



FMIPROT

Finnish Meteorological Institute Image Processing Toolbox

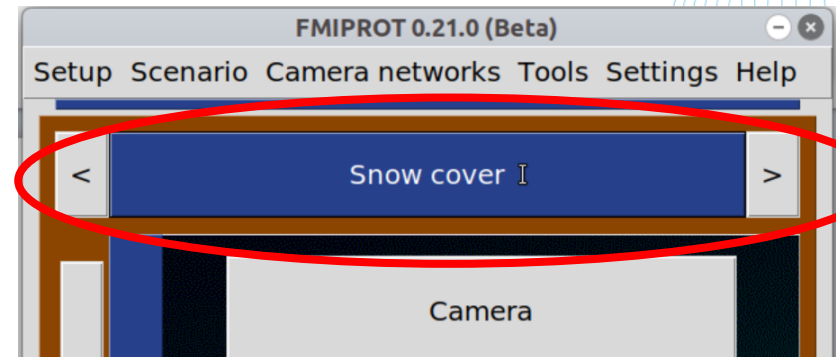
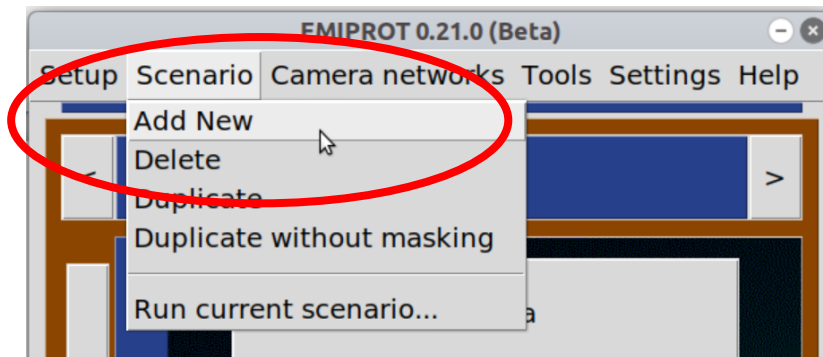
Quick guide - Example runs to learn user
interface

Cemal.melih.tanis@fmi.fi



Example run

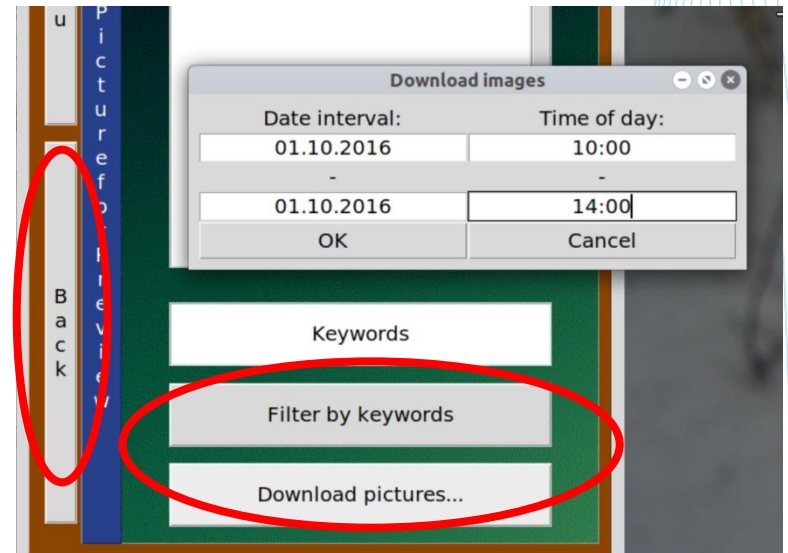
- FMIPROT comes with a demo dataset from MONIMET camera network. Let's use that to learn the basics.
- We will create a *setup* with 3 *scenarios* with 5 *analyses* in total, to observe snow cover, snow depth and vegetation from 3 different cameras.
- 1) Lets first name our scenario so that we don't get lost in between them.
 - Create 2 more scenarios by using "Scenario" -> "Add new"
 - Switch between the scenarios by using "<" and ">" and name them as "Snow depth", "Snow cover" and "Vegetation".





