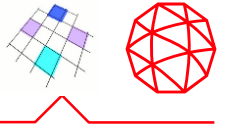**L3HARRIS™**  sarmap
your information gateway

# WHAT'S NEW IN ENVI SARSCAPE 5.6

Live Webinar

**March 16th, 2021**   **ALBERTO MERONI** | L3HARRIS GEOSPATIAL | DIRECTOR BUSINESS DEVELOPMENT
**NICOLAI HOLZER** | L3HARRIS GEOSPATIAL | SALES ENGINEER EMEA
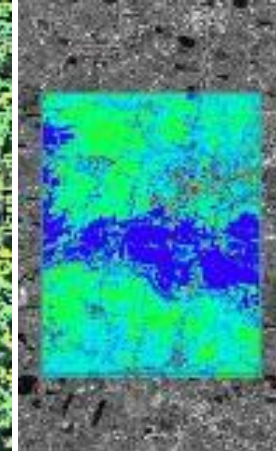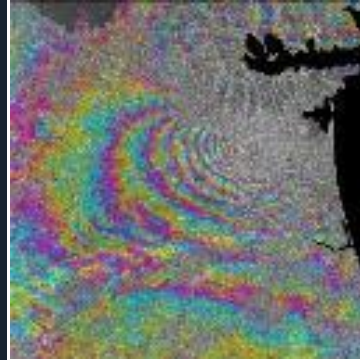
# ENVI SARscape
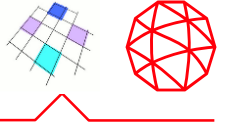


## Easily process and analyze SAR data

ENVI integration brings advanced image processing and analysis together with SAR processing in one package

Generate products (like DEMs or surface deformation maps) that can be integrated with other geospatial products

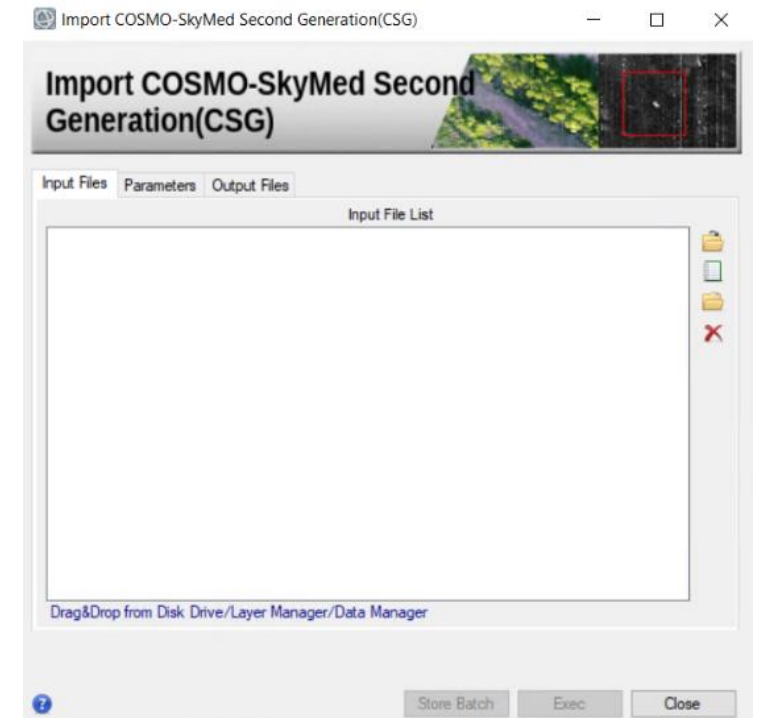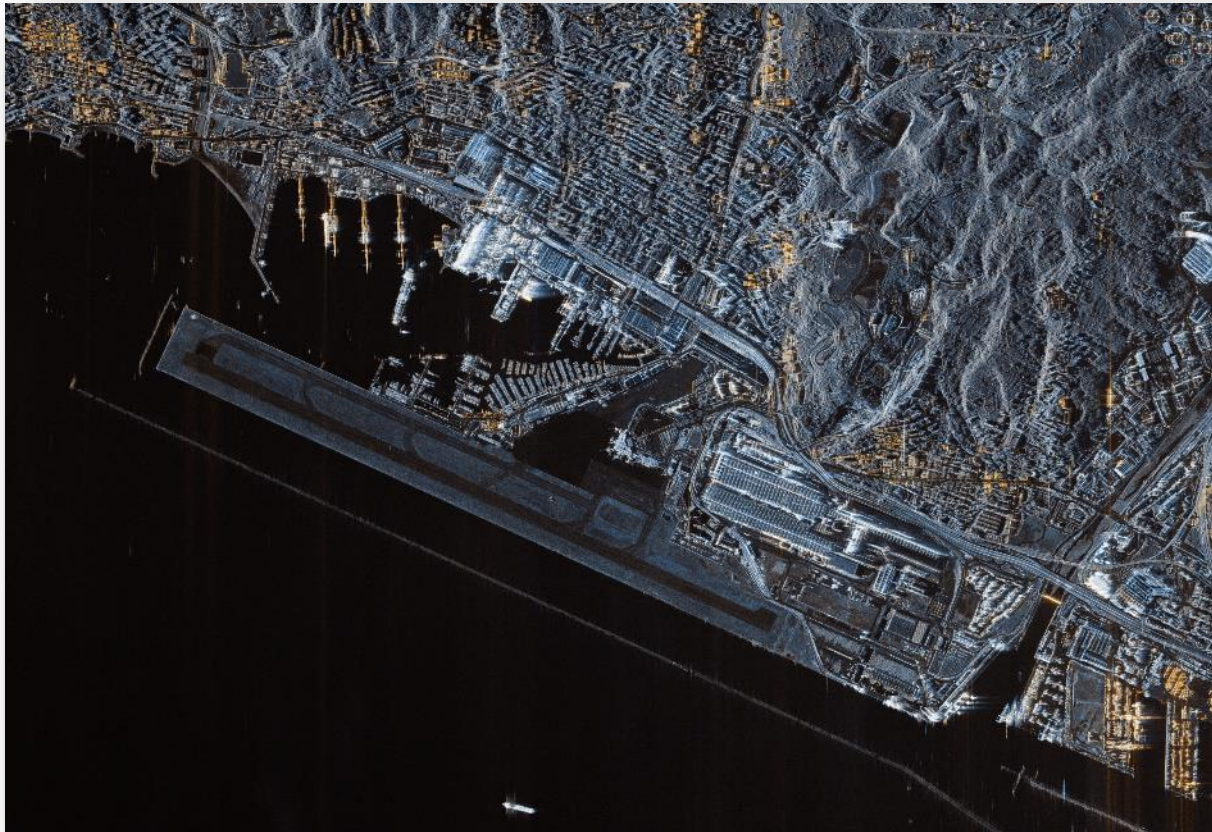Built-in workflows and modules simplify processing and can be customized
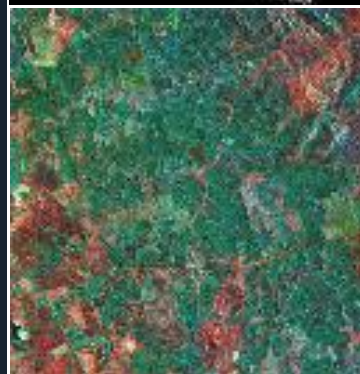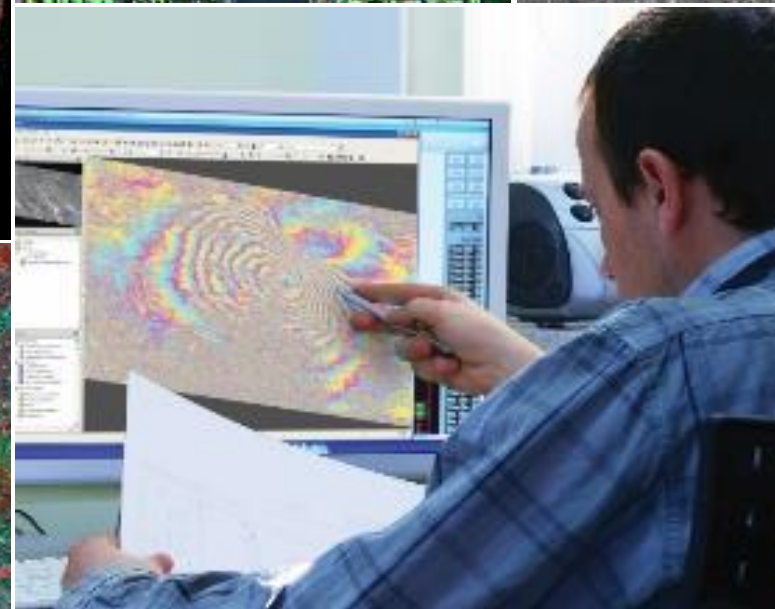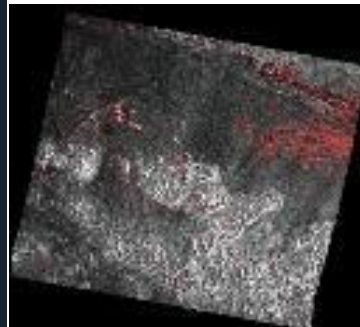
# Sensor Support and Data Formats

