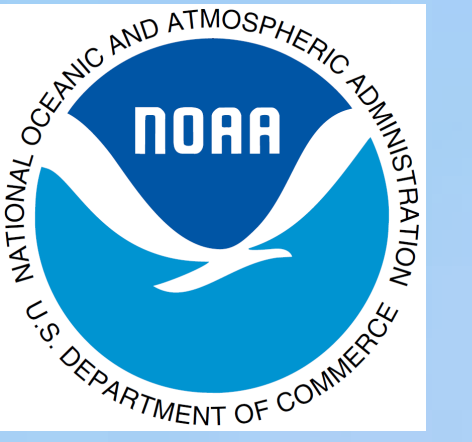


# VIIRS EDR Products in the Community Satellite Processing Package (CSPP)

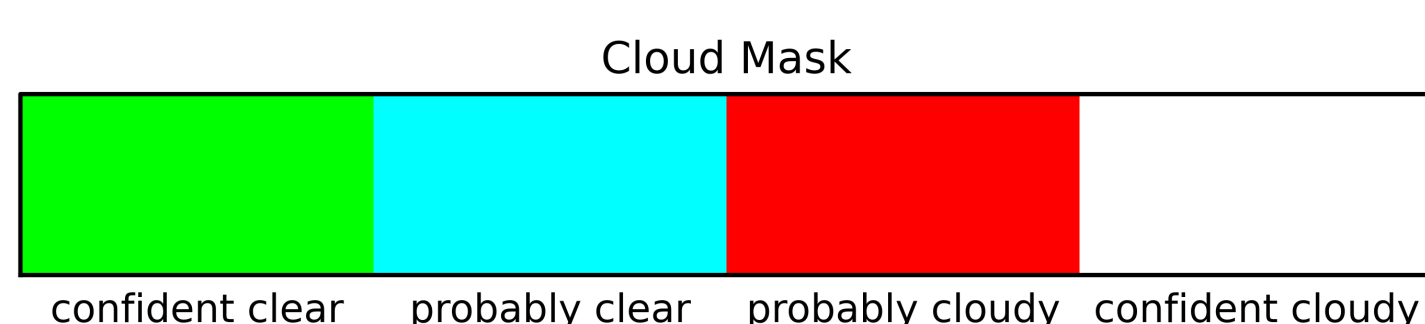
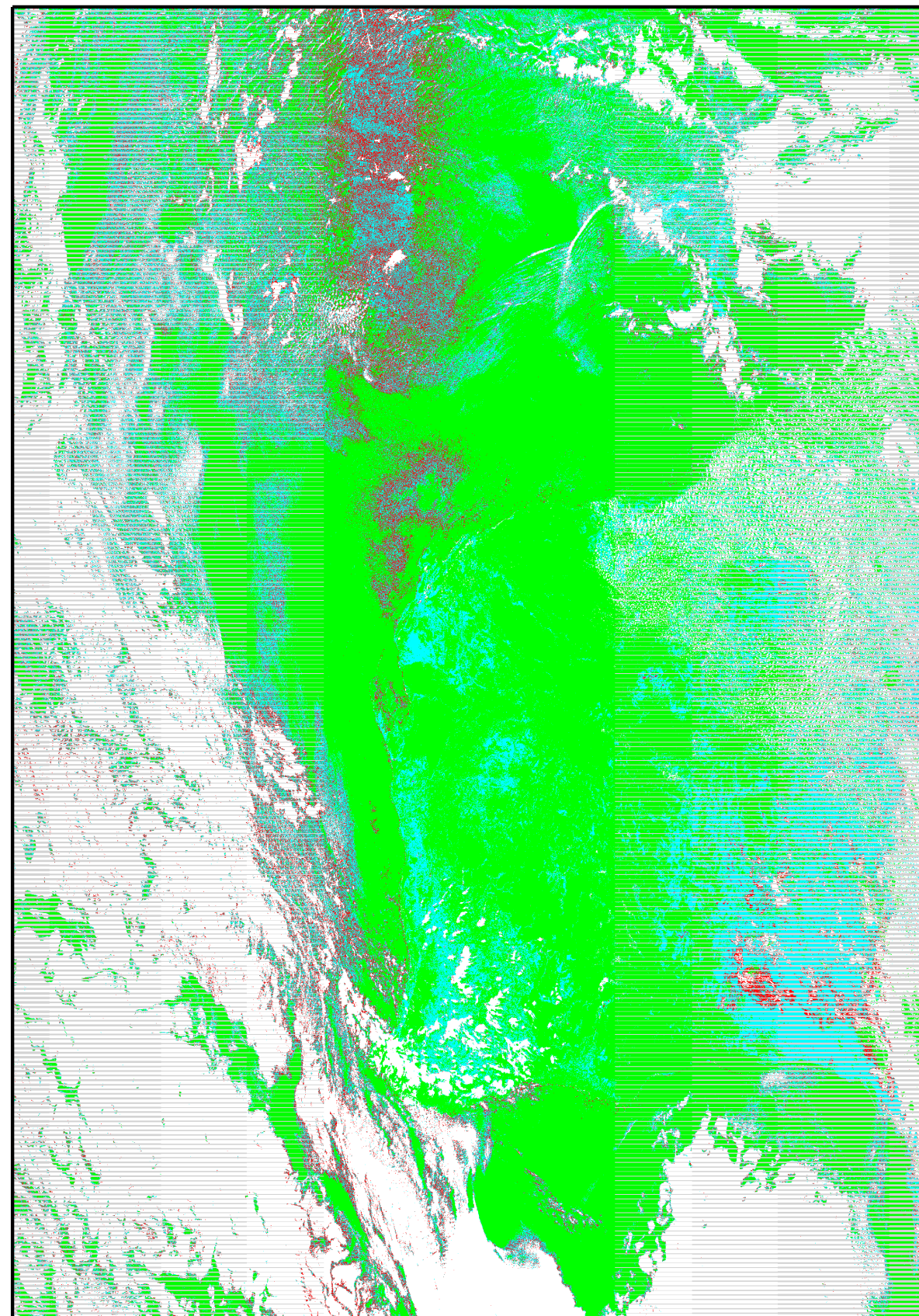
Geoff Cureton, Liam Gumley, Scott Mindock, Graeme Martin, Ray Garcia, Kathleen Strabala