Example run

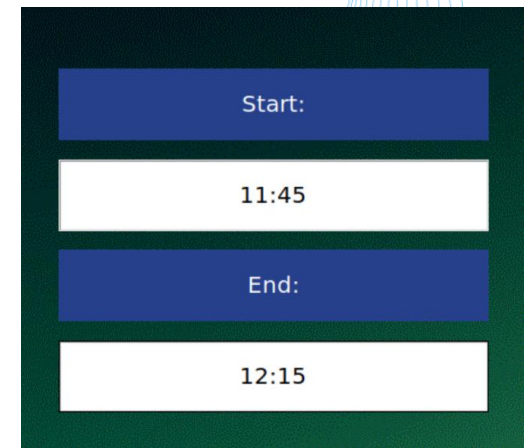
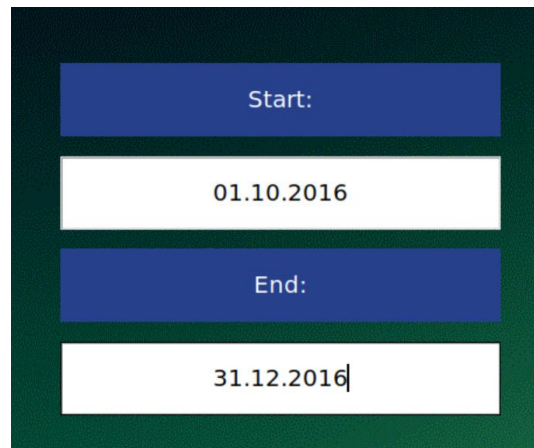
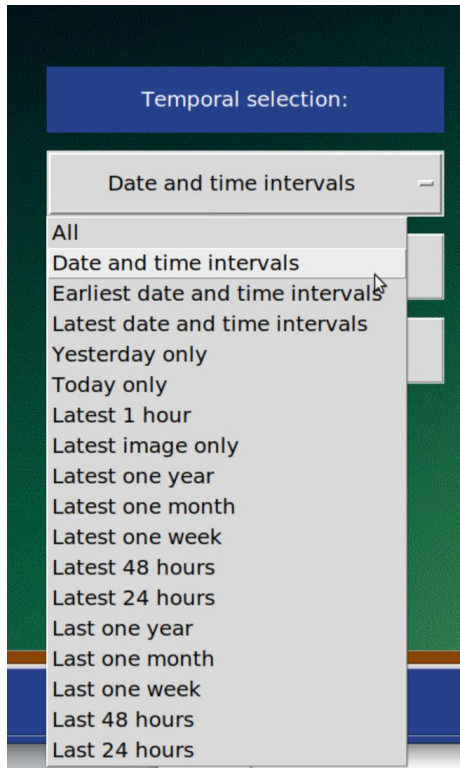
- Switch to “Snow depth” scenario back and go to the “Camera” menu. Choose “Sodankylä Pine Ground” from the cameras.
- By default, it shows a preview image but we need a snow free and good image to choose the ROI. Click “Choose Picture Preview”. Since no image is downloaded from the server yet. We don’t see any image in the list.
- Click “Download pictures...” and set the intervals as in the picture. Click OK and Yes and wait for the download. Now the images are visible in the list.
- Double click the image you like to set it as the preview image.
- Go back to the main menu by Clicking “Back” two times.





