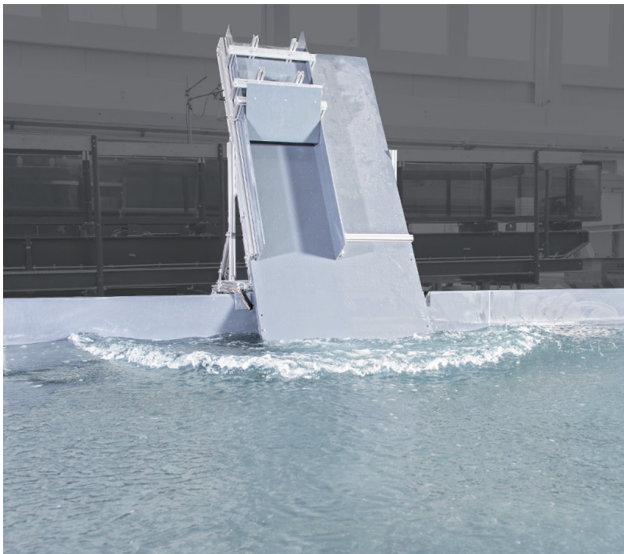
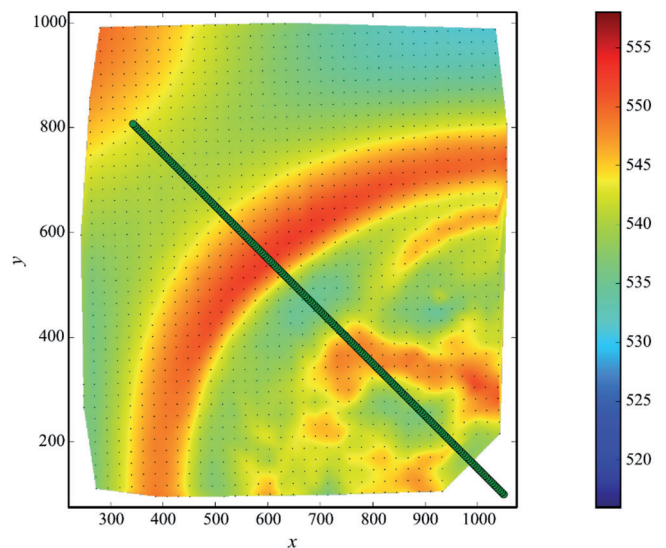


## Spatial Impulse Waves

Rock falls, landslides, shore instabilities, or snow avalanches may generate large water waves in oceans, bays, lakes, or reservoirs. These impulse waves, also referred to as tsunami-type waves, involve long-wave characteristics and may run-up the shoreline or overtop a dam, endangering thereby adjacent settlements and infrastructure.



Radially propagating wave front in the VAW wave basin



Videometric measurement of a radially propagating impulse wave train [mm]

The hydraulic processes related to landslide generated impulse waves have been extensively investigated at VAW during the past decades by means of physical scale model experiments. A set of governing dimensionless parameters was derived from the results. They include the slide Froude number  $F$ , the relative slide thickness  $S$ , the relative slide mass  $M$  and the slide impact angle  $\alpha$ . These parameters are relevant for the description of the characteristics of the generated waves, and govern the so-called impulse wave parameter  $P$  describing the main wave features.

The previous research studies at VAW mainly focused on the investigation of a vertical two-dimensional experimental set-up in a laboratory flume. The primary objective of the current project is to study wave generation and propagation due to a granular slide impact within a three-dimensional model basin. A state-of-the-art videometry system is applied for tracking and analyzing the temporal and spatial wave surface patterns.

### Main goals

- Investigating impulse wave patterns in a three-dimensional model basin
- Quantifying the effects on wave generation and propagation by varying selected parameters
- Extending existing formulas with three-dimensional calculation parameters

Keywords: impulse wave, landslide, wave gauge, spatial wave propagation, videometry  
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