NOAA JPSS Monthly Program Office

AMP/STAR FY25

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July, 2025

Highlights from the Science Teams (June)

Comparison of NESDIS and NASA VIIRS Snow products

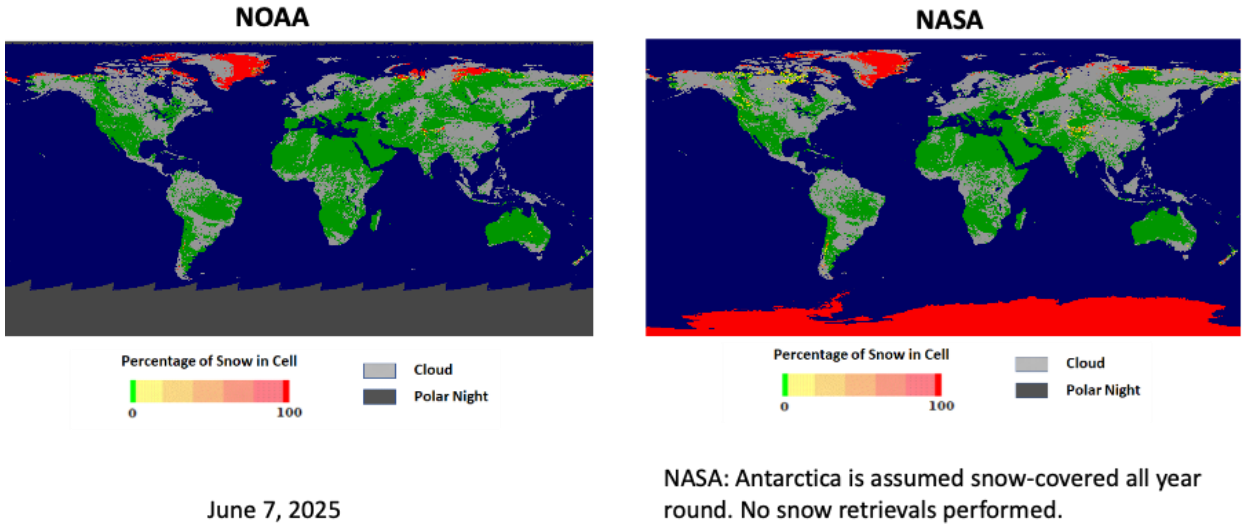


Figure. Example of NOAA and NASA VIIRS daily snow products on the Climate Modeling Grid (CMG). Note qualitative similarity between the snow mapped in the two products. CMG Snow products have been produced with VIIRS S-NPP data.

NOAA's VIIRS snow products were compared to NASA's similar products using a common 5 km grid, commonly referred to as as the Climate Modeling Grid (CMG). NOAA's 1 km daily snow maps were regridded to CMG, and the two datasets were compared over a 2.5-year period from early 2023 through June 2025. Both were also validated against daily Interactive Multisensor Snow and Ice Mapping System (IMS) data.

Visual comparisons showed general agreement between NOAA and NASA products in terms of snow and cloud cover, with key differences in high-latitude regions due to variations in cloud masking. Quantitative validation against IMS data showed similar performance: NOAA's product had slightly higher agreement (94.2%) than NASA's (92.9%) for snow-prone areas. During October–March, both products had comparable clear-sky coverage (40–50%). From April–September, NOAA's more relaxed cloud mask led to 5–10% greater effective coverage.

Highlights from the Science Teams (June)

VIIRS and ICESat-2 ice thickness comparison

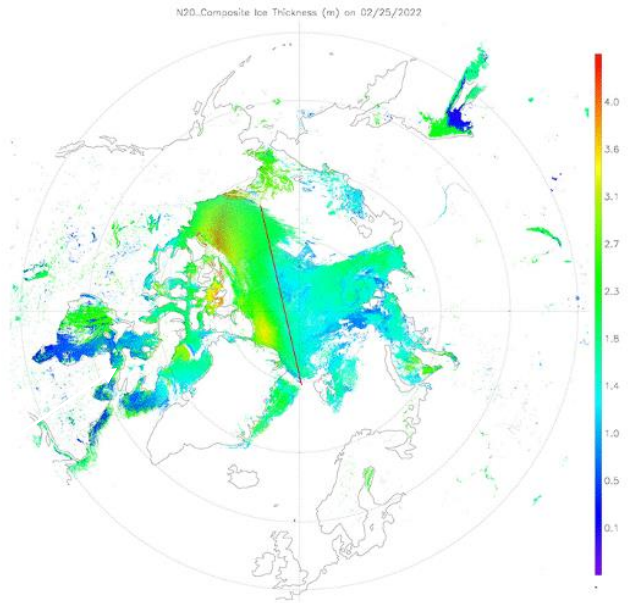


Figure. ICESat2 freeboard acquisition track on Feb. 25, 2022, superimposed onto OTIM v6.6 ice thickness

The VIIRS sea ice thickness product was compared with NASA's ICESat-2 L4 Along-Track Sea Ice Thickness, Version 1. NASA estimates are derived from ICESat-2 ATL10 freeboard data (Version 5) combined with snow loading from the NESOSIM model. On 25 February 2022, ICESat-2 collected several tracks over the Arctic Ocean, one of which was selected for this comparison.

For each VIIRS grid cell intersecting the ICESat-2 track, corresponding ice thickness values from ICESat-2 were averaged. The VIIRS product in this study uses Version 6.6 of the One-dimensional Thermodynamic Ice Model (OTIM), a newer version than the one used operationally.

Results show that OTIM v6.6 produces a mean ice thickness similar to ICESat-2, but with noticeably less variability. This suggests agreement in average values, though VIIRS estimates are more uniform compared to the broader ICESat-2 distribution.

