

11TH ADVANCED TRAINING COURSE ON LAND REMOTE SENSING



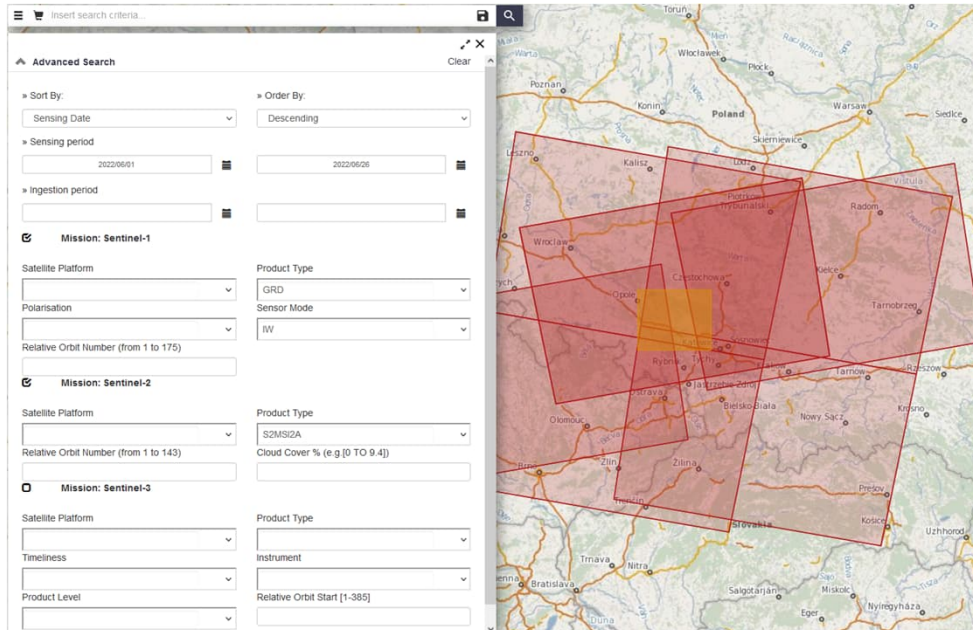
SAR & Optical data for Forestry: ESA SNAP exercise
Oleg Antropov, VTT Technical Research Centre of Finland

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→ THE EUROPEAN SPACE AGENCY

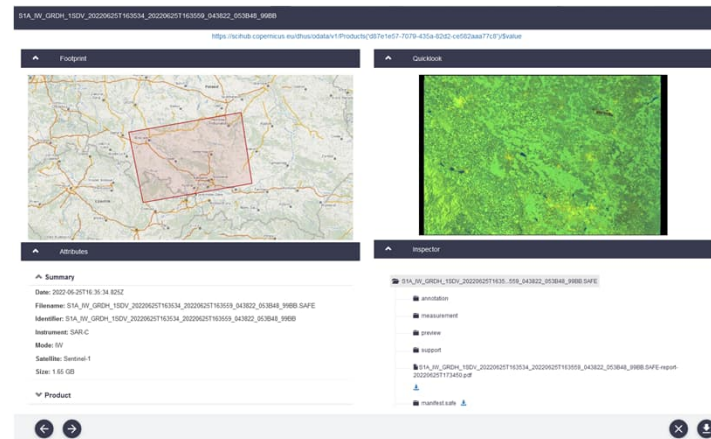
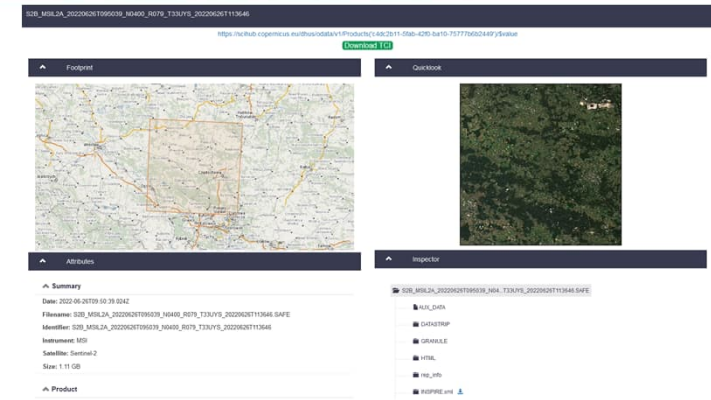
SNAP exercise: product download



