

The **goal of this practical** is to familiarise with SNAP and the SEOM S3 Land Study 1: Snow using the S3 Snow OLCI optical data and processor output over Greenland examining quantitatively different ice sheet surface properties.

**a.) getting started (try to work all together - live on screen and on personal computers)**

1. boot the VM and login using password: esacry2018
2. locate or gather Sentinel-3 OLCI scenes
  1. option 1
    1. you already downloaded the files (listed at the end of this document) into the VM
  2. option 2
    1. in the VM, open Firefox (3rd icon from top in left toolbar)
    2. in Firefox URL type: **tinyurl.com/CTC2018-Box**
    3. save to disk the .nbm file (a SNAP plugging)
    4. save to disk the 20170728 file<sup>1</sup> (Sentinel-3 OLCI data)
    5. note: the saved data will appear in the ~/Downloads/
    6. because internet bandwidth is limited, gather the priority\_2 folders containing output from the S3 Snow processor and **LATER** save the 20161029 and 20170627 scenes to the VM
3. open a terminal (search for "term" in upper left toolbar icon)
4. in the terminal type: mv ~/Downloads/\*.zip ~/Desktop
5. type ls ~/Desktop [and familiarize yourself with UNIX :-)]
6. extract the 20170728 .zip file [e.g. double click on the files]
7. in the terminal type: SNAP & (the % runs snap in the background)

**b.) familiarizing with some SNAP functionality (try to work all together - live on screen and on personal computers)**

1. open OLCI scene
  1. in SNAP Product Explorer window, browse for and open the *xfdumanifest.xml* file contained in the scene folder.
2. make RGB image
  1. explore
3. open single band Oa21 (1020 nm)
4. colour manipulation
5. tile displays
6. add Tool Window icons: *View > Toolbars > Tool Windows*
7. synchronize displays
8. synchronize pointer
9. pixel locator
10. pins
11. polyline
12. with pointer tool, right click on polyline, e.g. export transect pixels
13. install S3 Snow plugin

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<sup>1</sup> file naming convention <https://sentinel.esa.int/web/sentinel/user-guides/sentinel-3-olci/naming-convention>

1. in SNAP Tools>Plugins>Downloaded>Add Plugins browse for s3tbx-snow-2.0.1-SNAPSHOT.nbm

**c.) running S3 Snow processor (discussion, possible action)**

1. run the S3 Snow operators (**takes 10-30 minutes each, so alternatively** the output is provided via the Dropbox link in the **priority\_2** folder... uncompressing the .tar.gz files use `tar -xvzf FILENAME.tar.gz`)
  1. SNAP menus: *Optical > Thematic Land Processing > Setinel 3 Snow Processors*
  2. within the window, click the box in the tab to the right "use new algorithm for spectral albedo..."
  3. click Run

**d.) collocation (together or individually/groups)**

1. open the .albedo scenes
2. SNAP menus: *Raster > Geometric Operations > Collocation*
3. choose June instead of M (master) and July instead of S (slave)

**d.) analysis (together or individually/groups)**

1. open the .albedo scenes (if not already open from previous)
2. click and move mouse to draw a profile up from the bare ice area into the ice sheet interior, across latitude, double click to finish drawing
  1. [to remove an unwanted pin or line, use pointer tool to select then type CNTL-x]
3. right click on transect on the image and Export Transect Pixels to .txt file
4. open the output in a visualizer (I use IDL, have provided a code "plot\_transects.pro" in the Dropbox share)

**Run the snow operators [alternatively download from the Dropbox]**

1. make graphics and send them to [jbox.greenland@gmail.com](mailto:jbox.greenland@gmail.com)
2. I will post these to the projection system and let us discuss them as a group

**Notes - data files for Practical**

**priority\_1:**

1. S3A\_OL\_1\_EFR\_\_\_\_20170728T145921\_20170728T150221\_20170729T190526\_0179\_020\_239\_1619\_LN1\_O\_NT\_002.zip
2. s3tbx-snow-2.0.1-SNAPSHOT.nbm

**priority\_2\_S3Snow\_output:**

1. S3A\_OL\_1\_EFR\_\_\_\_20170627T132507\_20170627T132807\_20180504T203843\_0179\_019\_181\_1800\_LR2\_R\_NT\_002.SEN3\_albedo.tar.gz  
S3A\_OL\_1\_EFR\_\_\_\_20170728T145921\_20170728T150221\_20170729T190526\_0179\_020\_239\_1619\_LN1\_O\_NT\_002.SEN3\_albedo.tar.gz

**priority\_2\_alb\_transects:**

1. 20170627\_20170728\_collocated\_Rink\_transect.txt
2. columns.txt

**priority\_3\_20170627:**

1. S3A\_OL\_1\_EFR\_\_\_\_20170627T132507\_20170627T132807\_20180504T203843\_0179\_019\_181\_1800\_LR2\_R\_NT\_002.zip

**priority\_4:**

1. S3A\_OL\_1\_EFR\_\_\_\_20161029T141505\_20161029T141642\_20180315T081151\_0097\_010\_210\_1800\_LR2\_R\_NT\_002.zip