Cooperative Institute for Meteorological Satellite Studies  
Space Science and Engineering Center, University of Wisconsin - Madison  
1225 W. Dayton St., Madison, WI 53706, USA

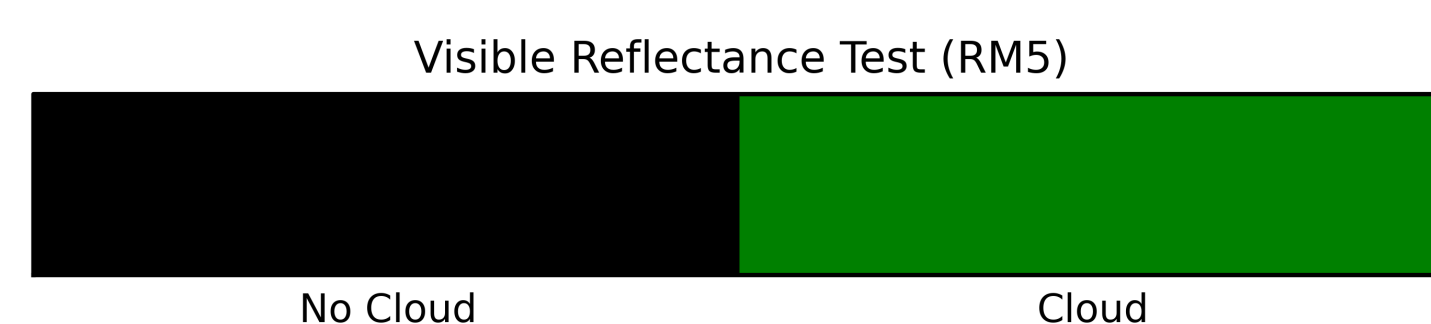
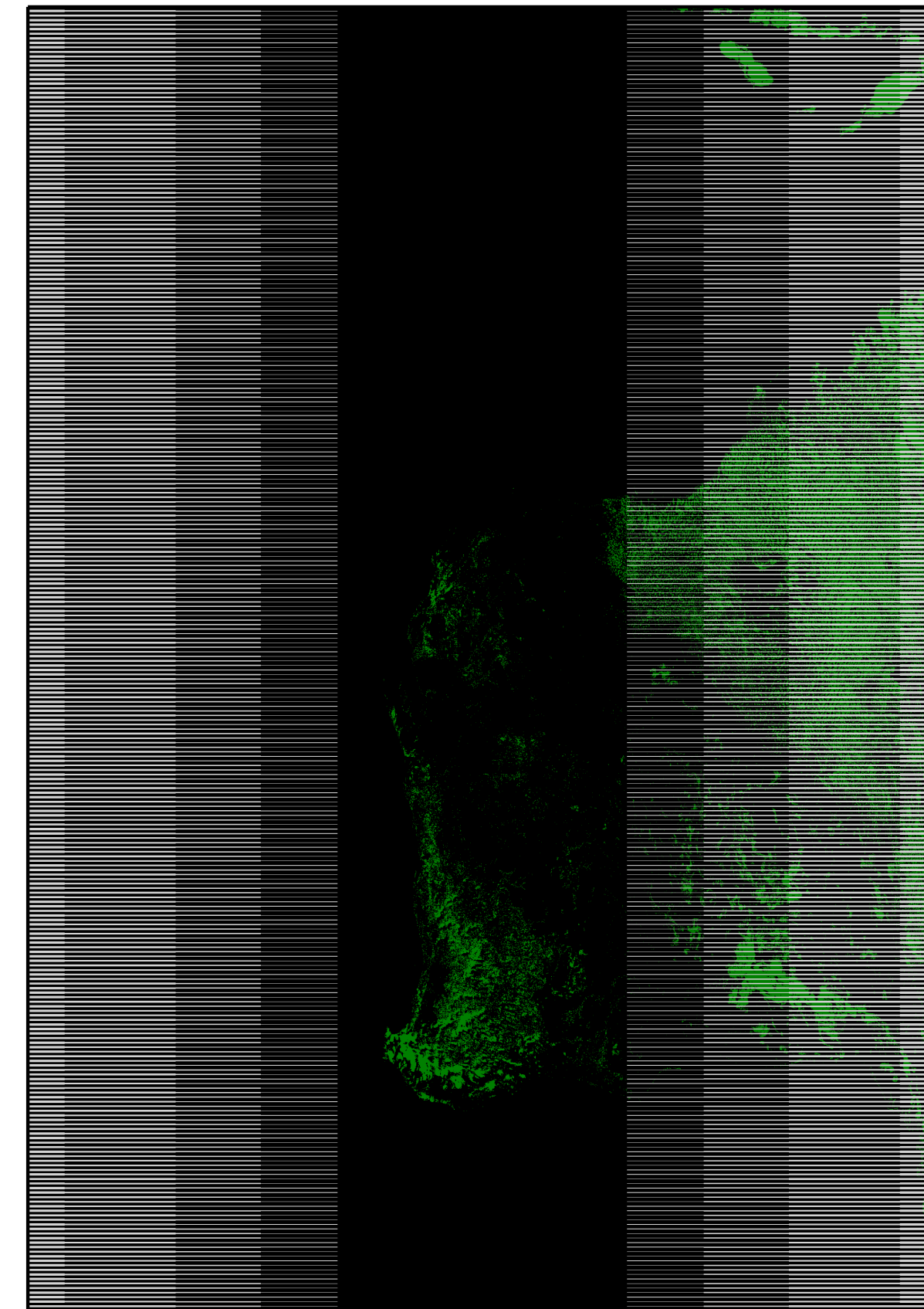


## Quality Flag Plots

VIIRS-CM-IP : orbit 12142 (Byte 0)