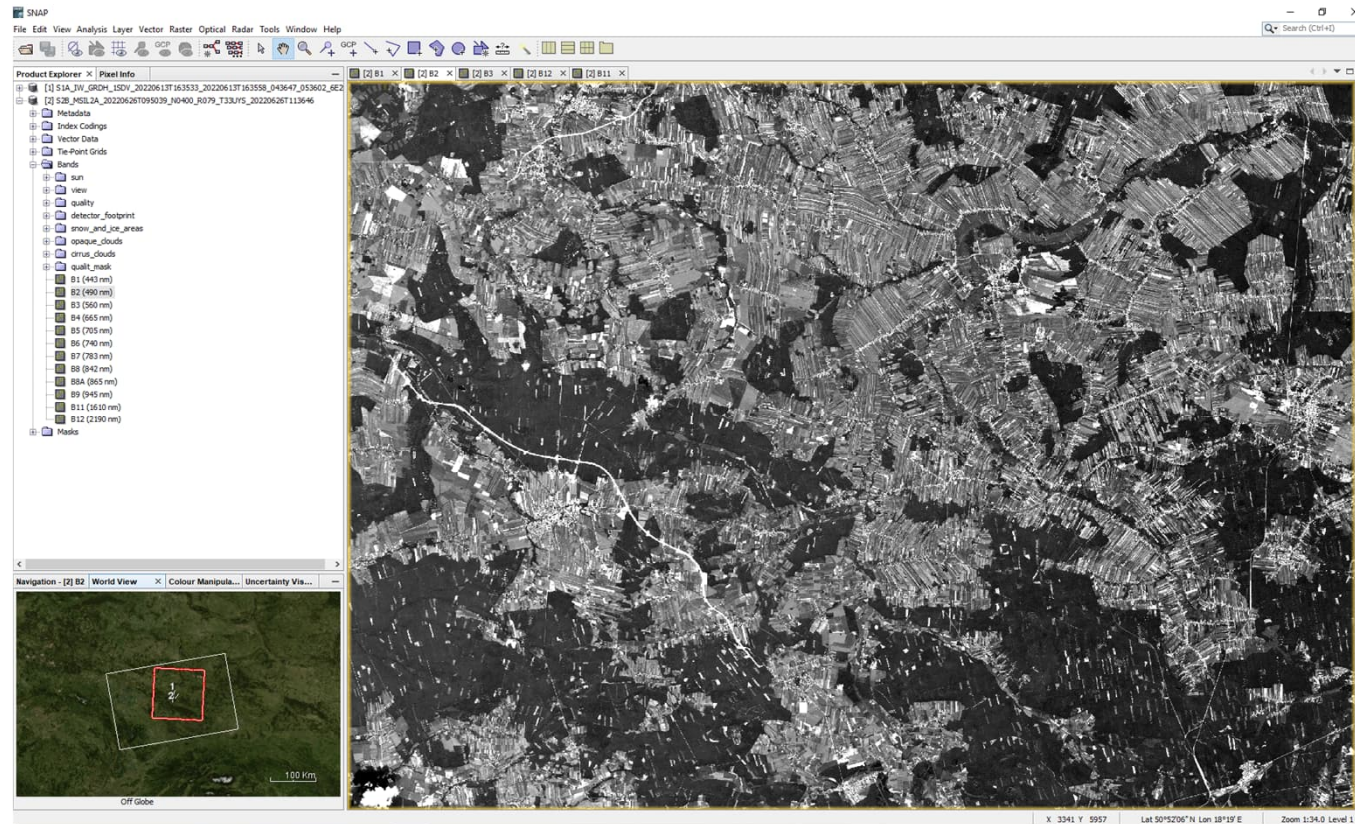
1. Localize and download Sentinel-2 Level 2A and Sentinel-1 IW GRD image from ESA Open Hub

