GIS8 Path Finder

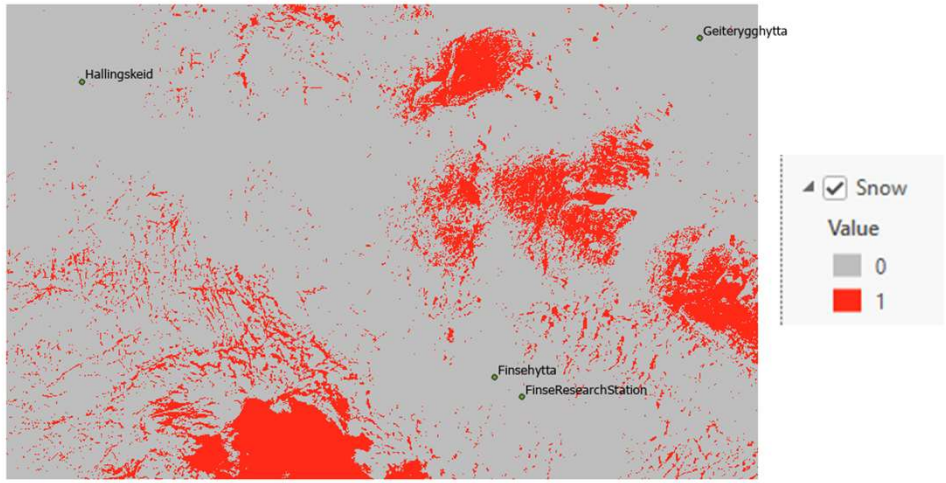
Luc Girod – GEO(3|4)460 – Spring 2025

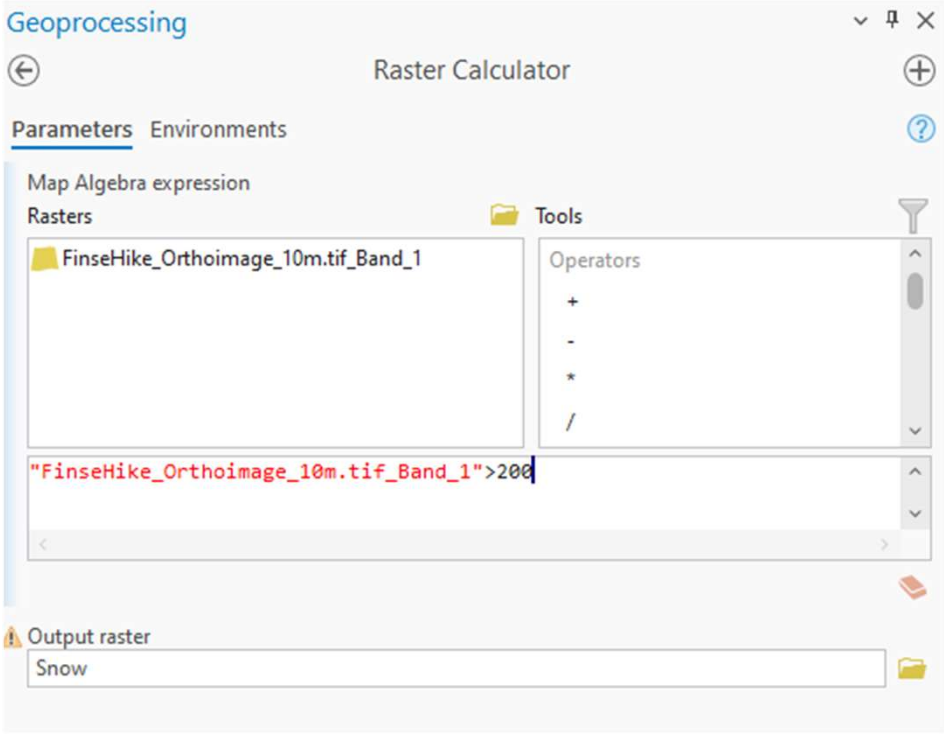
Task: finding the best route between cabins