Highlights from the Science Teams (June)

Continuous Observations of Canadian Wildfires from High-Resolution NOAA-21 OMPS Nadir Mapper Sensor Data Record (SDR) Data

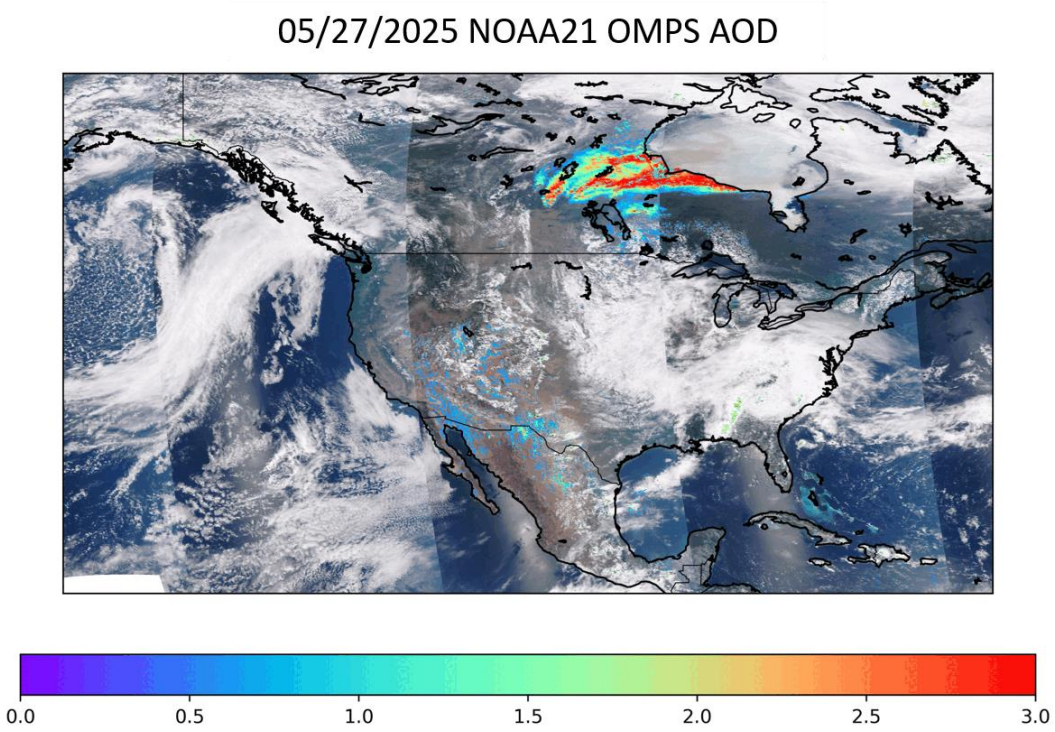
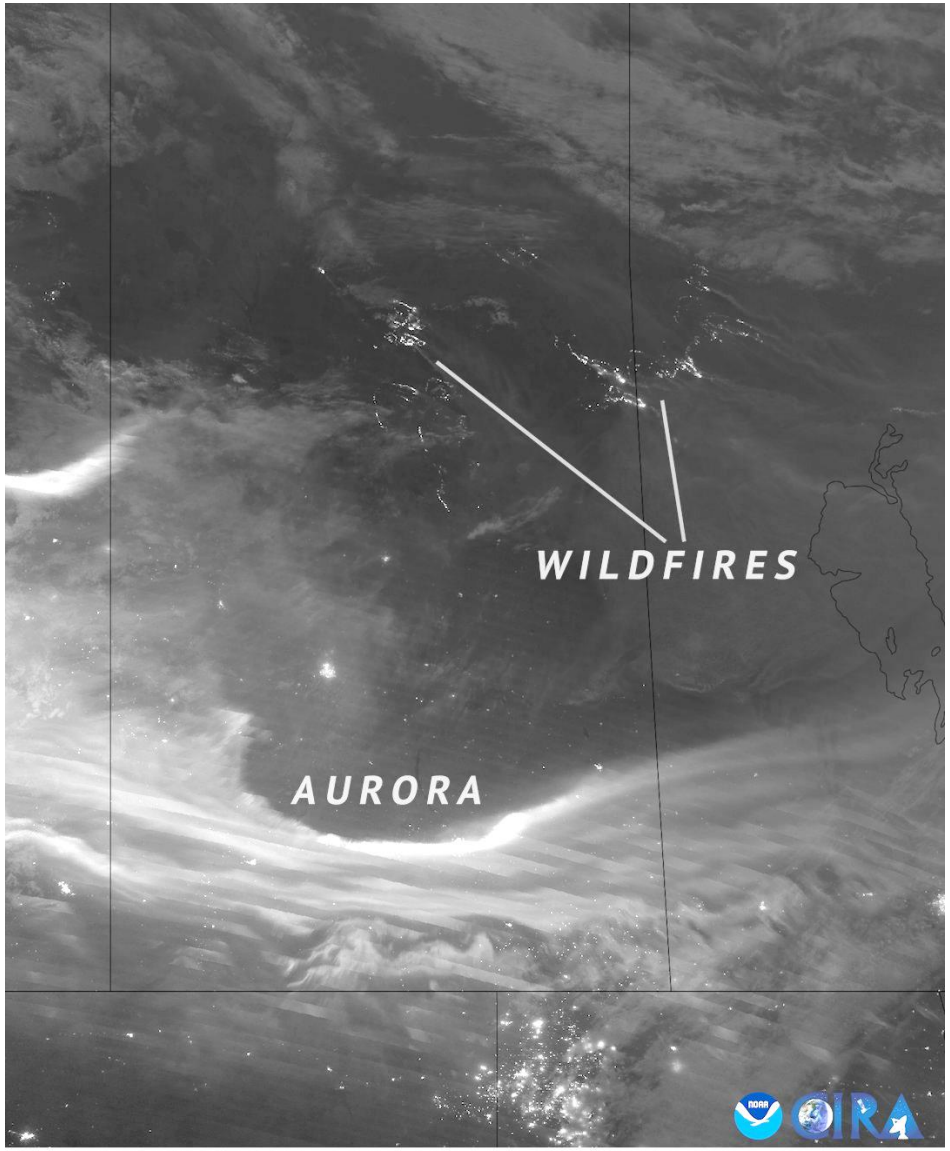


Figure. Animated aerosol radiometric features for 2025-May Canadian wildfires using high-resolution NOAA-21 OMPS NM SDR data from May 27 to June 9, 2025. The aerosol radiometric features are obtained using a newly developed ML-based algorithm for OMPS NM SDR data, while background images are produced using NOAA-21 VIIRS M3-M4-M5 true color.