<https://scihub.copernicus.eu/>

Product download requires registration and authorization



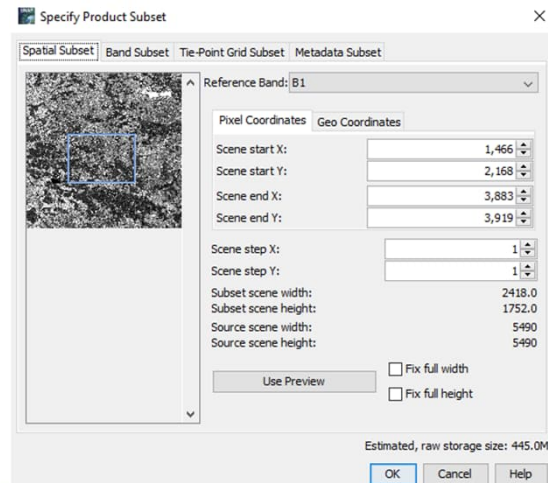
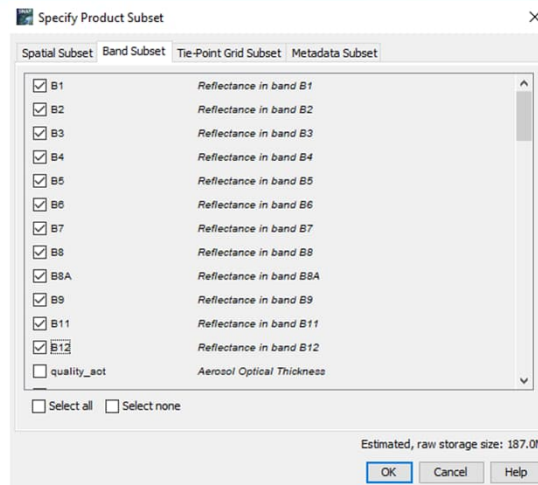
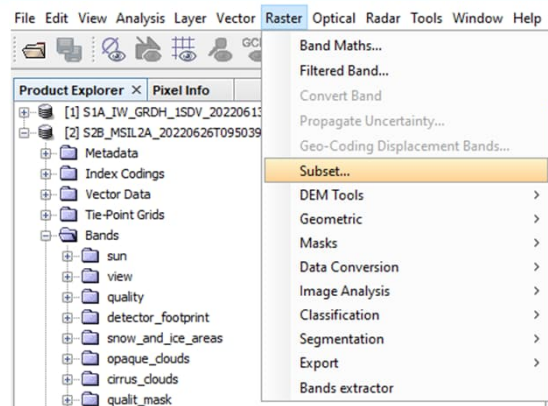
SNAP exercise: product download