## COSMO SkyMed Second Generation (CSG)

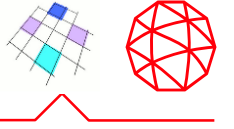**X-band** SAR constellation, following the first constellation of 4 sensors, supported products:

- SCS     Single Look Complex
- DGM     Multi-look Ground Range
- GEC     Ellipsoidal Geocoded



Courtesy: ASI



**Preliminary import** due to small dataset only for the *_B specification (Stripmap and Spotlight). Calibration and interferometry might have issues

# Sensor Support and Data Formats

## CAPELLA

**X-band** SAR constellation of very high-resolution sensors, supported products:
- GEO      Geocoded and Terrain Corrected using a Digital Elevation Model
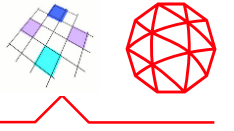- SLC      Single Look Complex (only for image geometry type slant-plane)



Courtesy: Capella Space

*Preliminary import** due to a small dataset used for validation.
Interferometric processing and geocoding might encounter issues
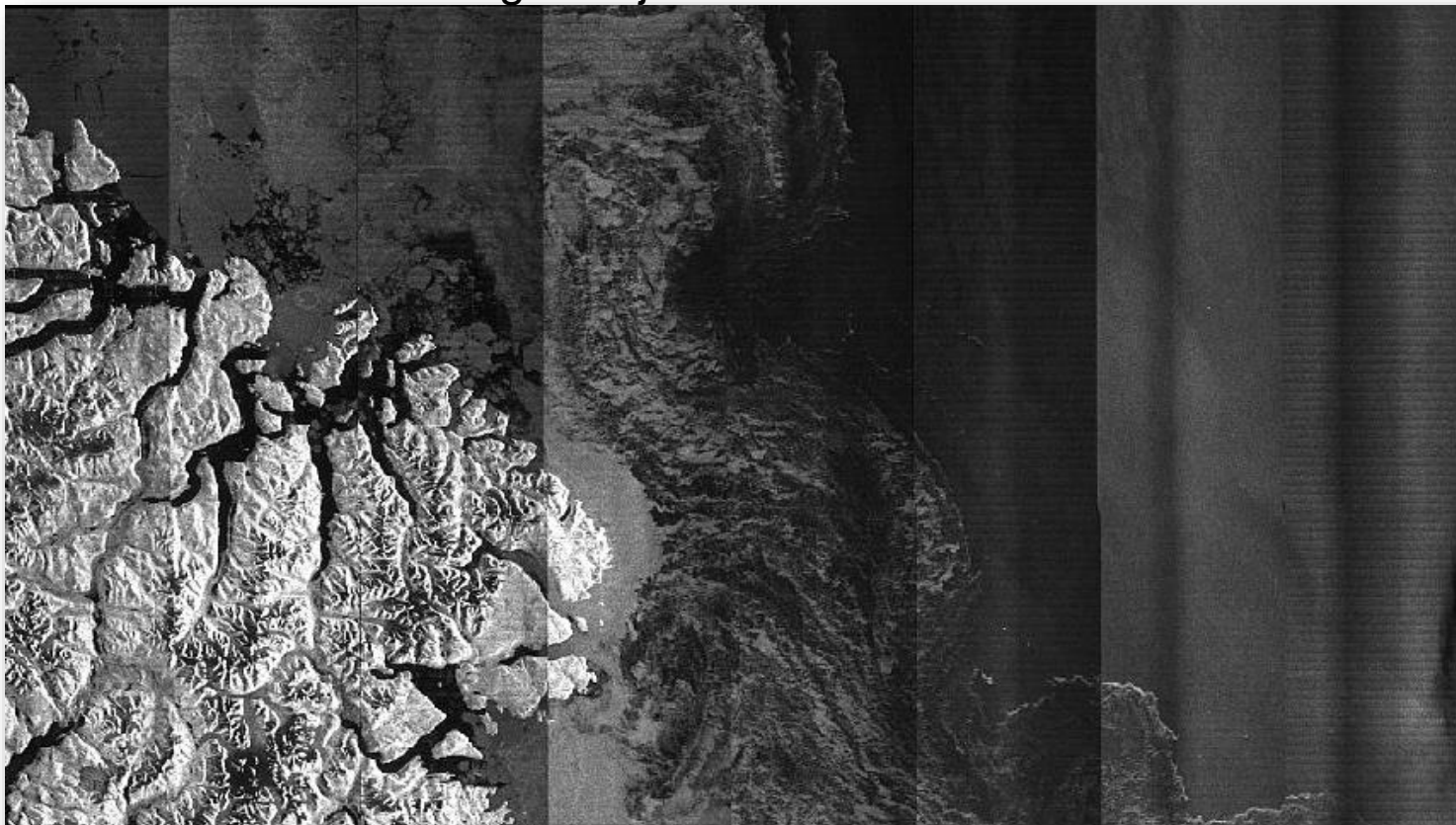
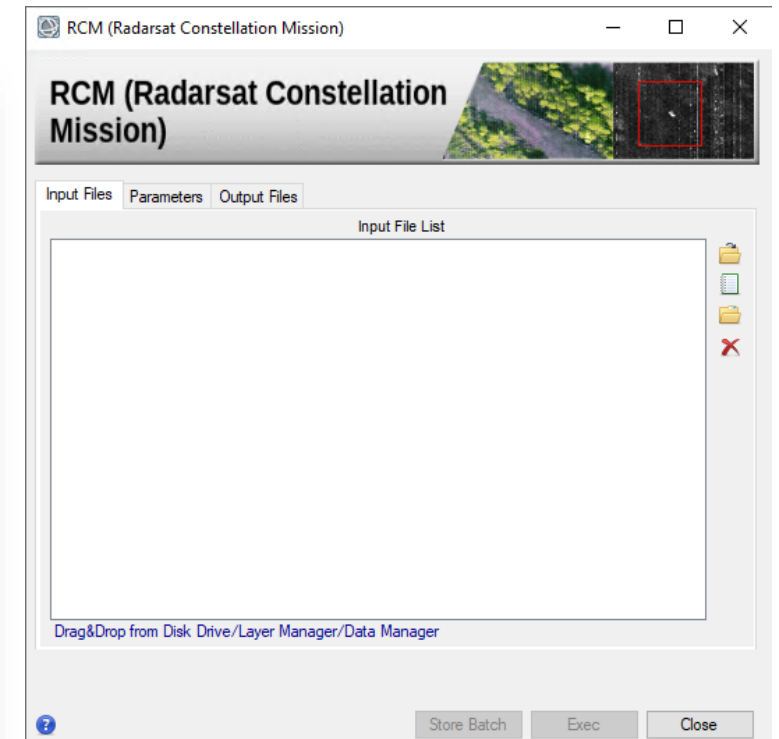# Sensor Support and Data Formats

## RCM – Radarsat Constellation Mission (C-Band)

Supported products:
- SLC       Single Look Complex
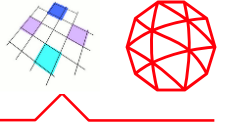- GRD      Ground Range Projected



First image captured by an RCM satellite (image credit: Canadian Space Agency)

**RCM (Radarsat Constellation Mission)**

Input Files | Parameters | Output Files

Input File List

Drag&Drop from Disk Drive/Layer Manager/Data Manager

Store Batch   Exec   Close

**Preliminary import** due to small dataset calibration and interferometry might have issues

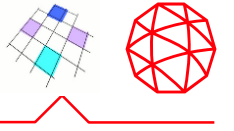# Sensor Support and Data Formats

## SICD Polar Format Algorithm (PFA)



Courtesy of NGA, airborne acquisition campaign over Albuquerque (US) with spatial resolution of 10 cm (after a 2:2 multilooking)

