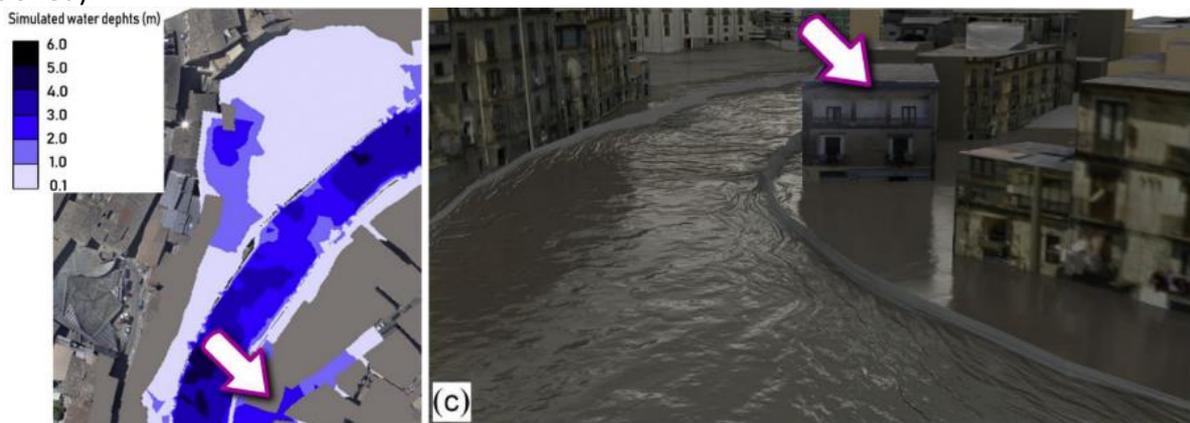


Title	3D visualization for a better communication of flood events
Type	Project/Master thesis
Contact/co-supervisor	Oddbjørn Bruland (NTNU)
Place	Grimstad and/or Trondheim

Short description with pictures

This master thesis is held within the [World of Wild Waters \(WoWW\) project](#), which aims at creating an integrated understanding of causes and effects of flash floods in steep rivers. WoWW focuses on improving risk assessment and its communication to stakeholders and decision-makers by 1) constructing realistic flood scenarios based on real data (*i.e.* physically precise numerical simulations) and highly detailed 3D computer graphics, 2) gamifying the flood scenario within a gaming engine (*i.e.* Unity) and embedding the output in Virtual Reality, and 3) testing the risk perception and communication potential of the generated scenario.

The aim of this master thesis is to provide a realistic 3D visualization environment for the flood scenario that will be furtherly gamified. Both the terrain (*i.e.* heightmap/Digital Elevation Model resulting from aerial laser scans done by the Norwegian authorities, NVE) and water surface (*i.e.* output of numerical simulations provided by a researcher on flood risk at NTNU) will be used as a starting point for the 3D modelling. The 3D visualization will be performed on [documentation of the flood event](#) affecting the municipality of Utvik (Sogn og Fjordane) in 2017. 3D visualization or 3D modelling should comply to requirements so that they can be used in Virtual Reality settings. Due to the complexity of the phenomenon and in order to facilitate the examination and illustration of the flood event, the student will be co-supervised by WoWW's project leader (expert in Hydrology and witness of the flood event mentioned).



Figures show (left) a 2D flood numerical simulation, (right) 3D Computer Graphics Rendering (from Macchione et al., 2019).

The student involved in this project must be familiarised with 3D modelling/visualization techniques and should have interest in natural hazards.