2. Open and examine the image products



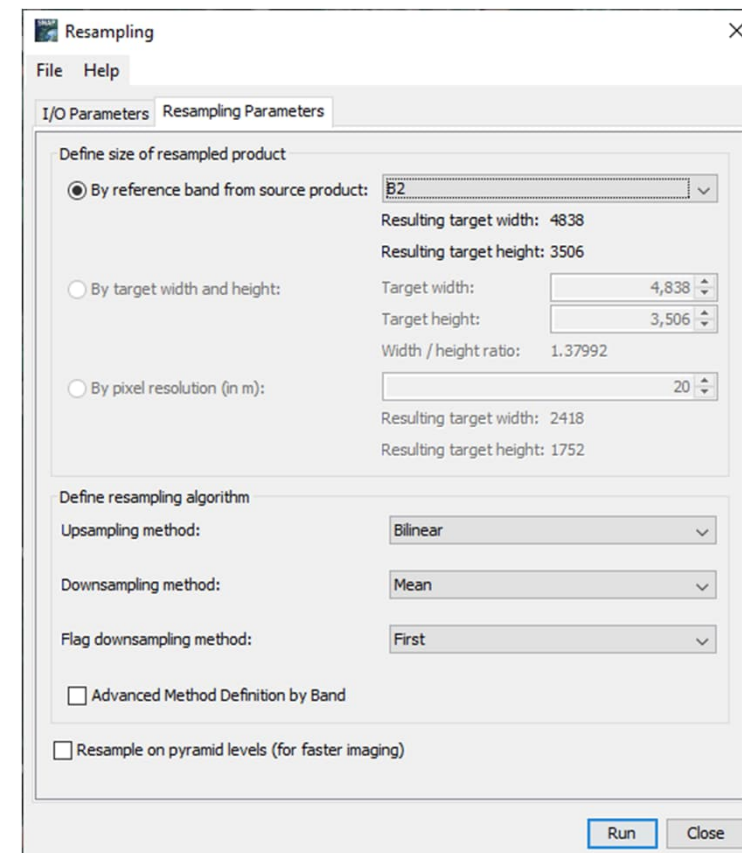
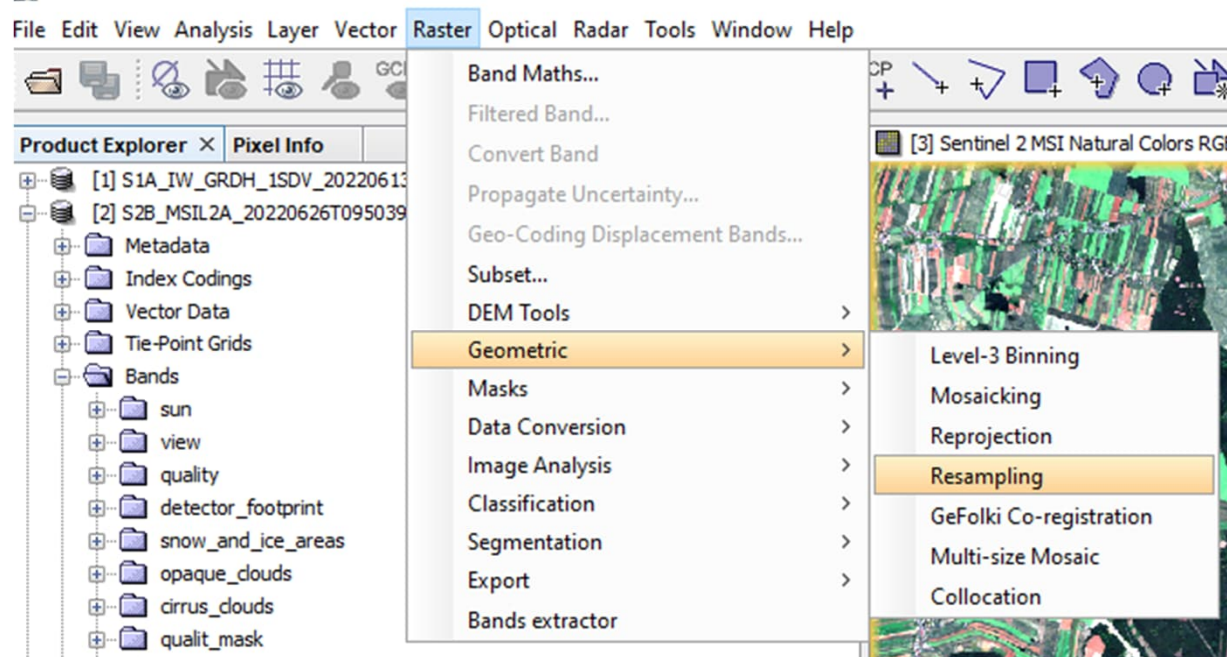
SNAP exercise: image subsetting



3. Extract a subset of Sentinel-2 product, limiting spatial extent and including only reflectance bands. Visualize the subset as RGB composite

