

SRIMAYA MOHAPATRA ,244104010

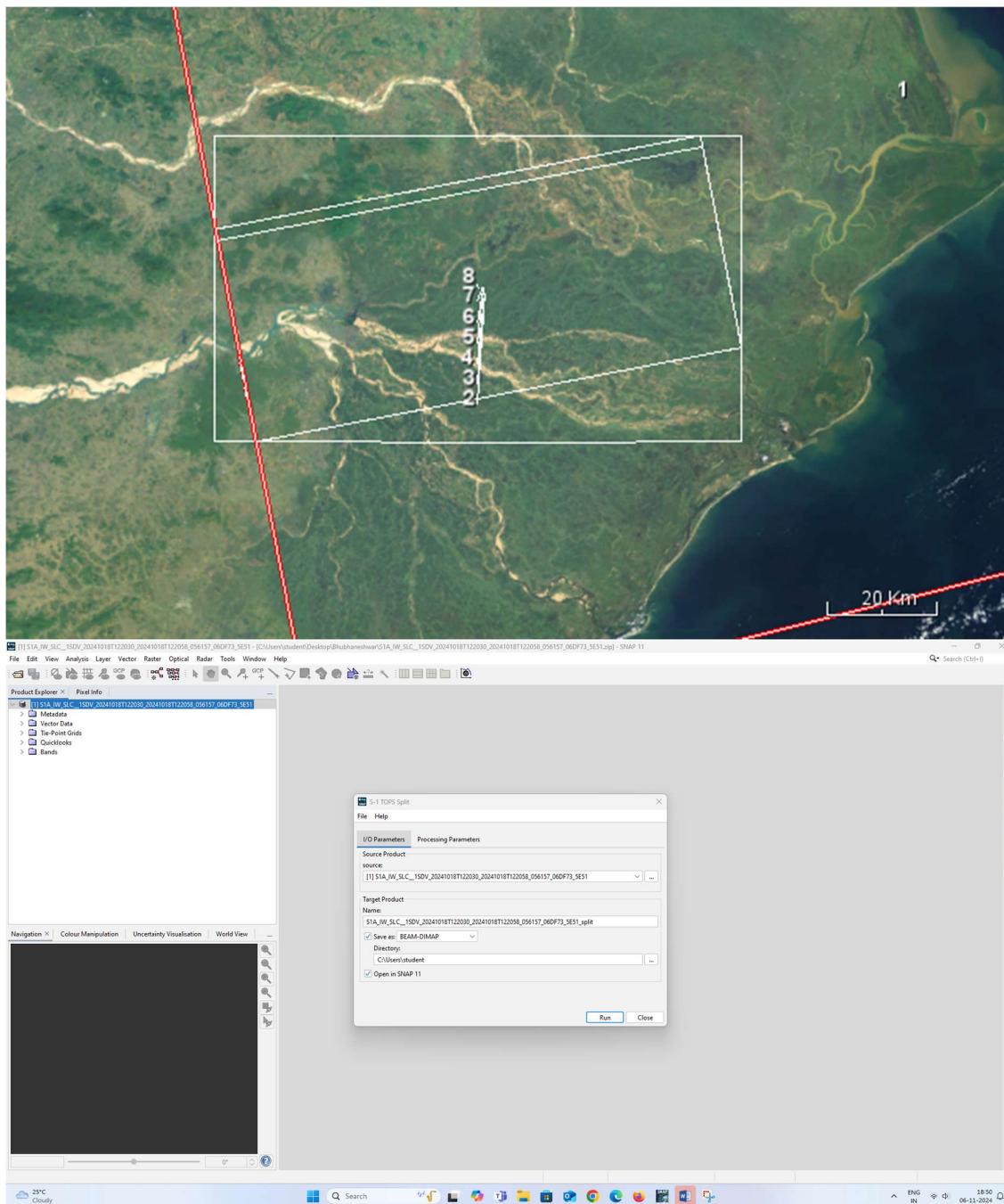
LAB 9 ASSIGNMENT

CE 593 ADVANCED REMOTE SENSING

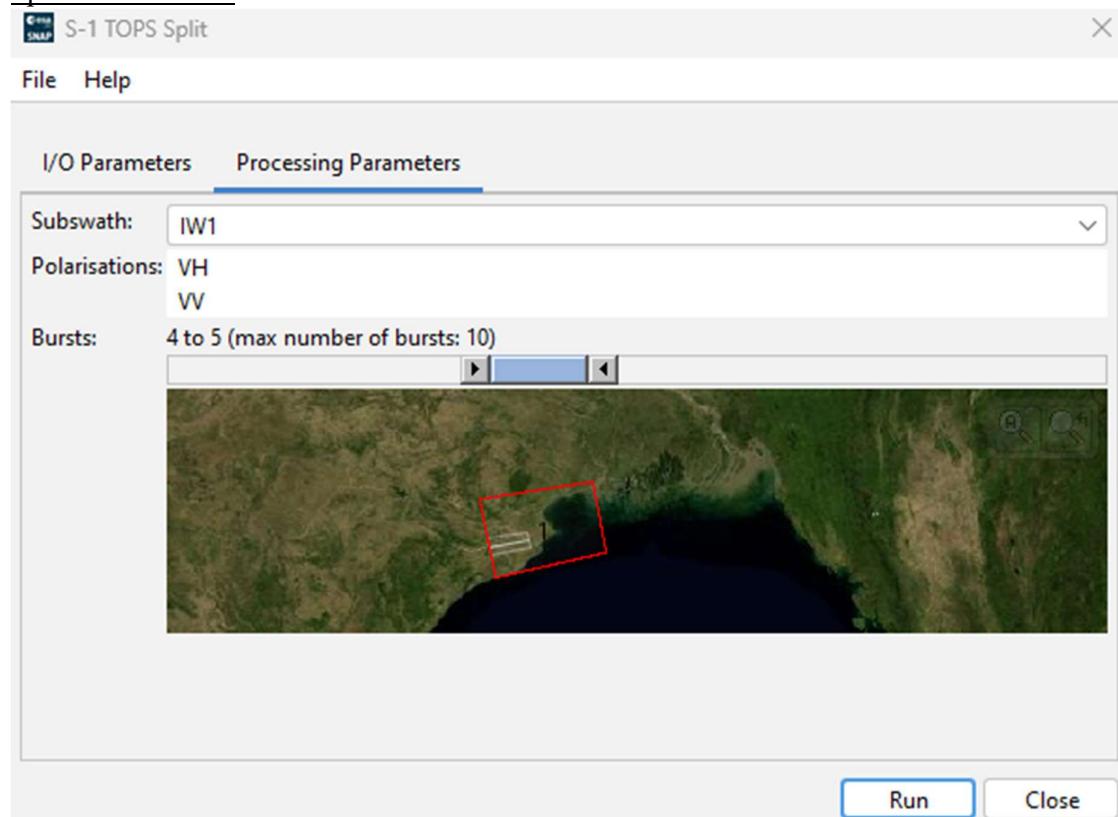
MICROWAVE REMOTE SENSING - SENTINEL-1 IN SNAP SOFTWARE

SLC (Single Look Complex):

SLC files retain **both amplitude and phase data** in a slant range format, preserving all radar signal information. This makes them essential for **interferometric analysis** (e.g., InSAR) and polarimetry, where phase information is crucial for measuring surface changes or structure.