# Sensor Support and Data Formats

## Sentinel-2 Download

Query and download Sentinel-2 data from ESA Scientific Hub
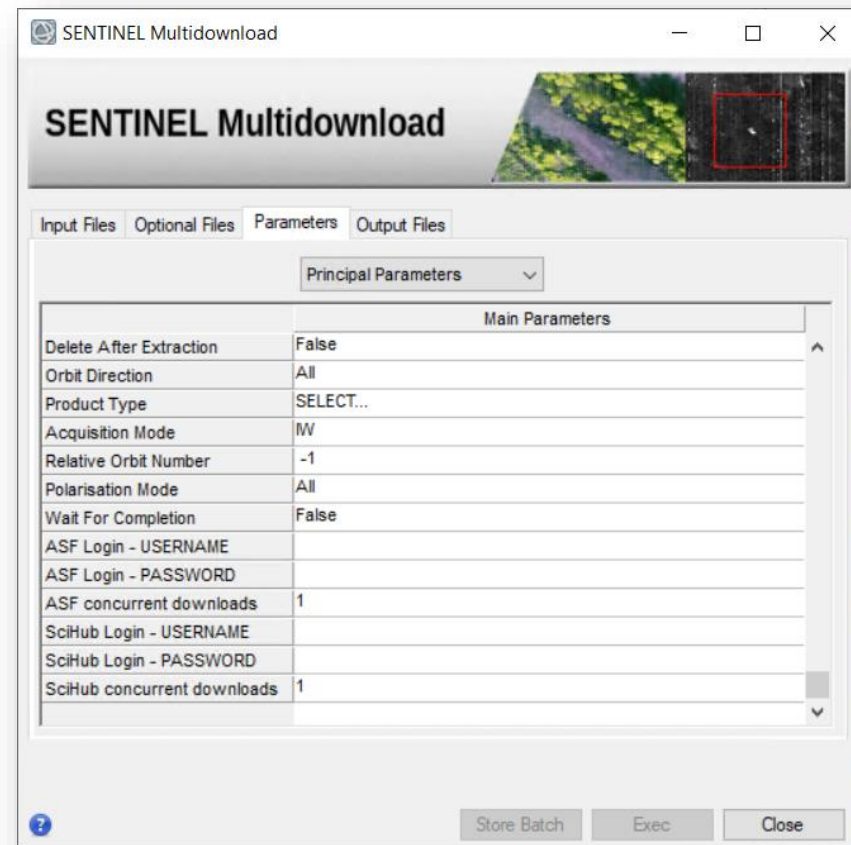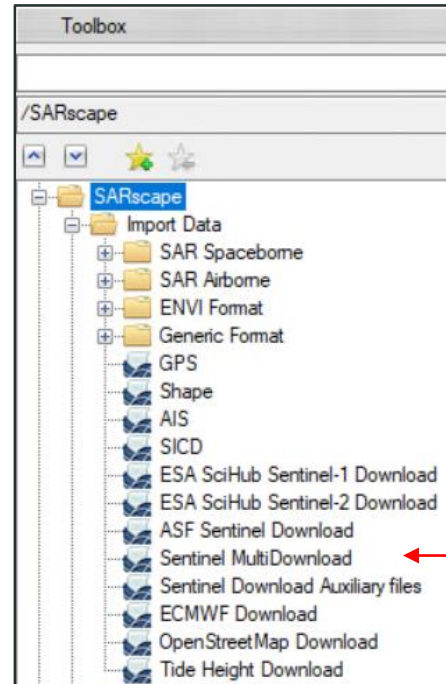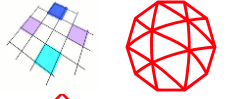
# Sensor Support and Data Formats

## Sentinel MultiDownload
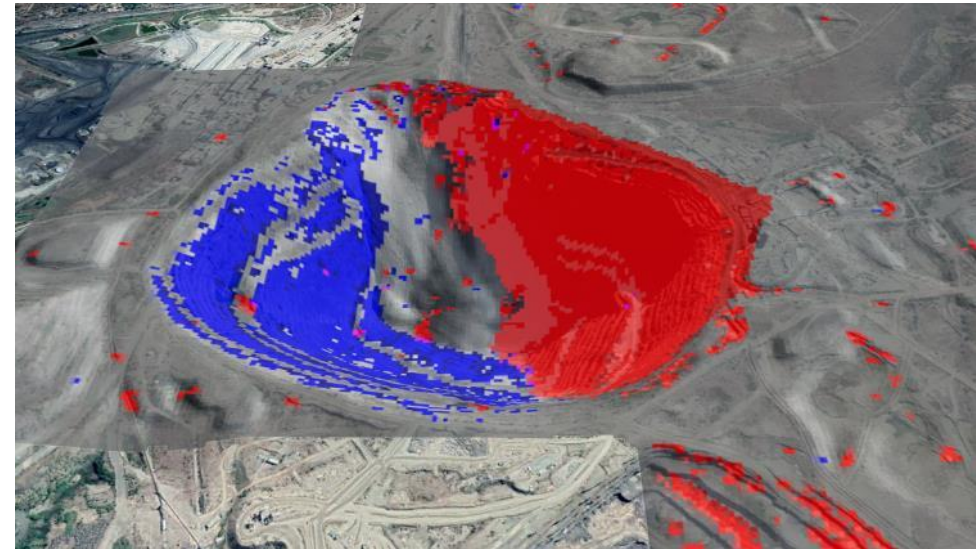Query and download Sentinel data from the Alaska SAR Facility and ESA Scientific Hub
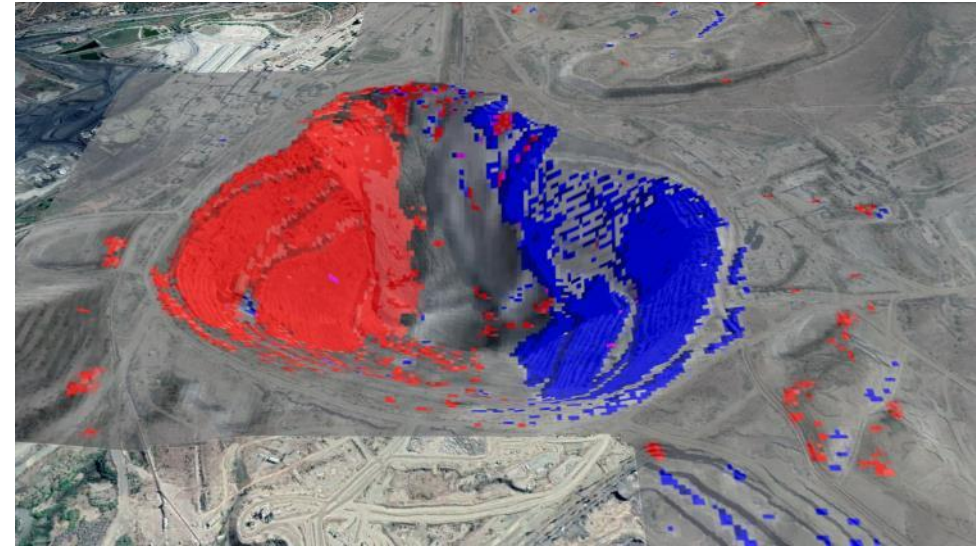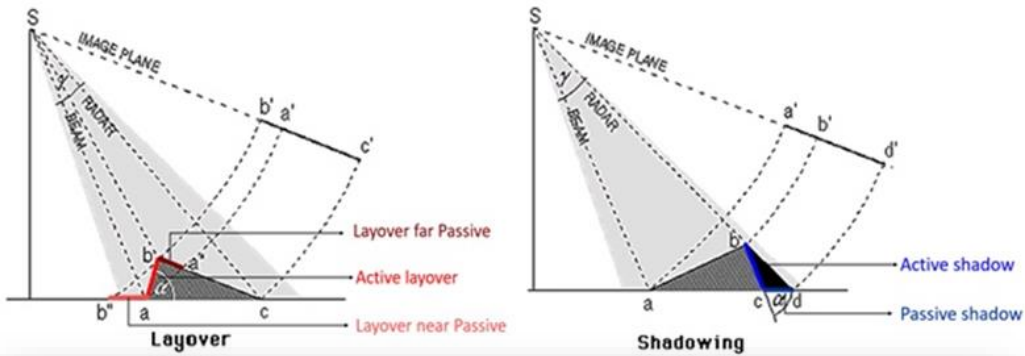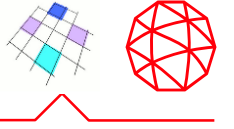
# SARscape Basic