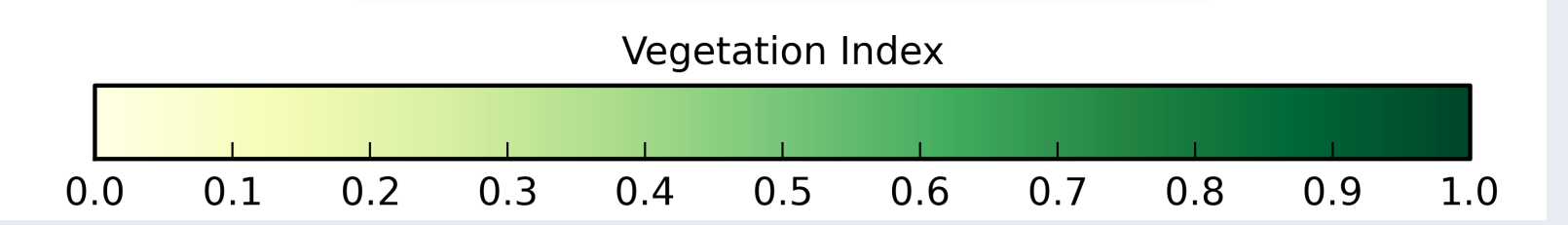
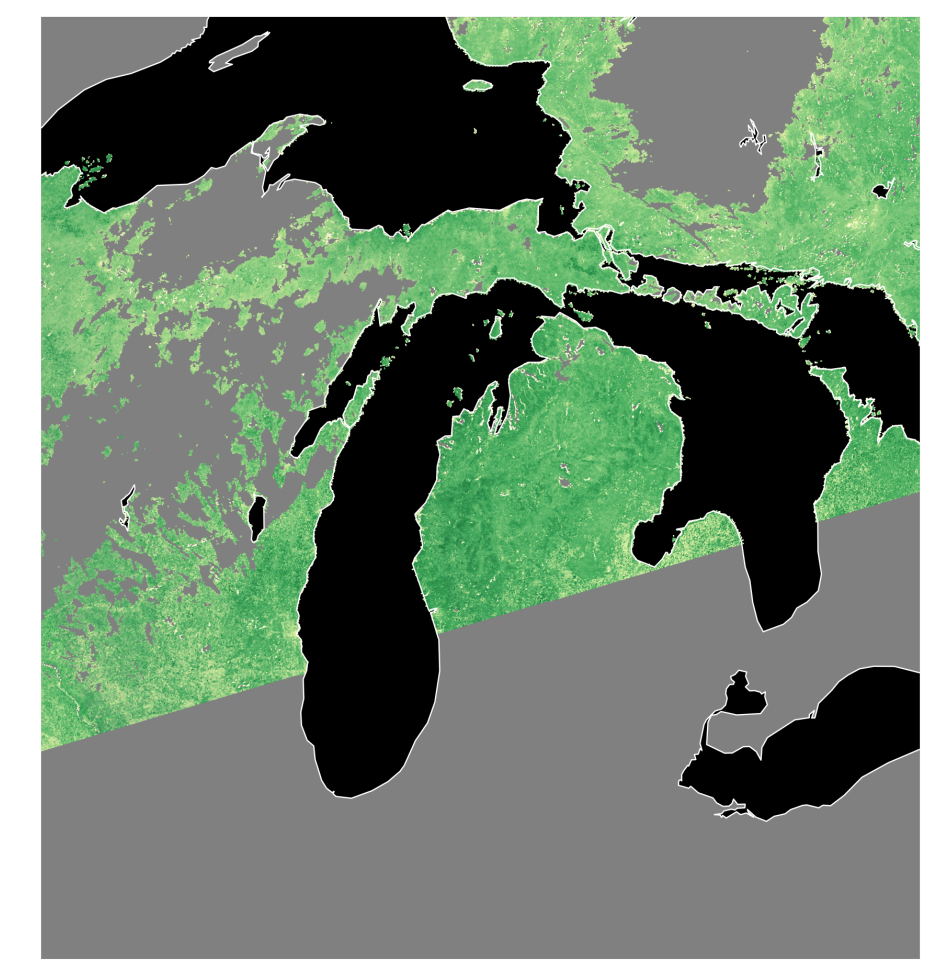
