

VIIRS Atmosphere SIPS Status and Plans

Liam Gumley
Space Science and Engineering Center
University of Wisconsin-Madison

MODIS/VIIRS Science Team Atmosphere Discipline Meeting
November 16, 2020

Atmosphere SIPS Team

(in alphabetical order)

LANCE Interface and Monitoring Systems	Jessica Braun
Science Team Interface	Nick Bearson
Science Team Interface	Denis Botambekov
Science Team Interface	Geoff Cureton
Infrastructure and Science Team Interface	Steve Dutcher
Infrastructure and Science Team Interface	Bruce Flynn
Project Manager	Liam Gumley
Infrastructure and Science Team Interface	Zach Griffith
Atmospheric Scientist	Bob Holz
System Administrator	Kevin Hrpcek
Orbit Prediction and Collocation	Fred Nagle
Level 2 QA/QC and Infrastructure	Ethan Nelson
Deputy Project Manager	Elaine Prins
Infrastructure and Orbital/Navigation Tools	Greg Quinn
Monitoring Systems and GIBS Imagery	Jenny Witt

SNPP Science Team Atmosphere Discipline

1. **Bryan Baum** (STC): Fusion of VIIRS and CrIS Data to Construct Supplementary Infrared Band Radiances for VIIRS.
2. **Christina Hsu** (NASA GSFC): Development of Consistent Long-Term Aerosol Records from MODIS to VIIRS Using e-Deep Blue Algorithm.
3. **Steven Platnick** (NASA GSFC), **Steve Ackerman** (UW), **Andy Heidinger** (NOAA): Refinement of the MODIS Cloud Optical Product in Synergy with Continued Development of a Full Suite of EOS-SNPP Cloud Continuity Algorithms.

Atmosphere SIPS significant events in the last year

Nov 20, 2019: SNPP/Aqua MODIS/VIIRS Cloud Properties L2/L3 v1.1 public release

Jan 28, 2020: SNPP VIIRS Water Vapor L2 v1.0 public release

Feb 24, 2020: SNPP VIIRS Dark Target Aerosol L2 v1.0 public release

Apr 6, 2020: SNPP VIIRS Continuity Cloud Mask and Deep Blue AOT L2 NRT public release via LANCE

Aug 7, 2020: Aqua + Terra MODIS COSP L3 public release

Sep 24, 2020: SNPP CrIS IMG product public release

VIIRS Atmosphere L2/L3 Products

Short Names	Product Description	Product Developer(s)	Production & Delivery to LAADS
CLDMSK_L2_VIIRS_SNPP	Cloud Mask (day/night)	Ackerman/Holz	Feb 2019 Collection 1
FSNRAD_L2_VIIRS_CRIS_SNPP FSNRAD_L2_VIIRS_CRIS_NOAA20	Fusion Radiances (day/night)	Baum/Weisz/ Borbas	Sep 2019 Collection 1
AERDB_L2_VIIRS_SNPP AERDB_D3_VIIRS_SNPP AERDB_M3_VIIRS_SNPP	Deep Blue Aerosol (day only)	Hsu	Dec 2018 Collection 1
CLDPROP_L2_VIIRS_SNPP CLDPROP_D3_VIIRS_SNPP CLDPROP_M3_VIIRS_SNPP	Cloud Properties (day/night)	Platnick/Heidinger	Jan 2020 Collection 2
AERDT_L2_VIIRS_SNPP	Dark Target Aerosol (day only)	Levy*	Feb 2020 Collection 1
WATVP_L2_VIIRS_SNPP WATVP_D3_VIIRS_SNPP WATVP_M3_VIIRS_SNPP	Water Vapor (day/night)	Borbas*	Jan 2020 Collection 1
CLDCR_L2_VIIRS_SNPP	Cirrus Reflectance (day only)	Gao*	Dec 2020

* Investigation not funded in ROSES-2017

NOAA-20 Atmosphere L2/L3 Product Schedule

Product Description	Product Developer(s)	Production & Delivery to LAADS
Cloud Mask (day/night)	Ackerman/Holz	Oct 2020
Fusion Radiances (day/night)	Baum/Weisz/Borbas	Nov 2019
Deep Blue Aerosol (day only)	Hsu	Dec 2020
Cloud Properties (day/night)	Platnick/Heidinger	Dec 2020
Dark Target Aerosol (day only)	Levy*	Dec 2020
Water Vapor (day/night)	Borbas*	N/A
Cirrus Reflectance (day only)	Gao*	N/A

* Investigation not funded in ROSES-2017

Recent Developments

1. Fusion Radiances: Improvements to fusion water vapor channel algorithm for SNPP and NOAA-20 are being tested.
2. Continuity Cloud Mask: NOAA-20 support added and tested; product is now being delivered to LAADS.
3. Cloud Properties: NOAA-20 support has been added; product is being evaluated.
4. Deep Blue Aerosol: L2 v1.1 product now being evaluated.
5. Dark Target Aerosol: NRT L2 product now in forward stream production for LANCE.
6. VIIRS Water Vapor: New algorithm based on Fusion Radiances has been developed; product is being evaluated.
7. VIIRS Cirrus Reflectance: SNPP L2 product development and testing completed; delivery to LAADS is imminent.

