SAPPHIRE

Digital Operational Hydrology

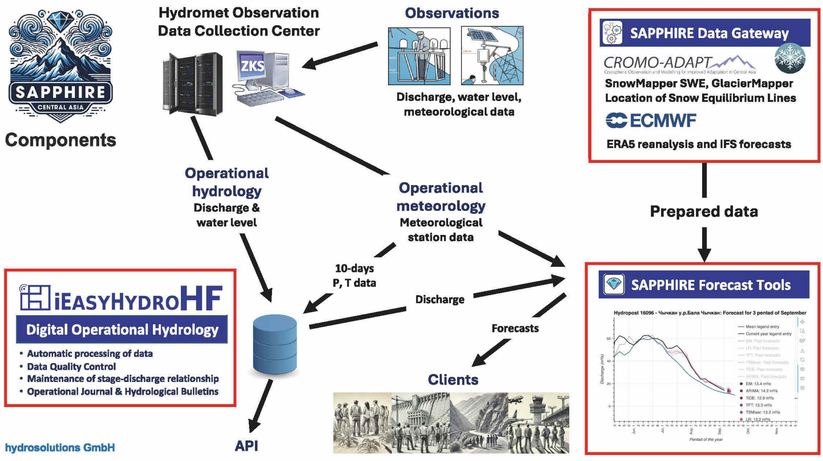
Modernizing operational hydrology and discharge forecasting services of the Central Asia Hydromets

SAPPHIRE (Smart & Precise Prognostic Hydrology for Innovative Risk Management and Resource Use Efficiency) Central Asia is a regional project running from 2022 to 2026. Supported by the Swiss Agency for Development and Cooperation and implemented by hydrosolutions GmbH, it aims to significantly improve how water resources are managed across five Central Asian countries: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.

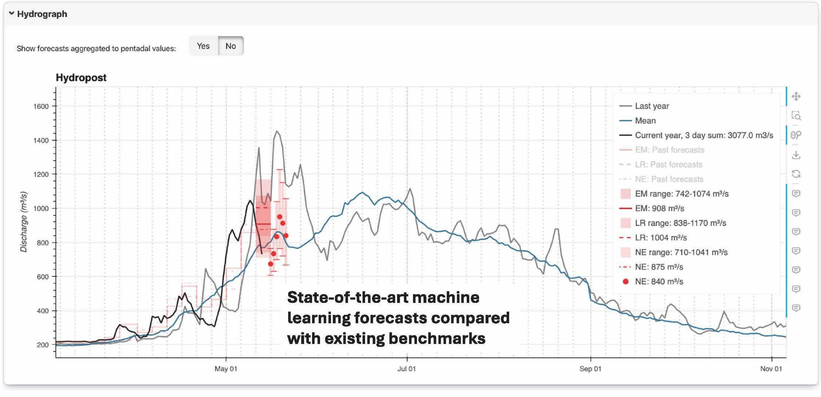
The project focuses on modernizing the crucial services provided by the National Hydrometeorological Services – the agencies responsible for monitoring weather and water. This includes operational hydrology and forecasting of river discharge.

Project Goals are

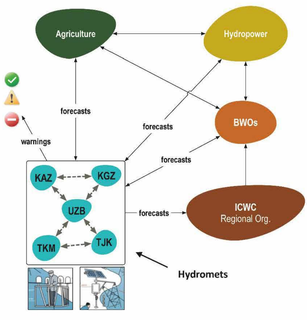
- Modernize Operations: Help the national agencies transition from analog pencil on paper-based methods to efficient digital workflows for handling water data.
- Improve Forecasting: Enhance the accuracy and timeliness of river discharge forecasts – predicting how much water will be in the rivers days, weeks, or months ahead.
- Strengthen Collaboration: Build a network (Community of Practice) of experts across the region to share knowledge and best practices.



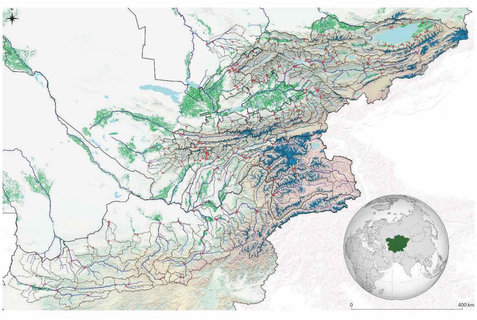
Author: hydrosolutions GmbH, Description: The three main components of SAPPHIRE are highlighted: iEasyHydro HF, SAPPHIRE Forecasting and Gateway, Year: 2025



Author: hydrosolutions GmbH, Description: Expample pentad forecast of inflow to Toktogul Reservoir as provided by SAPPHIRE Forecasting tools. Year: 2025. Location: Central Asia.



Author: hydrosolutions GmbH, Description: The central role of the Hydromets is depicted with regard to water resources management and disaster risk reduction. Year: 2025. Location: Central Asia



High-Mountain Centrl Asia with gauging stations. Source: hydrosolutions GmbH

The Central Asia Region, Source: Wikipedia, https://en.wikipedia.org/wiki/Central_Asia

SAPPHIRE provides modern digital tools in operational hydrology and fostering regional collaboration. This enables

- state-of-the-art forecasts of river discharge,
- increases the effectiveness of water management at national and transboundary scales, and
- reduces water-related risks from hazards like floods and droughts

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