- Starting from a cabin, what is the best route to reach another one?
- Use terrain and snow as cost functions
- Use lakes are barriers

Finding snow, which slows down a hike

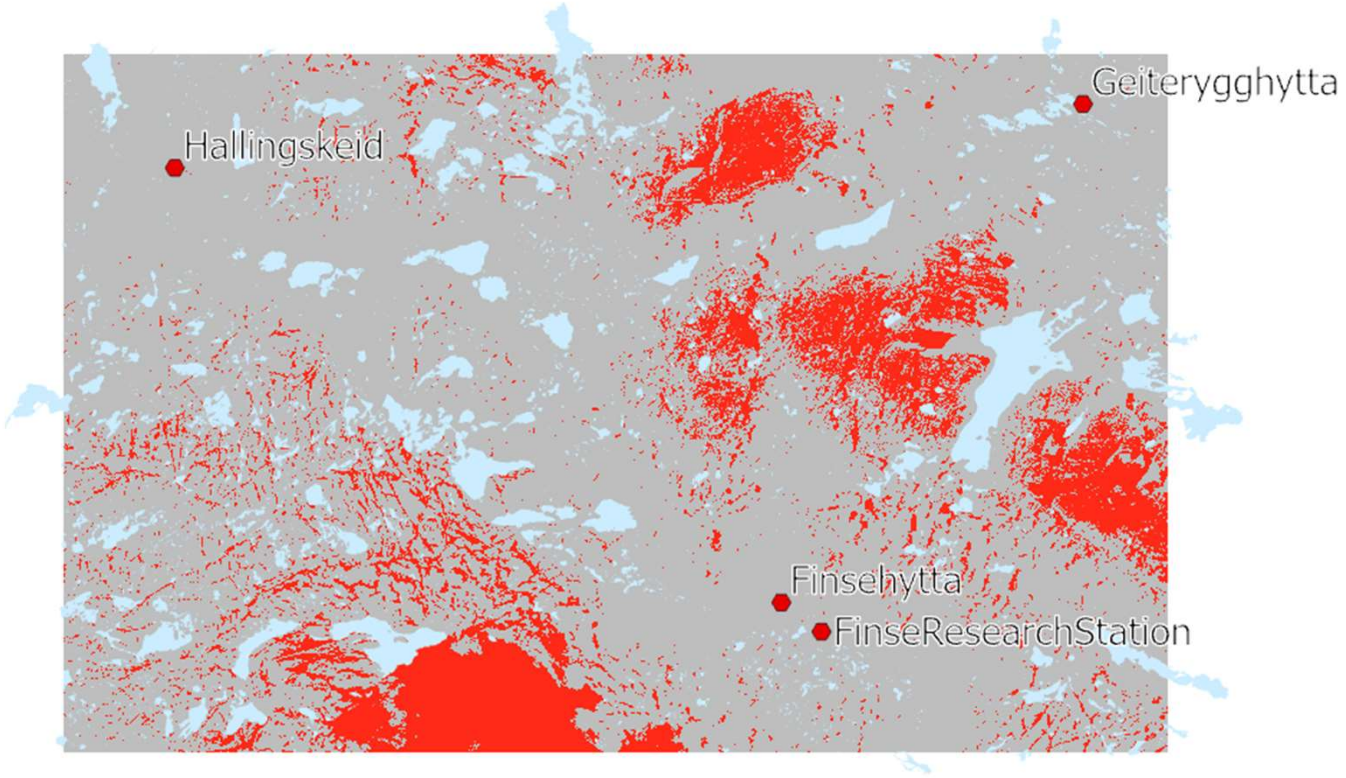
- Load the ortho-image, band 1 (red)
- Snow is bright white
- Threshold to >200 should select snow areas