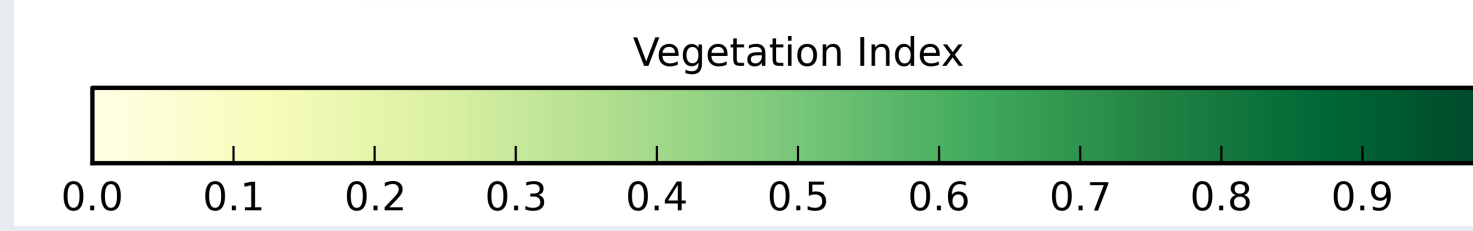
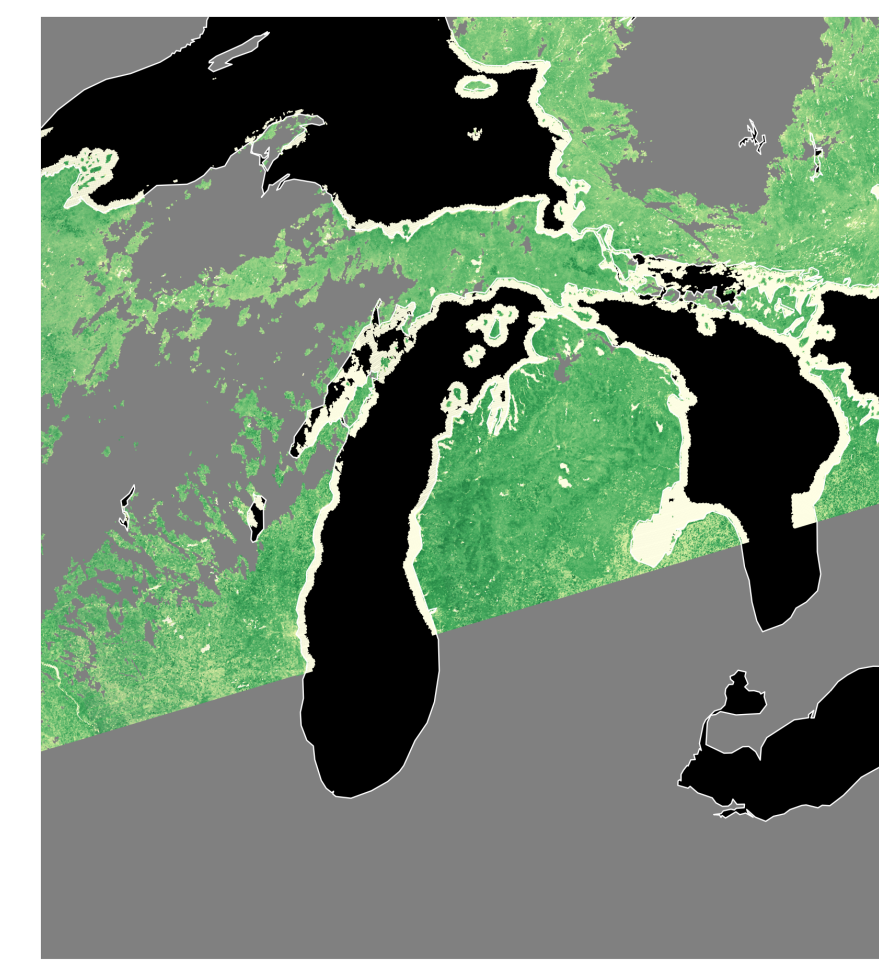
