

System Status and J-1 Readiness

ICVS & JPSS/EDRs Long Term Monitoring Systems

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What is the Long Term Monitoring System?

- A web application built with HTML, CSS, javascript/jquery, and PHP designed to organize, navigate and display a large set of images, cal-val metrics, and data produced daily and accumulated over the life of the S-NPP satellite
  - Originally developed for ICVS project
  - Went live in September 2013
  - Effort to extend and implement the LTM application for product monitoring (EDRs) started in fall 2014
- Designed to be 'content agnostic' so as to flexibly house any image, text, or data file, as long as content files conform to the system's naming and organization conventions
- ICVS: http://www.star.nesdis.noaa.gov/icvs/
- JPSS EDRs: http://www.star.nesdis.noaa.gov/jpss/EDRs/

ICVS LTM – Web Interface Architecture

S-NPP Cal/Val products

Spacecraft Cal/Val Products

VIIRS Cal/Val Products

ATMS Cal/Val Products

CrIS & CrIS FSR Cal/Val Products

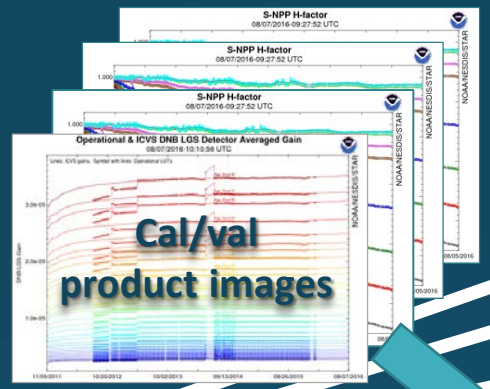
OMPS Cal/Val Products

ICVS instrument teams develop code to generate S-NPP cal/val metrics; code runs several times per day on STAR servers.

Products generated & copied to webserver several times daily

STAR Webserver

Product images organized by instrument, type, year & month. All images created to a common naming convention that makes the page coding and dynamic scripting portable and extensible across all instances of the LTM codebase

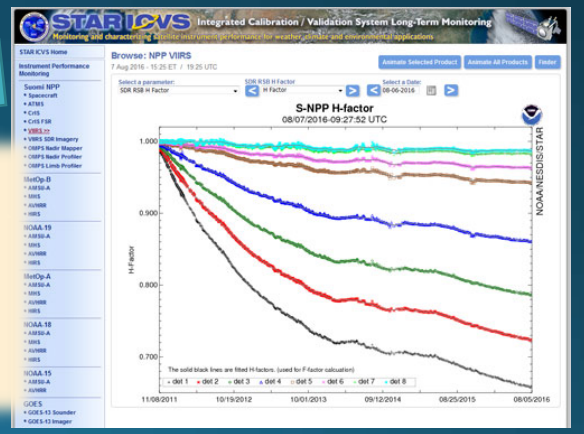


Instrument metric CSV file

Status page template PHP

Javascript, Jquery, PHP common code

The ICVS and EDR instances of the LTM System run on an IDENTICAL codebase; this focuses development efforts on extending and improving functionality instead of managing code.



Trends in JPSS monitoring effort - by the numbers

ICVS site metrics – 2016 to 2017		EDR site metrics – 2016 to 2017
3,017 > 3,071	Images generated per day	851 > 945
28% increase! 25,599 > 32,792	Total page views — last 12 months	5,779 > 11,233 94% increase!
~15, varying	# of team contributors	19 on product teams / 4 on system team
22	Web pages	19
6 years	Time span monitored	3+ years
3.3 MILLION FILES / 700 GB > 7.07 MILLION FILES / 1.2 TB	Total images generated / file size	412,751 files / 168 GB 600,000+ FILES / 250 GB

ICVS LTM System Status & JPSS-1 Readiness

- No significant changes to system functionality to report;
- ICVS is a mature system for S-NPP instruments;
- Site traffic continues to grow; up 28% from 2016 prior year site traffic totals.
- Downloadable GIF animation tool rolled out March 2017 for ICVS and JPSS EDR LTM.

