

→ 6th ESA ADVANCED TRAINING COURSE ON LAND REMOTE SENSING

1052

ESA Sentinel-1 Toolbox Generation of SAR Backscattering Mosaics

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SNAP

- The common architecture for all Sentinel Toolboxes and SMOS Toolbox is called Sentinel Application Platform (SNAP).
- SNAP architecture is ideal for Earth Observation processing and analysis due the following technological innovations: Extensibility, Portability, Modular Rich Client Platform, Generic EO Data Abstraction, Tiled Memory Management and a Graph Processing Framework.

Activity funded through SEOM element of ESA's EOEP-4 (www.seom.esa.int)

Sem scientific exploitation of operational missions



Multi-mission Scientific Toolboxes – Development Consortia



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SNAP

History

Development







Benefits of SNAP

- Developed as open source software
- Common Java core framework
- Joint development plan for Sentinel toolboxes
- Interchangeable Java/Python plugins
- Portable engine to Cloud infrastructure
- Single installer















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SNAP Feature Highlights

- Fast image display and navigation even of giga-pixel images
- Graph Processing Framework (GPF) for user-defined processing chains
- Advanced layer management for external images and vector data overlays
- Rich region-of-interest definitions for statistics and various plots
- Flexible band arithmetic using arbitrary mathematical expressions
- Accurate re-projection and ortho-rectification to common map projections
- Geo-coding and rectification using ground control points
- Automatic download and tiling of SRTM DEM and SAR precision orbits
- Product library for scanning and cataloging large archives
- Multithreading and Multi-core processor support
- Integrated WorldWind visualisation



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ESA STER

SNAP

Download

· Community

· Sentinel 1 Toolbox · Sentinel 2 Toolbox Sentinel 3 Toolbox **Science Toolbox Exploitation Platform**





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Former releases can be downloaded from the Previous Versions page. But we highly encourage you to test the beta version for the next release !

The next release of SNAP is currently in beta stage, with a target date for the final release in mid July. The current version is 2.0 beta-04 (13.07.2015 18:00).

Access to the current installers for the most common platforms (Windows, MacOS, Linux) are provided on-demand to interested beta-testers.

During the installation process you can select to download and install the Sentinel-1 Sentinel-2, or Sentinel-3 Toolbox or even all of them.



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Science Toolbox Exploitation Platform





A dual polarization colour of

between October and November 2014.

entire

fifteen GRDH

acquired

composite

products

Romania using Sentinel-1A

Technical documentation for both endusers and developers



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SNAP

Science Toolbox Exploitation Platform





Romania

products

Sentinel-1A

between October November 2014.

using fifteen

GRDH

and

acquired

Step-by-step tutorials including YouTube videos

esa science toolbox exploitation platform ESA STEP TOOLBOXES DOWNLOAD GALLERY DOCUMENTATION COMMUNITY Search Home > Documentation > Tutorials > Sentinel-1 Toolbox Tutorials 580 Sentinel-1 Toolbox Tutorials SAR Basics with the Sentinel-1 Toolbox Sentinel-1 Stripmap Interferometry Sentinel-1 TOPSAR Interferometry EO Science 2.0 Radarsat-2 Interferometry SAR Polarimetry ALOS Orthorectification Video Tutorials 6th ESA Advanced Training Course on Land Remote Sensing S1TBX Introduction s1tbx-intro 4th ESA Advanced Training Course on Ocean Remote Sensing

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Science Toolbox Exploitation Platform





Technical forum, gathering user feedback and communicating results

categories + Categories Latest Top		
alegory	Lätest	Topics
s1tbx	Coregistering sentinel-1 SLC data - 5n	
	Apmuth Fringes in Cape Verde Tutorial TOPSAR Interferogram 64	
5-1	Sentinel 1 toolbox memory increase- 30%	1 /day
he 51 Tooltox category regroups all threads about the Sentinel-1 Toulbox, as AR readers or processors.		3 runn
Problem Reports III Interferometry III Polarimetry		
e2thy	Sentinei-2 toolbox and data processing 4h	
JELUA	Can't read 52 commissioning sample data Sh	
- S-2	Reading S2 L18 in Multisize causes a Java lang llegalStateException in Linux 6d	2.000
The S2 Toolbox category regroups all threads about the Sentinel-2 Toolbox as sentinel-9 product readers and product manipulation. Sentimel-9 processors as 30 processor for drivospheric correction. US processor for fomporal synthesis, fc.		5:/monm
s3tbx	OLCI L3 reader artefact 9d	
S-3	Displaying RGB composite for Landsat 5 data 140	2 motor
The S3 Toolbox category regroups all threads about the Sentinel-3 Toolbox as eaders and processors for Sentinel 3 OLCI & SLSTR L1 & L2		2////
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	SNAP 2.0 beta-04 20	2 ruans
	Where is anappy? 78	Fi / murrey
his category contains without evolution Seminal Toolbox Application (SNAP) net detecto a sound of Seminal Toolbox		

The entry point for developers is here.

