Modernization of the hydrological observation network in the basins of the Kuban, Ussuri, Oka, and Yenisei rivers

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Within the MBRD Project "Modernization of the Rosgidromet hydrological network in the basins of the Kuban, Ussuri, Oka, and Yenisei rivers and upgrade of the gauging stations in other river basins" (2009-2011), the following tasks were set:

- Build the fundamentally new automated basin hydrological networks with high reliability and quality of the information received in the Kuban, Ussuri, Oka rivers basins and in the vicinity of the Sayano-Shushenskaya Hydropower Plant on the Yenisei river;
- Upgrade gauging stations that fall under the priority category, viz. located on the sites subjected to flood risk, with up-to-date technical facilities and systems for observation of hydrological characteristics of the natural environment;
- Increase accuracy of observations at existing gauging stations by installing automated hydrological complexes;
- Automated technology of registration and accumulation of measurement data on technical media;
- Organize timely collection of operational messages.

The above tasks were fulfilled by the **Information Business Systems Ltd.** Company on the base of equipment manufactured by the German company **SEBA Hydrometrie GMBH.**

In the result of the project implementation, the following outcomes have been achieved:

- Integrated hydrological observation system in the Kuban, Ussuri, Oka rivers basins and in the vicinity of the Sayano-Shushenskaya Hydropower Plant on the Yenisei river was built;
- Measurement quality and reliability in the network of hydrological observation points in the priority basins were improved due to adopted autonomous automated systems:
  - accuracy of flow observations within these basins increased by 10-15 %;
  - time of data transmission from the observation site to the information collection center in the above-mentioned river basins was shortened down to real-time scales.
- Number of observation points that apply automated technology of hydrological data reception, processing, and transmission was increased;
- Skills of staff at the hydrological stations and gauging stations were improved;
- Infrastructure for timely identification of dangerous hydrological phenomena in the priority basins has been prepared, namely:
  - Lead time of forecasting dangerous floods in the priority basins extended by 1-3 days;
  - Lead time of warning about fast floods in the priority basins was prolonged from 30 minutes up to 3-6 hours;
- Up-to-date information technologies of hydrological data reception and processing were applied in operative subdivisions of the Krasnoyarsk, Rostov, Nizhniy Novgorod Centers of Hydrometeorology and Environmental Monitoring and Primorskiy Hydrometeorology and Environmental Monitoring Department.