## Layover and Shadow Mask

Feasibility analysis of SAR applications in relation to possible geometric distortions and target visibility
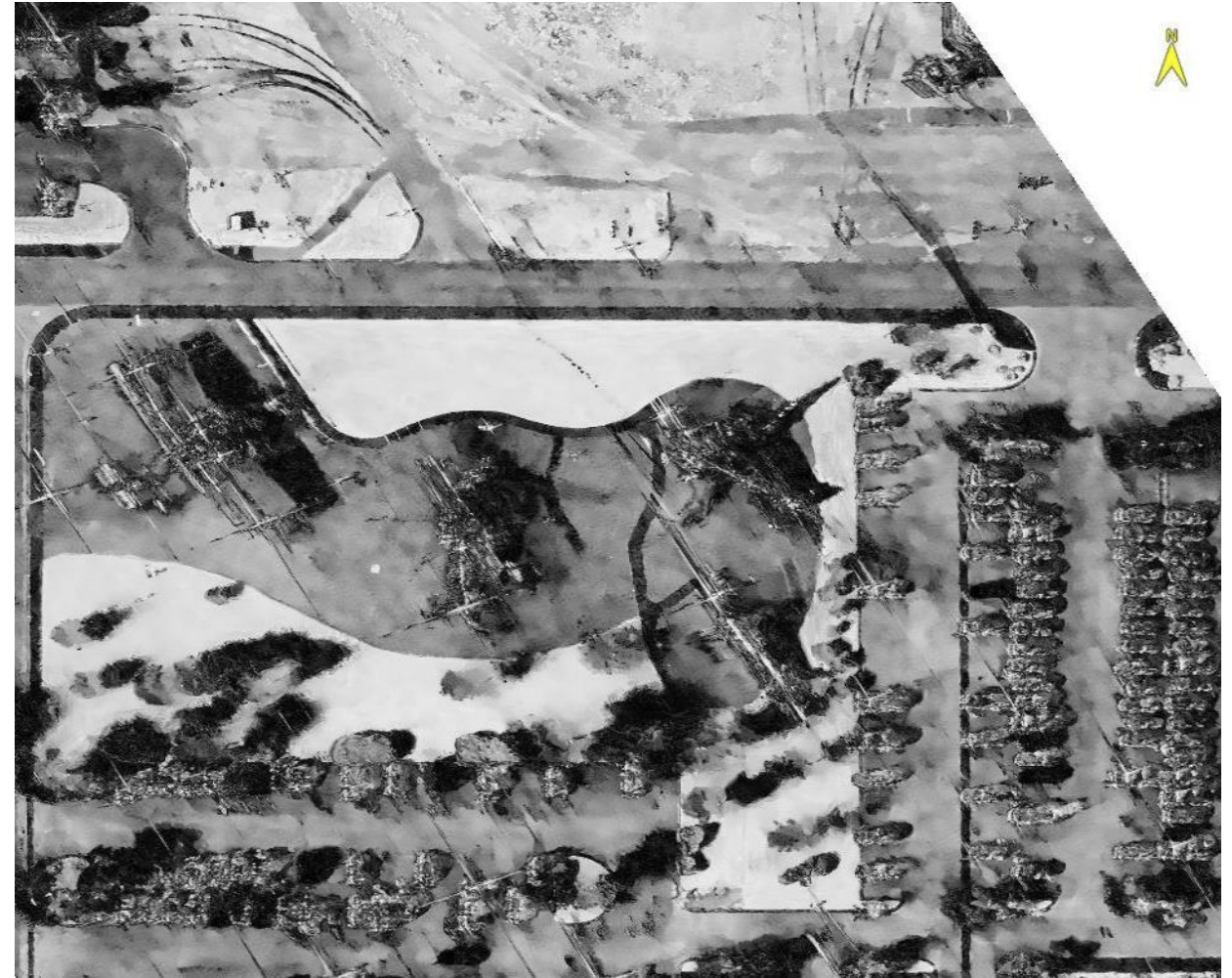
# Coherence Generation

## Non-Local Phase Filter

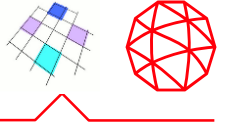Flattened interferogram filtering to reduce phase noise

- Good performance in ultra-high resolution data coherence
- Preserves point targets and strongly smooths homogeneous areas
- GPU is recommended

**Non-Local filter**



Courtesy of NGA

Ultra-high resolution PFA data
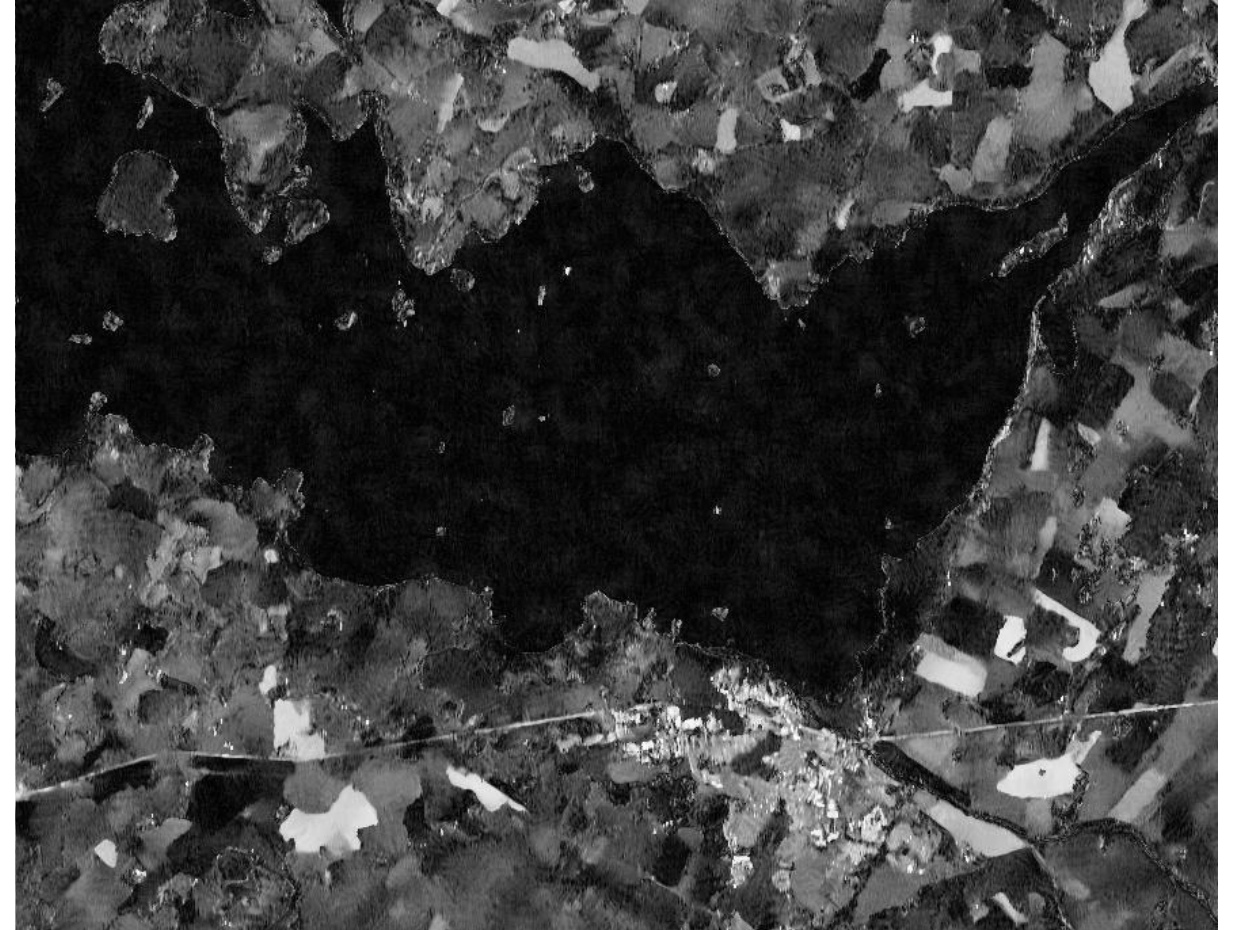
# Coherence Generation