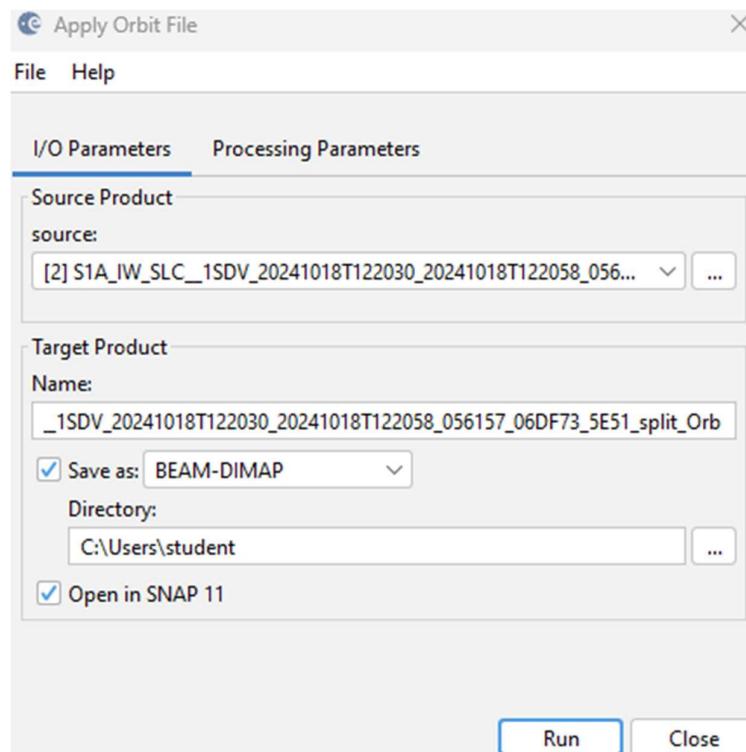


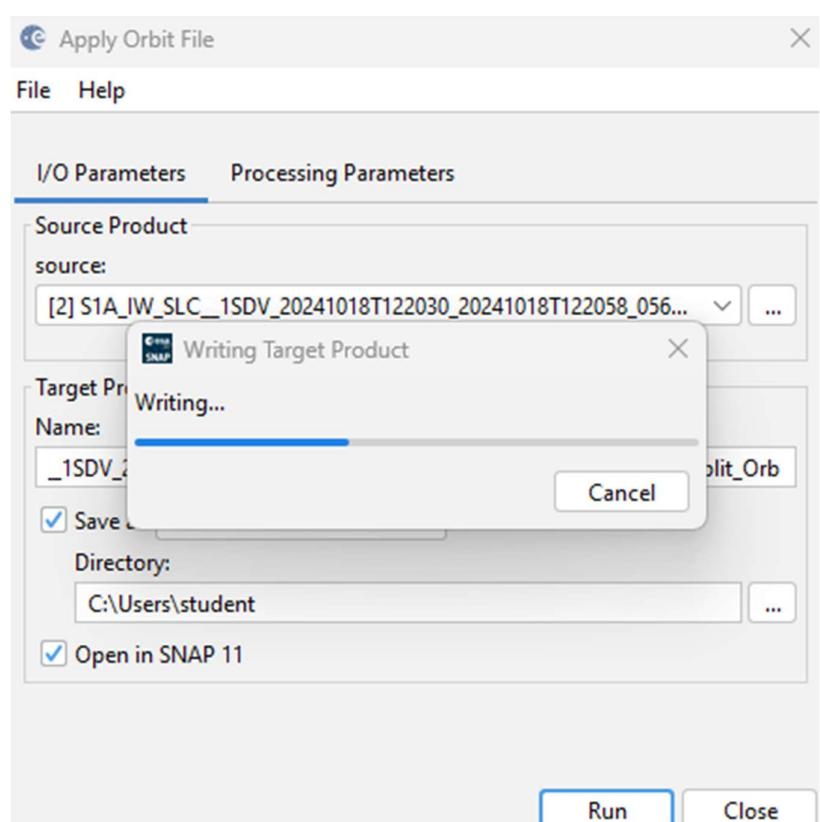
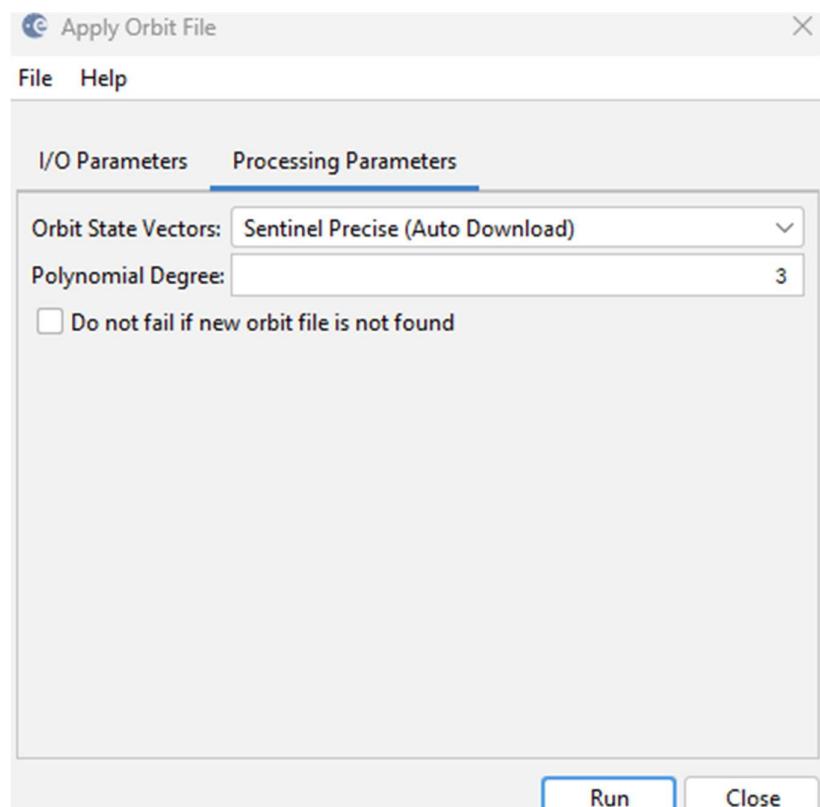
Split –Subset Data



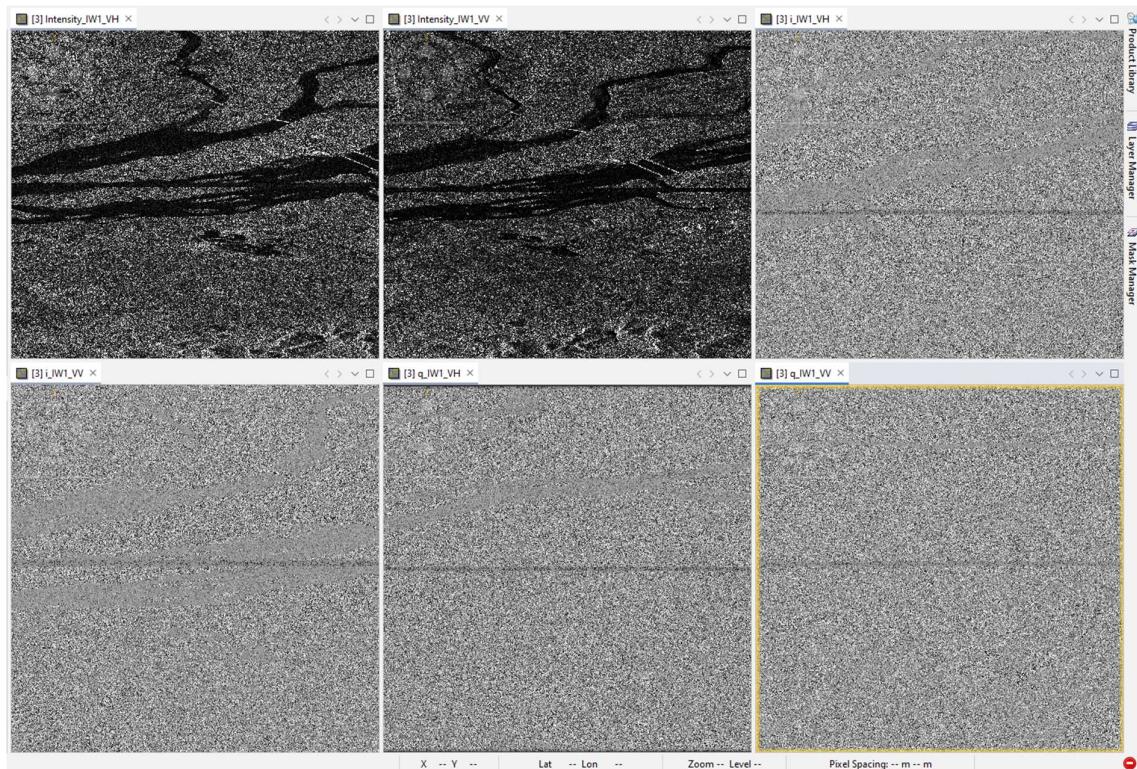
Involves separating the main dataset into smaller subsets for easier processing or targeted analysis.

