

INTRODUCTION TO SNAP

Data: Sentinel-1B IW GRDH 1SDV:

- S1B_IW_GRDH_1SDV_20170818T054243_20170818T054308_006990_00C503_DDB3.zip

1. Open file

- 1.1. File / Open Product
- 1.2. Browse to
S1B_IW_GRDH_1SDV_20170818T054243_20170818T054308_006990_00C503_DDB3.zip

2. View metadata

- 2.1. Select plus icons by filenames in "Product Explorer", expand "Metadata", double click on "Extracted Metadata". Here you can see the basic product information such as acquisition date, product type, acquisition mode, and geometry (antenna pointing, incidence angle, pass).

3. View world map

- 3.1. View / Tool Windows / World Map
- 3.2. Select magnifying glass icon to zoom to image footprint
- 3.3. Use mouse wheel and left click to zoom and pan respectively

4. View image single bands

- 4.1. Select "Bands" folder in "Product Explorer" window and view each band by double clicking on band name.

5. Subset

- 5.1. Navigate to an area you wish to subset in the main viewer
- 5.2. Select Raster / Subset. Here you see the extent of subset. Also you can apply geographic coordinates to create a subset.
- 5.3. Select "OK"

6. Comparison of two polarization images

- 6.1. Open "Amplitude_VH" and "Amplitude_VV" bands by double clicking on band name
- 6.2. Select: Window / Tile Evenly
- 6.3. Synchronise views by selecting the relevant icons in the "Navigation" tab

7. Calibration

- 7.1. Radar / Radiometric / Calibrate
- 7.2. In the "I/O Parameters" select the newly created subset image as source and specify an output directory and filename. The target product will be automatically renamed with the ending "_Cal".
- 7.3. View the "Processing Parameters" tab (but leave all settings as default)
- 7.4. Select "Run"
- 7.5. View the calibrated images "Sigma0_VH" and "Sigma0_VV".

8. Convert to decibel (logarithmic scale)

- 8.1. Expand the list of bands of the calibrated image, right mouse click on the band "Sigma0_VH", select: "Linear to/from dB", then select "Yes" in the pop-up window.
- 8.2. Repeat this also for the "Sigma0_VV" band.
- 8.3. Right click on the newly created "Sigma0_VH_db" and "Sigma0_VV_db" bands and select "Convert Band", then: File / Save Product, to save the virtual bands to file.

9. Filter speckle

- 9.1. Radar / Speckle Filtering / Single Product Speckle Filter
- 9.2. In the "I/O Parameters" select "S1B_IW_GRDH_1SDV_20170818T054243_crop_Cal". The target product will be automatically renamed with the ending "_Spk".
- 9.3. View the "Processing Parameters" tab (but leave all settings as default)

- 9.4. In the "Filter" dropdown box, select "Lee"
- 9.5. In "Filter Size X:" and "Filter Size Y:" select 3, and 3 respectively.
- 9.6. Select "Run"

10. Comparison of original and speckle-filtered images

- 10.1. Open "Sigma0_VV_db" and "Sigma0_VV_db" bands of "S1B_IW_GRDH_1SDV_20170818T054243_crop_Cal" and "S1B_IW_GRDH_1SDV_20170818T054243_crop_Cal_Spk" products
- 10.2. Select: Window / Tile Evenly
- 10.3. Synchronise views by selecting the relevant icons in the "Navigation" tab

11. Geocoding / Terrain Correction

- 11.1. Radar / Geometric / Terrain Correction / Range-Doppler Terrain Correction
- 11.2. In the "I/O Parameters" select "S1B_IW_GRDH_1SDV_20170818T054243_crop_Cal_Spk".
The target product will be automatically renamed with the ending "_TC".
- 11.3. View the "Processing Parameters" tab (but leave all settings as default)
- 11.4. Select "Run"

12. RGB image view of "S1B_IW_GRDH_1SDV_20170818T054243_crop_Cal_Spk_TC"

- 12.1. Window / Open RGB Image Window
- 12.2. Select the following bands: Red = Sigma0_VV_db, Green = Sigma0_VH_db, Blue = Sigma0_VH_db-Sigma0_VV_db. The difference image for Blue channel can be created using an expression icon [...] on the right side to the Blue channel.
- 12.3. Contrast stretch the images: Colour Manipulation tab, move triangular sliders to either side of the histogram for each R, G and B channel.

13. Export of the product (to KMZ-file)

- 13.1. Right click on the image in the main viewer and select "Export View as Google Earth KMZ".
- 13.2. Select an output folder and save the file
- 13.3. Open the file in Google Earth