

# HYDROLOGICAL DROUGHTS IN SWEDEN

## Mapping of historical droughts and identification of primary driving climate conditions and landscape traits

Hydrological droughts, which are defined by the departure of surface and subsurface water supplies from average conditions at various points in time, can cause severe habitat damage, problems for agriculture, forestry, and industry, building infrastructure, energy production and water supply. But the prediction and characterization of hydrological drought events is challenging because: (1) droughts are complex phenomena involving many interacting meteorological processes, (2) the sensitivity of regions to droughts depends on multiple factors, from storage properties and natural resilience to water use and social systems' vulnerability, and (3) the combined effects of land cover, topographical and geological controls on different gain and loss processes are not fully understood.

In this master thesis project, you will use available historical data records of precipitation, temperature and streamflow provided by SMHI together with land-cover and topographic data for 324 catchments in Sweden to

- identify suitable drought indices
- analyze historical hydrological droughts in 324 catchments with help of identified drought indices
- compare historical hydrological droughts with prevailing meteorological conditions
- identify primary meteorological patterns that promote hydrological droughts in different parts of Sweden
- test if historical hydrological droughts can be linked to land-cover or topographic attributes

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Are you interested in this research topic? If you have programming skills in Matlab and an affinity to numbers and statistical analyses, then please contact:

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