→ FRINGE 2015 WORKSHOP

Advances in the Science and Applications of SAR Interferometry and Sentinel-1 InSAR Workshop

Sentinel-1 Toolbox

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Sentinel-1 Toolbox

Goals:

- To enable the SAR community to better exploit the large archives of Sentinel-1, ESA heritage SAR and 3rd party SAR mission data in both R&D and operational contexts.
- To build on prior toolbox development (NEST/BEAM).
- To further develop the toolbox architecture to ensure that it will be able to deal with very large data products coming from the Sentinels.

Release 1.0: 29.9.2014

- 2000+ downloads

Release 1.1: 20.3.2015

- Includes TOPS InSAR support

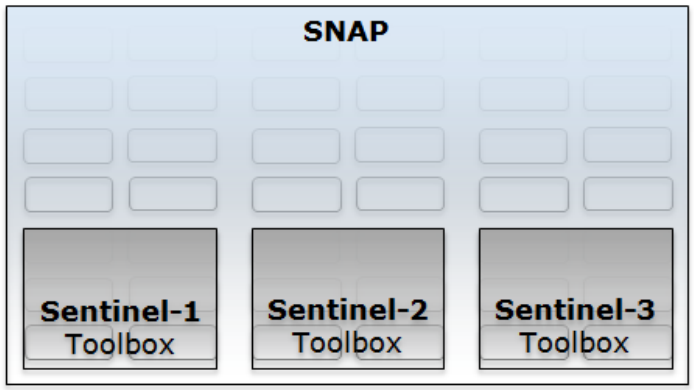
seom
scientific exploitation of operational missions

nest
next esa sar toolbox

Sentinels Application Platform

SeNtinels Application Platform (SNAP)

- **Common Java Software Platform for**
  - Sentinel-1/2/3 Toolboxes
  - SMOS Toolbox
- **Benefits of SNAP**
  - Joint development plan for toolboxes
  - Common core framework
  - Interchangeable plug-ins
  - Single installer



- **SNAP 2.0 release in May 2015**
  - https://github.com/senbox-org
  - Built on: NetBeans, github SOCIAL CODING, GPL Free Software Free as in Freedom, Java

Sentinel-1 Toolbox functionality 1/2

Features

- Free & open source
- Attractive GUI
- Product library tools
- Processing chain and batch processing support
- Fully scriptable

Supported Missions

- Sentinel-1
- ENVISAT ASAR
- ERS-1&2
- RADARSAT-2
- TerraSAR-X/TanDEM-X
- ALOS PALSAR/ALOS-2
- COSMO-Skymed

Generic SAR functionality

- Calibration
- Speckle Filtering
- Ellipsoid & Terrain Correction
- Radiometric Terrain Flattening
- SAR Simulation
- Mosaicking
- Coregistration
- Interferometry (including TOPS)

