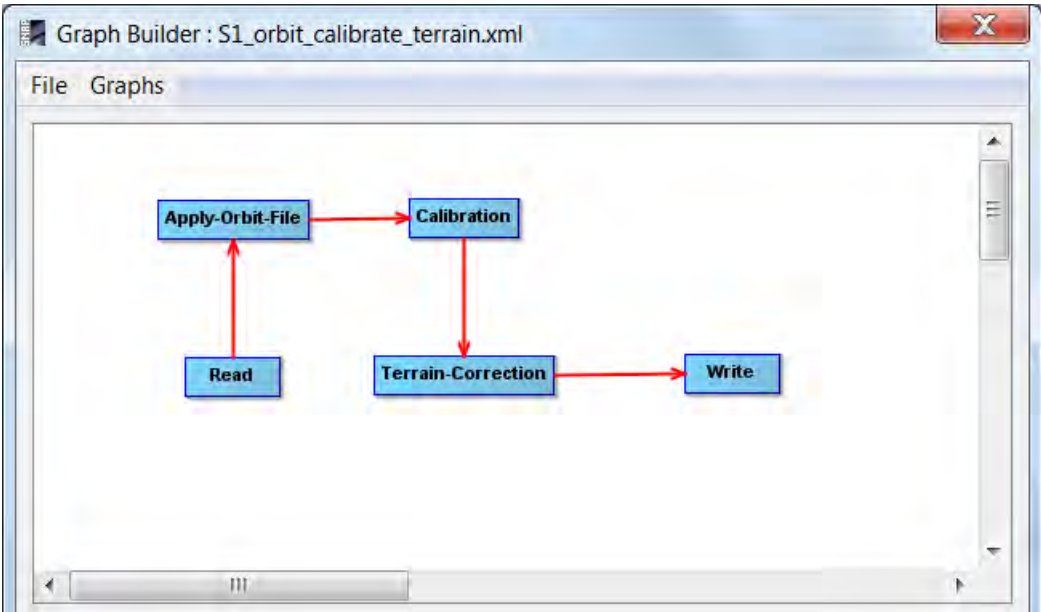


SENTINEL-1 BATCH PROCESSING IN SNAP

Data: Sentinel-1A IW GRDH 1SDV:

- S1A_IW_GRDH_1SDV_20151120T222038_20151120T222105_008694_00C5EE_B572.zip
- S1A_IW_GRDH_1SDV_20151214T222037_20151214T222104_009044_00CFAE_F8B4.zip
- S1A_IW_GRDH_1SDV_20160212T222035_20160212T222102_009919_00E8E4_00DC.zip
- S1A_IW_GRDH_1SDV_20160307T222035_20160307T222102_010269_00F2F3_DF4F.zip
- S1A_IW_GRDH_1SDV_20160319T222036_20160319T222103_010444_00F7EB_A5F1.zip
- S1A_IW_GRDH_1SDV_20160412T222037_20160412T222103_010794_01022C_3FB1.zip

1. Open all files
 - 1.1. File / Open Product
2. View world map
 - 2.1. View / Tool Windows / World Map
 - 2.2. Select magnifying glass icon to zoom to image footprint
 - 2.3. Use mouse wheel and left click to zoom and pan respectively
3. Crop
 - 3.1. Select the name of the first image listed in the “Product Explorer” window
 - 3.2. Raster / Subset... / Geo Coordinates
 - 3.3. North latitude bound: 40.111
 - 3.4. West longitude bound: 116.718
 - 3.5. South latitude bound: 39.747
 - 3.6. East longitude bound: 115.818
 - 3.7. Select OK
 - 3.8. Repeat for each image in time series
4. Save the newly created subset image
 - 4.1. Select subsetted image in “Product Explorer”
 - 4.2. Select: File / Save Product As...
 - 4.3. Select “Yes” to convert to BEAM DIMAP format (SNAP native file format)
 - 4.4. Select an output filename and location, and select “Save”
 - 4.5. Repeat for all images
 - 4.6. Close all images
 - 4.7. Open the cropped images
5. Create processing chain
 - 5.1. Tools / GraphBuilder
 - 5.2. Create the following graph by right mouse clicking and selecting a process, and left clicking on each process to connect them with arrows.
 - 5.3. Below the graph, for each process, apply the settings as shown below:



Read

The configuration panel for the 'Read' node includes the following fields:

- Source Product Name:** A dropdown menu showing '[1] S1A_IW_GRDH_1SDV_20151120T222038_sub'.
- Data Format:** A dropdown menu showing 'Any Format'.

