Master Thesis - Presentation 1

Development of an Overland Flow Model Emulator

December 18, 2017

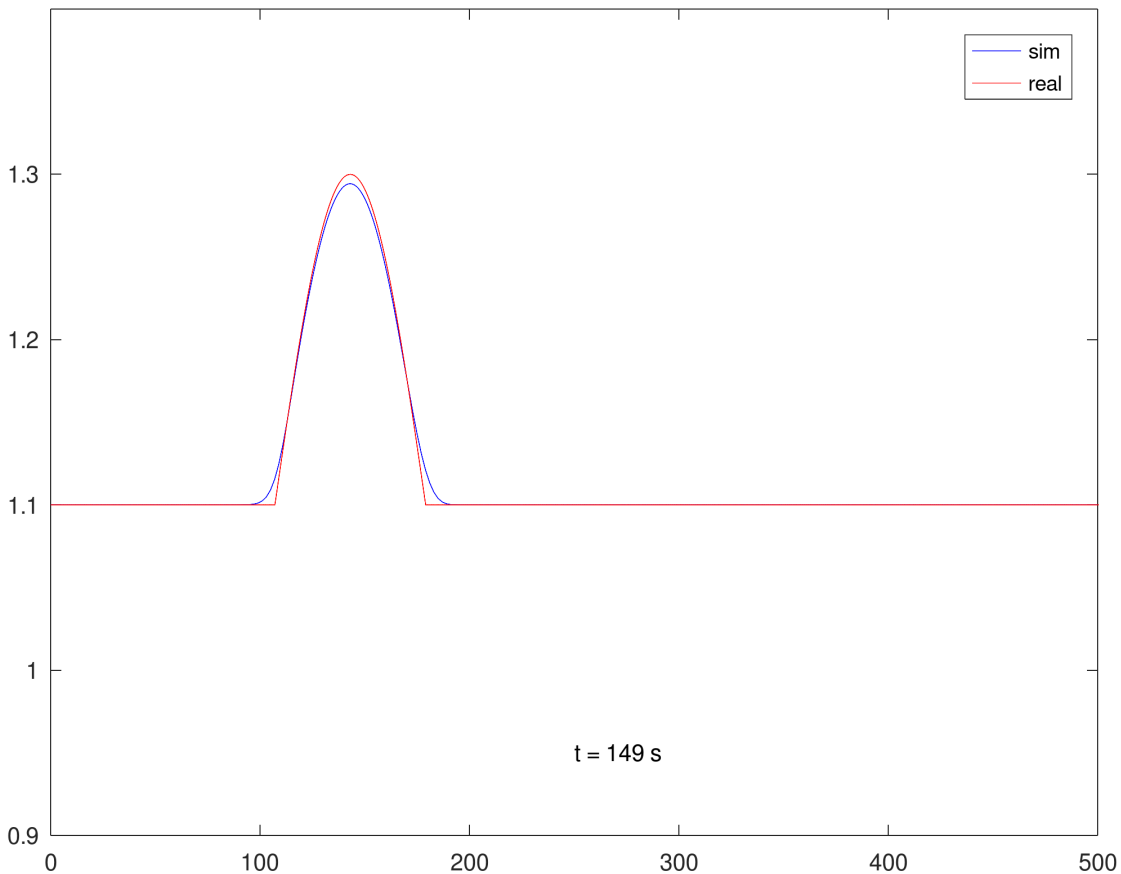
Sebastiano Rusca
Eawag: Swiss Federal Institute of Aquatic Science and Technology

This work is licensed under a Creative Commons "Attribution-ShareAlike 4.0 International" license.

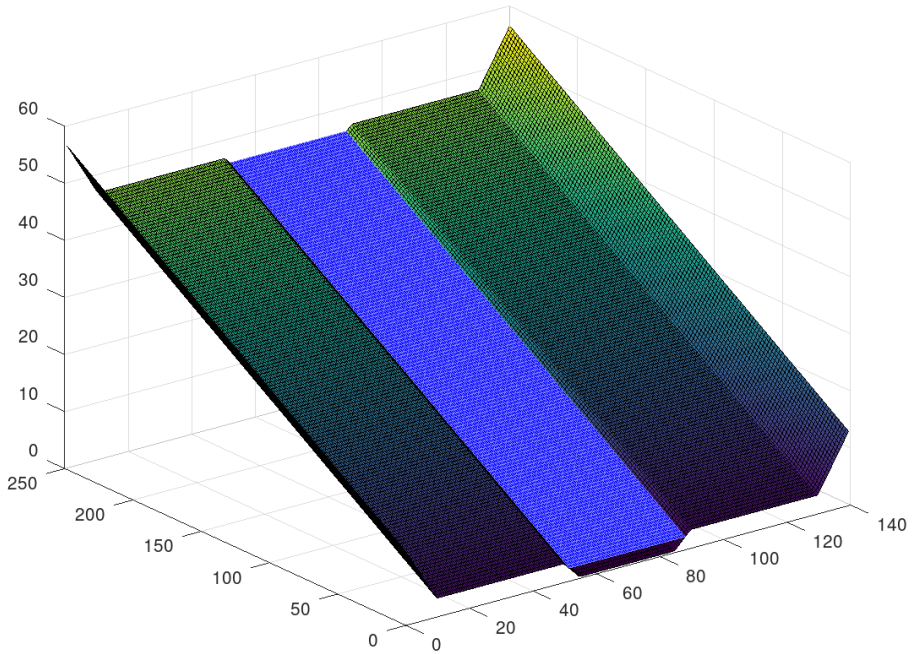
Aim and Tasks

- **Aim**: develop an overland flow model emulator for a concrete case study in Switzerland
- **Task 0**: get hands-on with the *Shallow Water Equation*
- **Task 1**: channel flow simulations in FullSWOF2d
- **Task 2**: more complex simulations for which analytical solutions exists, e.g. dam break wave propagation
- **Final Task**: simulations of a concrete case study. Implement some mitigations measures. Optimize them with the help of the emulator

Task 0: 1-D advection equation



Task 1: Channel simulations - Setup



Animations:

- Advection simulation
- Constant inflow channel experiment

Next Phase: 1st emulation step

- Study effect of variation of one parameter for a specific case study
- Run simulations with different parameter values
- Generate Input – Output plot
- Interpolate the values to obtain emulator for the chosen parameter