Issue tracker

You just found a bug ? Or maybe you want to report about this excellent idea you just had for a future release ? We welcome reports for issues and feature requests 1

Issue tracking is provided by Jira and is hosted here.





SIA Country Mosaic of Romania A dual polarization colour composite of entire Romania using fifteen Sentinel-1A GRDH products acquired







SNAP		
File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help		Q+ Search (Ctrl+I)
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	 Timeline ⊘ Months Collecting 45 folders 	



EXERCISE

Generation of SAR Backscattering Mosaics



Goals of the Exercise

- Familiarize with
 ESA Sentinel-1 Toolbox
- Training on the generation of backscattering RGB mosaics
- Provide instruction on step-bystep processing of Sentinel-1 data (incl. parameters, tips etc.)
- Demonstrate the potential for running in batch mode



Contains modified Copernicus Sentinel data [2014]



Input Dataset

A set of Sentinel-1A GRD images acquired in Oct. 2014
 S1A_IW_GRDH_1SDV_20141014T160828_20141014T160853_002828_003302_0AEE.zip
 S1A_IW_GRDH_1SDV_20141014T160853_20141014T160918_002828_003302_124B.zip

[downloadable @ https://scihub.esa.int]

Sentinel-1 Precise Orbits (PODs) for the corresponding S1A dates (auxiliary data)
 S1A_OPER_AUX_POEORB_OPOD_20141104T123622_V20141013T225944_20141015T005944.EOF.zip
 [downloadable @ https://qc.sentinel1.eo.esa.int]
 [stored locally @ C:\Users\mfoumelis\.snap\auxdata\Orbits\Sentinel-1\POEORB\2014]

 Digital Elevation Model (DEM) dataset from SRTM 3 arc-sec covering the Area of Interest (auxiliary data)

srtm_41_03.zip, srtm_41_04.zip, srtm_42_03.zip & srtm_42_04.zip
[stored locally @ C:\Users\mfoumelis\.snap\auxdata\dem\SRTM 3Sec]





Generation of SAR **Backscattering Mosaics**





EXERCISE Generation of SAR Backscattering Mosaics

PART 1



Input Data & Auxiliary files





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Reading Sentinel-1 Products



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Reading Sentinel-1 Detected Products (*.zip files)

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Sentinel-1 GRD Products







Viewing S-1 Amplitude (VV & VH Pol)







Checking Sentinel-1 Metadata (1/2)



File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

S1A IW GRDH 1SDV 20141014T160828 201410

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SRGR_Coefficients	SPH_DESCRIPTOR	Sentinel-1 IW Level-1 GRD Product	ascii		Description
Doppler_Centroid_Coefficients	MISSION	SENTINEL-1A	ascii		Satellite mission
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Triginal_Product_Metadata	antenna_pointing	right	ascii		Right or left facing
Dector Data	BEAMS	-	ascii		Beams used
Tie-Point Grids	SWATH	-	ascii		Swath name
Bands	PROC_TIME.1	5400	uint32	utc	Processed time
	PROC_TIME.2	73680	uint32	utc	Processed time
Amplitude_VV	PROC_TIME.3	264812	uint32	utc	Processed time
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	slice_num	12	int32		Slice number
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	first_near_lat	43.775	float64	deg	
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Checking Sentinel-1 Metadata (2/2)