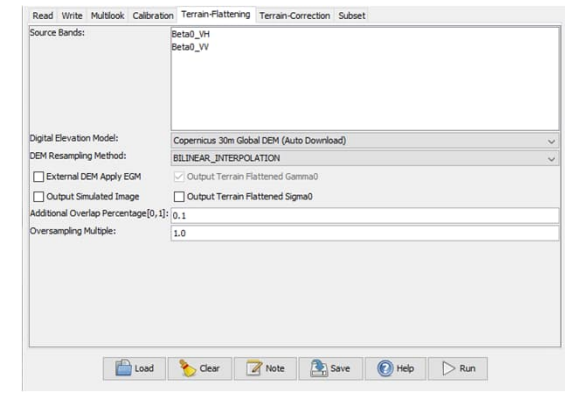
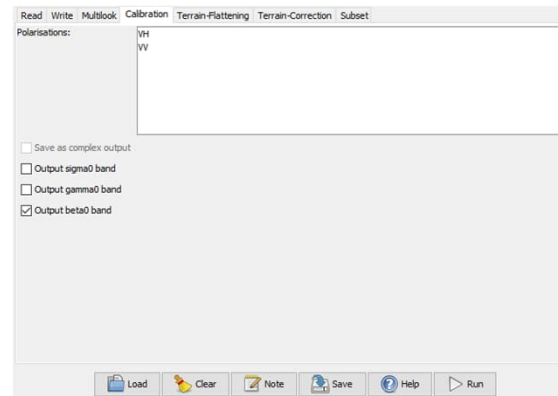
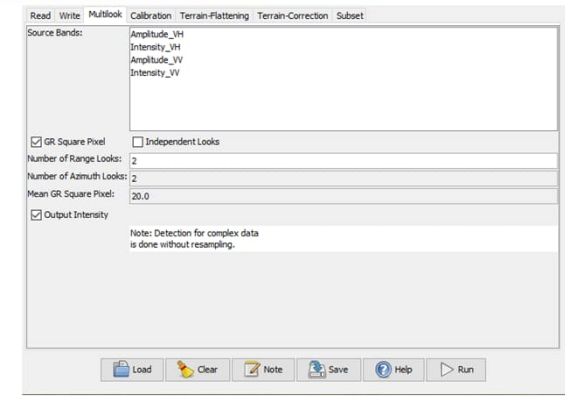
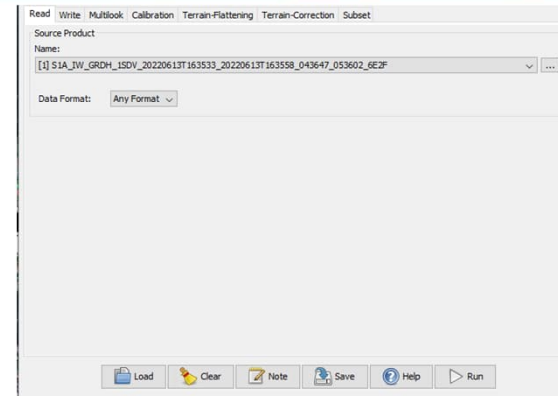
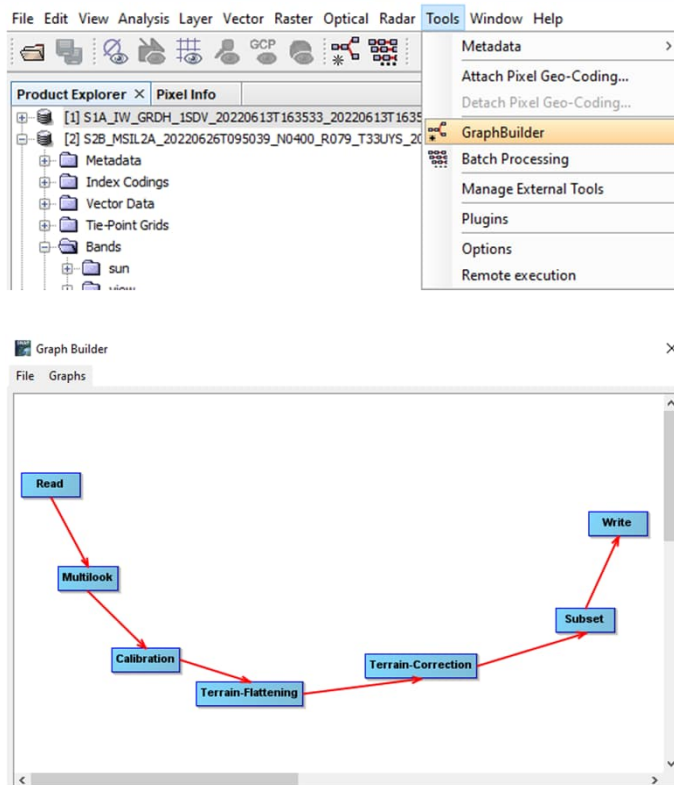