Split – Orbit File

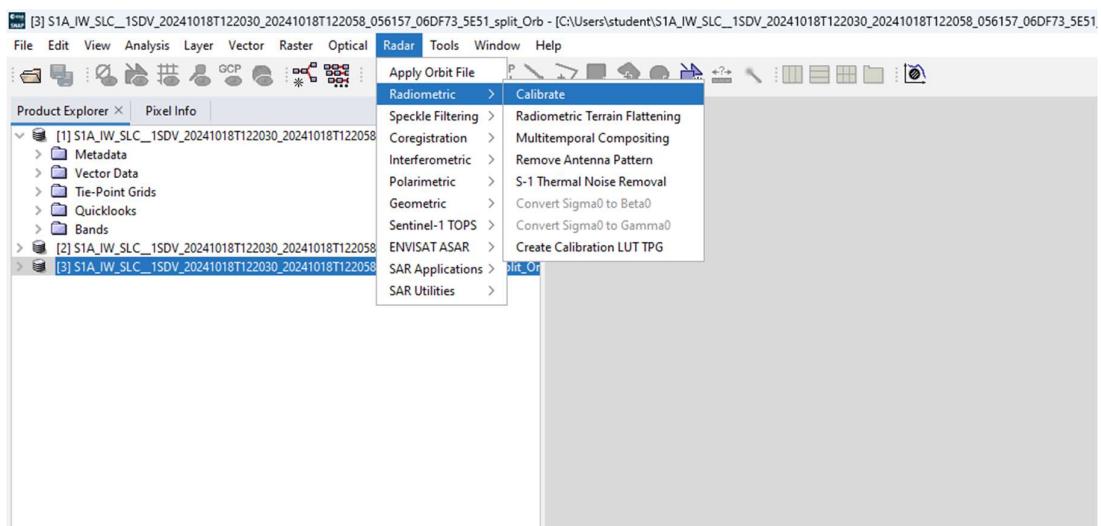


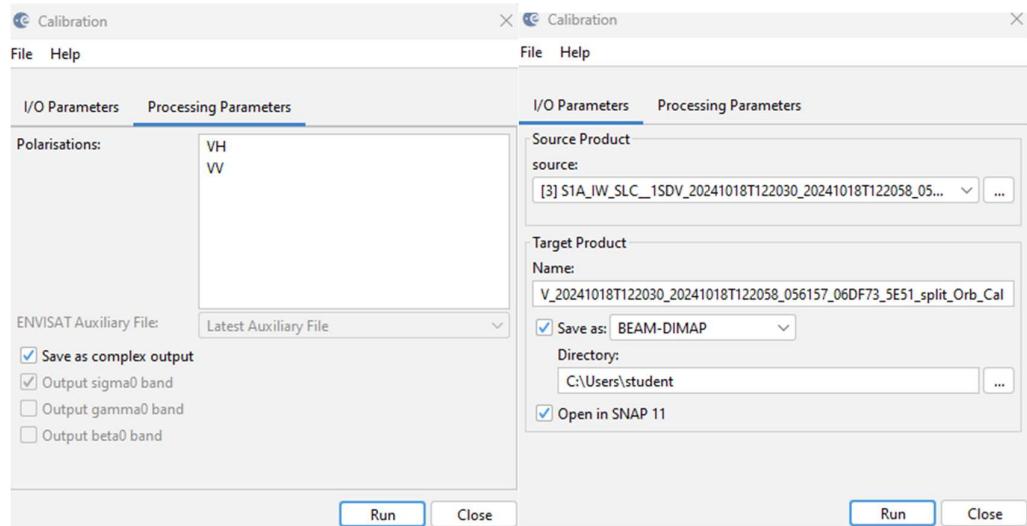


Split – Orbit File: Refers to handling orbit files, possibly to align data to the satellite's orbit.

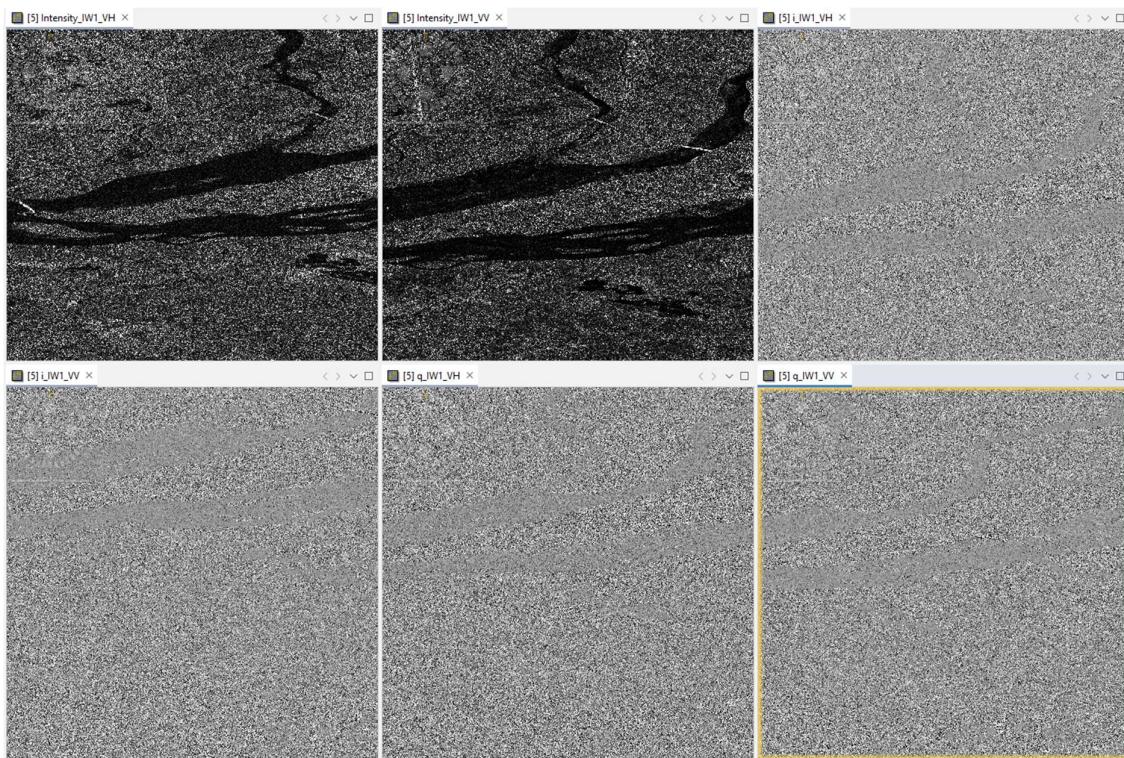


Calibrate Radiometric

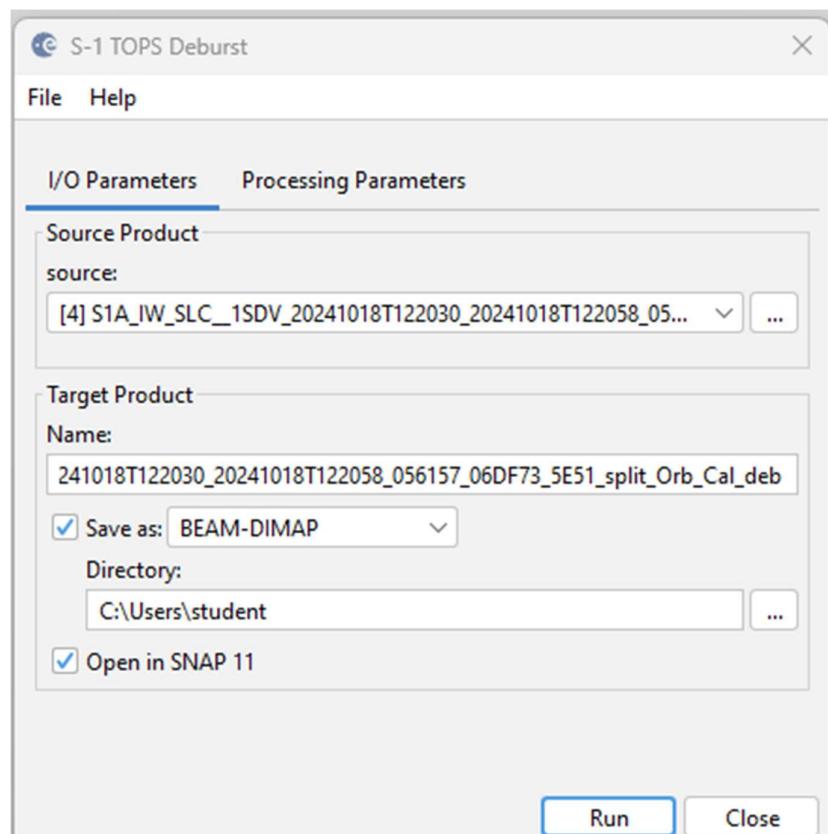
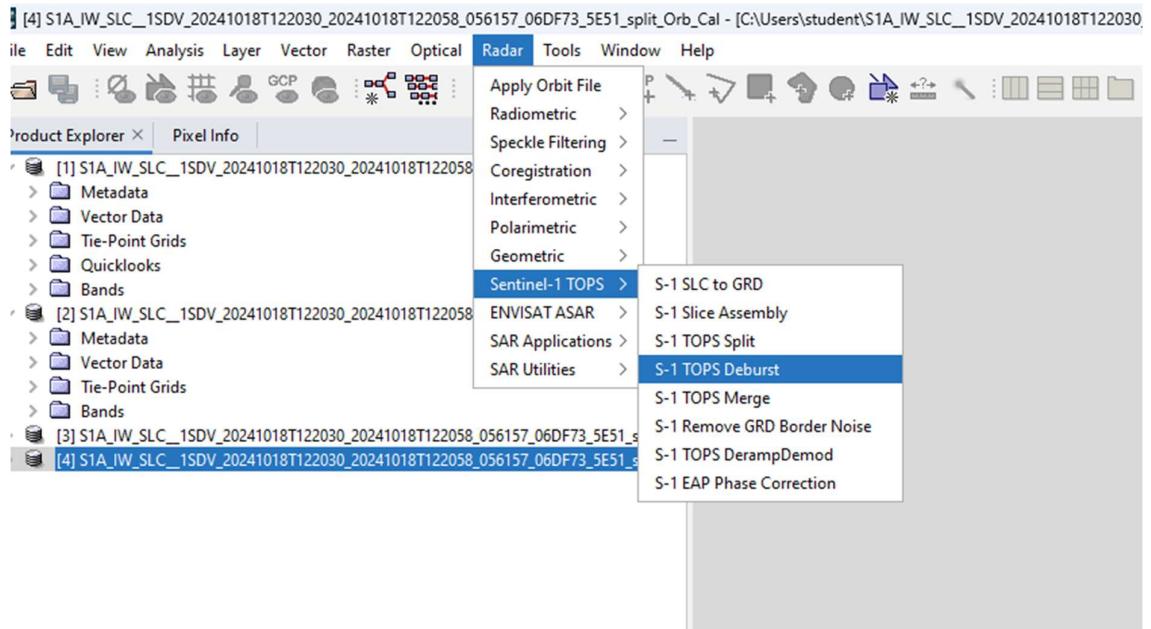