## Non-Local Phase Filter

### Non-Local filter
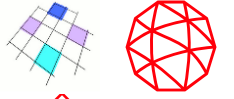


- Good performance in medium resolution data coherence
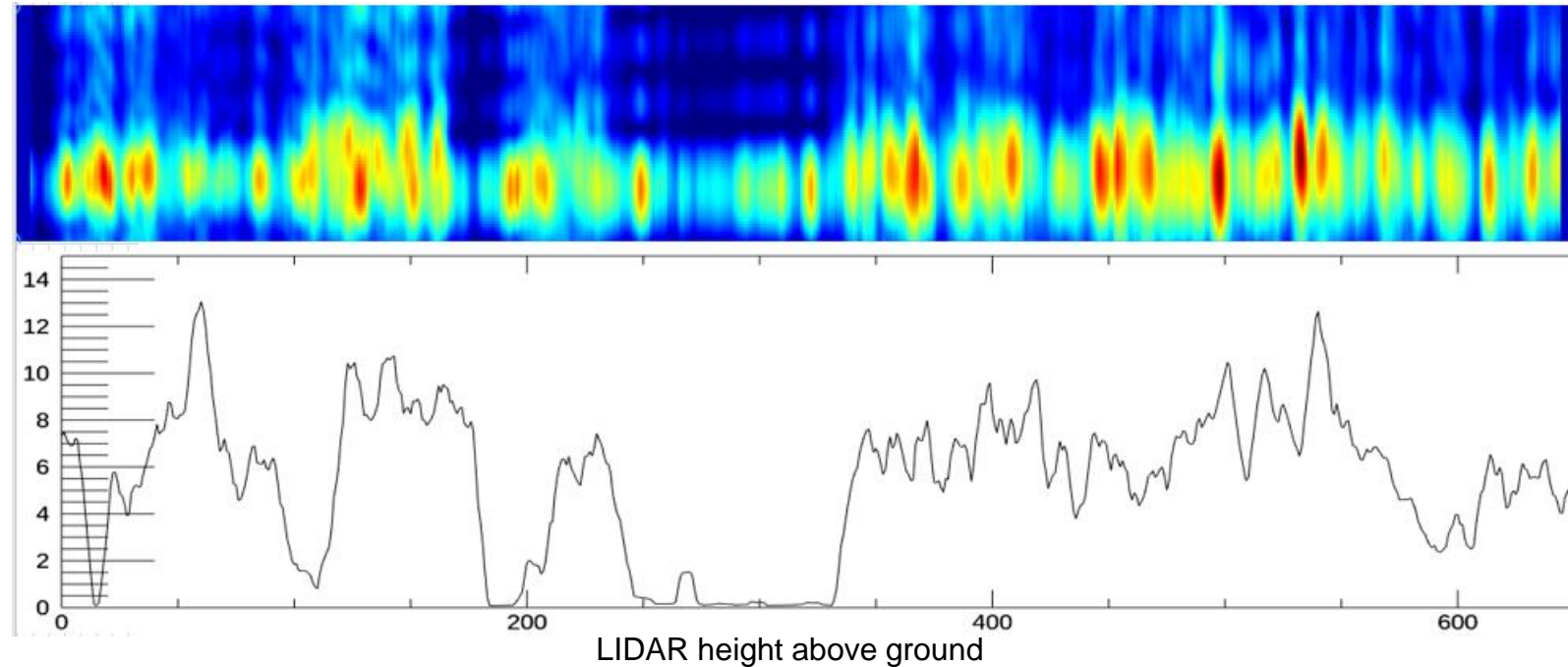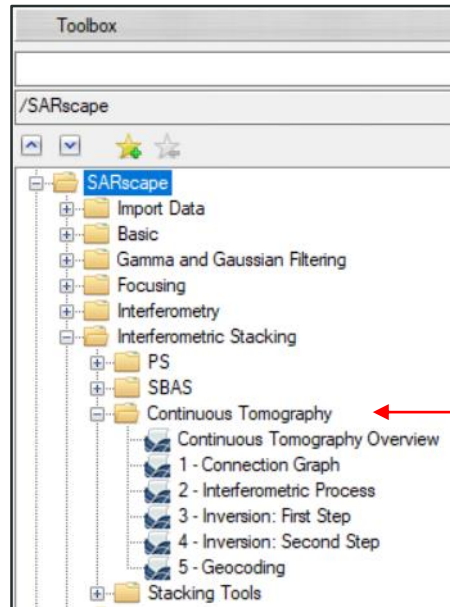- Preserves point targets and strongly smooths homogeneous areas
- GPU is recommended

# Interferometric Stacking

## Continuous Tomography



LIDAR height above ground

- 3D SAR radiometric and geometric reconstruction
- Best results from L- and P-band
- Ready tool to support future satellite missions – BIOMASS ESA for forestry analysis
- UAV SAR JPL data (airborne) that analysed the US forest condition will be supported soon
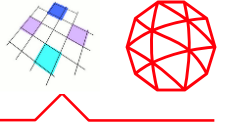
# Interferometric Stacking
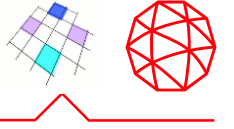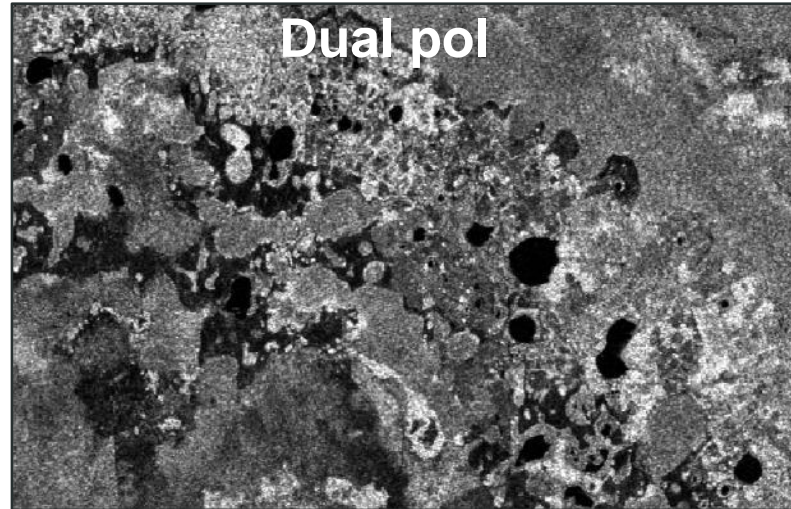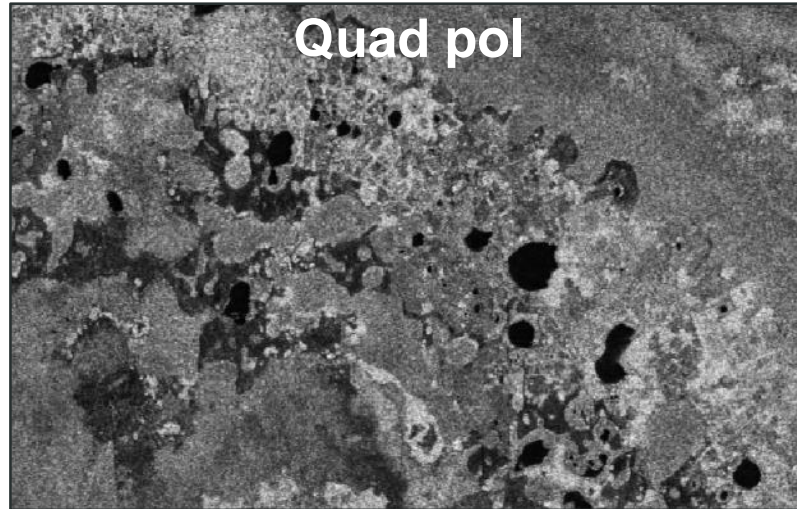
## Continuous Tomography
## Tomographic Slice



