

# Exercise: Water in the landscape

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## Aim

The aim of this exercise is to:

- learn about topography and hydrology in the two catchments where you will work: Rönne å catchment in Skåne, and a small catchment at Gårdsjön in the county of Västra Götaland,
- learn how to download GIS-data with the GET tool,
- refresh your ArcGIS knowledge.

## Task

1. Download the files listed in the table below from the course homepage, and open in ArcGIS (one data frame for Gårdsjön and one for Rönne å). Go through the contents of the files.
2. Download raster data for the Rönne å catchment (50\*50 m) and for the catchment F1 at Gårdsjön (2\*2 m) on <http://www.gis.lu.se/geodataUniAnstalld.htm>. The locations of the two areas can be derived by studying the catchment GIS layers in ArcGIS, with a county map as a background. For Gårdsjön, you can use a catchment map at [www.gardsjon.org](http://www.gardsjon.org) to find out where the F1 catchment is situated. A hint when you are looking for Gårdsjön in the GET tool: Gårdsjön is situated on the way between Ucklum and Västerlanda, a few km from Ucklum, south of the road.
3. Which are the highest and lowest points of the catchments (give the locations and heights)?
4. Which are the steepest parts of the two catchments, and how steep are they? Try to find the answer based on height data in the original raster file. Then, try the slope function (spatial analyst tool – surface – slope). Make sure that "spatial analyst" is ticked under customize – extensions. For Rönne å: Compare the results with the land use map. Is there a connection between topography and land use?
5. How does the water flow in the catchments? What direction? Try to find the answer based on height data in the original raster file. Then, try the flow direction function (spatial analyst tool – hydrology – flow direction). Find out how the function works by using the help function.
6. Which are the areas that receive most water from other areas in the catchments? Try to find the answer based on height data in the original raster file. Then, try to find an appropriate function under spatial analyst tool – hydrology.
7. Are there any sinks in the areas, i.e. depressions to which it slopes from all directions? Try to find the answer based on height data in the original raster file. Then, try to find an appropriate function under spatial analyst tool – hydrology.
8. If there are sinks – try to fill them with an appropriate function.

## Available data

Filnamn	Beskrivning	Projektion
AVR_region.shp	Rönne å catchment	RT90 25gonV
Lakes.shp	Lakes in the Rönne å catchment	RT90 25gonV
Landuse_all.shp	Land use in the Rönne å catchment	RT90 25gonV
Watercourse.shp	Rönne å	RT90 25gonV
IM_GS_watershed.shp	Catchment F1 (Gårdsjön)	RT90 25gonV
IM_GS_streams.shp	Streams in the F1 catchment (Gårdsjön)	RT90 25gonV
Lanskarta_04.shp	Counties in Sweden	RT90 25gonV