The NOAA-21 OMPS Nadir Mapper monitors atmospheric ozone and detects UV-absorbing aerosols and trace gases relevant to air quality, with improved spatial resolution. A machine learning algorithm was developed to visually observe aerosol radiometric features of large wildfires using OMPS NM SDR data above 310 nm, with VIIRS AOD as a reference. Two Canadian wildfires merged and grew to over 240,000 hectares by 27 May 2025, remaining active into June and causing hazardous air quality and evacuations.

The figure shows aerosol features from 27 May to 9 June using NOAA-21 OMPS NM data (10×12 km² at nadir). High values indicate dense smoke aerosols. These results demonstrate NOAA-21's improved resolution—about 7× finer than NOAA-20—and strong calibration accuracy. VIIRS true color imagery complements OMPS data. Overlaying OMPS aerosol features onto VIIRS imagery provides clear, contextual views of wildfire impacts often missed in visible light.

Highlights from the Science Teams (June)



- Contributed imagery/expertise to NESDIS stories:
  - Earth From Orbit: NOAA Satellites Monitor Canadian Wildfires and Smoke
  - Feature Story: A Silent Threat: How NOAA Satellites Help Save Lives in Low Visibility and Fog

Figure: VIIRS Day Night Band Near Constant Contrast imagery at night of Aurora and wildfires over Saskatchewan and Manitoba, Canada

Accomplishments

Delivery Date	Cloud Containerized Algorithm Packages (CCAPs) – Enterprise Products:	Recipient
5/28/2025	**OMPS-LP_v1-1:** This is a patch to the final CCAP to NCCF for resolving bad granule and high SZA run failures.	NCCF
6/6/2025	**HISA_v2:** Hurricane Intensity and Structure Algorithm (HISA): Final delivery of the HISA_v2-0 CCAP to the NCCF s3 bucket. This delivery includes updates to handle MiRS v11.10 files, a dateline crossing dix, and a fix for the duplicate files issue.	NCCF
6/18/2025	**TOAST_v2**:Final delivery of the TOAST v2-0 CCAP to NCCF for integration. This CCAP includes the OMPS LP EDR updates for LTOAST, and a fix for longitude shift in the NetCDF4 files which casues a longitude shift in the downstream GRIB2 TOAST products.	NCCF
6/23/2025	**Toolkit_V11-1:**11-1 patch delivery of BUFR Toolkit v7.2 to the NCCF S3 bucket. This patch re-defines the GRIB2 GRID or re-arrange the data array within the GRIB2 encoder. This helps to fix a longitude shift within the GRIB2 files that was coming from upstream TOAST NetCDF4 files.	NCCF
6/27/2025	**EN-CloudPhase_v1**: EN-CloudPhase_v1-0 Prelim CCAP for OSPO Software Code Review.	OSPO

Accomplishments – JPSS Cal Val Support

S-NPP	Weekly OMPS TC/NP Dark Table Updates	09/3/24, 09/10/24, 09/17/24, 09/24/24, 10/1/24, 10/8/24, 10/16/24, 10/22/24, 10/29/24, 11/5/24, 11/12/24, 11/19/24, 11/26/24, 12/03/24, 12/10/24, 12/17/24, 12/30/24, 01/7/25, 1/13/25, 1/22/25, 1/28/25, 2/4/25, 2/10/25, 2/18/25, 2/26/25, 3/4/25, 3/11/25, 3/18/25, 3/25/25, 4/1/25, 4/8/25, 4/15/25, 4/22/25, 4/29/25, 5/6/25, 5/13/25, 5/20/25, 5/28/25, **6/3/25, 6/10/25, 6/17/25, 6/24/25 7/1/25**
NOAA-20	Weekly OMPS TC/NP Dark Table Updates	09/3/24, 09/10/24, 09/17/24, 09/24/24, 10/1/24, 10/8/24, 10/16/24, 10/22/24, 10/29/24, 11/12/24, 11/19/24, 11/26/24, 12/03/24, 12/10/24, 12/17/24, 12/30/24, 01/7/25, 1/13/25, 1/22/25, 1/28/25, 2/4/25, 2/10/25, 2/18/25, 2/26/25**,** 3/4/25, 3/11/25, 3/18/25, 3/25/25, 4/1/25, 4/8/25, 4/15/25, 4/22/25, 4/29/25, 5/6/25, 5/13/25, 5/20/25, 5/28/25, **6/3/25, 6/10/25, 6/17/25, 6/24/25, 7/1/25**
NOAA-21	Weekly OMPS TC/NP Dark Table Updates	09/3/24, 09/10/24, 09/17/24, 09/24/24, 10/1/24, 10/8/24, 10/16/24, 10/22/24, 10/29/24, 11/12/24, 11/19/24, 11/26/24, 12/03/24, 12/10/24, 12/17/24, 12/30/24, 01/7/25, 1/13/25, 1/22/25, 1/28/25, 2/4/25, 2/10/25, 2/18/25, 2/26/25, 3/4/25, 3/11/25, 3/18/25, 3/25/25, 4/1/25, 4/8/25, 4/15/25, 4/22/25, 4/29/25, 5/6/25, 5/13/25, 5/20/25, 5/28/25, **6/3/25, 6/10/25, 6/17/25, 6/24/25, 7/1/25**
S-NPP	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	09/10/24, 09/24/24**,** 10/8/24, 10/22/24, 11/5/24, 11/19/24**,** 12/3/24, 12/17/24, 12/31/24, 1/13/25, 1/28/25**,** 2/11/25, 2/26/25, 3/11/25, 3/25/25, 4/8/25, 4/22/25, 5/6/25, 5/20/25, **6/3/25, 6/17/25, 7/1/25**
NOAA-20	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	09/03/24, 09/17/24, 10/1/24**,** 10/16/24, 10/29/24, 11/12/24, 11/26/24, , 12/10/24, 12/31/24, 1/8/25, 1/22/25, 2/4/25, 2/18/25, 3/4/25, 3/18/25, 4/1/25, 4/8/25, 4/15/25, 4/29/25**,** 5/13/25, 5/28/25, **6/10/25, 6/24/25, 7/8/25**
NOAA-21	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	09/03/24, 09/17/24, 10/1/24**,** 10/16/24, 10/29/24**,** 11/12/24, 11/26/24, 12/10/24, 12/31/24, 1/8/25, 1/22/25, 2/4/25, 2/18/25, 3/4/25, 3/18/25, 4/1/25, 4/8/25, 4/15/25, 4/29/25**,** 5/13/25, 5/28/25, **6/10/25, 6/24/25, 7/8/25**
S-NPP	Monthly VIIRS LUT Update of DNB Offsets and Gains	9/9/24, 10/9/24, 11/7/24, 12/6/24, 1/7/25, 2/4/25, 3/7/25, 4/8/25, 5/6/25, 6/3/25, **7/1/25**
NOAA-20	Monthly VIIRS LUT Update of DNB Offsets and Gains	9/9/24, 10/9/24, 11/7/24, 12/6/24, 1/7/25, 2/4/25, 3/7/25, 4/8/25, 5/6/25, 6/3/25, **7/1/25**
NOAA-21	Monthly VIIRS LUT Update of DNB Offsets and Gains	9/9/24, 10/9/24, 11/7/24, 12/6/24, 1/7/25, 2/4/25, 3/7/25, 4/8/25**,** 5/6/25, 6/3/25, **7/1/25**
NOAA-21	Monthly VIIRS DNB Straylight correction update	10/23/23, 11/21/23, 12/18/23, 01/22/24**,** 02/15/24, 03/18/24, 4/15/24**,** 5/14/24**,** 6/11/24, 7/16/24, 8/13/24 (Further updates reuse earlier correction LUTs based on the month)