SNAP exercise: image resampling



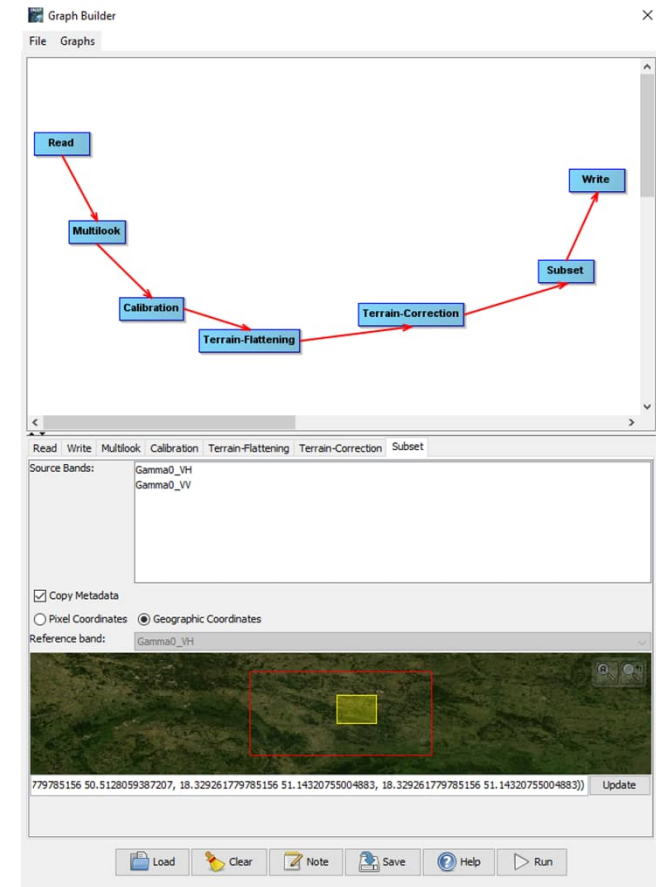
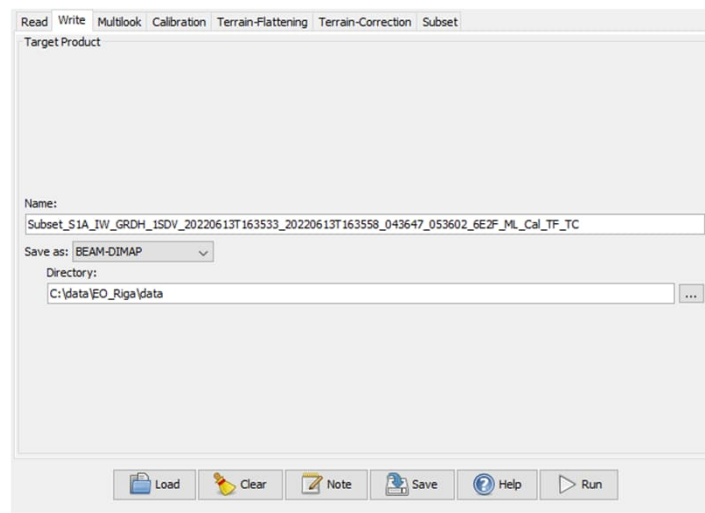
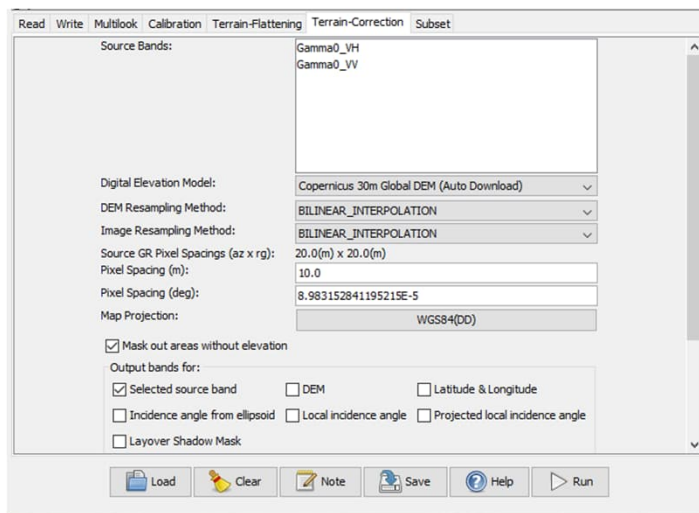
4. Resample image bands to 10 m resolution using suitable reflectance band, e.g. B2