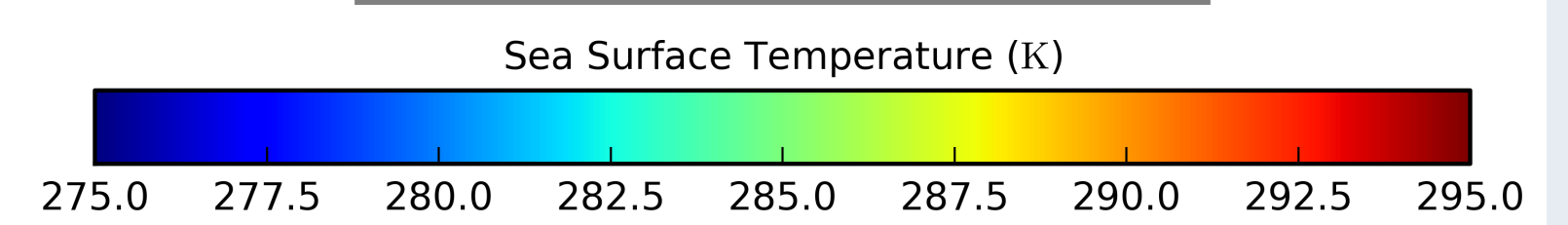
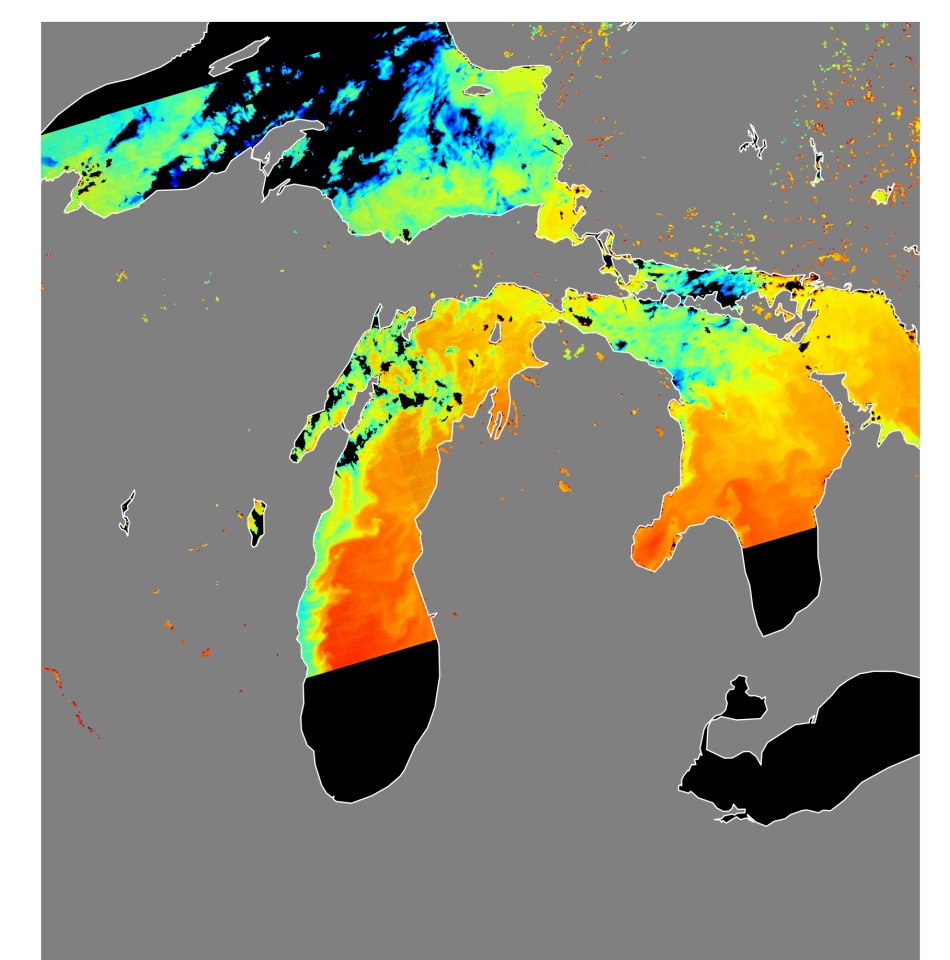
