

## Background

Changes in land use and climate are important factors that affect the runoff from small catchments. In recent years, there has been an increased focus on floods and extreme values, due to its importance for both planning and design in small catchments. The use of hydrological models is a leading tool for flood analysis and studies on local changes in such catchments. A big challenge is that small catchments usually are ungauged, which means that calibration and validation of models is impossible. Klima2050 is a Centre of Research-based Innovation (SFI), who is actively working with flood estimation from ungauged basins and the effects of both land use and climate.

In cooperation with Klima 2050, this thesis will use a regionalization method to simulate runoff from small catchments in Soknedal municipality, where there has been registered culvert failures along the railway between Garli and Støren. Based on the simulation results, the effects of climate change and land use is to be analyzed. The adapted DDD (Distance Distribution Dynamics) -model will be the foundation of this project.



Gaula river in Trøndelag county (Wikipedia)

Bao-Thy Huynh



Department of Civil  
and Environmental  
Engineering

Spring 2018

**Effects of land use  
and climate change  
on runoff from small  
catchments**

**Supervisor:**

Knut Alfredsén

**Co-supervisor:**

Aynalem Tsegaw

**In cooperation with:**

Klima 2050

 **NTNU**