FLOOD MAPPING – PREPROCESSING WITH A GRAPH AND THE BATCH PROCESSING TOOL

Data: Sentinel-1 IW GRDH 1SDV:

- S1A_IW_GRDH_1SDV_20160905T091347_20160905T091412_012915_0146AC_88E4 (not crisis image)
- S1B_IW_GRDH_1SDV_20170614T091259_20170614T091324_006044_00A9CE_80EB (crisis image)

1. Open the 2 S1 images in SNAP
   1.1. File / Open Product… (use control key to select multiple files)

2. Crop the images to include only general area of floods
   2.1. Raster / Subset…
   2.2. Crop first the image with floods
   2.3. Open the cropped flood image, then open the archive (non-flood) image and crop the archive to the same extent as the viewer (the synchronised displays will show the same extent)
   Note: the "Step2_subsets" you are provided with were created using the Geo coordinates below:
       - North Latitude bound: 45.442
       - West Longitude bound: 14.067
       - South Latitude bound: 46.299
       - East Longitude bound: 14.972

   Note: The subsets have already been created and can be opened directly

3. Build your pre-processing graph
   3.1. Click on the Graph Builder icon on the main toolbar
   3.2. Right click and add, in the order below, each of the preprocessing steps:
       - The first tool is Read, which appears as a default. Also the Write tool appears as a default.
       - Radar / Multilook. A new tab called Multilook tab will appear in the bottom. Change "Number of Range Looks" and "Number of Azimuth Looks" both to 3
       - Radar / Radiometric / Calibration
       - Radar / Speckle Filtering / Speckle Filter. Inside its tab, select one of the Gamma map with a filter size of 5 for both X and Y
       - Radar / Geometric / Terrain Correction / Terrain Correction. For image Resampling, use Nearest Neighbour. For Digital Elevation Model, use SRTM 1sec (Auto Download)
       - Raster / Data Conversion / Linear to/from dB
       - The last tool is Write
       - Click on each tool, and connect them by dragging the red arrows from one tool to the next, respecting the order above
   3.3. File / Save Graph. The backup one is called Preprocessing_Graph_backup.xml

4. Apply it to several images at once: Batch processing
   4.1. Click on the Batch Processing icon on the main toolbar
   4.2. In the I/O Parameters, click the second "+"sign to add the images you have in the Product Explorer, and click Refresh
   4.3. Under Directory, browse to the output folder (Outputs_graph in this case)
   4.4. The Keep source name product box:
       - If we do NOT select it, the products will have suffixes added to their individual name (as they would if processed manually)

- If we select it, the products have suffixes added to their individual names. The Directory can be adjusted. If the directory does not match the one in the Write tab, the products will go to the directory in the Write tab
  - If we select it, and the Directory matches the Write tab, same result
4.5. In the Load Graph button, navigate to your graph xml and click OK.
4.6. In the first of the tools, Multilook, select the polarisation we want. In this case, we can use either so we select Amplitude_VV, for example.
4.7. Check that the other tools display only VV, and if not, select VV
4.8. Click Run.
4.9. Save again the products but replacing Step2 with Step4B in their name. Close products and open them again if the Product Explorer window does not show the change

5. Create a Stack with the pre-processed images
   5.1. Radar / Coregistration / Stack Tools / Create Stack.
   5.2. Click the second "+" (Add Opened), and if use the minus sign to remove the products we don't want in the stack. We should only be left with the Step5 outputs. Click Refresh.
   5.3. In the Create Stack tab, select "Product Geolocation" as the "Initial Offset Method"
   5.4. In the Write tab, rename it as Step5B_subset_S1A_20141108_20141015_Stack and ensure the Directory points to Outputs_graph
   5.5. Click Run

From this, follow the steps in the manual part