

Study project/MSc thesis

“Sediment-laden dam break”

Supervision:

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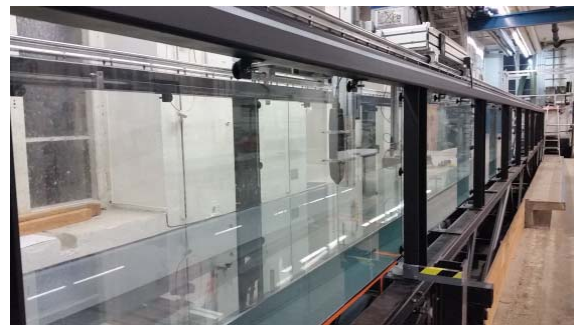
Prof. Dr. Olivier Eiff, Institute for Water and Environment

Sediment-saturated floods are among the most catastrophic natural phenomena. They can travel at high speeds and long distances. These flows are generated by landslides or runoff in mountain catchments. In recent years dam failures like in Libya in 2023, led to similar sediment-laden flows with devastating consequences including loss of life and destroyed infrastructure and properties. Therefore, estimation of the flow volume, velocity, depth, and over which distances the flows will run downstream are required for assessment of hazards and design of mitigating measures.

This study project aims to investigate sedimentary processes associated with the sediment-laden flow developed after the failure of a dam. In particular, the student will focus on the dam-break flow and its interaction with the downstream sediments and the effects of downstream geometry on the depth, flow velocity, erosion and deposition. The candidate will be involved in the design of the experimental set-up and definition of the parameter space to be investigated using an open channel flume and test runs.



The City of Derna, Libya after the dam break of 10. 09.2023¹.



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1- <https://www.newscientist.com/article/2392811-catastrophic-libyan-dam-collapse-partly-caused-by-climate-change/>