Finding lakes, that are impassable

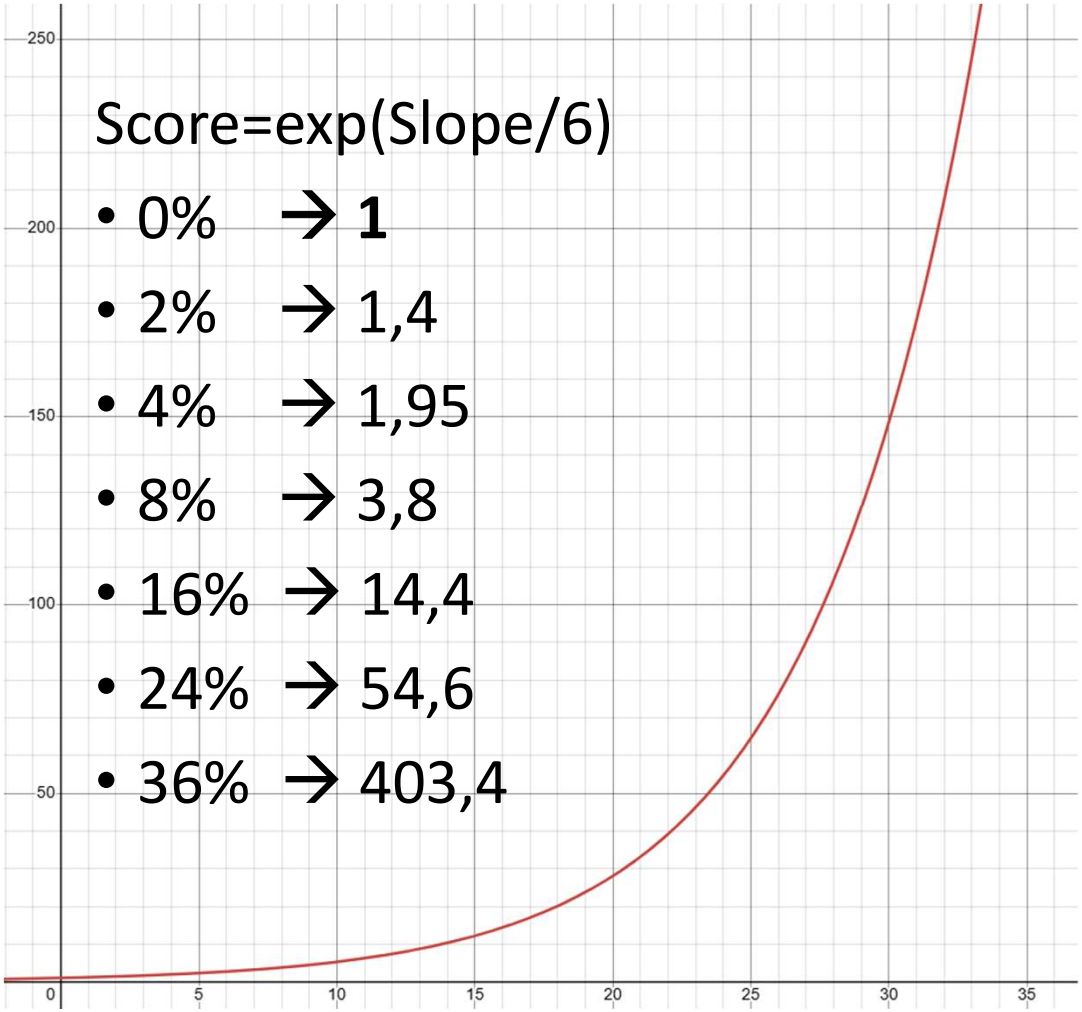
- Load the N50_Lake.shp layer
  - extracted from N50_Arealdekke_omrade (Innsjø)



