



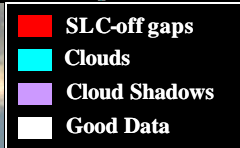
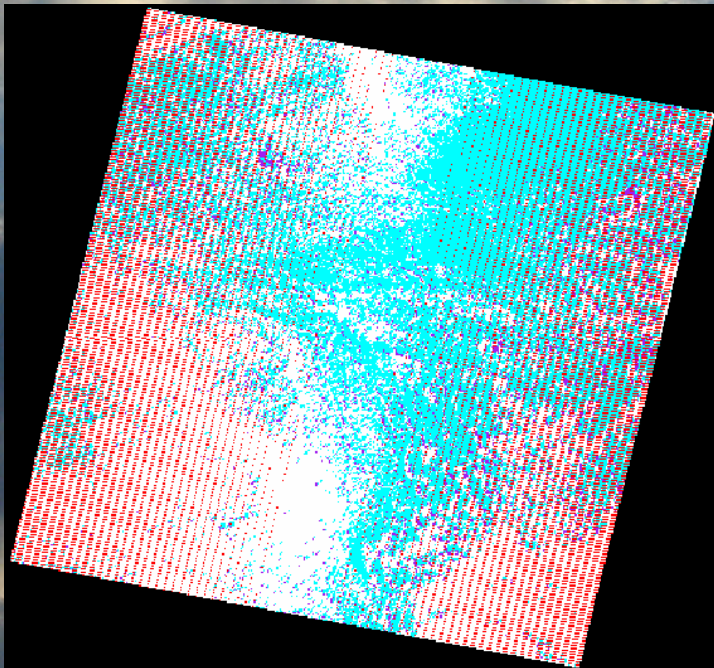
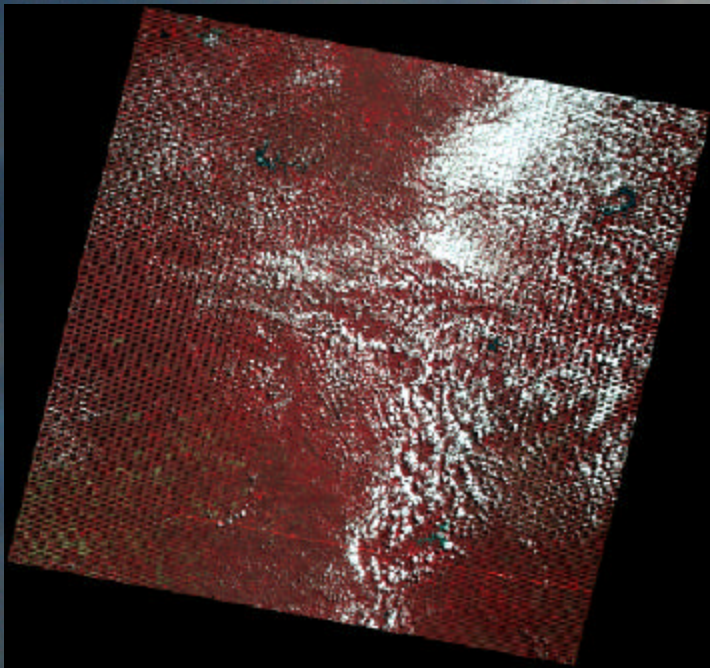
CASA Cloud And cloud Shadow Assessment Software

GDA Corp.

Cloud and cloud shadow contamination remains a remote sensing industry-wide problem with generally unsatisfactory solutions to date. GDA Corp. offers fully automated, operational-grade software for accurate detection of clouds and cloud shadows and statistical assessment of cloud / shadow contamination of the scene or a specific AOI.

Landsat 7 ETM+ image with SLC-off anomaly

CASA Raster Output



CASA Overview:

- ❑ CASA relies on spectral, spatial, and pattern information present in the image, and hierarchical, iterative self-learning logic. It does not require thermal band for the analysis.
- ❑ CASA provides a fully automated, per-pixel detection of dense clouds, light clouds / haze, and cloud shadows.
- ❑ CASA is a stand-alone, platform-independent C++ program that can be run on Windows, Linux, and UNIX.
- ❑ CASA is designed for operational, near-real time processing of large volumes of imagery. It can be used at the ground station or onboard the satellite via FPGA.
- ❑ CASA has been validated on 191 Landsat 5 TM and Landsat 7 ETM+ scenes from four diverse regions across the globe.
- ❑ CASA works with Landsat 5 TM, Landsat 7 ETM+, and Landsat 7 ETM+ data with SLC-off anomaly.

CASA is within 10% of the truth cloud estimate for more than 94% of all images tested

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CASA Input:

- ❑ CASA requires georeferenced, 8-bit Landsat imagery and image metadata as input.
- ❑ The current version works with GeoTIFF and ERDAS Imagine HFA image formats. Other formats, including NITF, can be incorporated.

CASA Outputs:

- ❑ A raster mask presenting per pixel cloud and cloud shadow contamination of the scene/AOI. Different IDs are assigned to dense clouds, light clouds / haze, and cloud shadows.
- ❑ A text file with scene total and per quad % cloud and cloud shadow contamination and an accuracy measure of cloud detection. Or, cloud and cloud shadow contamination can be provided for any AOI.
- ❑ Additional spatial outputs can be requested to aid in editing CASA cloud / cloud shadow masks when increased per pixel accuracy is desired, including: (i) a raster output depicting different cloud categories, (ii) raster outputs providing IDs for each individual cloud, separately for each cloud category, (iii) a raster output providing IDs for each individual cloud shadow, and (iv) a raster output with each cloud and/or cloud shadow being enlarged to a user-specified number of pixels/meters.

CASA Benefits and Applications:

- ❑ Reduction in labor and operating costs—CASA will either significantly reduce, or entirely eliminate, the need for manual assessment of cloud contamination.
- ❑ Per-pixel location of clouds and cloud shadows for 100% of collected imagery. Data can be archived for fast reference/query at a later date.
- ❑ Simplified generation of value-added products such as image mosaics / composites—Automatically replace cloud areas with imagery from other sources.
- ❑ Operational identification of "failed" acquisitions (esp. with CASA FPGA implementation) for refined retasking.
- ❑ Per-pixel quality enables selling the cloud and shadow masks as a separate layer.
- ❑ Quality assurance tag for each image processed to allow for easy and fast filtering of data that may require eyes-on. Batch runs of CASA provide an output database that attaches a reliability rating to each image assessed.

Error Level	Number of Scenes	Percent of Scenes
0 to 5%	155	81%
0 to 10%	179	94%
0 to 15%	188	98%
0 to 20%	189	99%
0 to 25%	191	100%
Max Error		25%

Request a copy of the formal CASA validation white paper today

Contact us about CASA licensing. CASA is licensed by hardware key in a range of configurations to exactly suit your needs