- **JPSS-1 readiness:**
  - The beta site for ICVS has had pages for all the JPSS-1 instruments live since Feb. 2016
    - Full set of J-1 images for test dates April 9, 2016
    - https://star.nesdis.noaa.gov/icvs-beta/status_J01_ATMS.php

Recent EDR LTM System Improvements

- New since August 2016:
  - Users can configure and download single product animated gifs, choosing their own start and end dates. This functionality available for both ICVS and EDRs (demo)
  - EDRs Now monitoring GCOM (~46 images per day)
    - Precipitation Products
    - Ocean Products
    - Microwave BT Products
    - Snow Products
    - Soil moisture product
  - ATMS Limb Correction monitoring (88 images / day)
  - Volcanic Ash products under development

All JPSS EDR Products now generated daily – Completion of Phase I

Products	# Daily Products	Start
Active Fires	1	1/1/2012
Active Fires - radiative power	3	3/16/2016
Aerosols - AOT	1	1/1/2013
Aerosols - Suspended Matter	1	1/1/2015
Albedo	1	1/1/2015
Clouds	4	1/1/2015
Cryosphere - Ice	4	2/5/2016
Cryosphere - Snow	15	1/1/2015
GCOM - AMSR2	40	1/1/2016
VIIRS Imagery - DNB	1	4/23/2016
Land Surface Temperature	4	4/7/2014

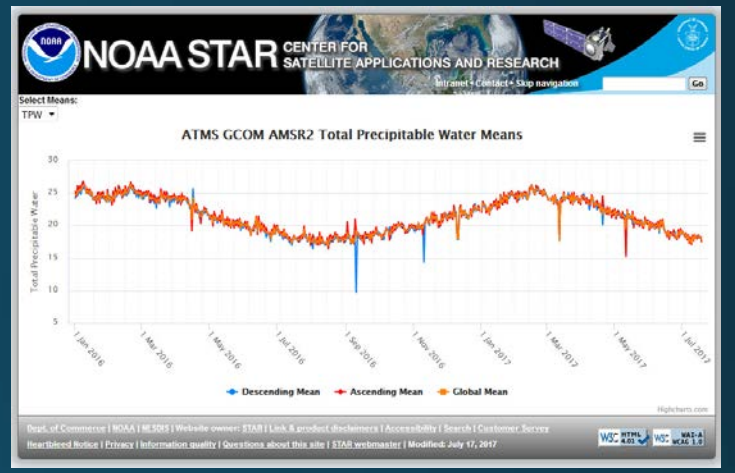
Products	# Daily Products	Start
Ocean Color	3	1/1/2015
OMPS / Ozone	3	1/1/2015
OMPS / IMOPO	2	12/18/2015
Polar Winds	2	7/20/2016
Sea Surface Temperature	2	12/7/2015
Surface Type	4	5/1/2015
Green Vegetation Fraction	1	8/1/2012
Vegetation Indices	3	5/19/2014
Veg. Health - weekly composites	6	1/1/2015
MiRS Soundings Products	166	2/18/2016
NUCAPS	584	1/1/2015

- The goal of this phase was to offer a global overview for users and downstream products to quickly assess availability and potential sources of error.
- This phase also allowed for the creation of a framework and a common set of presentation standards for all EDR teams to use.

Product Generation Centralization

- How EDR Monitoring Product images have been produced up to now:
  - Product teams supplied the LTM team with inputs
    - Partially processed data;
    - Partially processed images that the LTM team put in our 'wrapper';
    - In some cases, completed images in final form, ready to view on the site;
- Problems with this approach:
  - Complete product set not consistently available, and availability troubleshooting consumes a lot of team bandwidth;
  - Images not consistently reproducible via expected code;
  - Lack of clarity regarding algorithm versions used for monitoring product generation
- Solution: transition to producing all EDR LTM product images via LTM team processes using SCDR data and published algorithms.
- Target completion: 1/1/2018
- By the time J-1 data comes fully online, we will be ready to apply the same process to that data stream.

Phase II Quality Flags and Measures



- Now underway
  - Production of Suomi NPP Quality Statistic Charts and Flag Maps for all existing Suomi NPP products
  - Currently identifying all the quality flags for each product; then reviewing them with product teams to identify most useful ones to chart
  - Quality flags: we will produce 'mapped' output
  - Quality statistics:
    - Defined in cooperation with product teams and generated by the LTM team
  - Using Highcharts to make vector based, dynamically scalable downloadable charts – prototype at: https://star.nesdis.noaa.gov/smcd/opdb/nprovs/phase2gcom.php.
  - **JPSS-1 readiness:**
    - The EDR LTM Phase I is ready to replicate and stand up for JPSS-1
    - Phase II will be complete by January 2018.

EDR LTM J-1 Support

- Our plan is to replicate the site structure we have underway now from S-NPP for J-1, including prototyping a platform to enable geomapped layered product viewing.
- Communicate with the product teams NOW to ask them to plan to start delivering the same products to a new set of J-1 source folders that they are now making for S-NPP;
- While this effort will evolve to be mainly data instead of partially processed images, the requirement that we get data from them as soon as possible in the life of the new satellite is unchanged.