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Zoom -- Level -

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[1] S1A_IW_GRDH_1SDV_20141014T160828_20141014T160853_002828_003302_0AEE	Name	Value	Туре	Unit	Description
Metadata	slice_num	12	int32		Slice number
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Doppler_Centroid_Coefficients	first_line_time.2	58108	uint32	utc	First zero doppler azimuth time
D Band_IW_VH	first_line_time.3	229083	uint32	utc	First zero doppler azimuth time
Band_IW_VV	last_line_time.1	5400	uint32	utc	Last zero doppler azimuth time
Vector Data	last_line_time.2	58133	uint32	utc	Last zero doppler azimuth time
Tie-Point Grids	last_line_time.3	227483	uint32	utc	Last zero doppler azimuth time
Bands	first_near_lat	43.775	float64	deg	
Amplitude_VH	first_near_long	24.739	float64	deg	
	first_far_lat	44.174	float64	deg	
Intensity_VV	first_far_long	27.904	float64	deg	
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	algorithm	4	ascii		Processing algorithm
	azimuth_looks	1	float64		
1	range_looks	5	float64		
	range_spacing	10	float64	m	Range sample spacing
	azimuth_spacing	9.988	float64	m	Azimuth sample spacing
	pulse_repetition_frequency	1,717.129	float64	Hz	PRF
	radar_frequency	5,405	float64	MHz	Radar frequency
	line_time_interval	0.001	float64	s	
	total_size	3292	uint32	MB	Total product size
	num_output_lines	16721	uint32	lines	Raster height
	num_samples_per_line	25782	uint32	samples	Raster width
	subset_offset_x	0	uint32	samples	X coordinate of UL corner of subset in original image
	subset_offset_y	0	uint32	samples	Y coordinate of UL corner of subset in original image
	srgr_flag	1	uint8	flag	SRGR applied
	avg_scene_height	351.366	float64	m	Average scene height ellipsoid
	map projection	-	ascii		Map projection applied
	is_terrain_corrected	0	uint8	flag	orthorectification applied
	is_terrain_corrected	0	uint8 ascii	flag	orthorectification applied Digital Elevation Model used

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Sentinel-1 Incident Angles



S1A IW GRDH 15DV 20141014T160828 20141014T160853 002828 003302 0AEE - 0 WORKing/LTC2015 D2P1a/inputs/S1A IW GRD SNIAE File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help Q . Search (Ctrl+I) ஜ; ஜ 🛯 🖉 🔍 ഺ 약 ↘ ⊋ 🗖 🌒 @ 🎥 🚔 🔍 Ձ 🧟 🦉 🧏 🛛 🌒 🔮 🔲 🗏 🖽 🗋 🔄 🖣 🍯 🥐 📶 👍 🕖 🗭 🖉 φ.λ 🔟 🚳 🗽 🖉 Σ 2 R 1 1 7 0 [1] incident_angle × Product Explorer × Pixel Info E - I S1A_IW_GRDH_1SDV_20141014T160828_20141014T160853_002828_003302_0AEE 🖨 🔄 Metadata 🖶 🚺 Abstracted_Metadata . Orbit_State_Vectors B SRGR_Coefficients Doppler_Centroid_Coefficients Band_IW_VH 9 Band_IW_VV 🖻 🕕 Original_Product_Metadata 🕀 🧰 Vector Data E Tie-Point Grids atitude longitude ø incident_angle Mas elevation_angle slant_range_time 🗄 🔄 Bands Amplitude_VH Intensity_VH Amplitude_VV Intensity_VV [2] S1A_IW_GRDH_1SDV_20141014T160853_20141014T160918_002828_003302_1248 Navigation - [1... × Uncertainty Visua... Colour Manipulati... World Map Ð Q Q Q ۰. 0° ≑ 🕐 1:19.67 Zoom - Level --X - Y Lat - Lon

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Sentinel-1 Applying Precise Orbits (POD)

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Sentinel-1 Applying Precise Orbits (POD)

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Sentinel-1 POD Automatic Download

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Sentinel-1 Applying Precise Orbits (POD)

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Sentinel-1 Radiometric Calibration (1/4)

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Sentinel-1 Radiometric Calibration (2/4)

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Sentinel-1 Radiometric Calibration (3/4)

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Sentinel-1 Radiometric Calibration (4/4)



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S-1 Sigma0 Product Convert Linear to dB Scale

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Zoom - Level -

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File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

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S-1 Sigma0 in dB Histogram Stretching



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File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

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SAR Multi-looking (1/4)



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SAR Multi-looking (2/4)



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SAR Multi-looking (3/4)



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SAR Multi-looking (4/4)