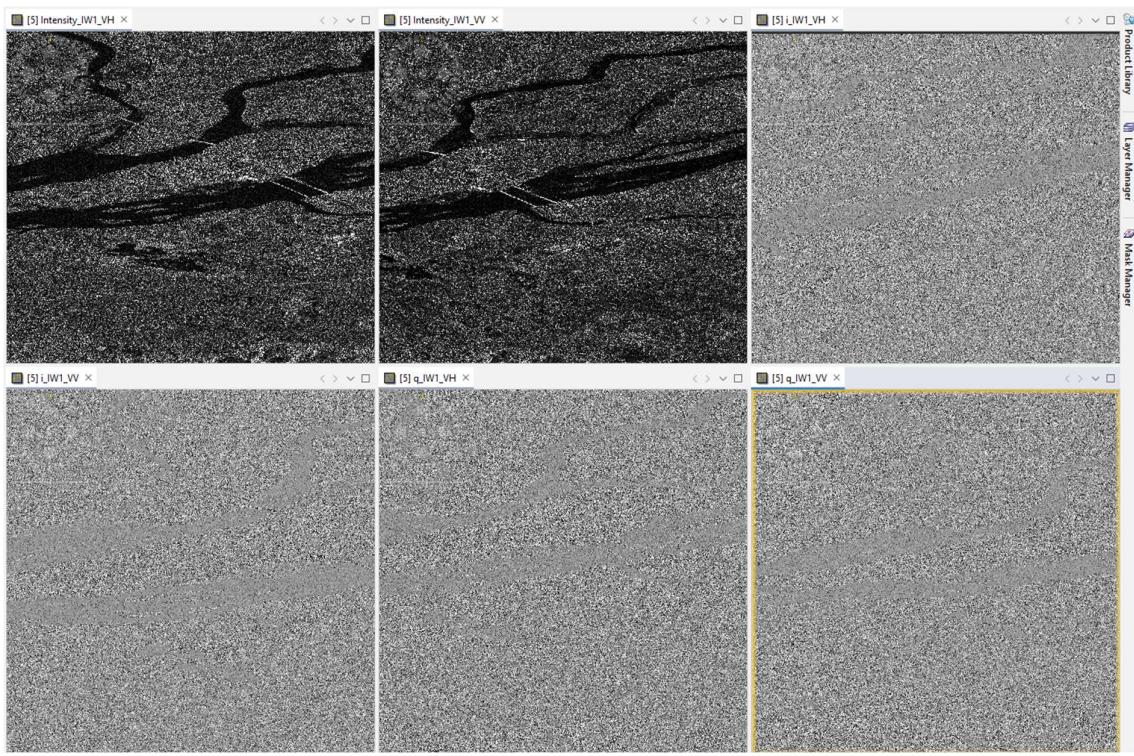
Calibrate Radiometric: Calibration step to correct the sensor's radiometric response, ensuring accurate reflectance values



Debursting



Debursting: Likely involves removing redundant data from bursts of satellite image acquisitions.



Polarimetry

Generate Covariance or Coherency Matrix X

File Help

I/O Parameters Processing Parameters

Source Product

source: [5] S1A_IW_SLC_1SDV_20241018T122030_20241018T122058_05... ...

Target Product

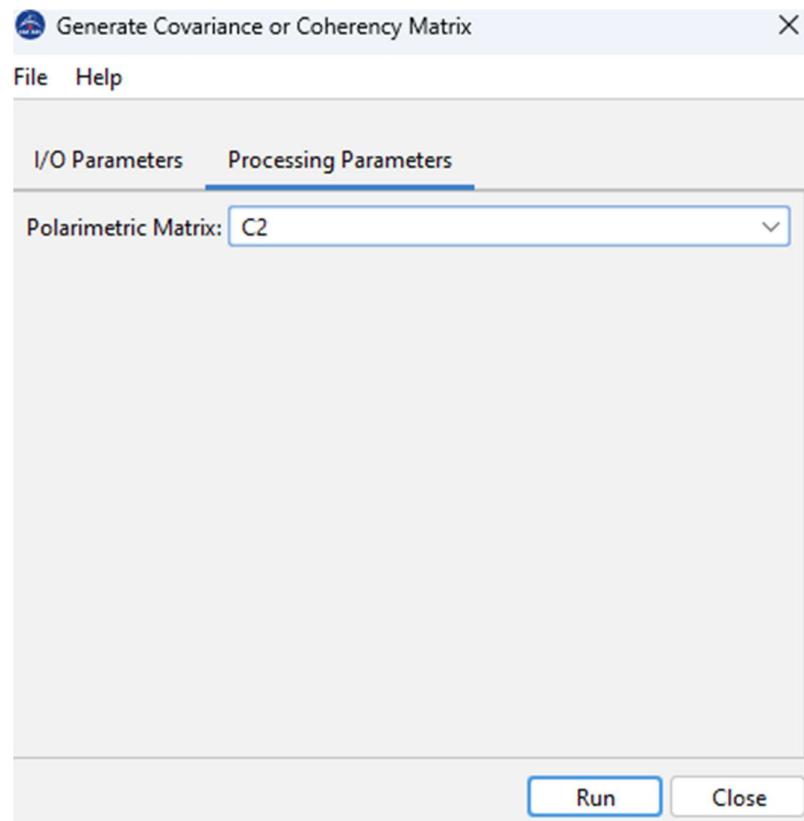
Name: I8T122030_20241018T122058_056157_06DF73_5E51_split_Orb_Cal_deb_mat

Save as: BEAM-DIMAP ▼

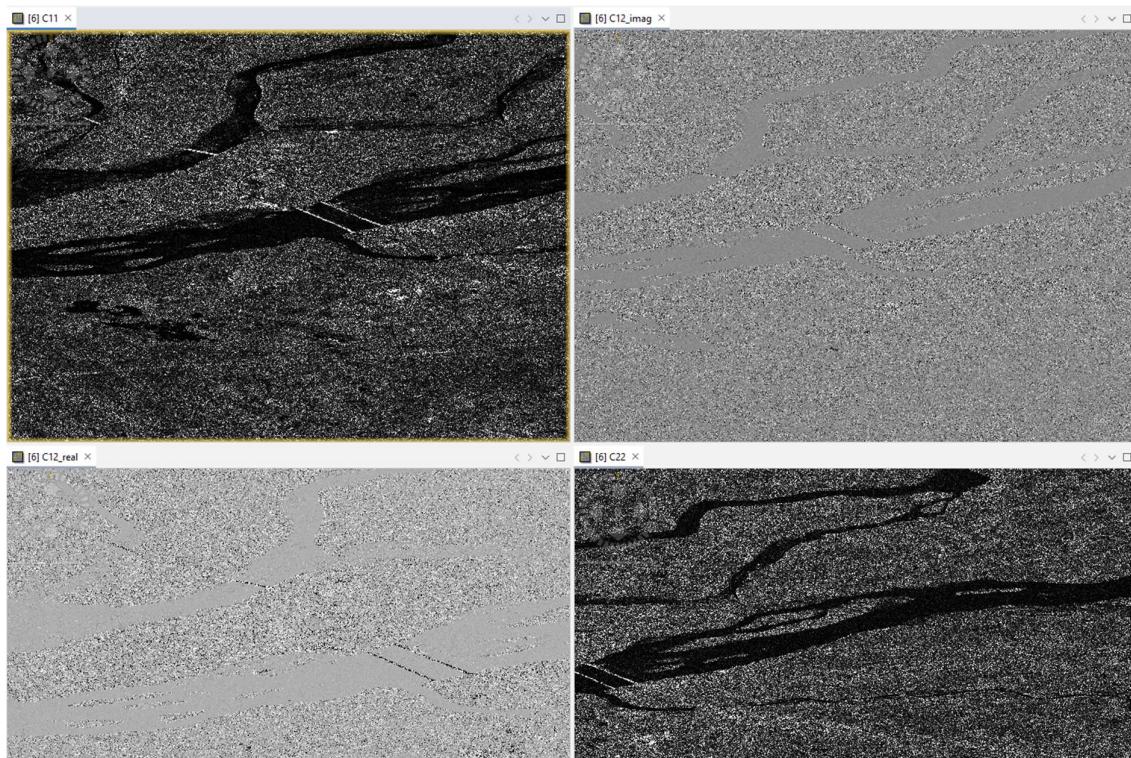
Directory: C:\Users\student ...