Slope – easier to walk on flat terrain

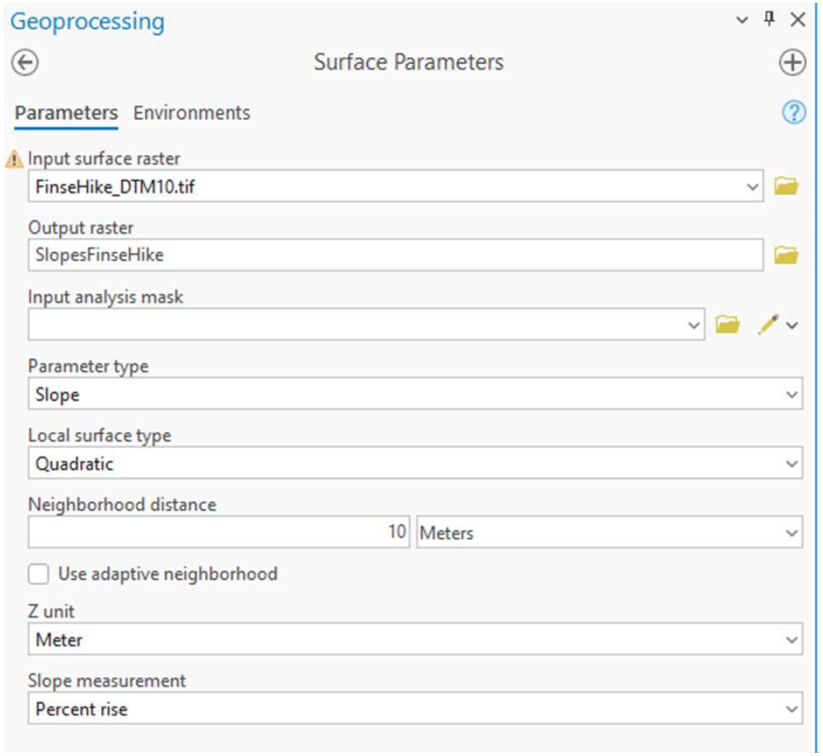
Gradient - Steepness

- 0% - **Flat**
- 2% - **Gradual**
- 4% - **Gentle Slope**
- 8% - **Moderately Steep**
- 16% - **Steep**
- 24% - **Very Steep**
- 36% - **Terrifying**