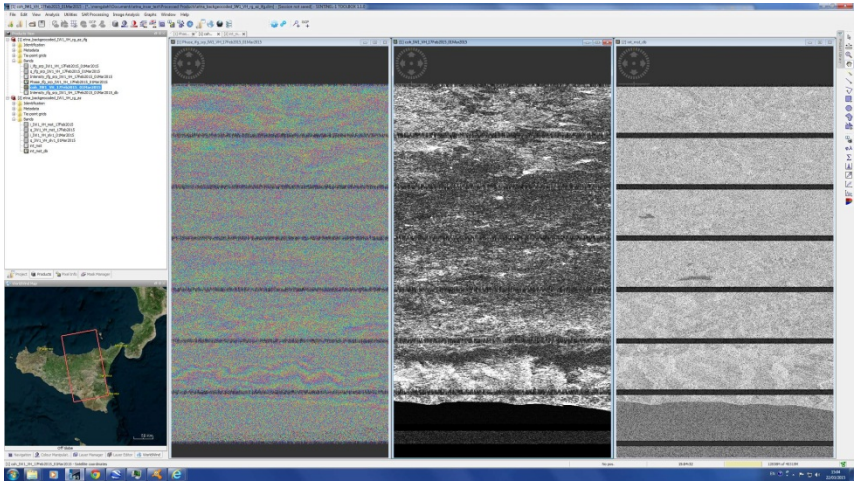
Supported OS

- Windows 32/64-bit
- Linux 32/64-bit
- Mac OS X 64-bit

Sentinel-1 Toolbox functionality 2/2

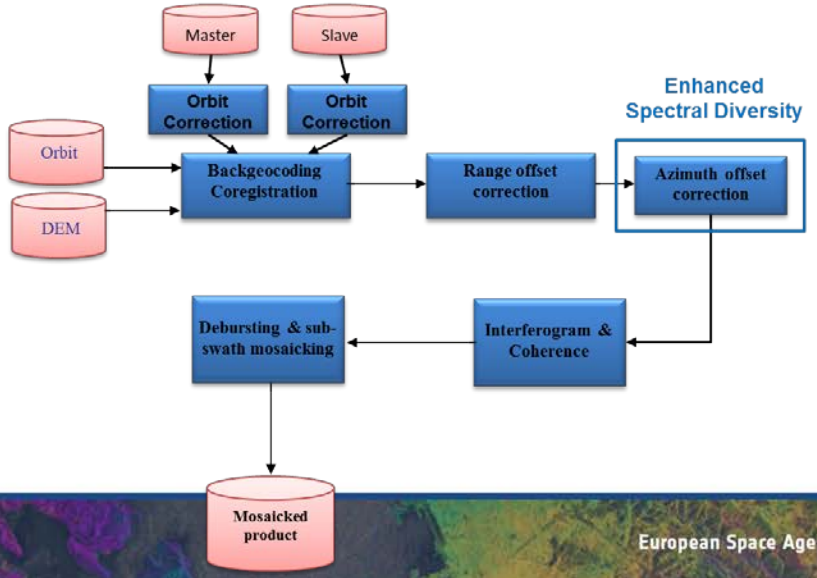
Sentinel-1 Specific Functionality

- S-1 Level-1 products handling
- Calibration
- Product assembly from slices
- TOPS deburst and swath-merge
- Dual-Pol processing
- SLC to “GRD-like” processing



Sentinel-1 InSAR functionality

- Precise orbits application
- TOPS co-registration
- Enhanced Spectral Diversity
- Deburst and merge of InSAR-products



