Dam breach outflows
at strongly silted reservoirs

The Swiss Dam Act defines a dam as a "facility for impounding or storing water or sludge". Based on the guidelines in force today a "pure water" flood wave must always be assumed when a dam breaks. For reservoirs with "sludge-like" contents, however, such an assumption is far from reality. The present work should help to model future flood waves more accurately, in the event of the failure of sediment traps and avalanche protection structures, as well as strongly silted, unused reservoirs impounded by small dams.

Goals of this study:
- Evaluate flood wave calculation methods for flows from heavily silted reservoirs (Newtonian and non-Newtonian fluid-sediment mixtures)
- Evaluate flood wave calculation methods for sludge-like material
- Demonstrate the differences between the available methods (using 2-3 numerical modelling examples)
- Possibly develop a proposal on how such a method could be introduced in Switzerland

Fig. 1: Strongly sedimented reservoir in canton Zurich (© AWEL)

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Remarks:

Research-oriented thesis; numerical modelling required