Open in SNAP 11

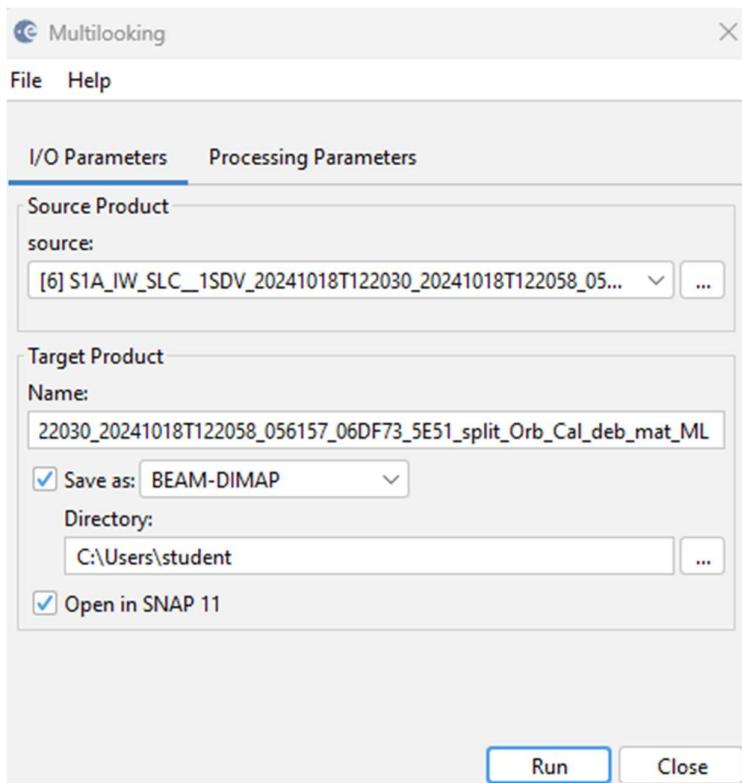
Run Close



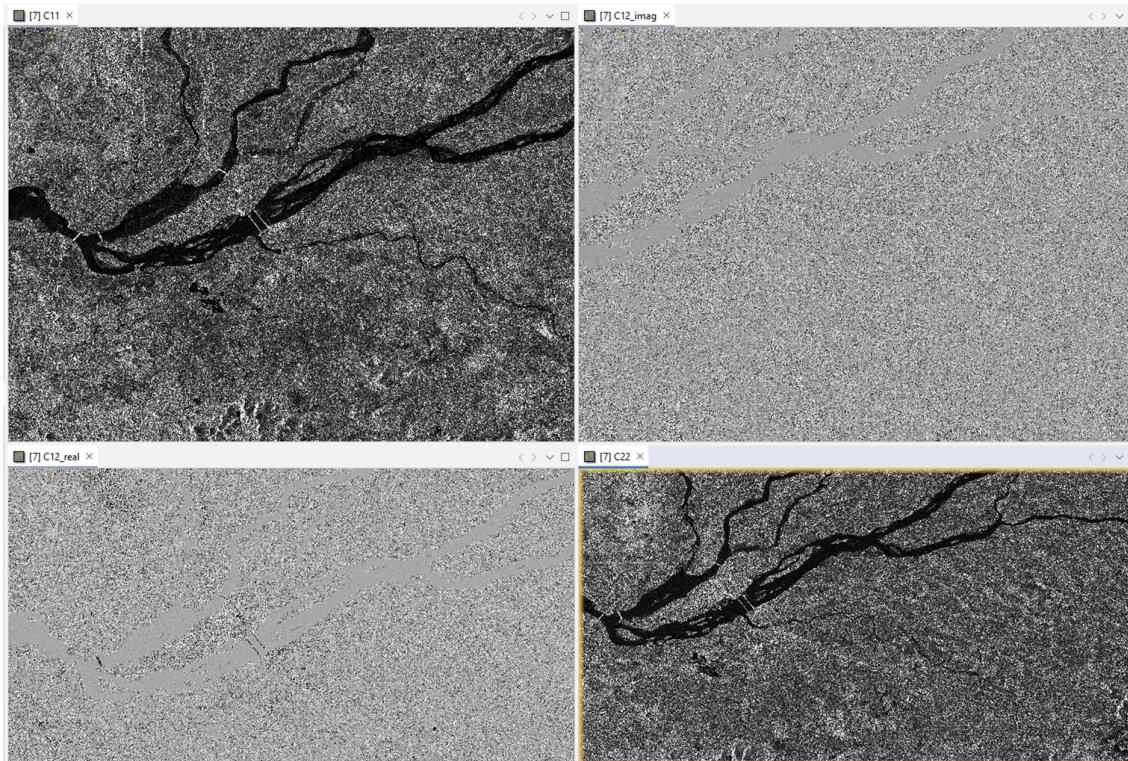
Polarimetry: This could involve analysing the polarization state of electromagnetic waves for further insight into surface properties