Future

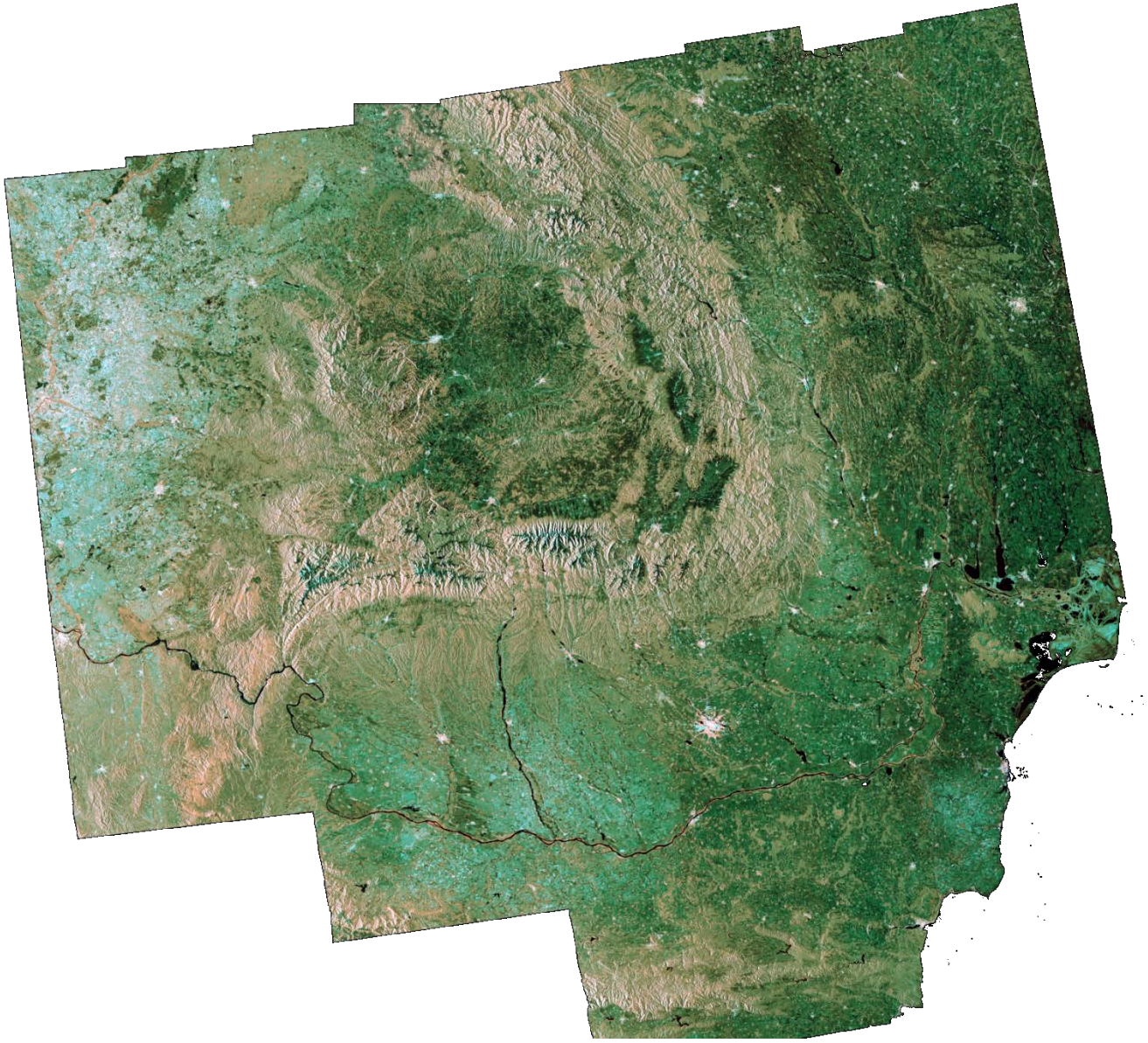
Iteration Plan

- Release 2 (May 2015)
  - SNAP 2.0 on NetBeans, Processing Previews, Single Smart Installer, InSAR improvements
- Release 3 (Sept 2015)
  - L2 product visualisation, task queue, performance optimizations
- Release 4 (Jan 2016)
  - Change detection, classification

Cloud Developments

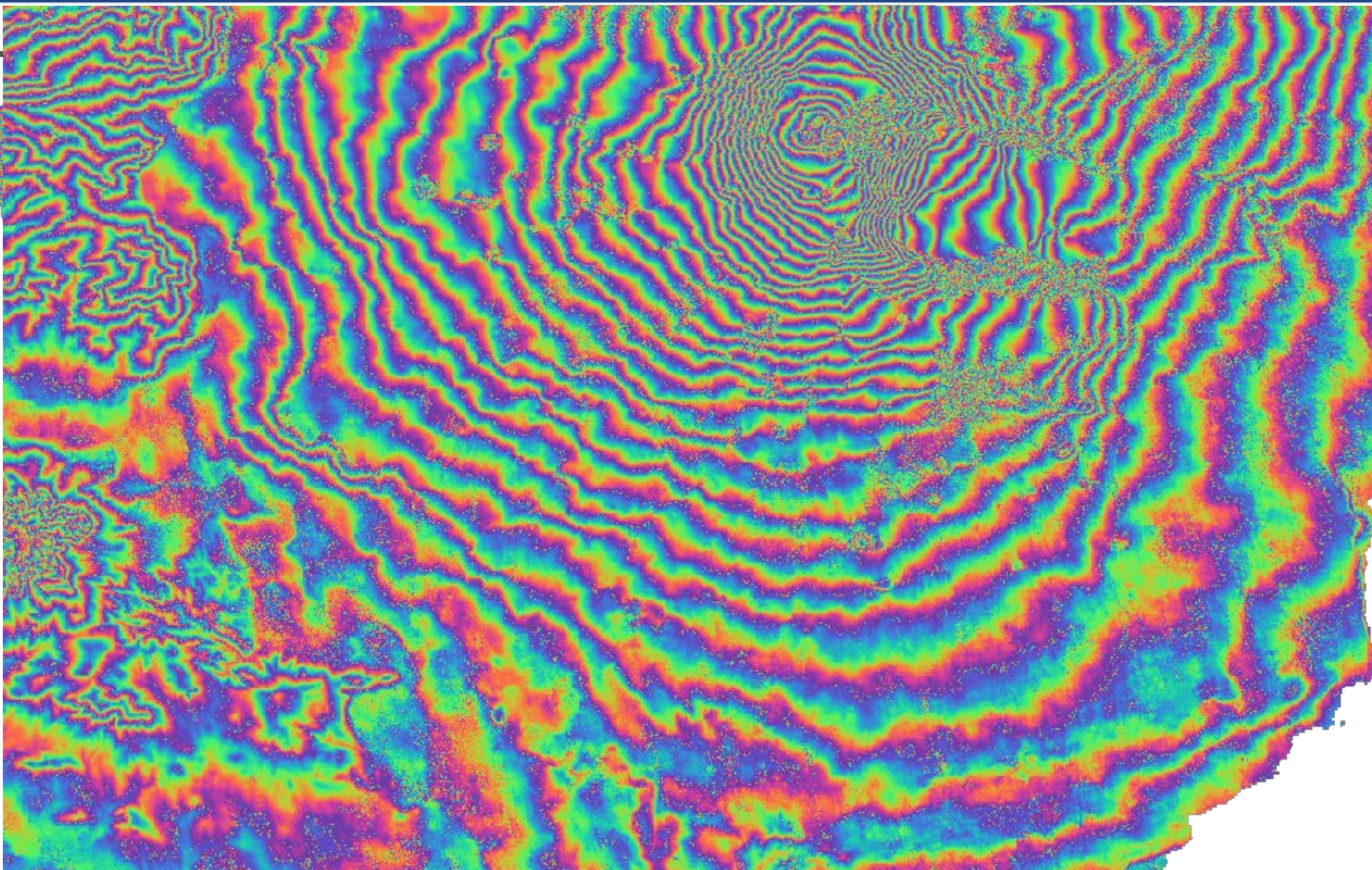
- Client-server functionality for SNAP
- Cloud demonstrator on https://step.esa.int