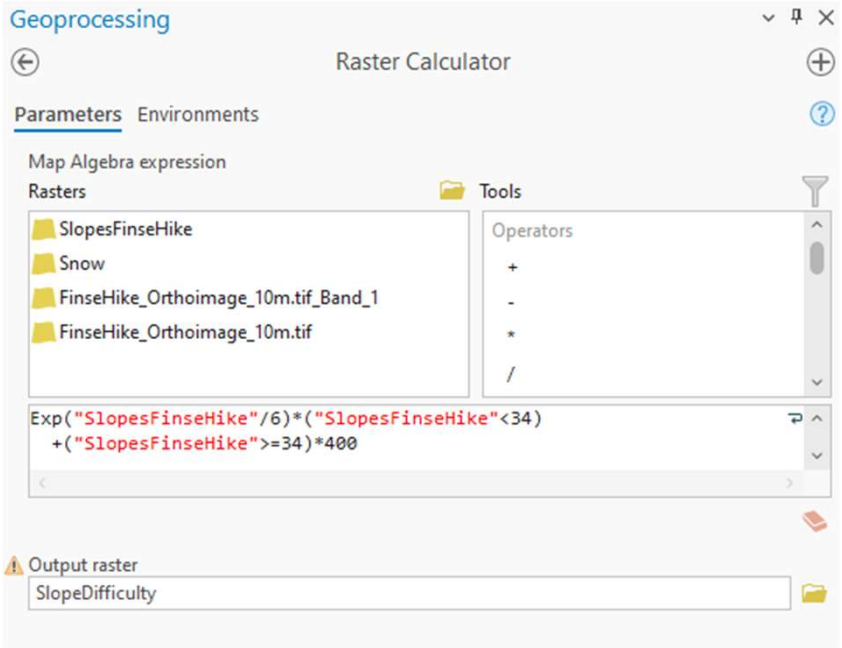


Slope – easier to walk on flat terrain

- Compute the slope using the Surface parameter tool
- Use Percent rise



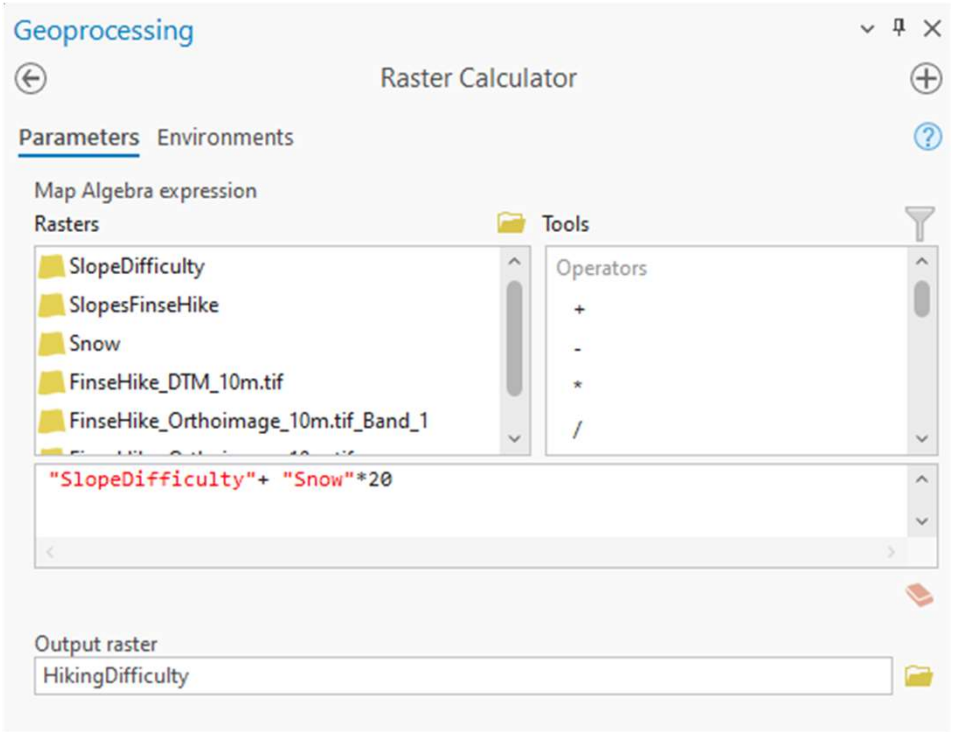
- Compute the slope difficulty score using the Raster calculator
- Use a logic to cap the score at 400



Combine slope and snow to a ‘Total hiking diffuculty score’

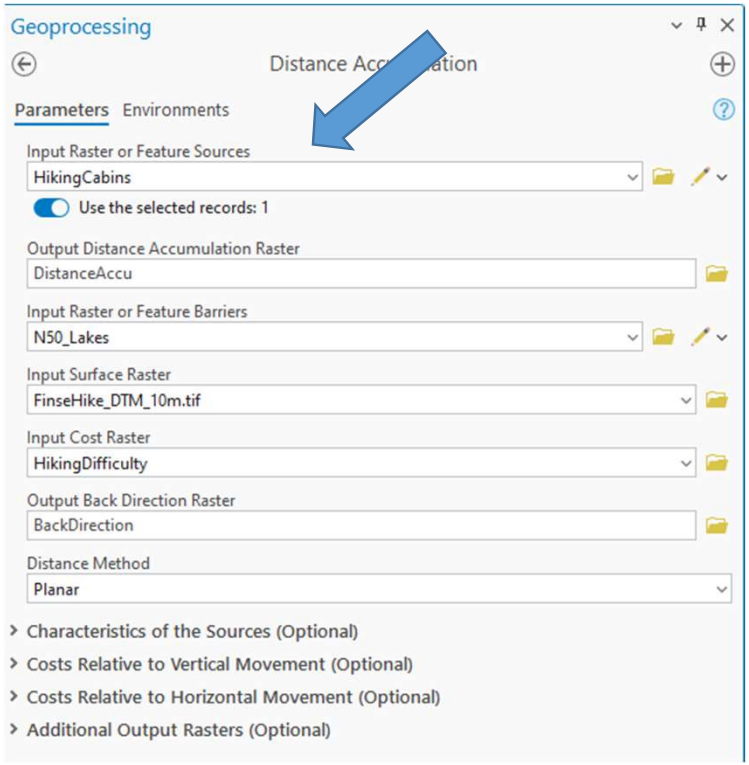
- Use the Raster Calculator to combine both difficulty factors