Example run

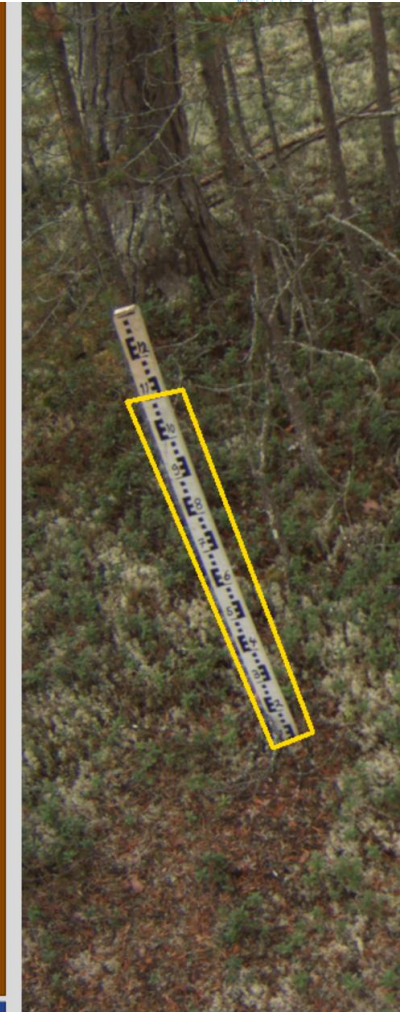
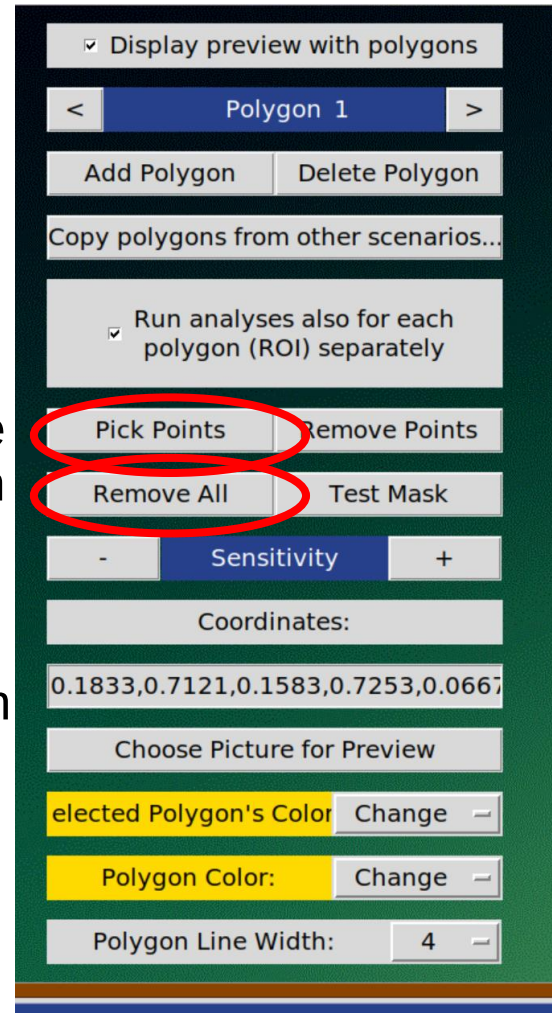
- Now we should make the temporal filtering. Go to the “Temporal” menu.
 - There are many options for making this selection. We will select noon time images in 2016 Autumn so that download does not take unnecessarily long time.
 - In the menu, choose “Date and time intervals” as the temporal selection and set up “Dates” and “Time of the day” as in the pictures.
- Go back to main menu.





Example run

- Now we can select the ROI for the analysis. Go to the “Masking/ROIs” menu.
- Using the buttons on the left, draw a polygon around the snow stick like in the image. The bottom of the rectangle should match the bottom of the stick and it should not be much wider than the stick. We use the stick on the left because the branches over the one in the middle close the view when there is snow.
- By default, drawing is not active. Click “Pick points” to start drawing and just explore the GUI.

