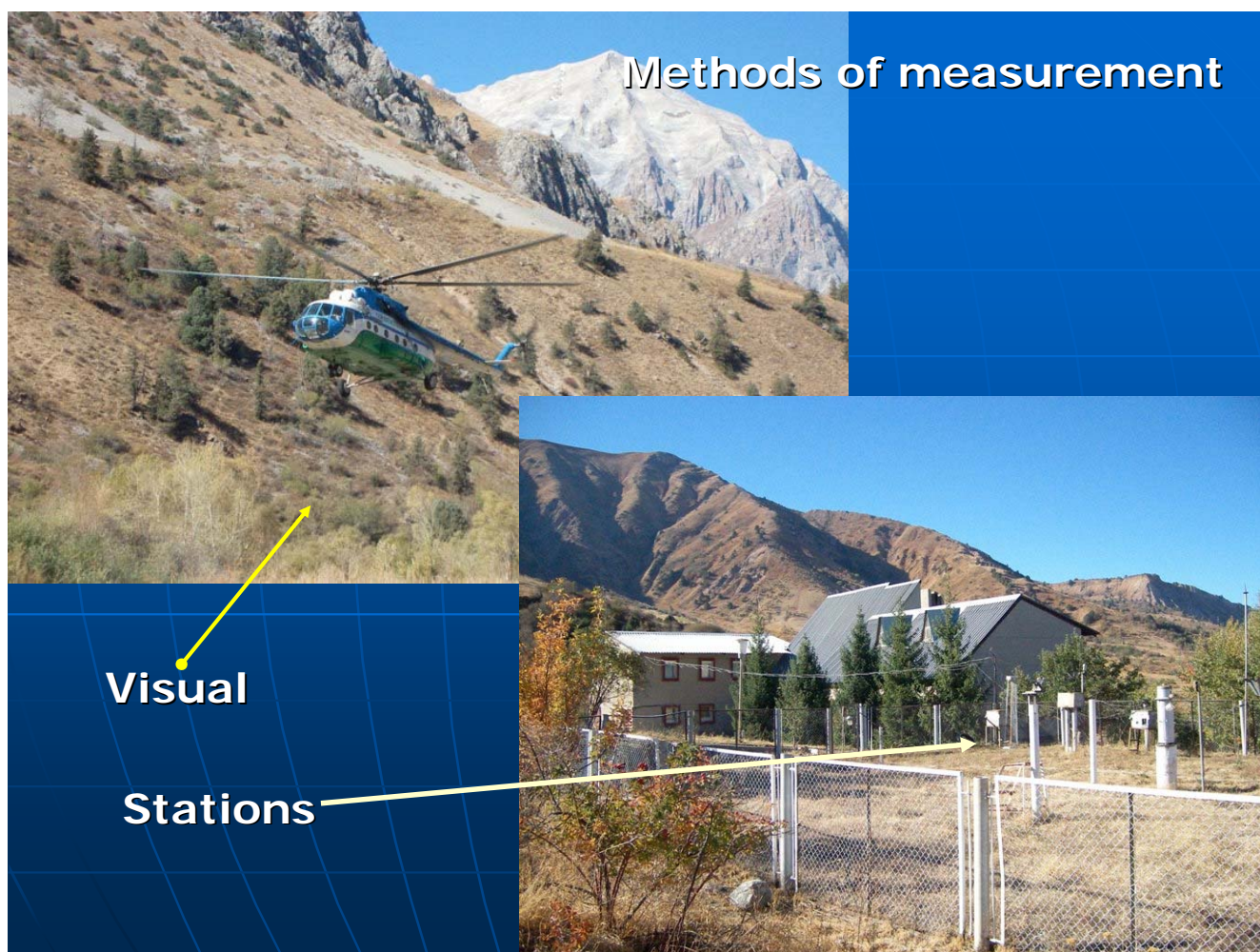
## Impacts of Climate Change

Snowmelt induced runoff of rivers of the Chirchik – Okhangaran basin comprised 60-90% of the total stream flow. The remaining part of runoff is assigned to glacier melt water and groundwater inflow (i.e. rainfall induced runoff is almost absent in the region).

This demonstration project would assist in monitoring the flow regimes in the rivers due to climate change.

## Floods

Spring and summer flood period is the main phase in the hydrological regime of the Central Asian rivers, during which 70 – 85% of the annual flow is passing through. This time the largest discharge values are being registered on the main rivers. The character of the flood formation depends on the different hydrometeorological factors and physical and geographical features of the river basins, which, being closely interconnected, create different conditions of their formation in each individual year. With the definite combination of these factors the floods with the highest volume and height are formed. Sometimes such anomalies of the water availability of rivers are revealed in a form of natural disasters causing significant damage to people and property.