FY25 STAR JPSS Milestones (1 of 4)

Milestones/Algorithm Updates	Original Date	Forecast Date	Actual Completion Date	Variance Explanation	Status
VOLCAT (Phase 1) NCCF implementation	Dec-23	Apr-25	SCR: August 17, 2023 Target CCAP Moved many times and currently set for **July 16, 2025.**	Additional changes made by the science team and working on test cases running necessitated the need to push the target CCR to **July16,2025**	Tracked as part of FY25 Maintenance
NetCDF4 Reformatting Toolkit (N4RT) to include Quick Sounder	Feb-25	Apr-25	ASSISTT to NCCF CCAP delivery moved many times to accommodate new sensors**.** Target CCAP is now moved **to July 24, 2025.**	This version (v12) toolkit on Cloud9 will include Stereo winds and Quick Sounder	
AWIPS Converter	Feb-26	Feb-26	SCR moved to **July 2**, and final CCAP delivery moved from May 20 to **August 21st.**	Integrators have generated and verified tailored output for all 5 satellites. ASSISTT team initiated implementation on ASSISTT Interface Module (AIM)	
Blended SST	May-25	Jun-25	Final CCAP moved to **July 2, 2025**	Reviewing updates on wrapper and issues with space required moving the CCR to July 2, 2025.	
Blended Hydro (uses NOAA-21)	Jun-25	Jul-25	This includes the latest version of MiRS 11.10. CCAP pushed to **July 8, 2025**.	Verified CentOs7 to CentOs9 test case matching and on-track for July8.	

FY25 STAR JPSS Milestones (2 of 4)

Milestones/Algorithm Updates	Original Date	Forecast Date	Actual Completion Date	Variance Explanation	Status
Cloud Mask J2 Validated; No code updates needed only maintenance CCAP	Feb-25	Jul-25	CCAP for SCR delivered on May 1st. Target CCAP delivery moved to **July 24, 2025** for AO architecture.	Maintenance updates (separate unit for Ancillary files to be included) as well as solving for latency issues, and implementation on AO architecture, all culminated into moving different cloud products into June/July CBH, CCL, Cloud Height pushed to June 3, Cloud Phase and cloud type **pushed to July** due to other priority and to account for AO architecture.	Tracked as part of FY25 Maintenance release.
Cloud Base Height (CBH), Cloud Cover Layer (CCL), Cloud Height, Phase and Type: (Different CCAPs for Cloud implementation) J2 Validated: No code updates, only maintenance CCAPS. Tracked as FY25 maintenance release	Jan-25	Jul-25	CCAP for SCR delivered on May 1st. Target CCAP (ASSISTT to NCCF) moved **July 24** for AO architecture.		
Surface Particulate Matter (PM2.5) **(new product)**	Jun-25	Aug-25	CCAP SCR planned for July 1 moved to July 22, and final CCAP delivery moved from **July 12** to **August 12, 2025.**	New implementation following AO architecture. Working on test runs, requirement and implementation on ASSISTT Interface Module (AIM).	New Product. Tracked as part of FY25
Derived Motion Winds (S-NPP, NOAA-20, NOAA-21, and GEO satellites	Jul -25	Aug-25	SCR now moved to Aug 21, and final CCAP moved from **July 10 to August 21, 2025**	ASSISTT team requested a one month extension to account for activating CI pipeline and adding additional python code to wrap AIM.	Tracked as part of FY25 Maintenance release.
Aerosol Detection Product (ADP) Updates	Jul-25	Aug-25	SCR moved several times and now set for July 11, 2025. Target CCAP (ASSISTT to NCCF) expected on **Aug 29th** for implementation in AO architecture	Updates to use Volcanic ash input. Removes dependency on volcanic ash product. Implementation in AO architecture. ASSISTT team worked on integrating MetOp-SG code. Awaiting science team feedback.	
Ocean Color (v2.1) (Gulf of Mexico to Gulf of America change in the outputs)	Jul-25	Jul-25	On-track for **July 30** delivery.	Shared implementation updates with v2-1 delivery with the **PG** team (Gulf of Mexico change). Fixed some of the issues related to science team code updates.	