SNAP exercise: image subsetting



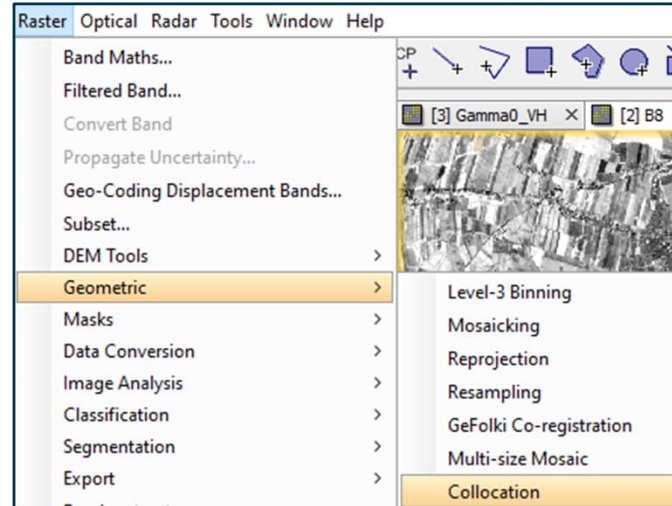
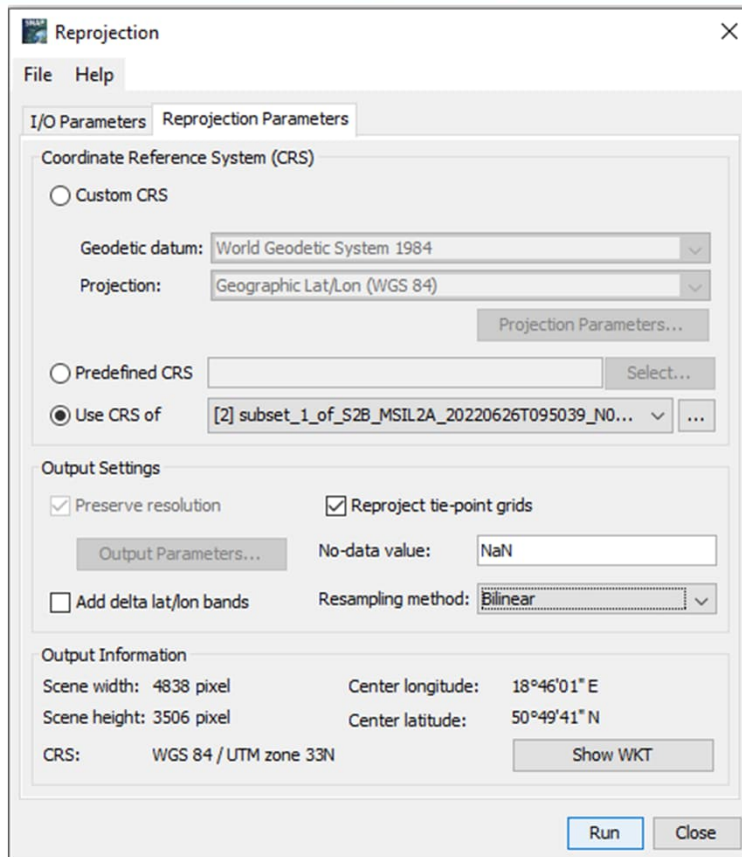
5. Construct a simple graph using GraphBuilder tool for Sentinel-1 GRD image orthorectification, as shown in the Figure. Orbit refinement and speckle filtering can be included additionally the graph.

SNAP exercise: Sentinel-1 GRD orthorectification

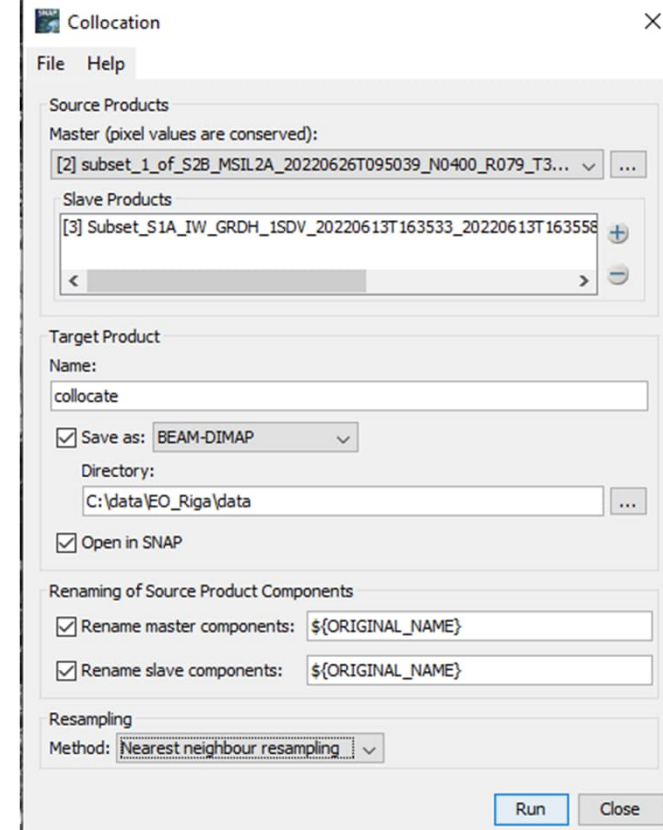


6. Construct a simple graph using GraphBuilder tool for Sentinel-1 GRD image orthorectification, as shown in the Figure. Orbit refinement and speckle filtering can be included additionally the graph (continuation)