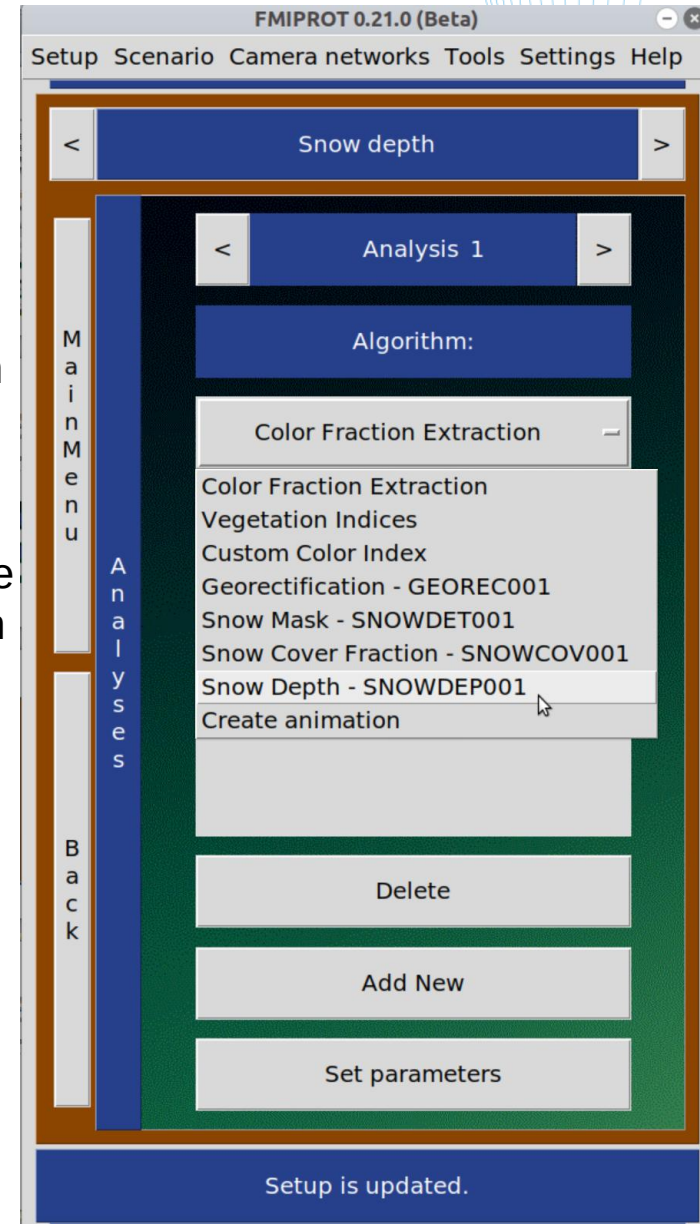




Example run

- Now it is time to set up the *analyses*. Go to “Analyses” menu and select “Snow depth – SNOWDEP001” as the algorithm.
- Click “Set parameters” and change the values as in the image. Notice that the ROI we selected has the number 11 on top, but actually first 10 cm of the stick is buried on the ground. Thus, height of the object (actually ROI) is 100 cm. The threshold value for the darkness is quite experimental. Images from this camera are rather darker because of the trees around so lets keep it 75.

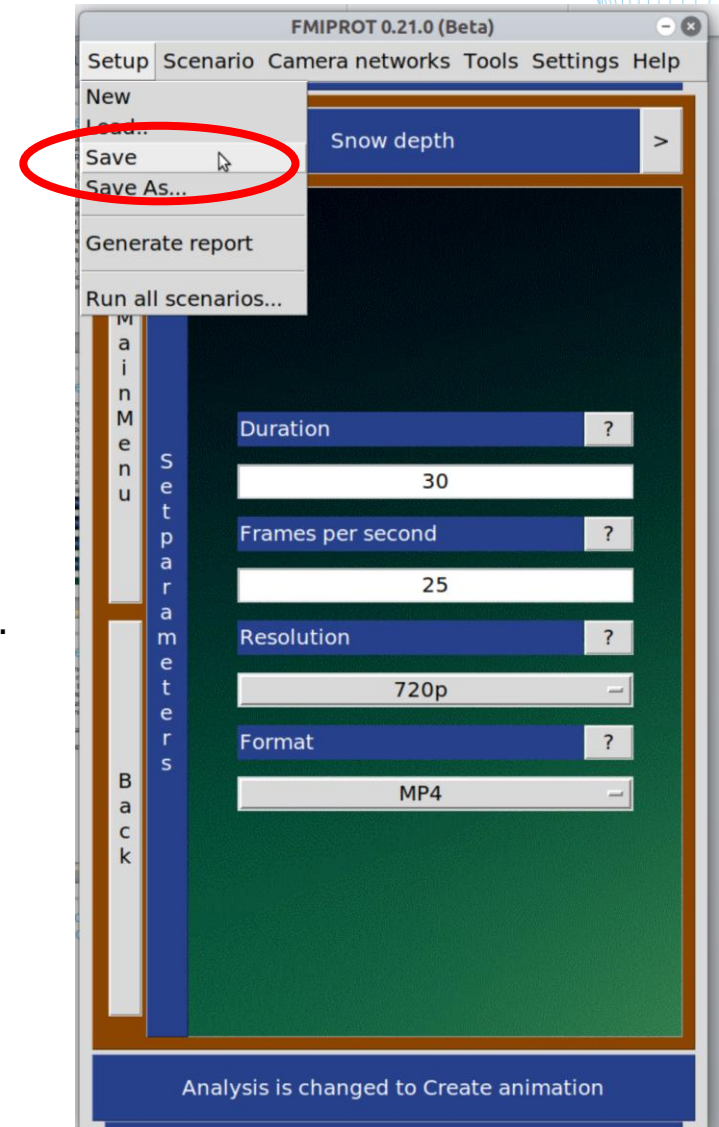
Height of the object	?
<input type="text" value="100"/>	
Threshold Value	?
<input type="text" value="75"/>	
Gaussian filter sigma	?
<input type="text" value="1"/>	
Bias	?
<input type="text" value="0"/>	