FY25 STAR JPSS Milestones (3 of 4)

Milestones/Algorithm Updates	Original Date	Forecast Date	Actual Completion Date	Variance Explanation	Status
MiRS upgrade for Quick Sounder	Aug-25	Aug-25	Science team delivered updates on March 31st. CCAP delivery expected on **Aug 4, 2025**.	Implemented through AO plan. Awaiting for QuickSounder information.	Tracked as part of FY25 Maintenance release
SFR upgrade to include GOSAT-GW AMSR3, MetOp-SG MWS, ocean coverage (the current SFR is land only). Also upgrades needed for Quick Sounder.	Aug-25	Aug-25	On-track. CCAP expected on **Aug 4, 2025.**	Integrators currently working on getting code compiled statically.	
ACSPO (update ACSPO 3.0 for VIIRS), for Ocean	Aug-25	Aug-25	SCR moved from June 30 to July 11, and final CCAP expected on **Aug 28, 2025.**	Working on AIM updates. On-track (okay)	
Green Vegetation Fraction: 1 Km GVF update for existing products.	Sep-25	Sep-25	SCR expected on Jul 31 followed by CCAP **on October 8, 2025.**	N/A	
Vegetation Index (VI): 1 Km update for existing products	Sep-25	Sep-25	SCR moved to July 21 and final CCAP on **Nov 3, 2025.**	AIM development work continuing.	
Bidirectional Reflectance Distribution Function (BRDF) (New Product)	Sep-25	Sep-25	SCR moved to Aug. 28 and final CCAP delivery expected on **Oct. 17, 2025.**	New implementation through AO Algorithm support documentation and demo scheduled 5/2	
Soil Moisture Operational Product System (SMOPS) – Maintenance update with migration to AO.	Oct-25	Oct-25	On-track. Maintenance updates with migration to AO. SCR expected on Aug. 1 and final CCAP on **October 29, 2025.**	N/A	
AST-2024 (VIIRS Annual Surface Type)	Sep-25	Sep-25	On-track	N/A	Ongoing as part of FY25
Reprocessing and transfer of EDRs to CLASS	Sep-24	May-25	Continue as part of FY25 milestones	JSTAR Team submitted a request to CLASS to archive reprocessed AOD/ADP. CLASS is working on Engineering Assessment.	Ongoing FY24 milestone.

FY25 STAR JPSS Milestones (4 of 4)

Milestones (Algorithm Cal/Val and LTM)	Original Date	Forecast Date	Actual Date of Completion	Variance Explanation	Status
NEON (Quick Sounder pre-launch and post-launch Cal/Val Plan)	Dec-24	Dec-24		Two CCRs already approved. Cal/Val Document released in MIS. 471-CCR-24-0069 471-CCR-24-0070	
FY26 Program Management Review (all teams)	Jun-25	Jun-25	Jun-25	Many PMRs have been completed and the remaining PMRs are scheduled and expected to be completed.	On-track
Maintain / Update ICVS (develop ICVS modules to support various activities: monitoring, inter-sensor comparison, …)	Sep-25	Sep-25	Follow FY25 PMR schedules	Quad charts provide the details of activities/tracking.	Ongoing
Maintain / Expand (to include JPSS-2 products) JSTAR Mapper, adopting to STEMS	Sep-25	Sep-25	Follow FY25 PMR milestones	Quad charts provide the details of activities/tracking.	Ongoing
Images of the Month	Monthly	Monthly	Follow FY25 PMR	N/A	Ongoing
JPSS-3/JPSS-4 pre-launch test data review/analysis and activity support (SDR teams);	Sep-25	Sep-25	Ongoing	FY24 milestones for J3 JCT1/JCT2, J3 Spacecraft TVAC, and J4 instrument TVAC completed as part of FY24 milestones. Science team efforts will continue in FY25.	Continuing as part of FY25 milestones
JPSS-3/JPSS-4 Pre-launch characterization reports for all SDRs: December 30, 2024	Dec-24	Mar-25	On-going	J3 ATMS: Team delivered pre-launch report in Dec 2024 J3 CrIS: Team delivered J3 pre-launch report in June 2024. J4: CrIS team delivered pre-launch characterization report J4: ATMS team delivered in June 2024. J4: OMPS team delivered pre-launch characterization report (Jan) J4: VIIRS: Delivered pre-launch characterization report (March)	Completed
GOSAT-GW End to End	Aug-24	Apr-25	GOSAT launch: **June 2025**	GOSAT-GW OSPO/JAXA scheduled test in June 2025.	Completed
SDR and VIIRS Imagery Look-Up Table Deliveries for J4	Jun-26	Jun-26	Ongoing	The initial J4 VIIRS SDR LUT delivery is expected in FY26, ahead of the Satellite TVAC and JCT-3.	Ongoing

IDPS Mx Build Status

Current: Block 2.3 Mx13

- TTO: 5/20/2025 1545 UTC
- Mx13 ADL should be used for all algorithm change package deliveries