S1A Country Mosaic of Romania



A mosaic of 15 data takes by Sentinel-1A in October and November 2014.
R-VH/G-VV(dB)/B-VV

S-1 TOPS Interferogram – Mt. Etna



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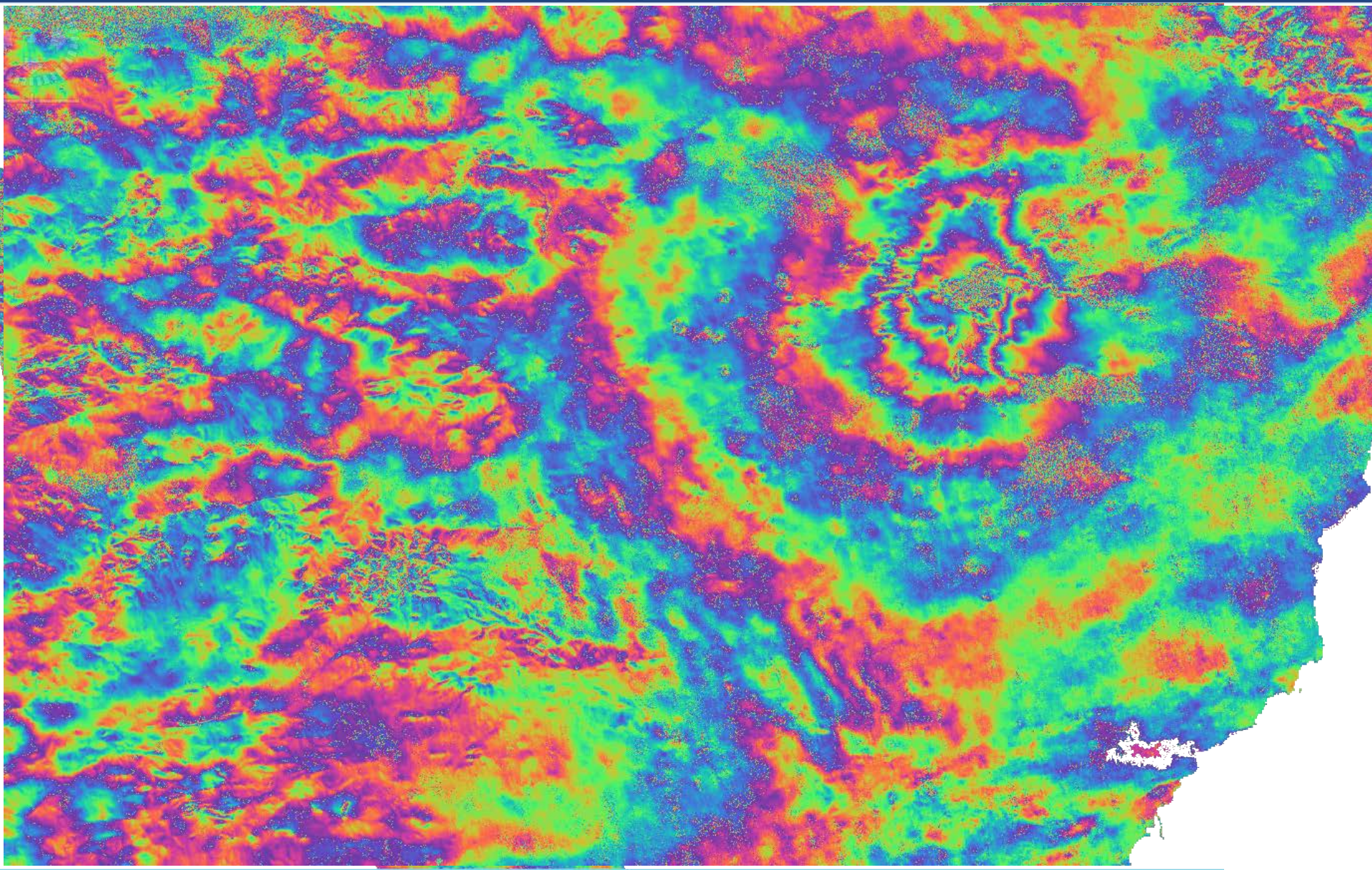