Example run

- Lets add another *analysis* to make a video animation so we can watch the change. Click “Add new”. Notice that now the analysis name is changed to “Analysis-2”. (You can switch between analyses using “<” and “>” when required).
- Choose “Create animation” from the algorithm list and click “Set parameters”. The temporal selection covers 3 months, which is about 90 images. So lets make a 30 seconds animation. Set the duration to 30 seconds as in the image.
- Lets now save the setup as a setup file, so if something goes wrong, we can load it back!
- Click “Setup” -> “Save” and choose a directory and filename to save your setup.





Example run

- We have set up a scenario with 2 analyses for the snow depth.
- Using the same menus, set up 2 other scenarios using the criteria below.
- Save your setup.

Snow cover:

Camera: Sodankylä Pine Peatland

Dates: 01.10.2016 - 30.11.2016

Times of day: 11:45 – 12:15

ROI: Two polygon as in image in the next slide, unselect “Run analyses also for each ROI separately”.

Analysis 1: Snow cover fraction – SNOWCOV001, parameters as default*

Analysis 2: Create animation, parameters as 20 seconds duration, others default.

Vegetation:

Camera: Sodankylä Pine Crown

Dates: 01.05.2016 - 31.11.2016

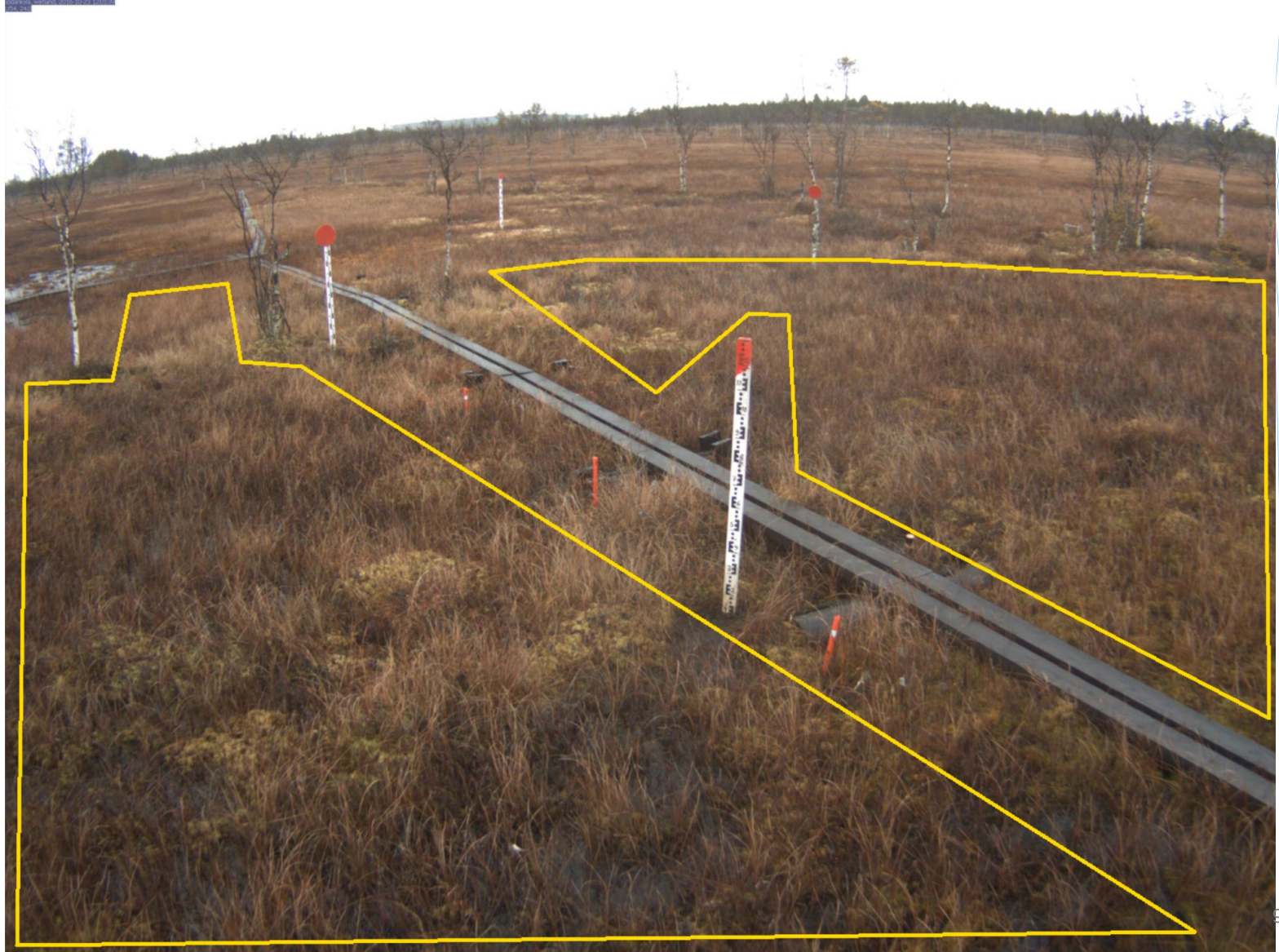
Times of day: 11:45 – 12:15

ROI: Two polygon as in image in the other slide

Analysis 1: Vegetation indices, parameters as default



Example run





Example run





Example run

- Click “Run All” from the main menu to start the run.
- After an “are you sure” prompt, FMIPROT will start the analyses.
- You can follow the progress from the log window. The process should take about 1 hour in a 2018 ultrabook.

```
Log
2018-11-30T22:58:43: Camera is changed to Sodankyla Pine Ground
2018-11-30T22:58:43: Analysis is changed to Snow Depth - SNOWDEP001
2018-11-30T22:58:43: Switched to scenario 1
2018-11-30T22:58:43: Scenario no changed to 1( Scenario name: Snow depth)