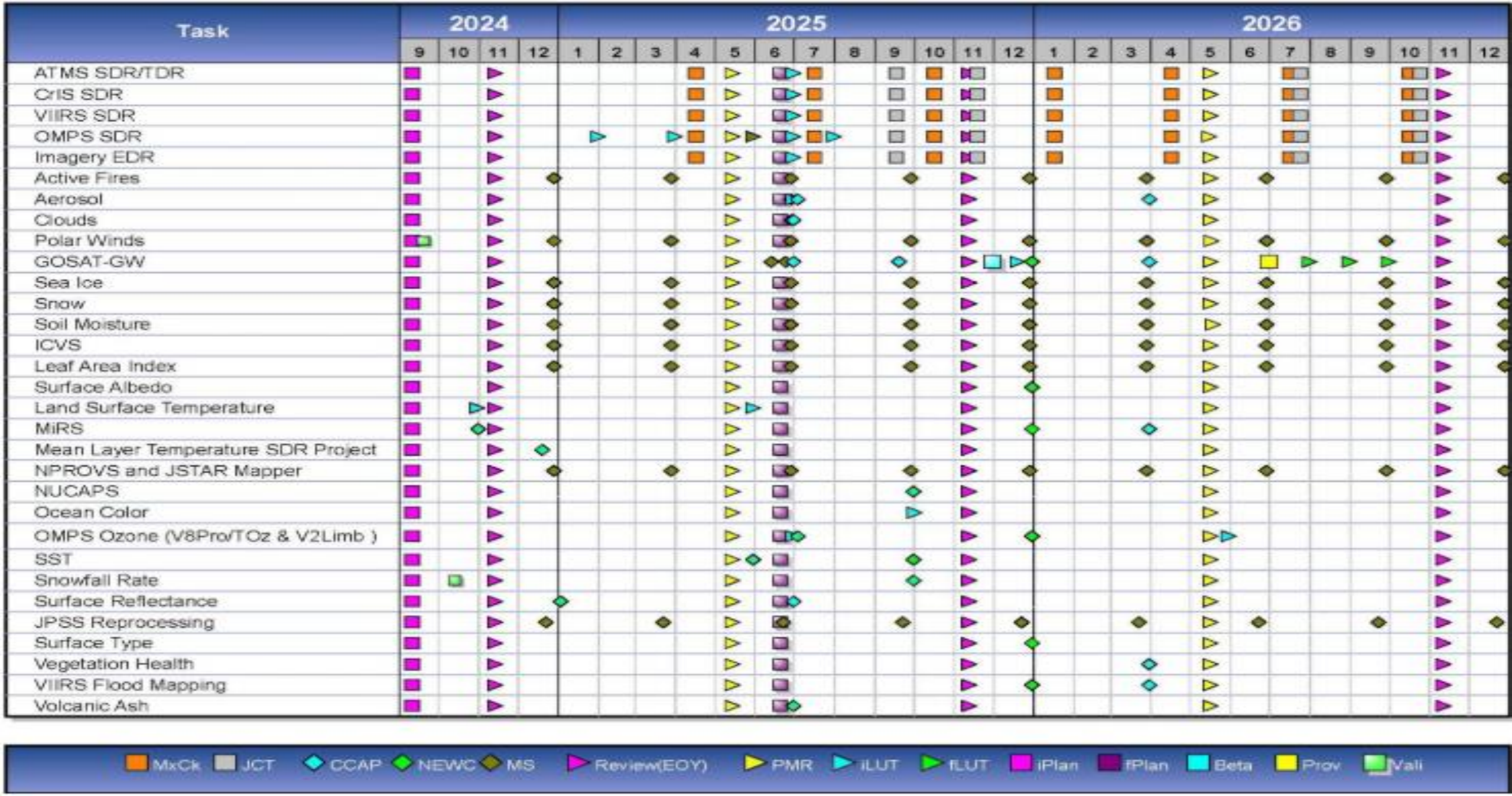
Mx14 RRR (Regression Readiness Review): 6/04/2025

Mx13 Patch (N21 CrIS update ADR-11194/CCR-7603) Schedule:

- Deploy to SOL: May. 19, 2025
- SOL Checkout: May. 28, 2025 (STAR report: 5/29/25)
- To OCCB: May. 29, 2025
- DP-TE deploy: Jun. 6, 2025 (STAR report: 6/9/2025)
- TTO: Jun. 17, 2025

IDPS Mx Schedule	Mx13	Mx14	Mx15
Code change cutoff (STAR to ASSISTT)	Nov. 28, 2024	Feb. 12, 2025	May. 10, 2025
Code change cutoff (IDPS AIT to Peraton)	Jan. 14, 2025	Apr. 1, 2025	Jun. 24, 2025
SOL (DP_FE) regression test	Feb. 18 - Apr. 1, 2025	Jun. 5 – Jul 8, 2025	Aug. 7 – Sep. 9, 2025
STAR SOL review/checkout feedback (Go/No-Go & Report)	Mar. 18, 2025 (Completed)	Jul 8, 2025	Sep. 9, 2025
Handoff to OMS (taken to OCCB)	Apr. 10, 2025	Jul. 17, 2025	Sep. 25, 2025
I&T (DP-TE) regression test	Apr. 10 – May. 1, 2025	Jul. 17 – Aug. 8, 2025	Sep. 25 – Oct. 17, 2025
STAR I&T review/checkout feedback (Go/No-Go & Report)	May. 1, 2025 (STAR provided “GO” and review report on 5/1/2025)	Aug. 8, 2025	Oct. 17, 2025
TTO	May. 20, 2025	Aug. 26, 2025	Nov. 4, 2025

STAR JPSS Schedule: TTA Milestones



Color code:

Green: **Completed Milestones**

Gray: **Ongoing FY25 Milestones**

June 2025

Active Fires

June 2025

Accomplishments / Events:

- Generated one day of global NGFS VIIRS detection and fire radiative power data and compared to operational EFIRE data
  - initial results are as expected: overall global patterns are consistent; NGFS FRPs are typically higher due to atmospheric correction
- Worked on improved persistent anomaly classification using Convolutional Neural Network (CNN)
- Continued analysis of 2023 NASA FireSense data for FRP validation

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		x			
Technical / Programmatic		x			
Schedule		x			

1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

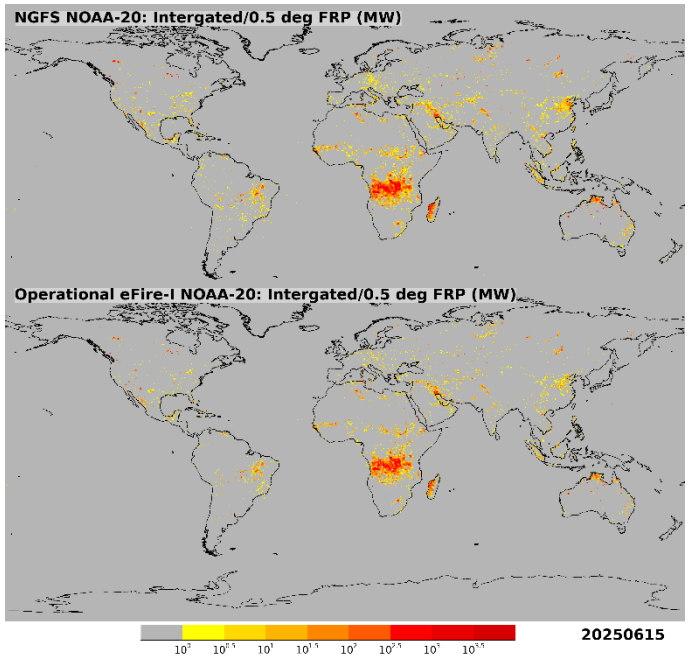
Issues/Risks:

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Evaluate Suomi NPP and NOAA-20 reprocessed data record	Mar-25	Mar-25	Jan-25	
Generate cross-verification datasets, including opportunistic in-situ reference data	Dec-24	Jun-25	Jun-25	
Generate / update opportunistic in-situ reference data	Mar-25	Jun-25	Jun-25	
eFire cal/val	Sep-25	Sep-25		
eFire – NGFS cross-verification	Sep-25	Sep-25		
Direct Broadcast support	Sep-25	Sep-25		
Maintenance, LTM and anomaly resolution	Sep-25	Sep-25		

Highlight:

NGFS vs. EFIRE VIIRS fire radiative power

Next Generation Fire System (NGFS; top) and operational Enterprise Fire (EFIRE; bottom) NOAA-20 total VIIRS fire radiative power (FRP) over a 0.5 degree global grid on June 15, 2025.



ATMS SDR

June 2025

Accomplishments / Events:

- Finished the ATMS geolocation rotation matrix correction update impact study on downstream EDR products. The NUCAPS EDR products have minor improvement in the % of accepted retrievals and retrieval biases (Fig.1), and MiRS showed no significant impact in the EDR product quality. ATMS SDR team is working with LEO/DPMS to go through the process for the IDPS code update. The target version to include this update is Mx16.
- Continued ATMS On-orbit NEDT tool development and analysis. A plot of ATMS SDR PCA NEDT residuals is shown for NOAA-21 ATMS Channels 1 and 2 in Figure 2. A paper on this work is currently being written.
- ATMS SDR team finished the backup of GRAVITE information portal (GIP) J01/J02/J03/J04 ATMS pre-launch observatory spacecraft thermal vacuum test (TVac) data archiving to Google shared folder provided by LEO office. Due to the decommissioning of GRAVITE, these data needs to be migrated to different storage for life time saving. GRAVITE also saves another copy in AWS GovCloud, which however needs special permission for access while Google share folder is accessible without additional cost for ATMS SDR team.
- Generate experimental NPP/N20/N21 ATMS non-linearity correction coefficients using new instrument TVac data analysis algorithm, as shown in Figure 2. The coefficients will be tested in ADL for verification.

Milestones	Category	Original Date	Actual Date	Variance Explanation
JPSS-3 SN306 ATMS Pre-launch Characterization Report	Sustain	Dec-24	Dec-24	
Update ATMS ATBD	Maintain	Mar-25	Mar-25	
ATMS beam alignment error correction evaluation	Sustain	May-25	Jun-25	
GRAVITE ATMS TVac data archiving	Maintain	Jun-25	Jun-25	
Final Version of the JPSS-4 SN305 ATMS Cal/Val Plan	Sustain	Jun-25		
Evaluate the ATMS Geolocation accuracy assessment tool and determine if the current sliding window can be reduced from 30-day period to a shorter period	Sustain	Aug-25		
Support JPSS-4/JPSS-3 JCT and Test events (J3 Pre-Storage TVAC, IDPS JPSS-3/JPSS-4 Test data Flow, etc.)	Sustain	Sep-25		
Radiometric inter-comparison of S-NPP, NOAA-20 and NOAA-21 ATMS SDR data against other LEO/GEO Microwave observations and GNSS-RO.	Sustain	Sep-25		
NOAA-21 ATMS Spectral Response Function (SRF) analysis/report to allow replacement of simulated NOAA-21 ATMS SRFs with measured values	Sustain	Sep-25		
Enhance the ATMS Calibration Website with new capabilities for rapid anomaly and SDR data evaluation response	Maintain	Sep-25		
Review/Checkout of IDPS Mx Builds SOL and I&T Deploy Regression data	Maintain	Sep-25	Block 2.3 Mx12 I&T, Jan 2025, Mx13 I&T, Apr 2025	

Overall Status:

	Green1 (Completed)	Blue2 (On-Schedule)	Yellow3 (Caution)	Red4 (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

1. *Project has completed.*
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3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Highlights:

Figure 1 NOAA-20 NUCAPS temperature and water vapor retrieval profile comparison using Ops and Exp ATMS data

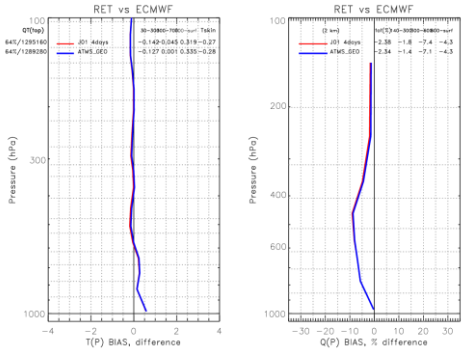
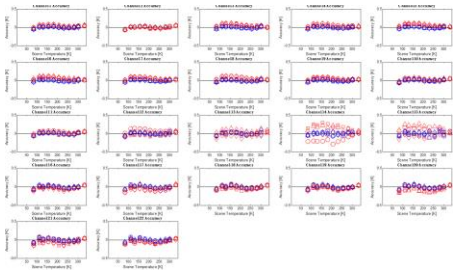
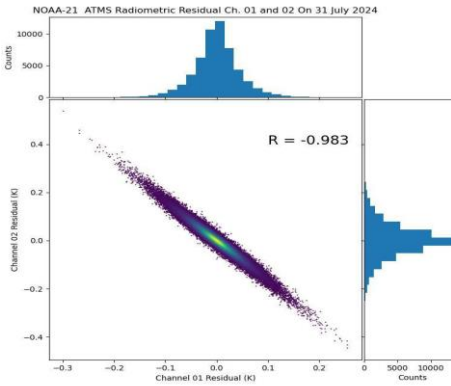


Figure 2 NOAA-21 ATMS calibration accuracy after non-linearity correction





(2) NOAA-21 ATMS SDR PCA NEDT residuals for Channel 2 vs. Channel 1

Clouds

June 2025

Accomplishments / Events:

- Work is ongoing regarding the 963mb issue found in the cloud height algorithm that is affecting wind heights.
- Paper published on the AI/ML method for Emulating Daytime ABI Cloud Optical Properties at Night With Machine Learning"
  - White, C. H., Noh, Y. J., Haynes, J. M., & Ebert-Uphoff, I. (2025). Emulating daytime ABI cloud optical properties at night with machine learning. Journal of Geophysical Research: Atmospheres, 130(12), e2024JD042829 https://doi.org/10.1029/2024JD042829.