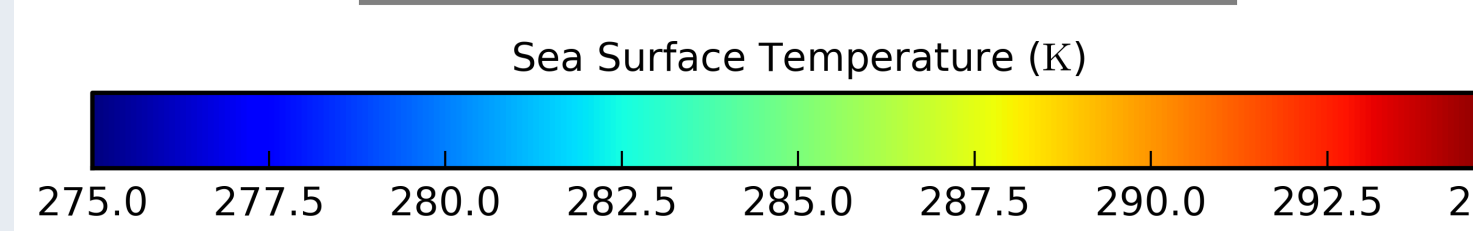
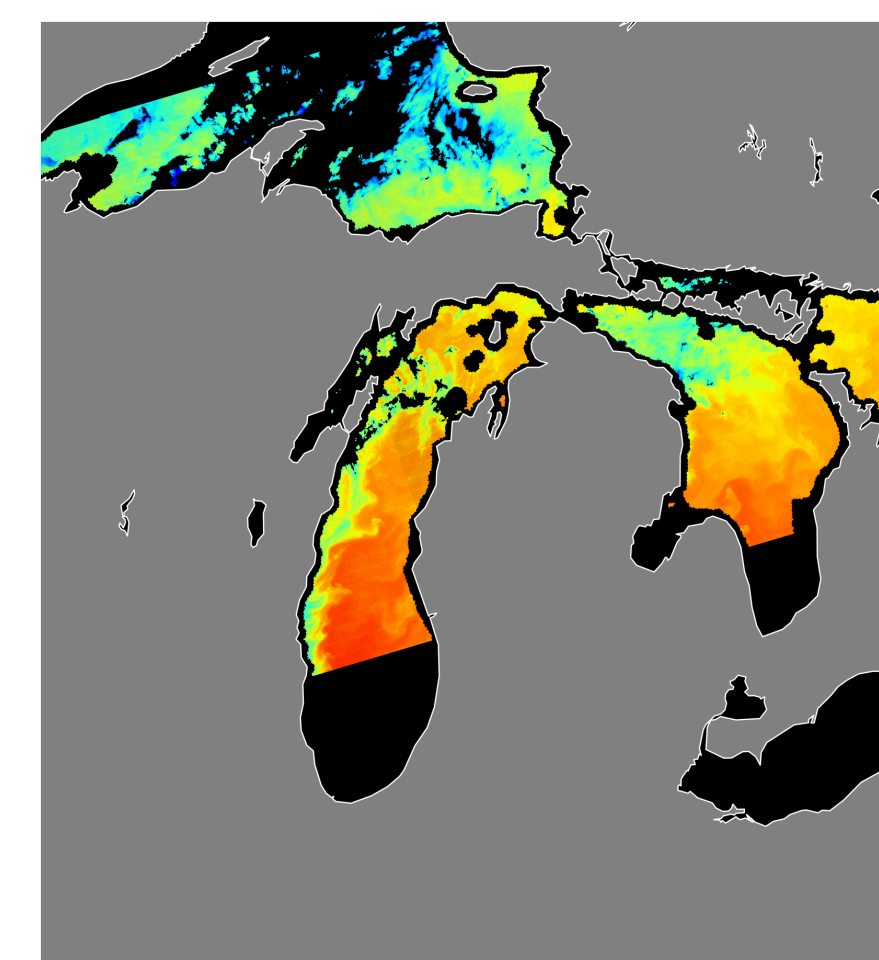