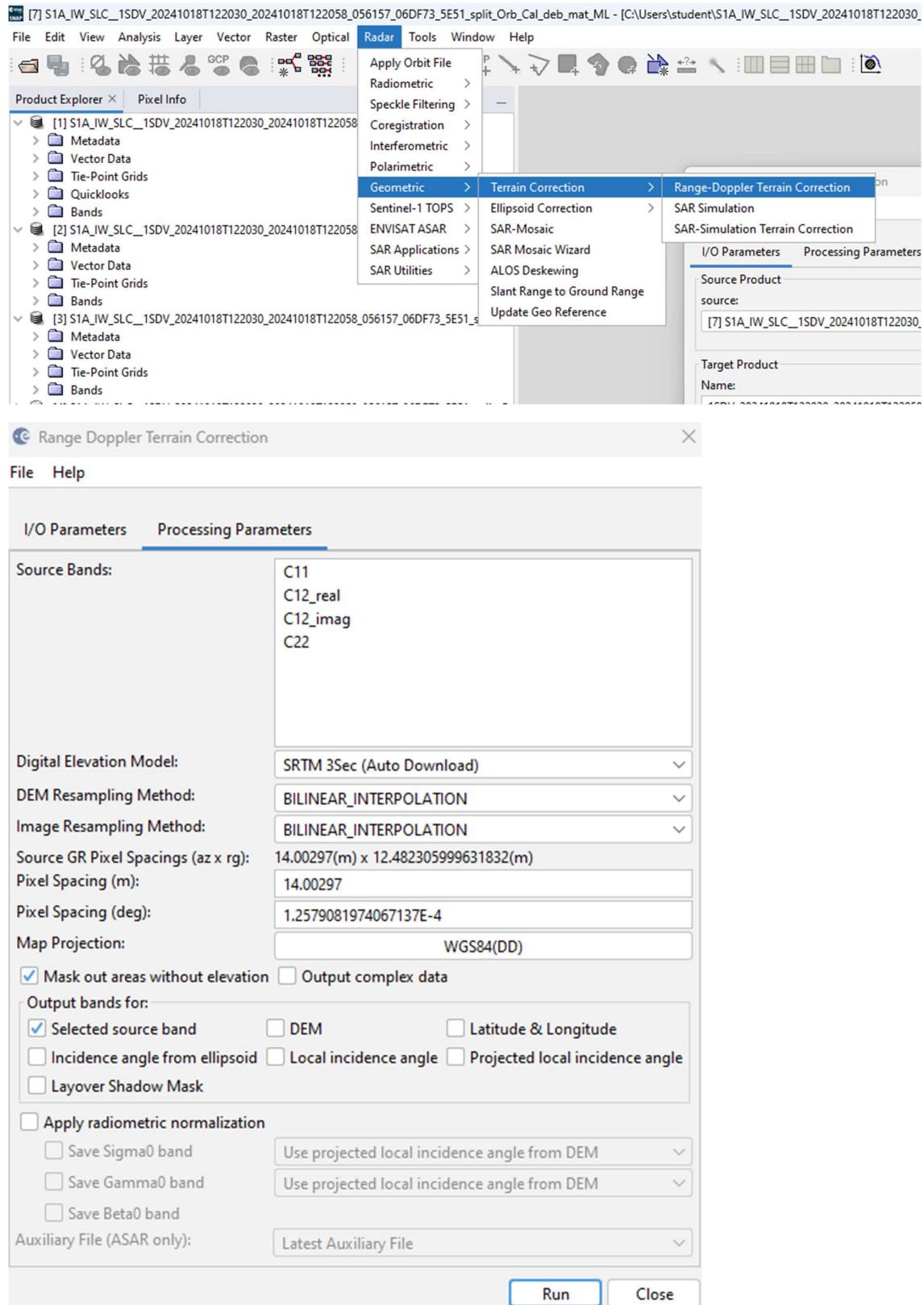
Multilooking



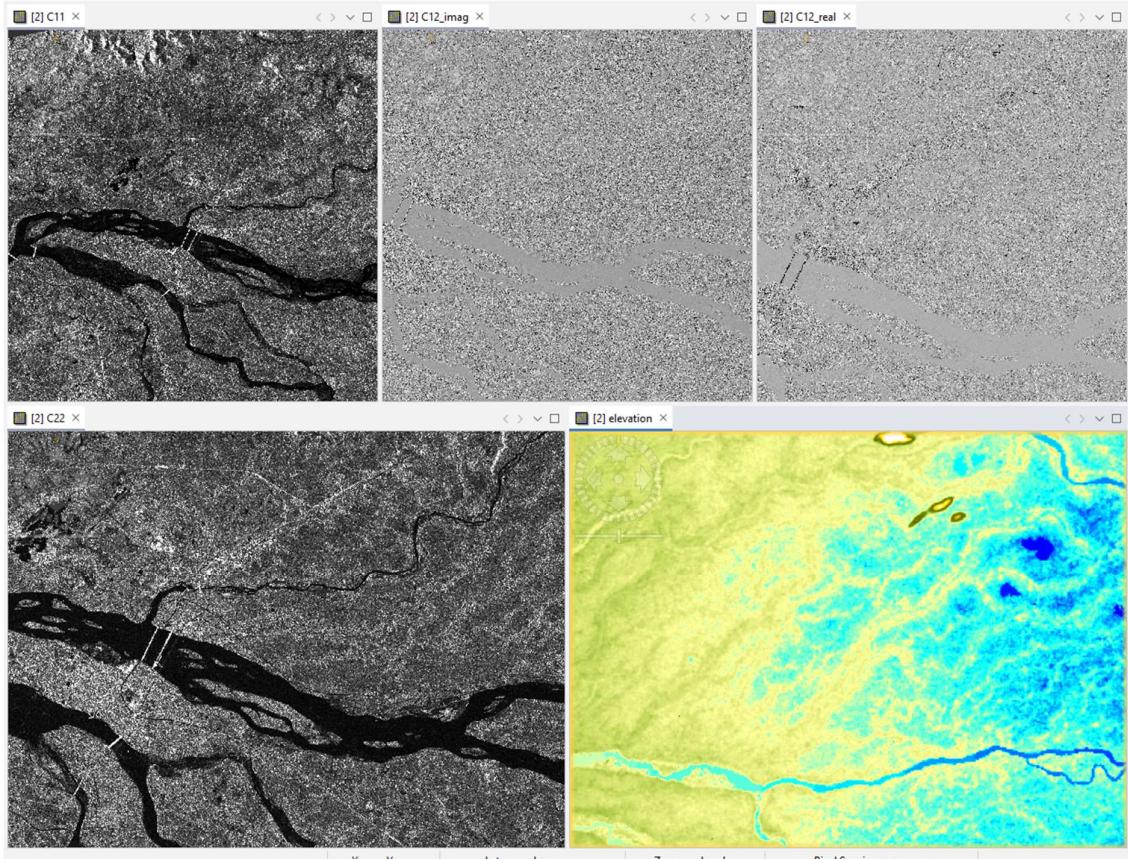
Multilooking: A process to reduce speckle noise in radar images by averaging multiple looks



Geometric Correction

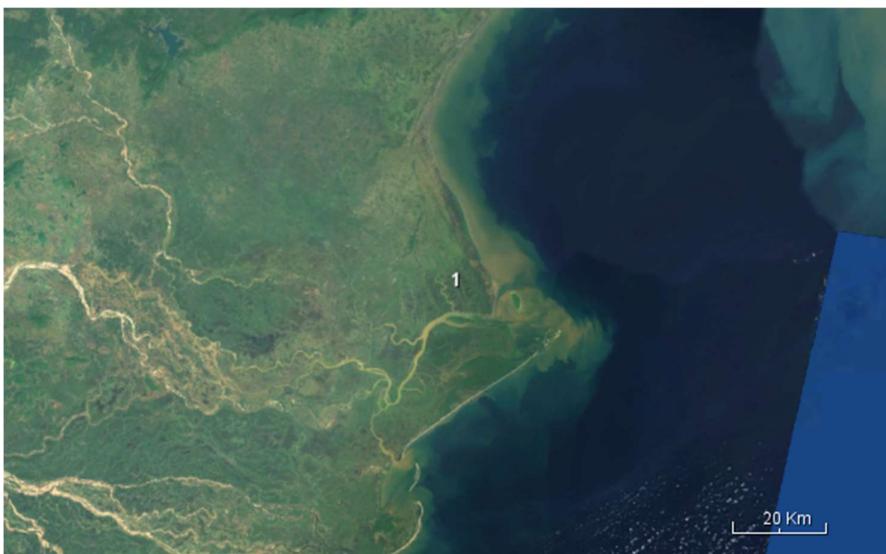


Geometric Correction: Correcting for geometric distortions to align the image spatially with ground coordinates

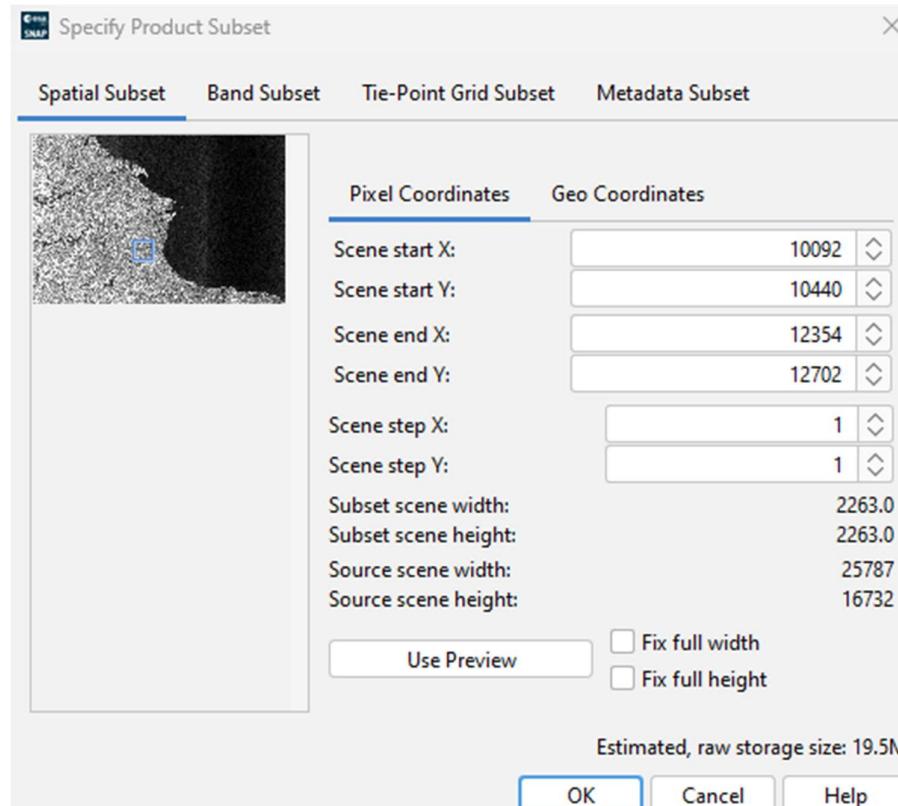
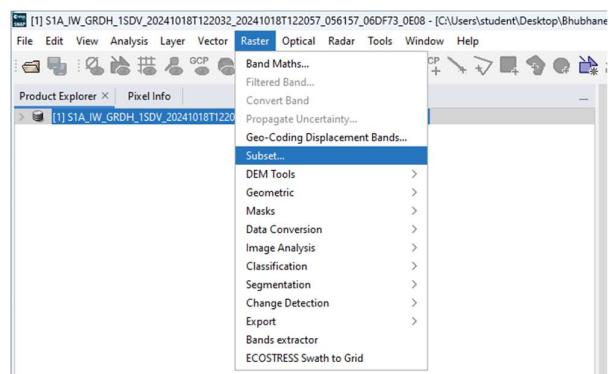
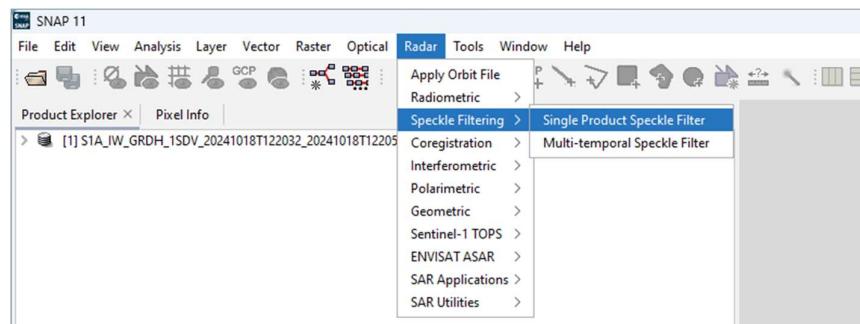


GRDH (Ground Range Detected High resolution)