VIIRS Atmosphere NRT Products

Learn ▾ Articles ▾ **New VIIRS Atmosphere Imagery Products in LANCE**

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New VIIRS Atmosphere Imagery Products in LANCE

Two new near real-time VIIRS products are available for download in NASA's Land, Atmosphere Near real-time Capability for EOS (LANCE) and for interactive exploration using NASA Worldview.

New products for determining atmospheric aerosol loading for daytime cloud-free, snow-free scenes and for determining confidence in cloud-free views of Earth are the two newest near real-time (NRT) products available in NASA's Land, Atmosphere Near real-time Capability for EOS (LANCE). Both products are produced using data acquired by the Visible Infrared Imaging Radiometer Suite (VIIRS) aboard the joint NASA/NOAA Suomi National Polar-orbiting Partnership (Suomi NPP) satellite and are available generally within three hours of a satellite observation.

The VIIRS Level 2 Deep Blue Aerosol Product (short name: AERDB_L2_VIIRS_SNPP_NRT) uses the Deep Blue (DB) algorithm over land and the Satellite Ocean Aerosol Retrieval (SOAR) algorithm over water to determine atmospheric aerosol loading. The product is designed to facilitate continuity in the aerosol record provided by the [Deep Blue Multi-Sensor Aerosol Project](#) for other sensors, including the Sea-viewing Wide Field-of-view Sensor ([SeaWiFS](#), operational 1997 to 2010) and by the Moderate Resolution Imaging Spectroradiometer

NASA Worldview examples of the two new VIIRS Atmosphere products over Africa on March 22, 2020. Both products are shown on a Suomi NPP daily global base map image. **Left image** shows the Cloud Mask, with white indicating clouds and dark red indicating high probability of clear sky (easily seen over the Sahara Desert near the top of the image). **Right image** shows the Deep Blue Aerosol Product, with colors indicating Aerosol Angstrom Exponent. The Angstrom Exponent is a measure of the wavelength-dependence of aerosol optical depth (AOD), which is related to aerosol particle size. Interactively explore both images using NASA

SNPP VIIRS Cloud Mask and Deep Blue AOT now in LANCE

CrIS/VIIRS IMG Product

1. Algorithm and product generation software developed by the SNPP CrIS Level 1 team. Requires CrIS and VIIRS Level 1B and VIIRS Continuity Cloud Mask products.
2. The CrIS IMG product contains statistics of the MODIS/VIIRS Continuity Cloud Mask and Level 1B data within each CrIS FOV.
3. The CrIS IMG Colocation product (IMG_COL) contains the colocation indices of the VIIRS pixels within each CrIS FOV.
4. Product generation done at Atmosphere SIPS (full SNPP mission already processed).
5. CrIS IMG product (SNPP) is delivered to GESDISC for archive and distribution. NOAA-20 CrIS IMG product now in testing.