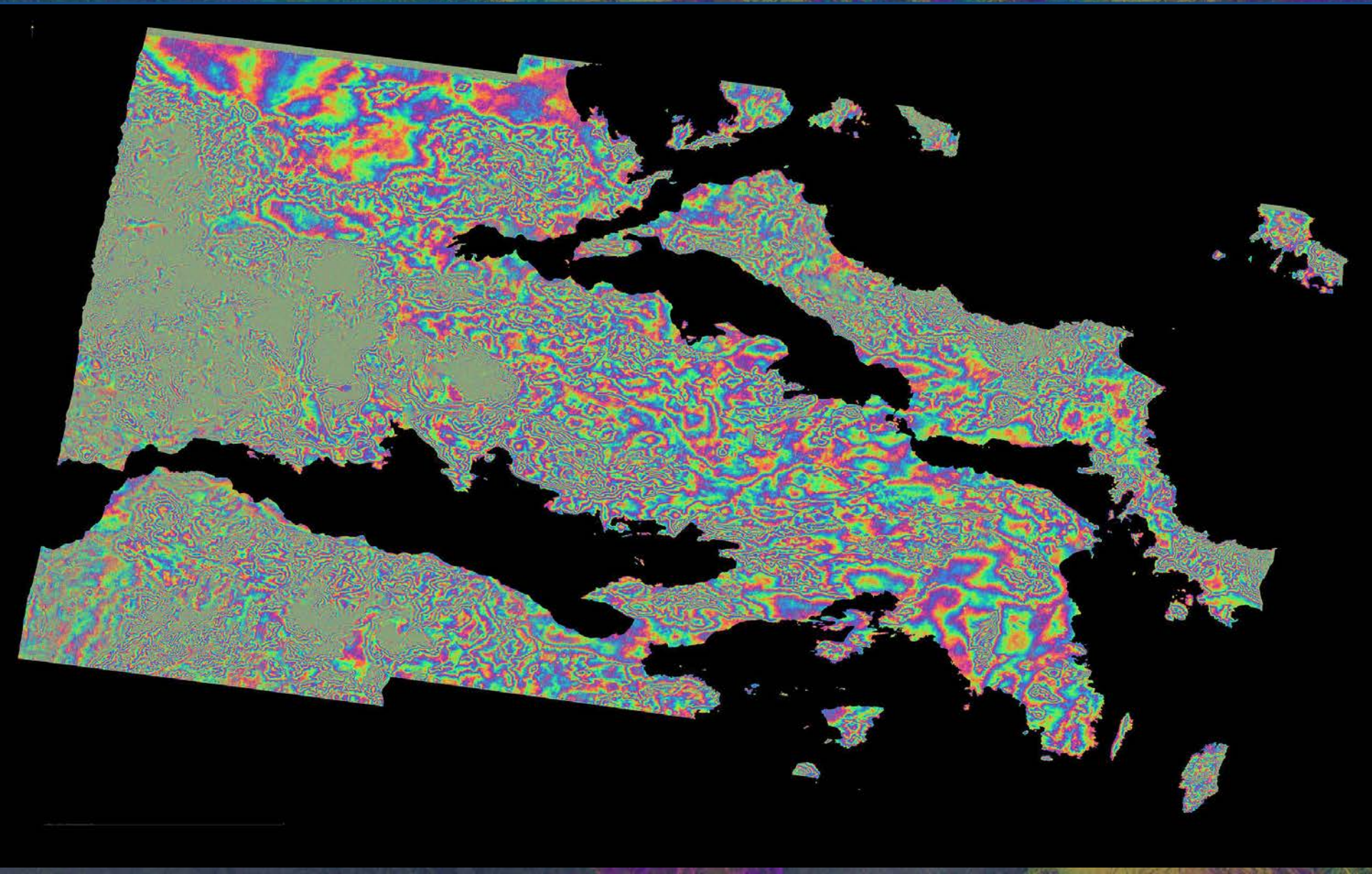


S-1 TOPS over Greece – VV coherence

S-1 TOPS over Greece – VH coherence

S-1 TOPS over Greece – Phase



Get the S-1 Toolbox from

https://sentinel.esa.int/web/sentinel/toolboxes/sentinel-1