2018-11-30T22:58:46: Running all scenarios...
Program is busy, it will not respond until the process is complete.
2018-11-30T22:58:46: Setup file saved as demo.cfg in results directory.
2018-11-30T22:58:46: Analyzing Sodankyla Pine Ground Camera images:
2018-11-30T22:58:46: Establishing FTP connection...
2018-11-30T22:58:50: Connection established.
2018-11-30T22:58:50: Looking for images...
2018-11-30T22:58:53: 1755 possible files found.
2018-11-30T22:58:53: Disconnected from FTP.
2018-11-30T22:58:53: Listing images between dates 2016-10-01 - 2016-12-31 between times of the
day 11:45:00 - 12:15:59...
2018-11-30T22:58:53: 92 images found.
2018-11-30T22:58:53: Running analysis 1: Snow Depth - SNOWDEP001...
2018-11-30T22:58:53: Checking existing images...
2018-11-30T22:58:53: 91 images to be downloaded.
2018-11-30T22:58:53: Opening connections and downloading images...
2018-11-30T22:58:53: Establishing FTP connection...
2018-11-30T22:58:56: Connection established.
2018-11-30T22:58:56: Downloading images...

Image: 16 of 91 (17.58%) (0:01:51)
Analysis: 0 of 2 (0.0%) (~)
Scenario: 0 of 3 (0.0%) (~)
```



Example run

- When the run is finished, the results are saved in the results directory. There is also an HTML report for the whole *setup*. GUI will ask if it should open this with default browser. Open it either by clicking “Yes” or browsing to the results directory. The full path of the directory can be read in the log window.
- The results are visible in the HTML report and also in the GUI Result viewer, which will be automatically opened after the run. Play around to see the results!
- Animations are not visible in the result viewer. It may also not be visible in the HTML report, depending on your browser. In that case, go to the folder and play them with your favorite media player.
- To see if the results are correct, it is easiest to see the downloaded images by using “Camera” > “Open local image directory.”