Elevation slices

# Polarimetry and PolInSAR
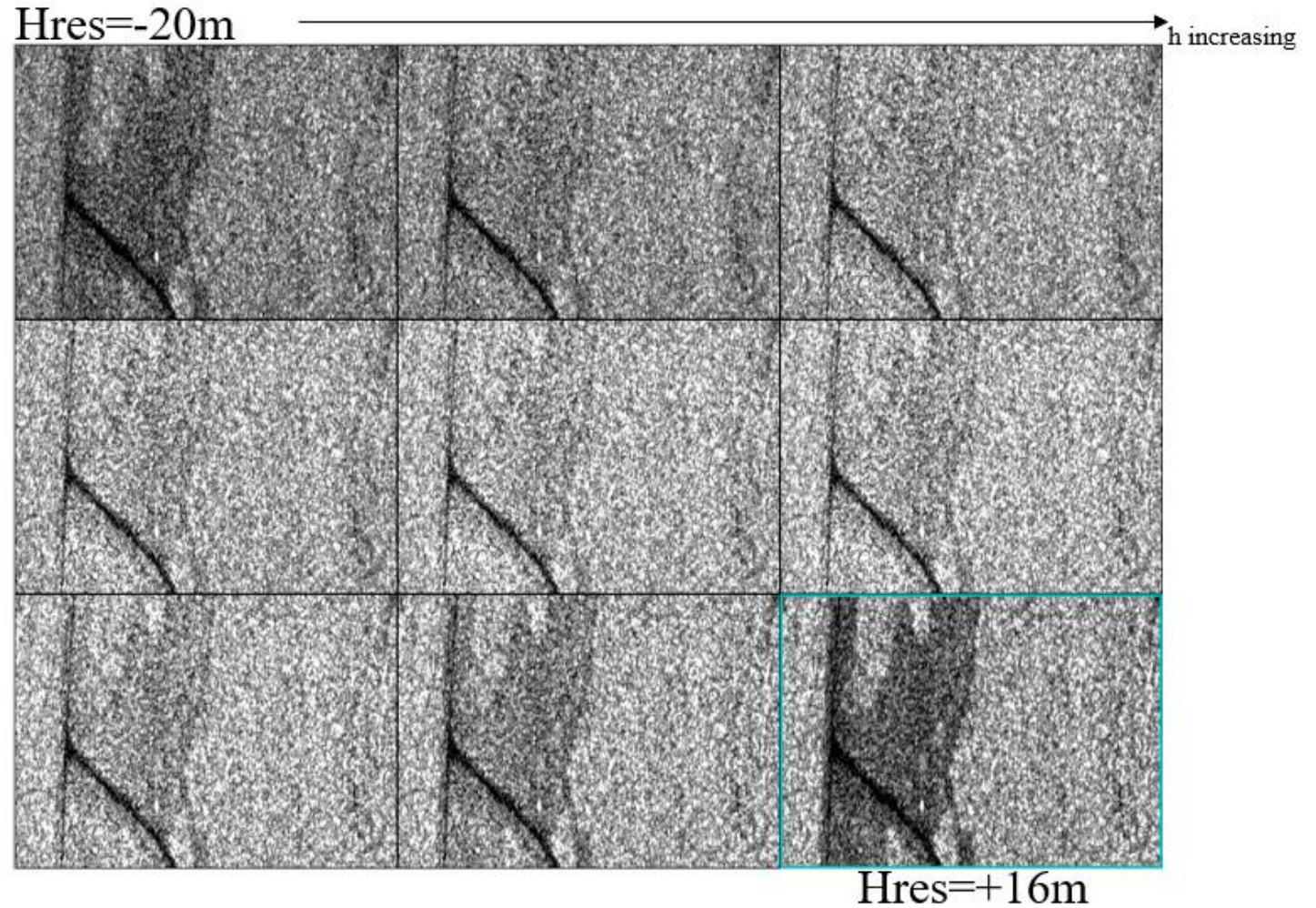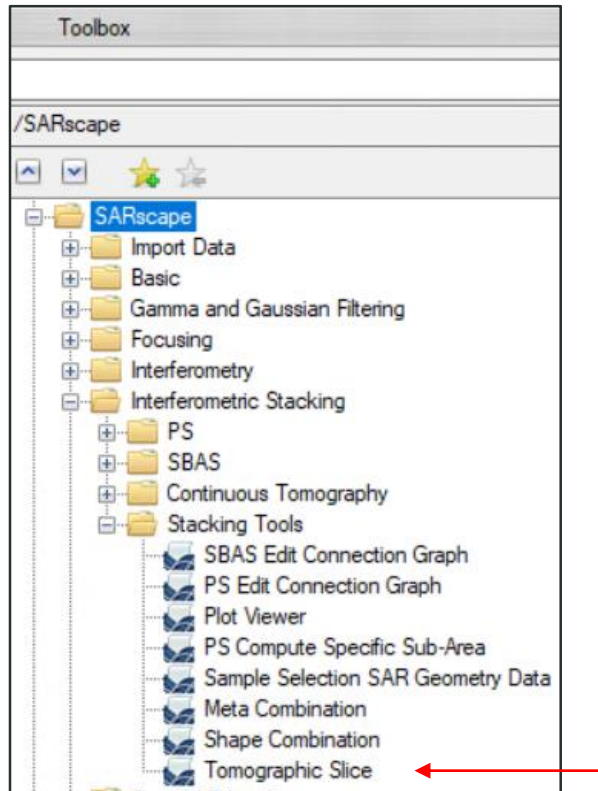
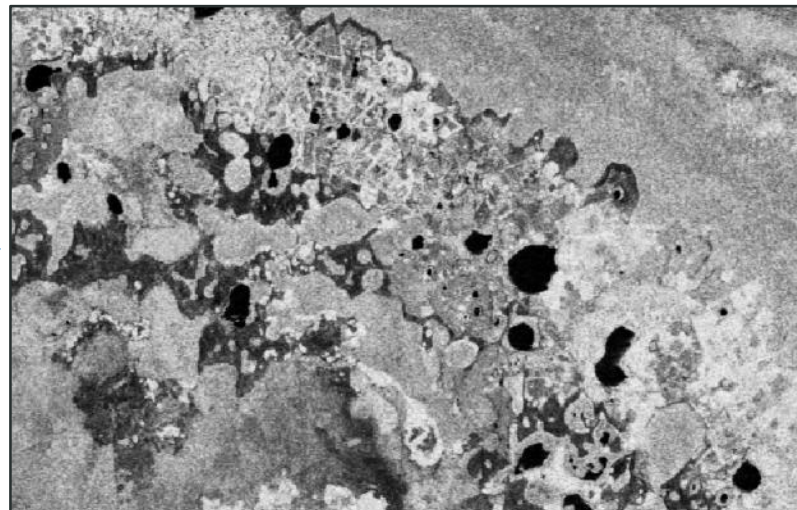## Dual Polarimetric Entropy Alpha Anisotropy Decomposition



**alpha** — **Quad pol** / **Dual pol**
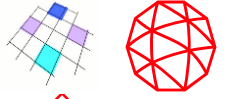
**entropy** — **Quad pol** / **Dual pol**
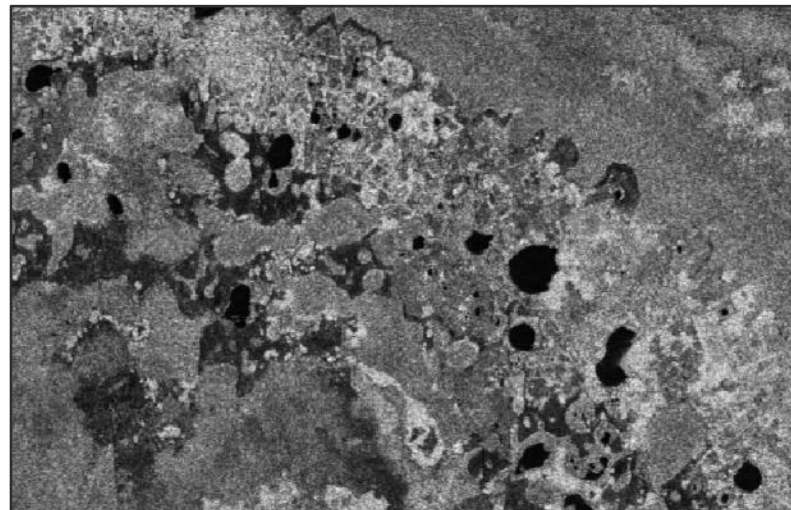
- Alpha-entropy decomposition on HH/HV or VV/VH dual polarization data
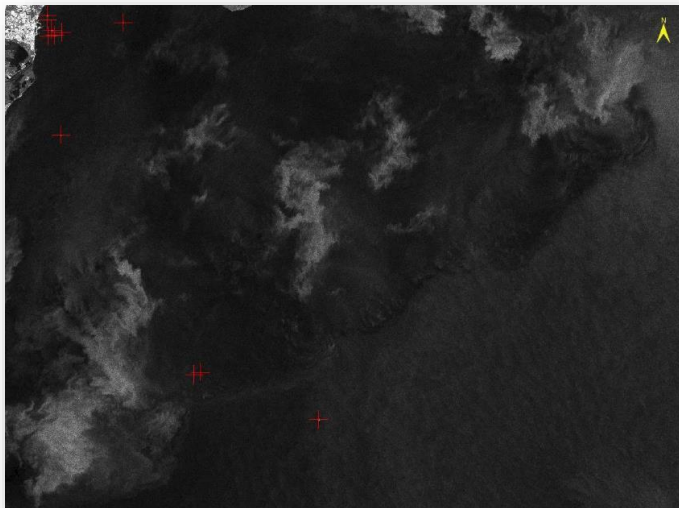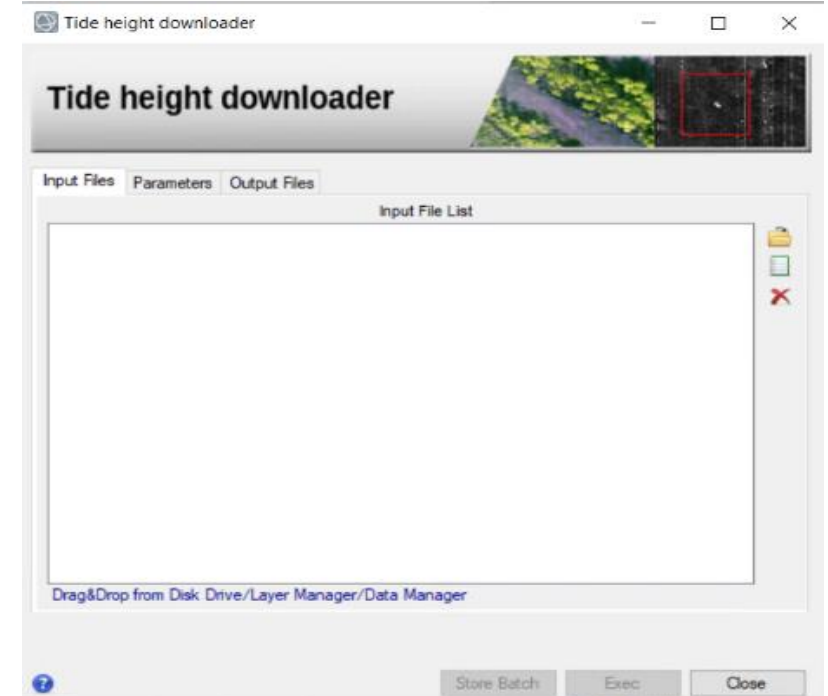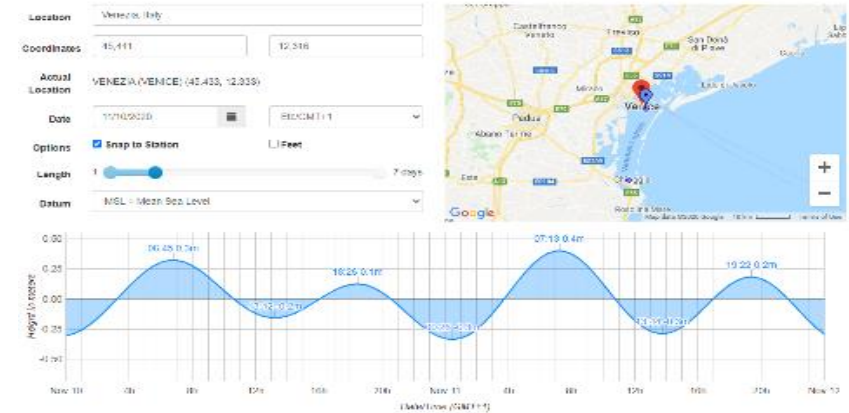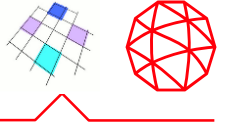
# New Maritime Applications