VIIRS-CM-IP : orbit 12142 (Byte 2)



- Python script included in CSPP which plots the algorithm products and quality flags in swath projection.
- The script can plot individual granules, or aggregate a set of granules into a pass.
- Shown above is (left) the VIIRS daytime cloud mask over Western Australia for orbit 12142, and (right) the corresponding visible reflectance test for band M5.

## Improved SST and NDVI



- The VIIRS SST algorithm only retrieves in deep water (top left), and the VIIRS VI algorithm erroneously retrieves in shallow water (bottom left).
- When granulating the land sea mask, all instances of shallow water were changed to deep water.
- Shallow water SST (top right) is now retrieved, as well as smaller lakes and rivers. VI is no longer retrieved over water (bottom right).

## Overview

- The Community Satellite Processing Package (CSPP), supporting the VIIRS, CrIS and ATMS sensors on the Suomi National Polar-orbiting Partnership (Suomi-NPP) spacecraft. In time it is intended that CSPP will support GOES-R, JPSS and other geostationary and polar orbiting platforms.
- The VIIRS EDR algorithms currently available in CSPP include the Cloud Mask (VCM), Active Fires (AF), Aerosol Optical Thickness (AOT), Sea Surface Temperature (SST), Surface Reflectance (SR) and Vegetation Index (VI).
- This poster summarises new features in v1.2 of the package, giving graphical examples where appropriate.