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Zoom 1:10.5 Level 3

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→ 6th ESA ADVANCED TRAINING COURSE ON LAND REMOTE SENSING 14-18 September 2015 | University of Agronomic Science and Veterinary Medicine Bucharest | Bucharest, Romania X 225 Y 8291 Lat 45°16'19" N Lon 24°24'20" E Zoom 1:3.7 Level 1



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Sentinel-1 GRD Spatial Subset Operation (1/3)

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Sentinel-1 GRD Spatial Subset Operation (2/3)

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Sentinel-1 GRD Spatial Subset Operation (3/3)

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Spatial Subset Operation Saving "Virtual" Output.. (1/2)





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Spatial Subset Operation Saving "Virtual" Output.. (2/2)





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S-1 GRD Processed Data Step-by-Step Approach



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Geometric Transformation Terrain Correction & Geocoding





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Range-Doppler Terrain Correction (1/4)

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Range-Doppler Terrain Correction (2/4)

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Range-Doppler Terrain Correction (3/4)

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Range-Doppler Terrain Correction (4/4)



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Sentinel-1 Data Geocoded and Terrain Corrected



File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

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X 81 Y 1364 Lat 44°26'38" N Lon 24°28'29" E Zoom 1:237.4 Level 1

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EXERCISE Generation of SAR Backscattering Mosaics

PART 2

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Exercise PART 2 – Graph Builder & Batch Processing

- Prepare and store a "Graph" for defined processing chain
- Run "Graph" for multiple products in batch mode
- Reduce processing time from reading and writing intermediate products
- Save disk space by storing only one output file



The GRAPH BUILDER



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Graph Builder Interface



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Building the Graph Adding Operators (1/9)

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Building the Graph Adding Operators (2/9)

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Building the Graph Adding Operators (3/9)

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Building the Graph Adding Operators (4/9)

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Building the Graph Adding Operators (5/9)



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File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

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Building the Graph Adding Operators (6/9)

rosa





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Building the Graph Adding Operators (7/9)

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Building the Graph Adding Operators (8/9)



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Building the Graph Adding Operators (9/9)

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Defining Graph's Processing Parameters (1/3)



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Defining Graph's Processing Parameters (2/3)

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Zoom -- Level --

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Defining Graph's Processing Parameters (3/3)



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File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

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File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help



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EXERCISE Generation of SAR Backscattering Mosaics

PART 3

→ 6th ESA ADVANCED TRAINING COURSE ON LAND REMOTE SENSING 14-18 September 2015 | University of Agronomic Science and Veterinary Medicine Bucharest | Bucharest, Romania



Exercise PART 3 – Mosaicing Operation & Output Results

- The quality of mosaicing depends on the accuracy of the geocoding of the individual input files.
- The accuracy of the geocoding in turns is dependent on the precision of the orbit state vectors ingested.
- Large image volumes might results from such processing (reducing pixel size is recommended).



Geometric Transformation SAR Spatial Mosaicing





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SAR Spatial Mosaicing Selecting Input Data



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SAR Spatial Mosaicing Selecting Input Data



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File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

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14–18 September 2015 | University of Agronomic Science and Veterinary Medicine Bucharest | Bucharest, Romania

World Map ×



SAR Spatial Mosaicing Defining Processing Parameters



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File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

Product Explorer × Pixel Info

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Resampling Method:	NEAREST NEIGHBOUR
Pixel Size (m):	100.0
Scene Width (pixels)	4488
Scene Height (pixels)	3842
Feather (pixels)	0
Normalize	
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SAR Spatial Mosaicing Selecting Output Filename



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File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

Product Explorer × Pixel Info

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SAR Spatial Mosaicing Reduced Processing Time



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File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

Product Explorer × Pixel Info

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SNAP

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rosa) SAR Spatial Mosaicing



E.



LTC2015 D2P1a\outputs\mosaic100.dim

X 842 Y 2397 Lat 45°04'31"N Lon 24°51'28"E Zoom 1:403.6 Level 2

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rosa Visualization of S-1 Bands





Q+ Search (Ctrl +I)



LTC2015 D2P1a\outputs\mosaic100.dim

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Visualization of S-1 Bands Definition of Histogram Values (1/3)



File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

Q+ Search (Ctrl +I)



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Visualization of S-1 Bands Definition of Histogram Values (3/3)



File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

Q+ Search (Ctrl +I)



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Visualization of S-1 Bands Definition of Histogram Values (2/3)



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Q+ Search (Ctrl +I)



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Visualization of S-1 Bands Generation of RGB Composite (1/2)