## Tide Height Download

- For any location in the world
- Supports the identification of coastlines for ship detection
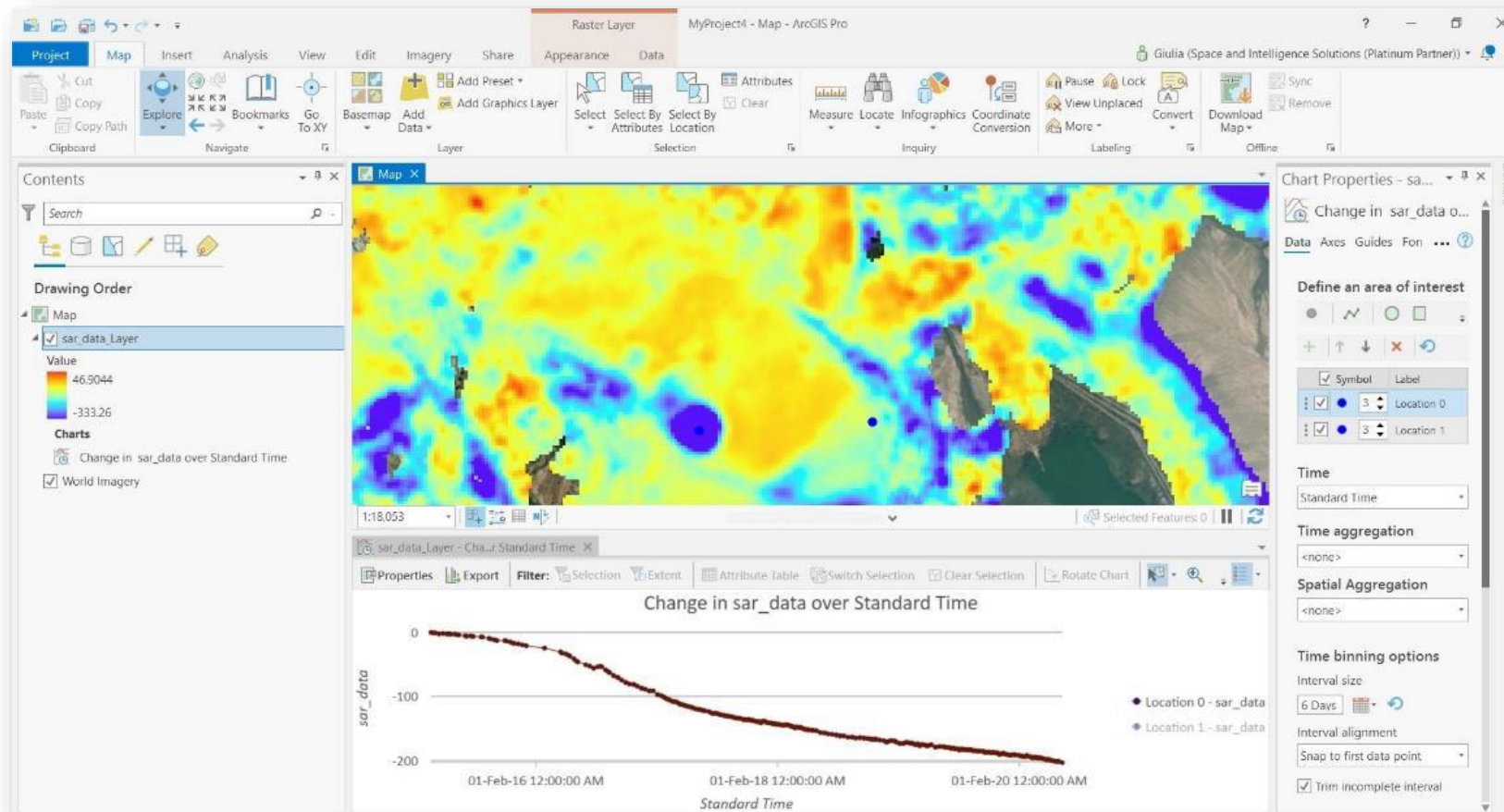- Provided in shapefile format as point feature

## Ship Statistics

- Monthly average number of ships detected from SAR in a certain area (CSV format)
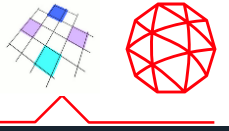- Monthly average quick view plot