Atmosphere SIPS Capabilities

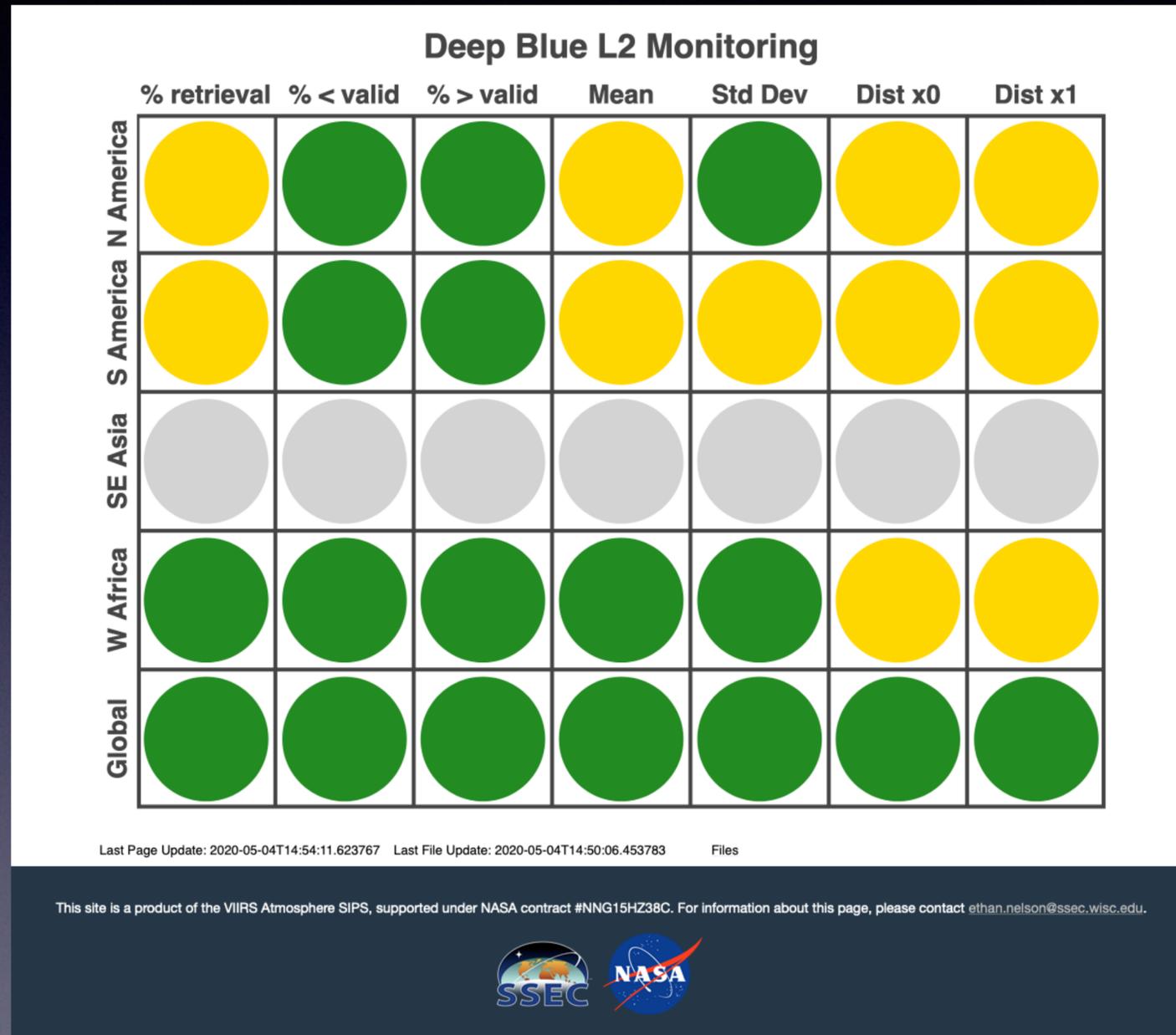
- Local instance of NASA Worldview for product preview and evaluation.
- Yori Level 3 gridded product generation software.
- Monitoring and comparisons of SNPP and NOAA-20 VIIRS Level 1 reflectances and radiances vs. Aqua MODIS.
- `sips_exec` tool (available on sipssci2 server) available for executing delivered science product generation software on individual granules.
- `sips_search` tool (available on sipssci2 server) to search for files in the SIPS local archive.

VIIRS Level 1 Automated Monitoring



Status page identifies any inconsistencies between local Level 1 VIIRS and LAADS within minutes of production

VIIRS Level 2/3 QA/QC



Current and Planned Features:

- Fraction of granule retrieved tracking
- Statistical mode behavior
- Out of bounds retrieval checks
- Retrieval trends over time in selected regions
- Custom science team defined metrics
- Proactive notification to A-SIPS and science team

Prototype for Daily Level 2 Stop Light Display

VIIRS Atmosphere SIPS

Atmosphere SIPS Website Quicklooks

Atmosphere SIPS

PRODUCTS LINKS CONTACT

SNPP VIIRS Truecolor
Nov 14 2020 07:30 DOY: 319
Mode: Day Orbit: 46889

Granule Orbit

SNPP NOAA 20 Latest Download ?

Truecolor
Falsecolor
Visible (M07)
Infrared (M15)
Day/Night

Aerosol Opt. Thickness
Aerosol Angstrom Exponent
Cloud Mask
Clear-sky Confidence
Cloud Effective Radius

Cloud Optical Thickness
Cloud Top Height
Brightness Temperature at 6.7 μm
Brightness Temperature at 13.3 μm

<https://sips.ssec.wisc.edu/>

Readiness for JPSS-2

- We are preparing to ingest JPSS-2 VIIRS, CrIS, ATMS Level 0 data (storage will be in place in 2021)
- No major issues or problems are anticipated in supporting JPSS-2. We will have sufficient compute and storage capacity.
- Will support development and testing of VIIRS and CrIS Level 1 software starting in 2021.