File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

Q+ Search (Ctrl +I)



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Visualization of S-1 Bands Generation of RGB Composite (2/2)



File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help.

mosaic100 - [D:\WORKing\LTC2015_D2P1a\outputs\mosaic100.dim] - SNAP

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X 2277 Y 2993 Lat 44°33'30" N Lon 26°41'06" E Zoom 1:403.6 Level 2

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Export Results TIFF or GeoTIFF Image Format





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Export Results TIFF or GeoTIFF Image Format



Q . Search (Ctrl+I)

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File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

mosaic100 - [D:\WORKing\LTC2015_D2P1a\outputs\mosaic100.dim] - [Sigma0_VH] - SNAP

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Export to Google Earth Transformation to Geograph<u>ic Coords</u>





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Export to Google Earth Transformation to Geograph<u>ic Coords</u>



Q - Search (Ctrl+I)

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File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

mosaic100 - [D:\WORKing\LTC2015_D2P1a\outputs\mosaic100.dim] - SNAP



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Export to Google Earth Transformation to Geographic Coords



Q - Search (Ctrl+I)

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Zoom -- Level --

Lat -- Lon

File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

mosaic100 - [D:\WORKing\LTC2015_D2P1a\outputs\mosaic100.dim] - SNAP

Product Explorer × Pixel Info V [] FOT DCB X [1] S1A_IW_GRDH_1SDV_20141014T160828_20141014T160853_002828_003302_0AEE - 📾 [2] S1A_IW_GRDH_1SDV_20141014T160853_20141014T160918_002828_003302_124E - E [3] S1A_IW_GRDH_ISDV_20141014T160828_20141014T160853_002828_003302_0AEE_Orb [4] S1A_IW_GRDH_1SDV_20141014T160828_20141014T160853_002828_003302_0AEE_Orb_Cal [5] S1A_IW_GRDH_1SDV_20141014T160828_20141014T160853_002828_003302_0AEE_Orb_Cal_ML [6] S1A_IW_GRDH_1SDV_20141014T160828_20141014T160853_002828_003302_0AEE_Orb_Cal_ML_Sub . 📾 . [7] S1A_IW_GRDH_1SDV_20141014T160828_20141014T160853_002828_003302_0AEE_Orb_Cal_ML_Sub_TC 8] S1A_IW_GRDH_1SDV_20141014T160853_20141014T160918_002828_003302_124B_TC . Reprojection File Help I/O Parameters Reprojection Parameters Coordinate Reference System (CRS) Custom CRS Geodetic datum: World Geodetic System 1984 Geographic Lat/Lon (WGS 84) Projectio O Predefined CRS O Use CRS of [7] S1A_IW_GRDH_1SDV_20141014T160828_201410. **Output** Settings Reproject tie-point grids ✓ Preserve resolution Navigation - [9] RGB × Uncertainty Visualisation Colour Manipulation - [9] RGB World Map Ð No-data value: NaN Output Parameters. Of Of Add delta lat/lon bands Resampling method: Nearest **Output Information** 0 Scene width: 6504 pixel Center longitude: 26°38'13" E -Scene height: 3843 pixel 45°31'25" N Center latitude: Les WG584(DD) Show WKT CRS: Run 0° 📫 1:403.57

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Export to Google Earth Transformation to Geographic Coords



Q - Search (Ctrl+I)

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Zoom -- Level --

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File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