# Data Export
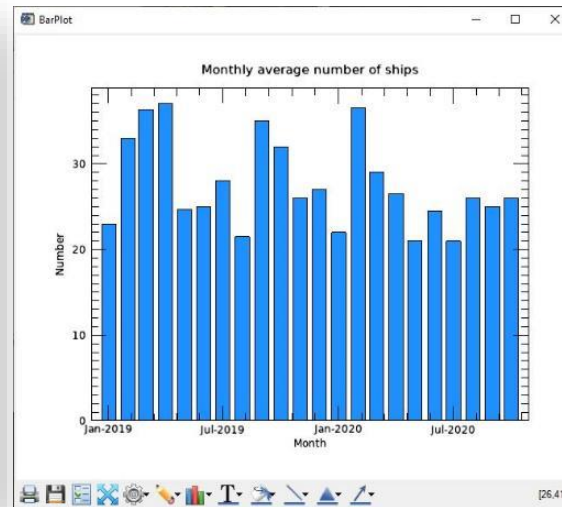
## EnviSeries to NetCDF Conversion

- Enables the analysis of multitemporal data in ArcGIS
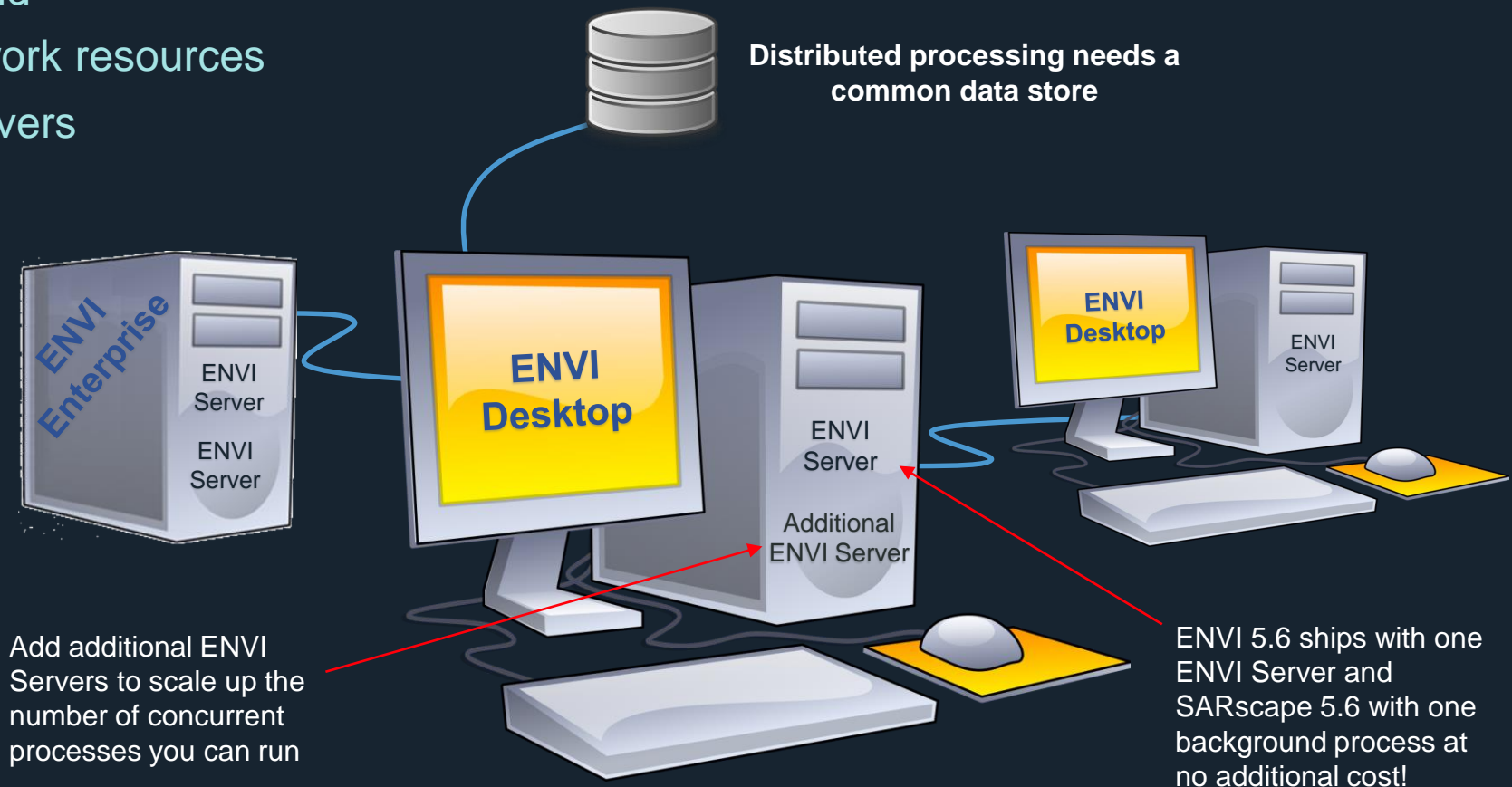  - Time-Series SAR intensity
  - Time-Series deformation (SBAS)

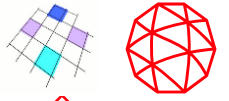# Operational Processing with SARscape and ENVI Server

## SARscape 5.6 supports ENVI Server to run processing remotely or in the background of ENVI

- Save time by running processes in parallel

- Bulk processing in the background

- Take advantage of powerful network resources

- Distribute processing to local servers with common data access

- No programming required!

**Distributed processing needs a common data store**

ENVI Enterprise

ENVI Server

ENVI Server

ENVI Desktop

ENVI Server

Additional ENVI Server

ENVI Desktop

ENVI Server

Add additional ENVI Servers to scale up the number of concurrent processes you can run

ENVI 5.6 ships with one ENVI Server and SARscape 5.6 with one background process at no additional cost!

# Live Demo: SARscape and ENVI Server

**Process SAR data while visually inspecting the outcomes**

# Improvements and much more

## Drag and Drop UI

All panels enable the use of Drag and Drop from a variety of sources
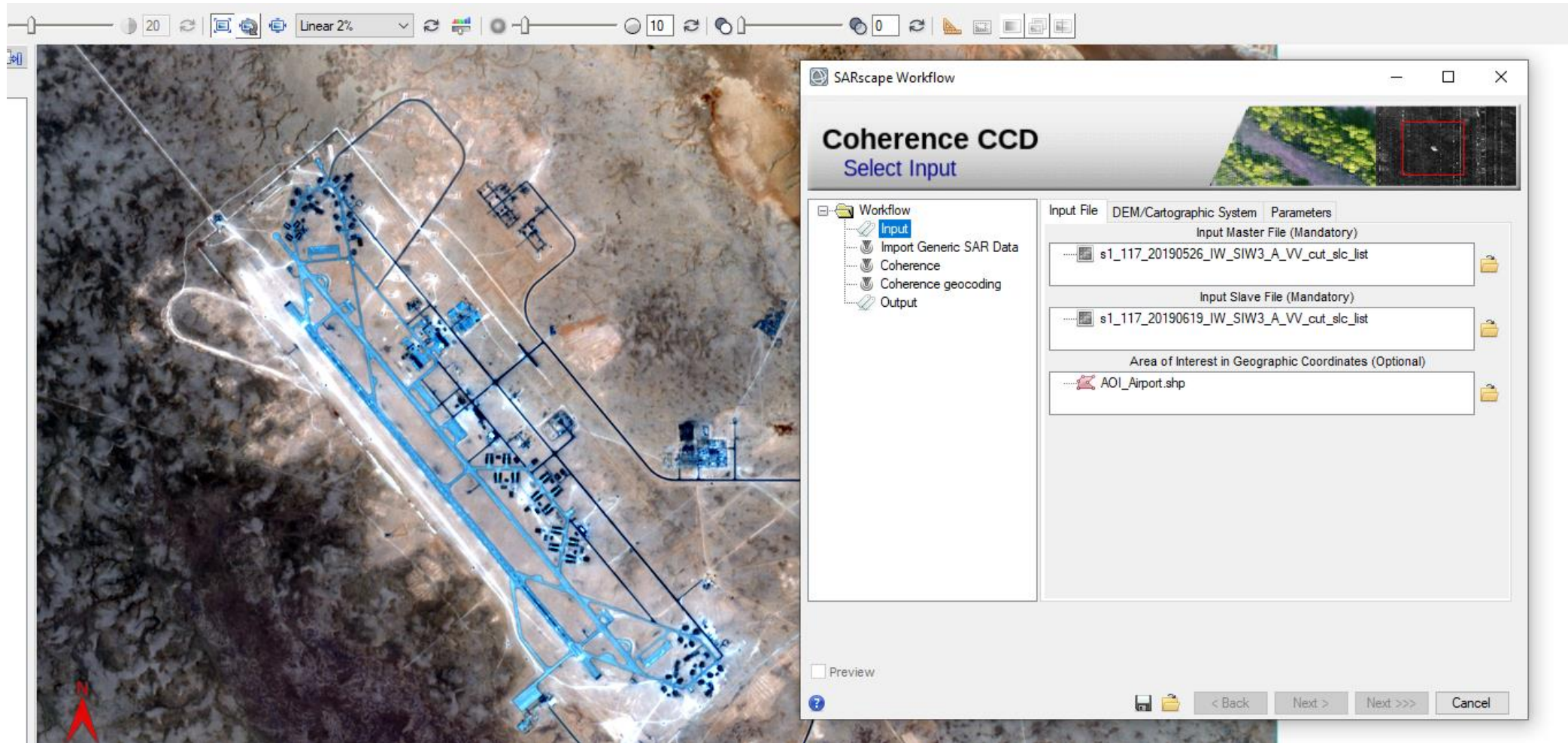
# SARscape 5.6 Improvements List

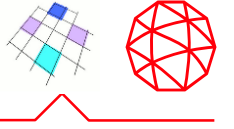| Workflows | |
|---|---|
| **Import Data** | SAR Spaceborne / Generic SAR data |
| **Import Data** | SAR Spaceborne / Single Sensor / Sentinel-1 (and in Generic SAR data, Focusing) |
| **Basic** | Intensity Processing / Multilooking |
| **Interferometric Stacking** | PS |
| **Interferometric Stacking** | SBAS |
| **General Tools** | Time Series Analyzer / Raster |
| **General Tools** | Data and Quality Analysis / RFI Filter |
| **Preferences** | |

**ALBERTO MERONI** | L3HARRIS GEOSPATIAL | DIRECTOR BUSINESS DEVELOPMENT
Alberto.Meroni@L3Harris.com

**NICOLAI HOLZER** | L3HARRIS GEOSPATIAL | SALES ENGINEER EMEA
Nicolai.Holzer@L3Harris.com