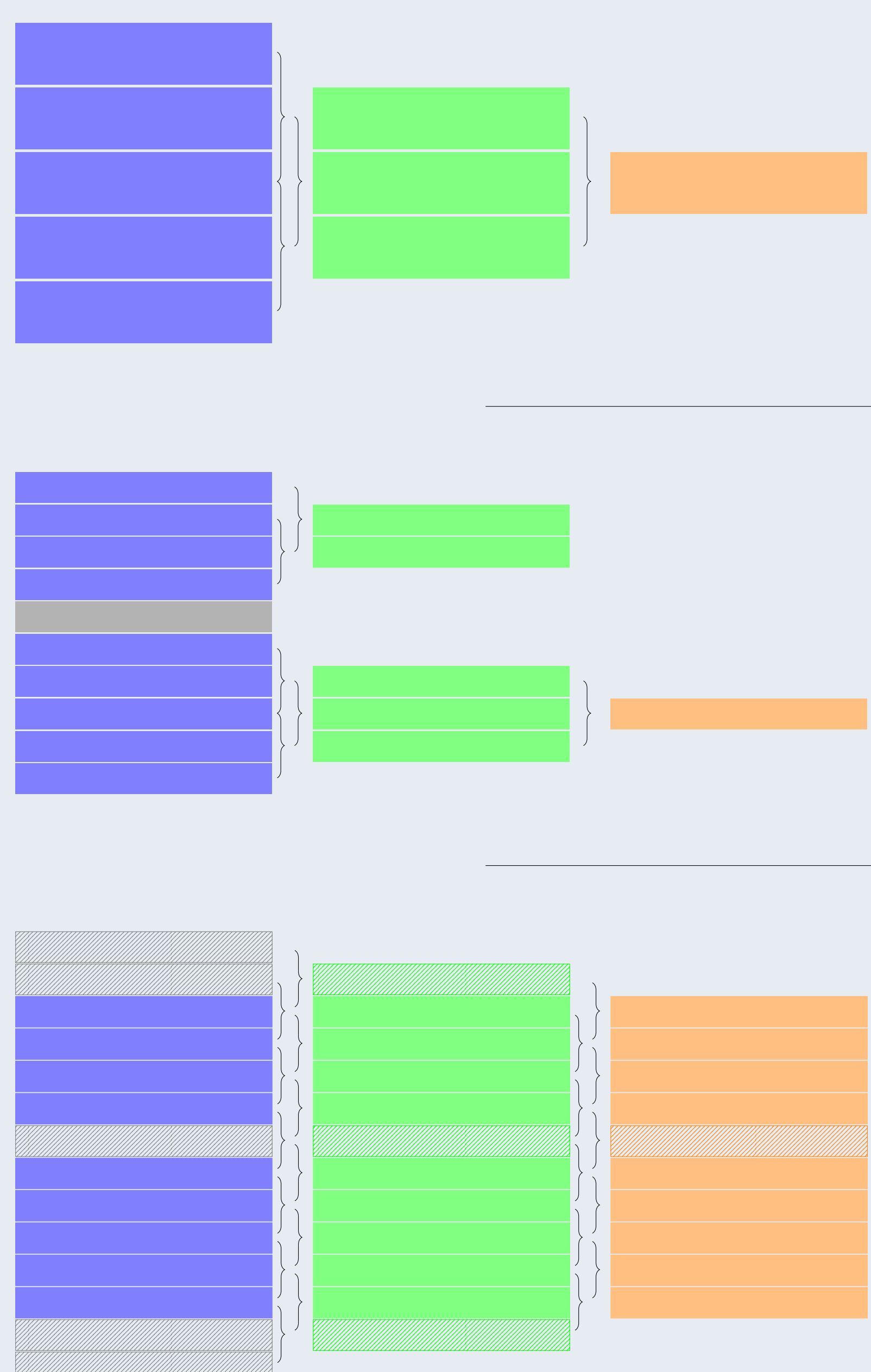
## What's New in CSPP EDR?

- The EDR software matches NOAA IDPS version Mx6.7.
- Updated Look-Up-Tables (LUTs).
- Addition of VIIRS Surface Reflectance and Vegetation Index algorithms
- Improved land/sea categorization in output products (SST, NDVI)
- Increased granule yield by improved handling of cross-granule dependence
- The VIIRS EDR software can now be run in parallel on multiple processor cores

## What's to Come?

- Application of multi-core processing to unpacking of VIIRS SDR HDF5 files.
- Application of multi-core processing to granulation of dynamic and static ancillary data.
- Elimination of unnecessary processing with respect to satisfaction of cross-granule dependencies.
- Online CSPP documentation and cookbook, with basic installation use case information.
- Addition of various land algorithms.

## Cross-Granule Dependency



- Some VIIRS algorithms have a cross-granule dependency of +/- 1 granule.
- The **VCM** has a +/- 1 granule dependency on the **SDR**
- The **AOT** **SST** have a +/- 1 granule dependency on the **VCM**
- If there is missing data in the **SDR** (gray), the subsequent yield from a DB pass for downstream algorithms can be greatly reduced
- By filling in any missing **SDR** data with dummy granules, and prepending and appending dummy granules to the DB pass (grey hatched), we can ensure that we get **VCM**, **AOT** and **SST** granules for any valid **SDR** data
- Invalid **VCM**, **AOT** and **SST** granules (hatched) from processing dummy granules are discarded

## Retrieval Results

