

# Operational flood protection for Switzerland

Powering decision-making through advanced hydrodynamic and operational models



**Scientific robust tools for stakeholder dialogue and decision-making**



**Covers numerous controlled lakes in one solution**



**Validated data to support flood mitigation and protection**

## Challenge

The floods of 1999, 2005 and 2007 caused severe damage across Switzerland. The biggest impacts have been recorded for lakes at the verge of the Alps (also known as Jurarandseen), Lake Lucerne, Lake of Zurich and the downstream midland rivers. Analyses of the floods revealed that a stronger collaboration between the Federal Office for the Environment (FOEN) and the cantons of Switzerland was necessary.

The lakes play an important role for water management in the region. On the one hand, they are important for water balance; and on the other, they can support flood protection. Acknowledging the challenges, the FOEN initiated a model development process to ensure robust forecast data for decision-making.

## Solution

To better manage the lake system and rivers connecting them, the FOEN decided to establish a forecast model to support the cantons in flood management and mitigation.

Driven by MIKE Powered by DHI software, hydrodynamic (MIKE 11 – now MIKE HYDRO River) and operational (MIKE OPERATIONS) models were developed, covering the Swiss river systems Aare, Reuss, Limmat and Rhine. The models include different weather forecast data, hydraulic models and workflows with the goal to support the FOEN in deciding if an operational action is needed while identifying possible consequences. The system provides and visualises data from gauges and models, performs analyses and produces flood maps for visualisation and estimation of damages.

*'The system enables the FOEN to better support cantons in coping with floods today. The powerful model and intuitive interface has contributed to more holistic flood management in Switzerland.'*

Gian Reto Bezzola  
Head of Section, Federal Office for the Environment (FOEN)



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