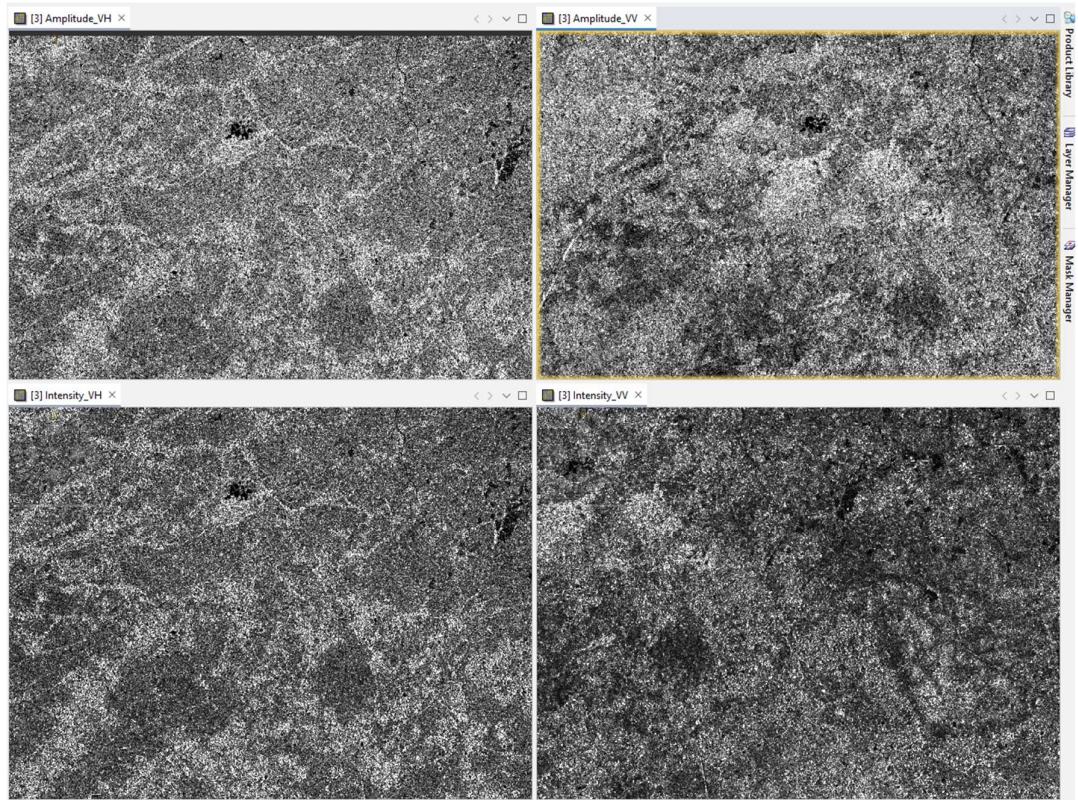
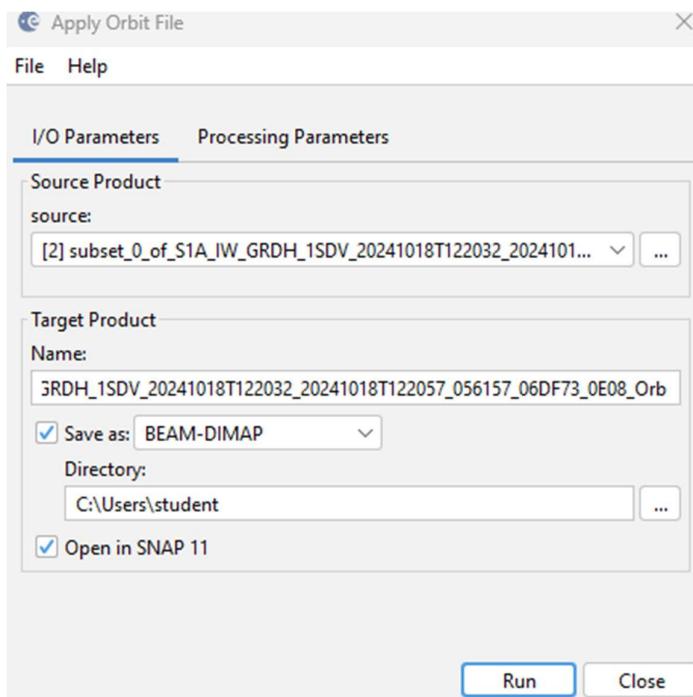
GRDH files provide **magnitude-only data** and are processed to ground range with reduced speckle. They're ideal for **visual interpretation and classification** because they focus on spatial resolution and simplicity, making them easier to work with when phase information isn't needed