mosaic100 - [D:\WORKing\LTC2015_D2P1a\outputs\mosaic100.dim] - SNAP

Product Explorer × Pixel Info FOT DCB X [1] S1A_IW_GRDH_1SDV_20141014T160828_20141014T160853_002828_003302_0AEE [2] S1A_IW_GRDH_1SDV_20141014T160853_20141014T160918_002828_003302_1248 3 S1A IW GRDH 1SDV 20141014T160828 20141014T160853 002828 003302 OAEE Orb [4] S1A_IW_GRDH_1SDV_20141014T160828_20141014T160853_002828_003302_0AEE_Orb_Cal [5] S1A_IW_GRDH_1SDV_20141014T160828_20141014T160853_002828_003302_0AEE_Orb_Cal_ML - 🗎 [6] S1A_IW_GRDH_1SDV_20141014T160828_20141014T160853_002828_003302_0AEE_Orb_Cal_ML_Sub [7] S1A_IW_GRDH_1SDV_20141014T160828_20141014T160853_002828_003302_0AEE_Orb_Cal_ML_Sub_TC 8] S1A_IW_GRDH_1SDV_20141014T160853_20141014T160918_002828_003302_124B_TC [9] mosaic 100 🗄 🗐 [10] mosaic 100_WGS84 Reprojection File Help I/O Parameters Reprojection Parameters Coordinate Reference System (CRS) Custom CRS Geodetic datum: World Geodetic System 1984 SNAP - Reprojection The target product has been successfully written to D:\WORKing\LTC2015_D2P1a\outputs\mosaic100_WGS84.dim and has been opened in SNAP. Total time spend for processing: 00:00:12.484 Don't show this message anymore. Navigation - [9] RGB × Uncertainty Visualisation Colour Manipulation - [9] RGB World Map C O O OK Cancel Output Information 0 Scene width: 6504 pixel Center longitude: 26°38'13" E -Scene height: 3843 pixel Center latitude: 45°31'25" N Les WG584(DD) Show WKT CRS: Run Close 0° ≑ 🔞 1:403.57

Lat -- Lon

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* More Option:

Sentinel-1 RGB Mosaic **Re-projected to Geographic Coords**



File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

Q · Search (Ctrl+I)

X - Y

Lat -- Lon Zoom -- Level -



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Open Product...

* More Option:

Export Results Google Earth (.kmz) Format



- 11

Q . Search (Ctrl+I)

File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help GCP 0

SNAP

Reopen Product Product Library 41014T160828_20141014T160853_002828_003302_0AEE 41014T160853_20141014T160918_002828_003302_124E 41014T160828 20141014T160853 002828 003302 0AEE Orb **Close All Products** 41014T160828 20141014T160853 002828 003302 0AEE Orb Cal Close Other Products 41014T160828_20141014T160853_002828_003302_0AEE_Orb_Cal_ML Save Product 41014T160828_20141014T160853_002828_003302_0AEE_Orb_Cal_ML_Sub 41014T160828_20141014T160853_002828_003302_0AEE_Orb_Cal_ML_Sub_TC Save Product As. 41014T160853_20141014T160918_002828_003302_124B_TC Session Import Export Other Exit SAR Formats Colour Palette as File No. 1 CSV Geo-Coding as ENVI GCP File Sigma0_VH GeoTIFF / BigTIFF Geometry as Shape file Sigma0_VV BEAM-DIMAP Sigma0_VV_db Mask Pixels ENVI Product Metadata GeoTIFF Transect Pixels View as Image NetCDF4-BEAM View as Google Earth KMZ NetCDF4-CF NetCDF-BEAM NetCDF-CF Navigation - [10] RGB Colour Manipulation - [10] Dual Pol ... × Uncertainty Visualisation World Map 2 Name: Sigma0_VV_db 95% 100% Unit: intensity_db Min: -37.451 €! Q! Max: 9.257 Rough statistics



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Export Results Google Earth (.kmz) Format



File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help.

- 🗇 Q+ Search (Ctrl+I)

Product Explorer × Pixel Info [2] S1A_IW_GRDH_1SDV_20141014T160853_20141014T160918_002828_003302_124B - 8 [4] S1A_IW_GRDH_ISDV_20141014T160828_20141014T160853_002828_003302_0AEE_Orb_Cal . 🗎 [5] S1A_IW_GRDH_1SDV_20141014T160828_20141014T160853_002828_003302_0AEE_Orb_Cal_ML [6] S1A_IW_GRDH_1SDV_20141014T160828_20141014T160853_002828_003302_0AEE_Orb_Cal_ML_Sub 8] S1A_IW_GRDH_1SDV_20141014T160853_20141014T160918_002828_003302_124B_TC [9] mosaic 100 [10] mosaic 100_WGS84 😟 🛅 Metadata 🖶 🧰 Vector Data Bands Sigma0_VH Sigma0_VV Sigma0_VV_db Navigation - [10] RGB Colour Manipulation - [10] Dual Pol ... × Uncertainty Visualisation World Map 2 Name: Sigma0_VV_db 95% 100% Unit: intensity_db Min: -37.451 Ci Qi Max: 9.257 Rough statistics (A) * More Option:



X - Y

Lat -- Lon

Zoom -- Level --

SNAP

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Google Earth Viewer





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Google Earth Viewer (Detail)





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Thank you

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