At the bottom of the panel are several action buttons: Load, Save, Clear, Note, Help, and Run.



Apply-Orbit-File

Read

Apply-Orbit-File

Calibration

Terrain-Correction

Write

Orbit State Vectors:

Sentinel Precise (Auto Download)

Polynomial Degree:

3

☐ Do not fail if new orbit file is not found

Load

Save

Clear

Note

Help

Run

Calibration

Read

Apply-Orbit-File

Calibration

Terrain-Correction

Write

Polarisations:

VH

VV

☐ Save as complex output

☒ Output sigma0 band

☐ Output gamma0 band

☐ Output beta0 band

☐ Output DN band

Load

Save

Clear

Note

Help

Run

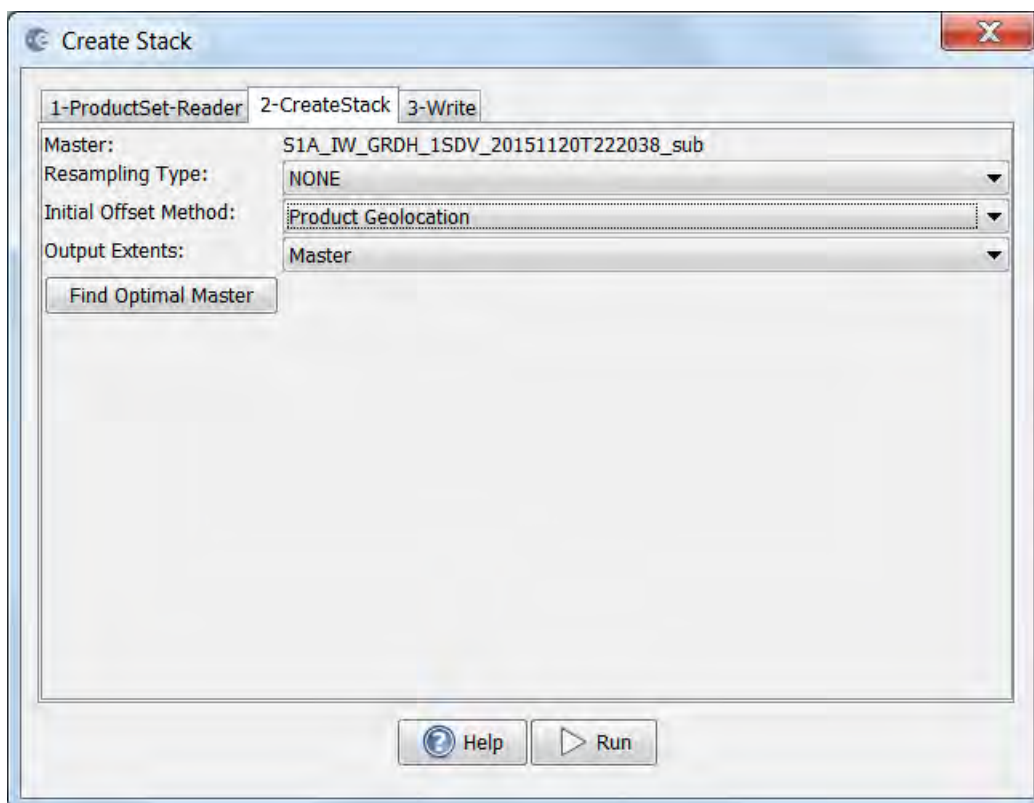
Terrain-Correction

Read	Apply-Orbit-File	Calibration	Terrain-Correction	Write
Source Bands:		Sigma0_VH Sigma0_VV		
Digital Elevation Model:		SRTM 3Sec (Auto Download)		
DEM Resampling Method:		BILINEAR_INTERPOLATION		
Image Resampling Method:		BILINEAR_INTERPOLATION		
Source GR Pixel Spacings (az x rg):		10.01(m) x 10.0(m)		
Pixel Spacing (m):		10.01		
Pixel Spacing (deg):		8.992135994036409E-5		
Map Projection:		WGS84(DD)		
<input checked="" type="checkbox"/> Mask out areas without elevation		<input type="checkbox"/> Output complex data		
Output bands for:				
<input checked="" type="checkbox"/> Selected source band		<input type="checkbox"/> DEM		<input type="checkbox"/> Latitude & Longitude
<input type="checkbox"/> Incidence angle from ellipsoid		<input type="checkbox"/> Local incidence angle		<input type="checkbox"/> Projected local incidence angle
<input type="checkbox"/> Apply radiometric normalization				
<input type="checkbox"/> Save Sigma0 band		Use projected local incidence angle from DEM		
<input type="checkbox"/> Save Gamma0 band		Use projected local incidence angle from DEM		
<input type="checkbox"/> Save Beta0 band				
Auxiliary File (ASAR only):		Latest Auxiliary File		
<div>Load Save Clear Note Help Run</div>				