→’Total hiking diffuculty’=SlopeDifficulty+Snow*20

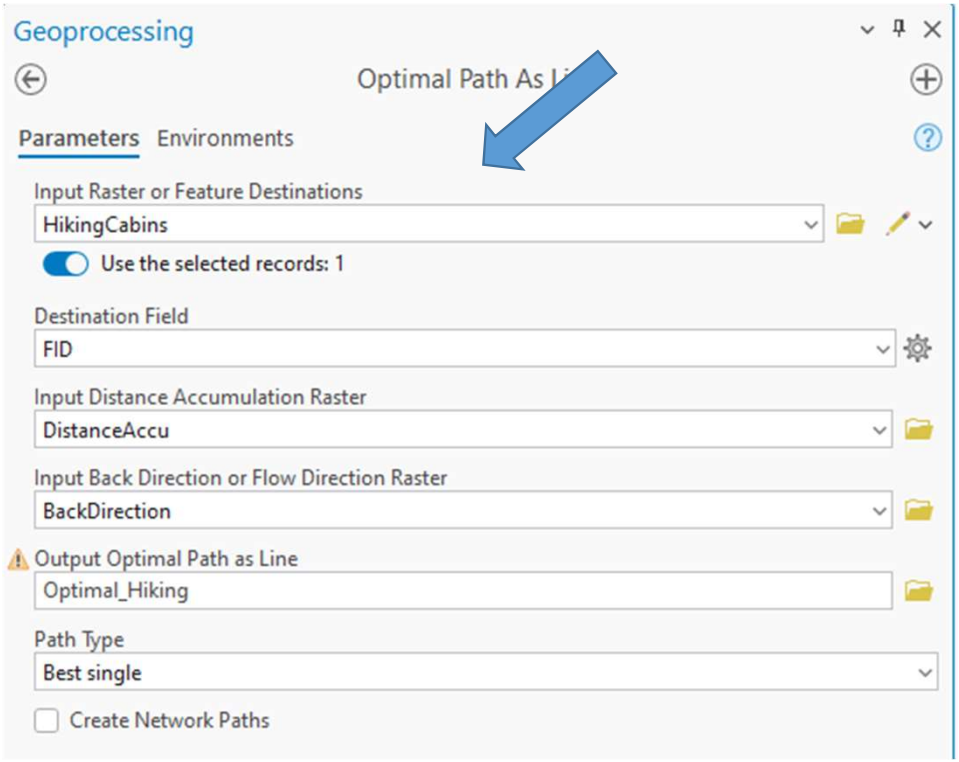


Pute the best path

Select FinseHytta



Select GeiteryggHytta



Hiking path found!

It does cross rivers quite a lot, an improvement here would be to add the rivers either as barriers (but it might make the hike impossible), or as a rasterized layer with high costs

Lab report

- Turn the steps in this lab into a Toolbox using the Model Builder
- Apply your toolbox to another location!