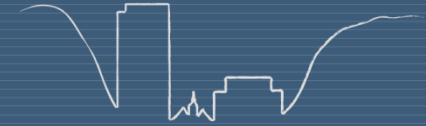


Exercise: SAR Preprocessing using SNAP 4.0.0

PD Dr. habil. Christian Thiel





Open Source Radar-Software/Tools



Nest - Next ESA SAR Toolbox (Beam, Best)

Sentinel-1 Toolbox, SNAP

POLSARPRO - Polarimetric SAR Data Processing and Educational Tool



MapReady Remote Sensing Tool Kit

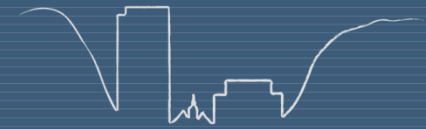
SAR Training Processor (STP)



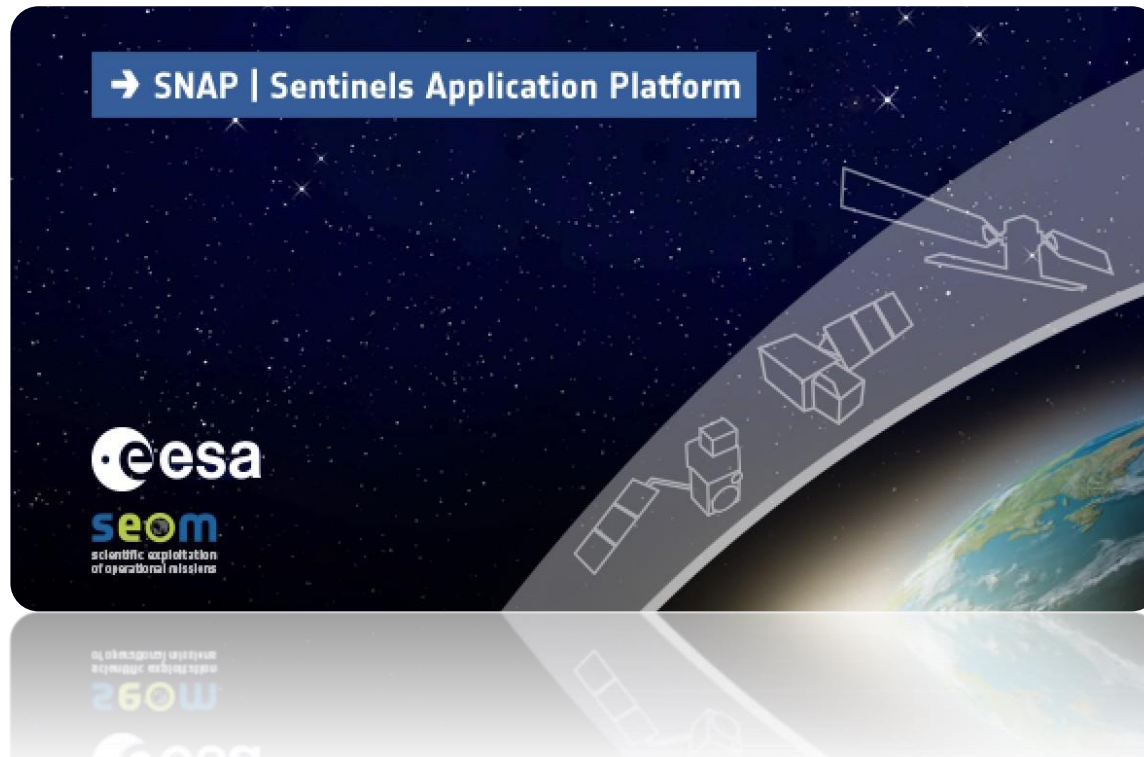
RAT (Radar Tools)

I.D.I.O.T. - INSAR Deformation Inspection and Observation Tool (Plugin for RAT)

TU Berlin

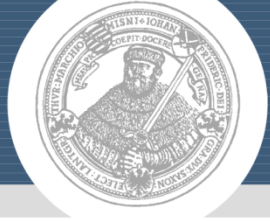


SNAP – SENTINELS APPLICATION PLATFORM



NEST
Next ESA SAR Toolbox





Where to store data:

SRTM DEM Data Folder: C:\Users\c5thch\.snap\auxdata\dem\SRTM 3Sec

File: srtm_41_04.zip

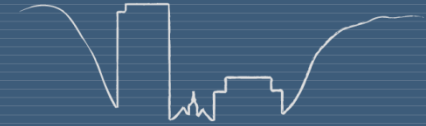
(do not unpack zip)

Sentinel-1A SAR Data Folder: Somewhere on local drive

File:

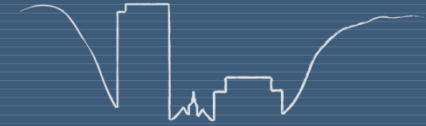
S1A_IW_GRDH_1SDV_20160510T162422_20160510T162447_011199_010EB6_2143.zip

(do not unpack zip)



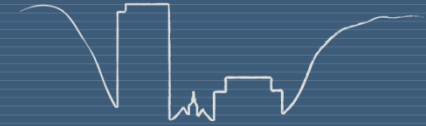
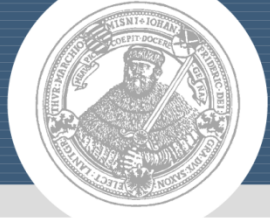
Plan for today:

1. Open “real” SAR data with SNAP
2. Interpret the data including meta information
3. Find location of SAR data set
4. SAR data processing
5. Statistical analyses
6. Create Bands and delete bands from stack
7. SAR-Simulation based Radiometric Terrain Flattening and RD-Orthorectification
8. Export processed data



Step by step (1/2)

1. Copy data
2. Start SNAP
3. Open S1A data – Display data in grey scale and as RGB-composite
4. Interpret the data (metadata, pixelinfo, image navigation tools etc.)
5. Find location of area covered by SAR data set
6. Multi-Looking (5x5)
7. Create Elevation Band (SRTM)
8. Do SAR Simulation (incl. Layover-Shadow Mask)



Step by step (2/2)

9. Radiometric Calibration of ML data (beta0)
10. Radiometric Terrain Flattening (gamma0)
11. Range-Doppler Terrain Correction, Input: TF image
12. Convert gamma0 image from linear to dB
13. Compute difference image from gamma0 [dB]: $HH - HV$
14. Display data as RGB view – adapt data stretch
15. Statistical analyses: Scatterplots, Histogram Analysis, Profile Plot etc.
16. Export processed data