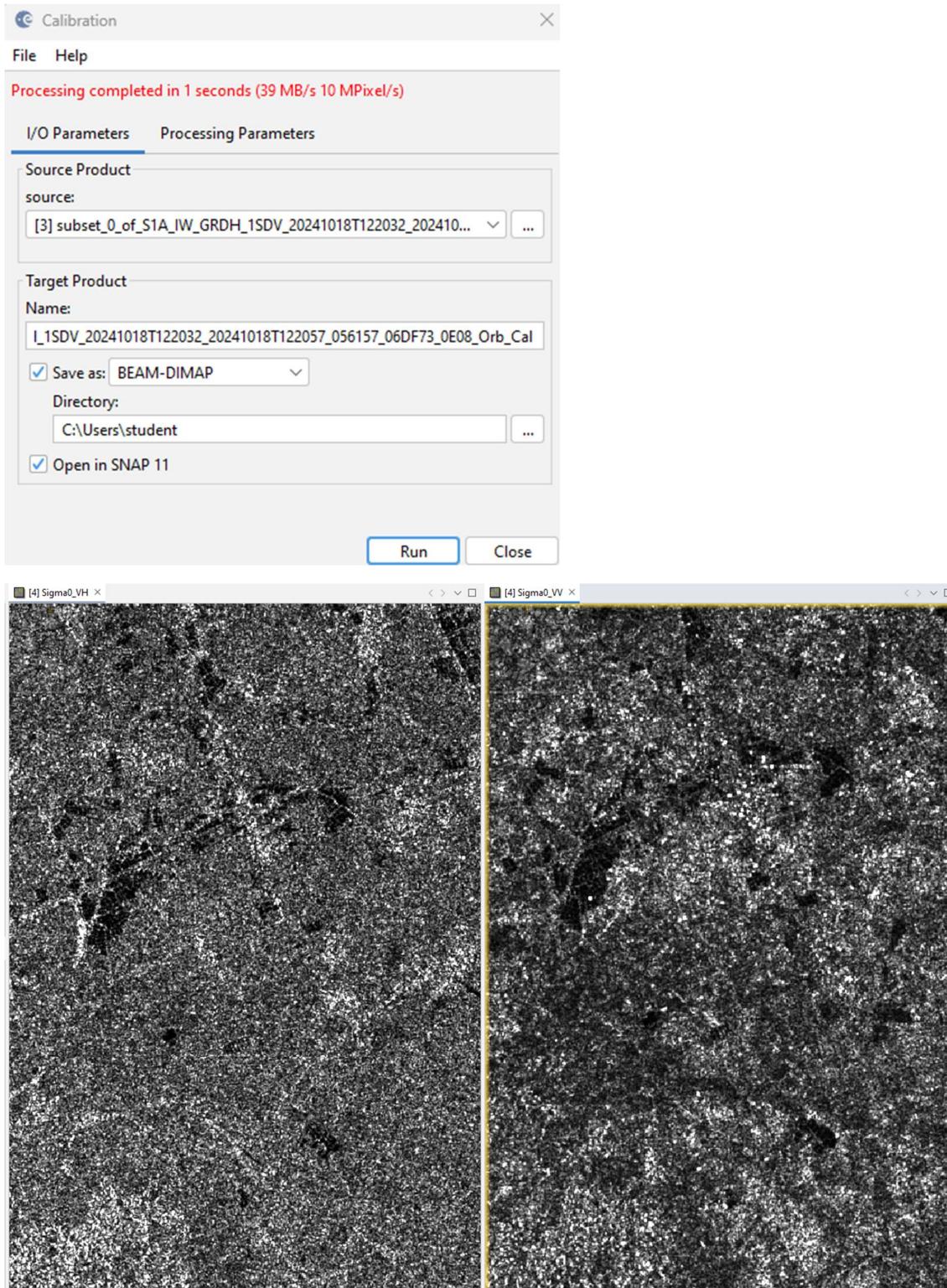
Specify Product Subset



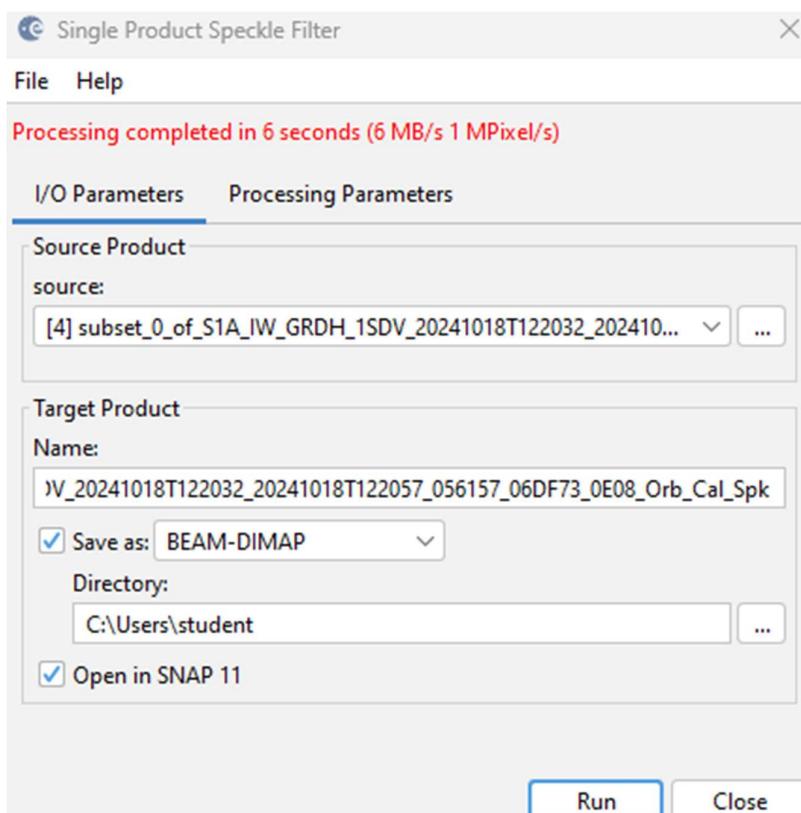
Split – Orbit File



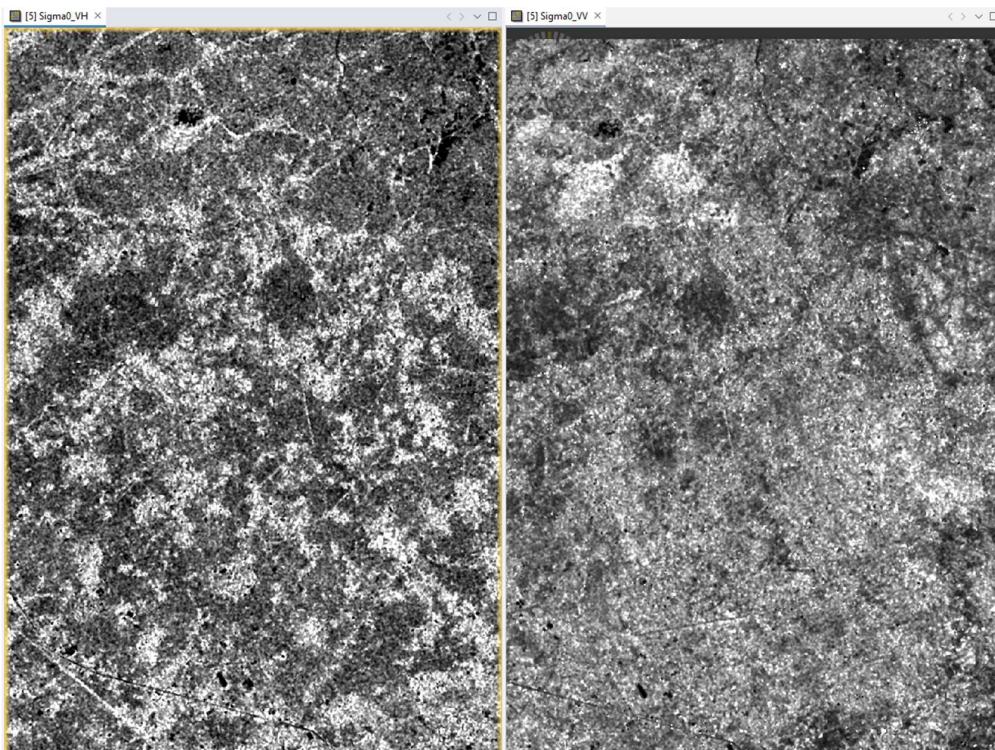
Calibrate Radiometric



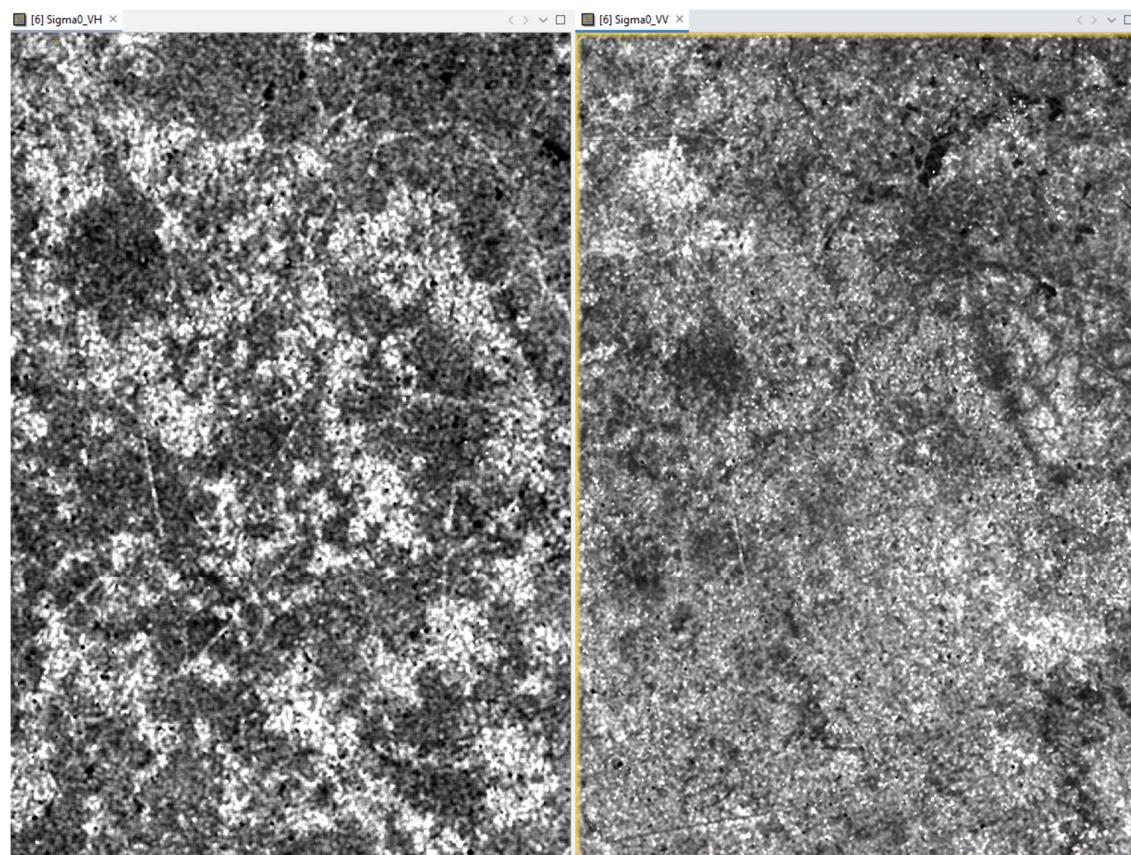
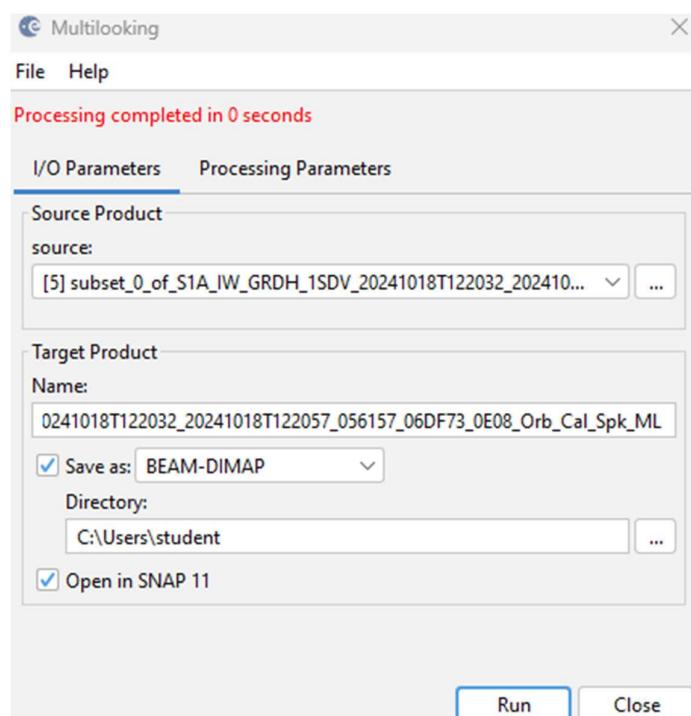
Speckle Filter



Speckle Filter -To reduce this speckle noise without losing significant spatial details. It's a multi-look filtering technique that averages pixels to smooth out the speckle effect, enhancing the visual quality of radar images and improving the accuracy of classification.



Multilooking



Geometric Correction

