

ENVI SAR ESSENTIALS 1.1 FUNCTIONAL SUMMARY

October 2025

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SYSTEM REQUIREMENTS

Minimum Requirements

ENVI 6.0, 8 GB of RAM, a CPU with at least two cores and an OpenCL 1.2-compatible device (either CPU or GPU) with double-precision, floating-point (FP64) support.

Recommended Requirements

ENVI 6.1 or 6.2, 16/32 GB of RAM, a CPU with at least four cores and an OpenCL 1.2-compatible GPU with 8 GB of memory and double-precision, floating-point (FP64) support, and a fast 512/1024 GB SSD disk

Operating system requirements

Windows 10 or 11, 64-bit

Linux 64-bit, kernel 3.10.0 or higher, glibc 2.17 or higher, glibcxx 3.4.19 or higher, xterm

SUPPORTED DATA

SAR spaceborne

- ALOS PALSAR-1
- ALOS PALSAR-2
- ALOS PALSAR-1KC
- ALOS PALSAR-2KC
- ASNARO-2
- CSG
- CAPELLA
- COSMO-SkyMed
- ENVISAT ASAR
- ENVISAT MERIS
- EOS-04
- ERS SAR
- GAOFEN-3
- Fucheng-1
- Hisea-1
- HJ-2
- HT-1
- ICEYE
- JERS-1 SAR
- KOMPSAT-5
- LuTan-1
- NISAR

- NovaSAR
- PAZ-1
- QPS
- RADARSAT-1
- RADARSAT-2
- RCM (Radarsat Constellation Mission)
- RISAT-1
- SAOCOM-1
- Sentinel-1
- Spacety
- SV-2
- TerraSAR-X and Tandem-X

COMMON FUNCTIONS

Basic Data Processing

- Imported data
- Multilooked data
- Filtered data
- Geocoded data
- Layover/shadow mask

Download Sentinel-1

This tool performs a query and download of Sentinel-1 data from the Copernicus Data Space Ecosystem or Alaska Satellite Facility (ASF) platform.

Radar Cross Section

This tool extracts the Radar Cross Section (RCS) of targets. RCS is a metric that indicates the level of detectability of an object by a radar.

Height Estimation

This tool estimates the height of vertical objectd in a single image.

3D Point Estimation

This tool calculates the height of a point using two radar images of the same location.

Compatibility Check

This tool helps determine whether an input dataset can be used with a specific SAR Essentials tool. The validity check can be performed on a list of images, trying all combinations. Check the following:

- All Processing
- Basic Data Processing
- Radar Cross Section
- Height Estimation
- 3D Point Estimation
- Amplitude Difference
- Amplitude Change Detection
- Coherent Change Detection
- Coherent and Amplitude Change Detection
- Interferometric DSM
- Stereo-Radargrammetry DSM
- Moving Target Detection
- Dynamic Moving Target Detection
- Velocity Estimation
- Inverse-SAR Detection and Refocusing
- Ship Detection

Management and Basic operations

- Configure credentials of web platforms used to automatically download data through API protocols
- Configure folder, annotation, and custom AIS preferences
- Check for software updates
- Manage error reports

CHANGE DETECTION

These tools perform change detection analysis based on the amplitude and phase components of SAR signals.

- Amplitude Difference
- Amplitude Change Detection
- Coherent Change Detection

- Coherent and Amplitude Change Detection

DSM GENERATION

These tools create Digital Surface Models (DSMs) from SAR image pairs.

- SAR Interferometric DSM
- SAR Stereo-Radargrammetry DSM

MOVING TARGET DETECTION

These tools analyze moving targets.

- Moving Target Detection
- Dynamic Moving Target Detection
- Velocity Estimation
- SAR Inverse-SAR Refocusing

TARGET DETECTION

These tools perform automatic target detection.

- Ship Detection with Automatic Identification System (AIS) matching

DOCUMENTATION

- Online user's guide
- Hyperlinked help documentation
- Technical documentation to install and configure the software
- Tutorials
- Quick Guides (NV5 Geospatial)