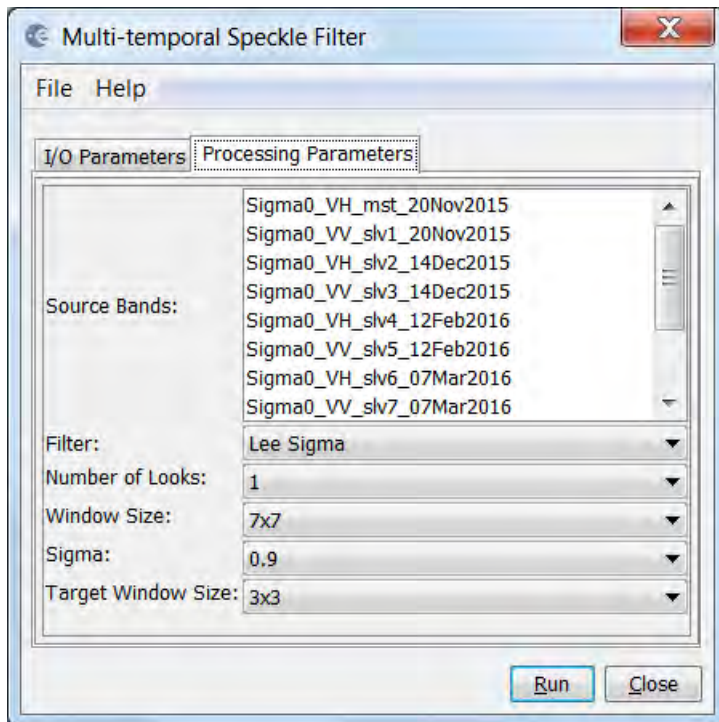
Write

Read	Apply-Orbit-File	Calibration	Terrain-Correction	Write
Target Product				
Name: S1A_IW_GRDH_1SDV_20151120T222038_sub_Orb_Cal_TC				
<input checked="" type="checkbox"/> Save as: BEAM-DIMAP				
Directory: C:\WORK\Temp				
<input checked="" type="checkbox"/> Open in SNAP				
<div>Load Save Clear Note Help Run</div>				

- 5.4. Select "Save" and save the graph.
- 5.5. Close the Graph Builder window.
6. Create batch directory
 - 6.1. Create a new folder in which to save batch processed imagery
7. Batch processing
 - 7.1. Tools / Batch Processing
 - 7.2. Select "Add Opened"
 - 7.3. Select "Load Graph" and browse to saved graph.
 - 7.4. Under "Directory" browse to newly create batch directory
 - 7.5. Select "Run"
8. Create stack
 - 8.1. Close all images and reopen batch processed images in the batch folder
 - 8.2. Radar / Coregistration / Stack Tools / Create Stack
 - 8.3. Select "Add Opened"
 - 8.4. In the "2-CreateStack" tab, select the following parameters:



- 8.5. In the "Write" tab, select a filename and location
- 8.6. Select "Run"
9. Multitemporal Speckle Filtering
 - 9.1. Radar / Speckle Filtering / Multi-temporal Speckle Filter
 - 9.2. Select the stack as input
 - 9.3. Select the parameters below:



9.4. Select “Run”

10. Convert to dB

10.1. Expand the bands of the speckle filtered stack in the “Product Explorer” window

10.2. Right mouse click on each band and select “Linear to/from dB”

11. Multitemporal, polarimetric analysis

11.1. View various RGB composites of the speckled filtered stack in dB: Window / Open RGB Image Window

11.1.1. View: Red = VV_dB, Green = VH_dB, Blue = VV_dB from the same date

11.1.2. View: Red = Sigma0_VH_mst_20Nov2015_db, Green = Sigma0_VH_mst_12Feb2016_db, Blue = Sigma0_VH_mst_12Apr2016_db