Installation for Snow cover measurement



Aero visual control



Different parts of the river basin

3349 meters

450 meters







*River bed without water*

*Ikhnach lake (2743 m)*

To distinguish the characteristic features and differences in the conditions of the formation of the catastrophic floods it is expedient to consider the floods with the different genesis in different years.

In 1959 the formation of the outstanding maximum floods was registered. That time the catastrophic maximums caused by the excessive rains were observed on many rivers and ephemeral channels of the Chirchik – Okhangaran basin.

The proceeding outstanding maximum was registered on Chirchik river in 1914 which was 1800 m<sup>3</sup>/sec. Maximum in 1959 was 2160 m<sup>3</sup>/sec. Let's consider the qualitative features of the process of the catastrophic floods formation in 1914 and 1959.

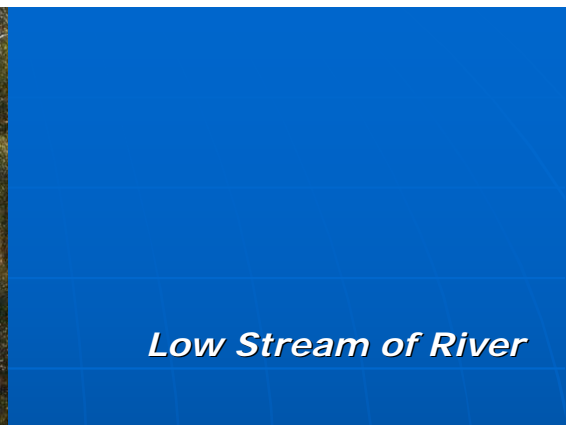
Chirchik is rather big river, the maximum discharges of which are being formed mainly by the melt water.

At the same time, the large rain flood was registered on the neighboring Akhangaran river.

Determination of an adequate warning system for floods would be a target for the demonstration.



*Upper Stream of River*



*Low Stream of River*

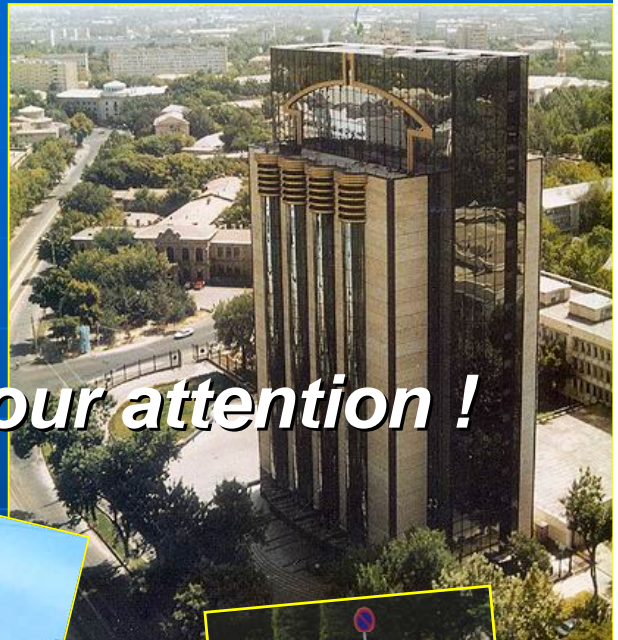
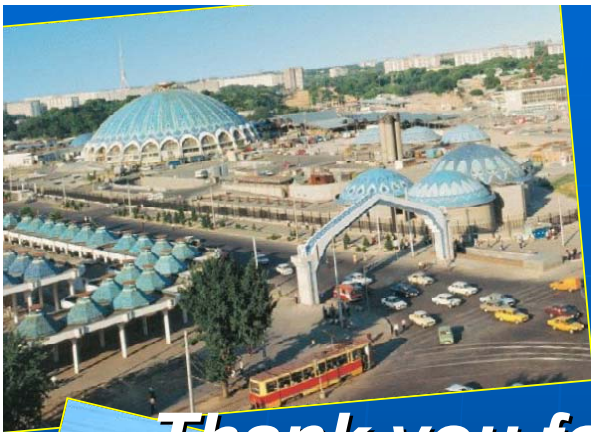


*Dam for Flood Control*

## Capacity building needs

- Education
- Training
- Research and development
- Access to satellite information with height resolution





*Thank you for your attention !*

