# Project Ideas, Snow

## Main Project:

* Calculate snowmelt and snow cover for every month
* Input rasters: - new snow per month  
   - snow cover (raster from Snow detection code)
* Result rasters: - snow at the end of each month (🡪 should be transferred to next month)  
   - snowmelt per each month (🡪 erosive in this month)

## Code design:

* Load raster files and get the file names  
  🡪 maybe insert a function to check if they have all the same cell size, extent, no data value and so on  
  🡪 use filenames to identify year and month (similar to what we have done in the exercise)
* Code should create folders or check if they are already there to save the result and intermediate result files
* Code should do all the calculations (same raster format needed!)
* (Code should clip raster files)
* Code should write and save the raster files (.tif) using the right geoprojection
* Maybe we should use an dictionary with date as key
* Maybe some statistics for Sebastian like snow covered area in % or max snow height
* Maybe 3 Classes and one main script:   
  - Class for Raster Calculations (high priority, Theresa will start)  
  - Class for read, write data, create folders (high priority, I’ll start)  
  - Class to check input data (same format, geoprojections and so on)

Optional components:

* Implement GUI
* Add Plots
* Magic methods

### Maybe Additional:

* Connect with EroSnow and or Snow Detection
* Improve EroSnow according to what we have learnt in the course

Things to improve:

* Code does not check if the months correspond (snow cover and snonw\_mm) to each other  
  🡪 get both dates and make a check function
  + Change names of snow\_cover input files to be able to use get\_date() and define naming in readme
* Code is still running if there is not same amounts of files or an index error occurs in the first for loop  
  🡪 we need to check input files before creating the list
* Maybe split the main function into several functions (This will probably make the code clearer)
* Add datatype to the docstrings