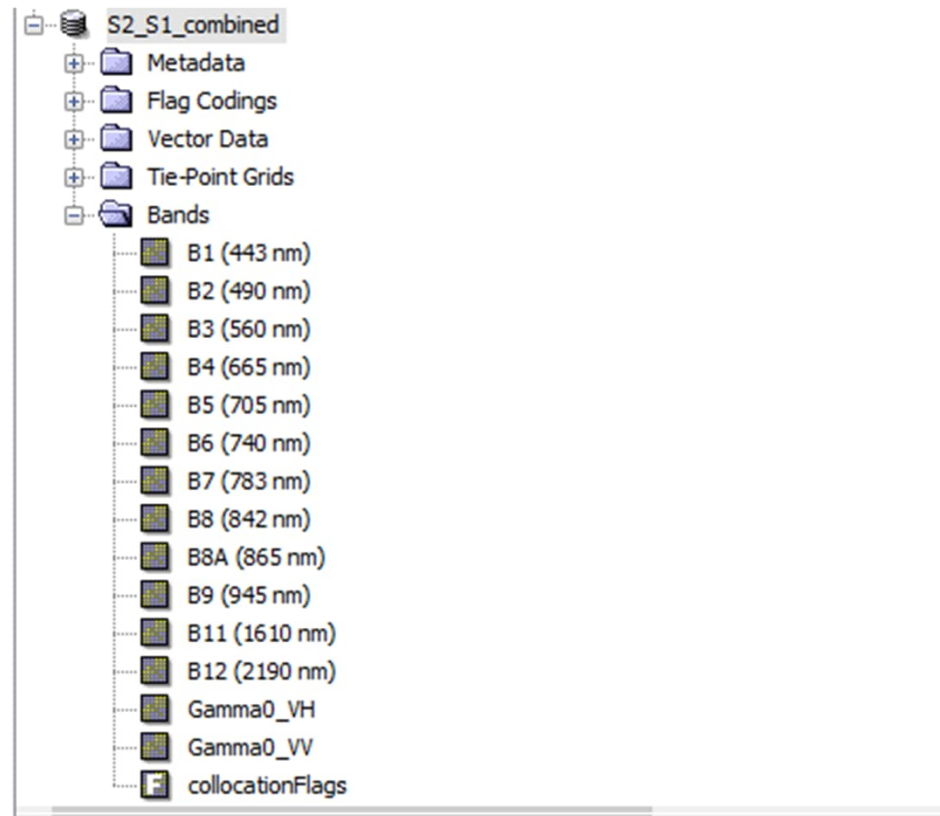
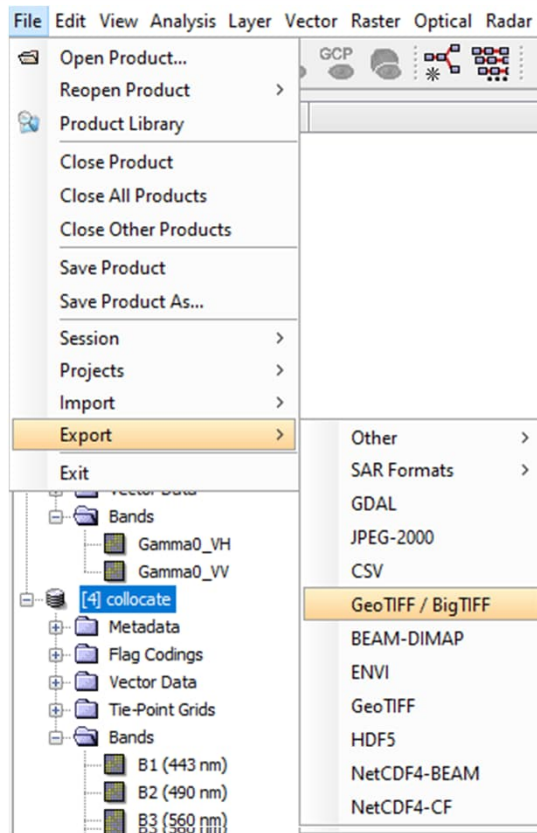
SNAP exercise: image reprojection and collocation



7. Reproject Sentinel-1 image using CRS of Sentinel-2 subset image preprocessed earlier, and collocate Sentinel-1 and Sentinel-2 bands.



SNAP exercise: product export and post-processing



8. Export collocated product as geotiff and investigate it by e.g. applying PCA and producing RGB composites of first 3 channels after transformation.

9*. Compare “flattened” Sentinel-1 image to radiometrically corrected non-flattened sigma-naught product.

