



## **Central Asia Water (CAWa) - A visualization platform for hydro-meteorological sensor data**

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Water is an indispensable necessity of life for people in the whole world. In central Asia, water is the key factor for economic development, but is already a narrow resource in this region. In fact of climate change, the water problem handling will be a big challenge for the future.

The regional research Network „Central Asia Water“ (CAWa) aims at providing a scientific basis for transnational water resources management for the five Central Asia States Kyrgyzstan, Uzbekistan, Tajikistan, Turkmenistan and Kazakhstan. CAWa is part of the Central Asia Water Initiative (also known as the Berlin Process) which was launched by the Federal Foreign Office on 1 April 2008 at the “Water Unites” conference in Berlin.

To produce future scenarios and strategies for sustainable water management, data on water reserves and the use of water in Central Asia must therefore be collected consistently across the region. Hydro-meteorological stations equipped with sophisticated sensors are installed in Central Asia and send their data via real-time satellite communication to the operation centre of the monitoring network and to the participating National Hydro-meteorological Services.[1]

The challenge for CAWa is to integrate the whole aspects of data management, data workflows, data modeling and visualizations in a proper design of a monitoring infrastructure.

The use of standardized interfaces to support data transfer and interoperability is essential in CAWa. An uniform treatment of sensor data can be realized by the OGC Sensor Web Enablement (SWE) , which makes a number of standards and interface definitions available: Observation & Measurement (O&M) model for the description of observations and measurements, Sensor Model Language (SensorML) for the description of sensor systems, Sensor Observation Service (SOS) for obtaining sensor observations, Sensor Planning Service (SPS) for tasking sensors, Web Notification Service (WNS) for asynchronous dialogues and Sensor Alert Service (SAS) for sending alerts.

An OpenSource web-platform bundles the data, provided by the SWE web services of the hydro-meteorological stations, and provides tools for data visualization and data access. The visualization tool was implemented by using OpenSource tools like GeoExt/ExtJS and OpenLayers. Using the application the user can query the relevant sensor data, select parameter and time period, visualize and finally download the data.

[1] <http://www.cawa-project.net>