Milestones - 1-4Q in the above table denotes that the specific milestone listed is ongoing algorithm developmental work that will likely span the entire year. Quarterly updates will be provided as needed.	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Investigate DCOMP sensitivity to ice crystal habit and channel-set for cirrus clouds	Sep-25	1-4Q		
Enhance and maintain websites as a public interface to access product imagery	Sep-25	1-4Q		
In collaboration with Polar Winds team, investigate ACHA performance as it relates to Atmospheric Motion Vector (AMV) height assignment	Sep-25	1-4Q		
Prepare CLAVRx cloud top phase algorithm to replace current operational cloud phase algorithm	Sep-25	1-4Q	Jul-25	
Investigate new AI/ML techniques to improve multiple products (e.g., ECM, DCOMP/NCOMP)	Sep-25	1-4Q	Mar-25	
Investigate DCOMP precipitation applications	Sep-25	1-4Q	Jul-25	
Prepare tools that leverage new datasets for algorithm development and validation (e.g., EarthCARE)	Sep-25	1-4Q		
Prepare CLAVRx cloud top phase algorithm to replace current	Sep-25	1-4Q		

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

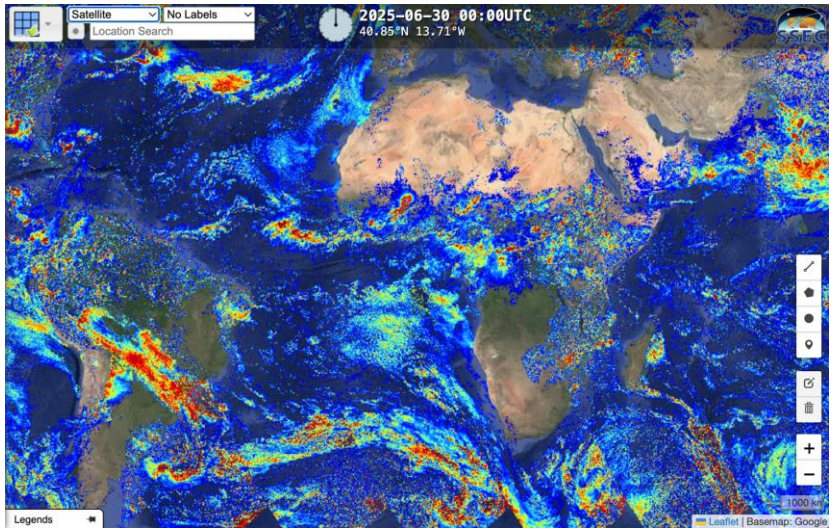
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Highlights:

Figure 1. The image to the right is a display of the NOAA-21 ascending Daytime optical properties within the cloud web viewing platform. This allows the cloud team to visually look at products to see where how the products are performing in an efficent manner



CrIS SDR

June 2025

Accomplishments / Events:

- A quarter of orbit had invalid data quality flag for NOAA-20 CrIS on 18 June 2025. Reprocessing occurred over 9 hours later. No satellite alert messages were issued. (**Fig. 1**)
- Finished the Mx13.01 I&T Checkout for CrIS Algorithm Change. (**Fig. 2**)
- Dr. F. Zhang at ESSIC was assisted by Sherry Li for the CrIS observations minus CRTM simulated TOA radiance using collocated RAOBs over ice (BT < 265K) and the ECMWF ICE emissivity model. Small residuals were observed.(**Fig. 3**)
- NOAA-21 CrIS imaginary radiance was examined at the eclipse exit. The imaginary part changes matches well the behavior from previous years(**Fig. 4**)
- The CrIS vs VIIRS comparison tool shows excellent matches. (**Fig. 5**)
- Observed several data gaps with JPSS data after GRAVITE IPS termination. The reliability and accuracy of the INT data feed remains a topic of concern.
- Presentation at the CrIS science team meeting: On 6/12/2025 about the code change to mitigate the neon lamp misfiring.

Milestones	Category	Original Date	Actual Completion Date	Variance Explanation
Delivery of the JPSS-4 CrIS PreLaunch Characterization Report	Sustain	Dec-24	Jan-25	Needed NASA's Feedback
Implement and Test NOAA-21 Algorithm/PCT Calibration Updates to Mitigate the Impact of Neon Lamp Misfiring	Sustain	Apr-25	Apr-25	
Offline calculation of laser wavelength based on spectral correlation method	Sustain	Apr-25	Apr-25	
IDPS Mx13 I&T Checkout	Maintain	May-25	Apr-25	
Delivery of the Final JPSS-4 CrIS Cal/Val Plan	Sustain	Jun-25	Jun-25	
Delivery of the JPSS-4 CrIS Initial PCT LUT	Sustain	Jun-25	Jun-25	
Implement and Test Solutions of Calibration Error Reduction for JPSS-4 Launch Risk Mitigation	Sustain	Sep-25		
Delivery of the JPSS-4 CrIS Engineering Packet with New PRT Coefficients	Sustain	Sep-25		
Provide support to Metop-SG Joint Cal/Val Activities	Sustain	Sep-25		
Radiometric Intercomparison of the Operational CrIS SDR data against other LEO/GEO IR observations and GNSS-RO	Sustain	Sep-25		
Review/Checkout of IDPS Mx Builds SOL and I&T Deploy Regression data	Maintain	Sep-25	Block 2.3 Mx12 I&T, Jan 2025, Mx13 I&T, Apr 2025	
Perform the transition of Cal/Val activities to the Cloud environment	Maintain	Sep-25	In Progress	
Conduct maintenance including investigation and anomaly resolution of on-orbit CrIS sensors	Maintain	Sep-25	NOAA-21 Neon lamp,, March 3	

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X	X	X	See Issues/Risks
Schedule			X		See Issues/Risks

1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

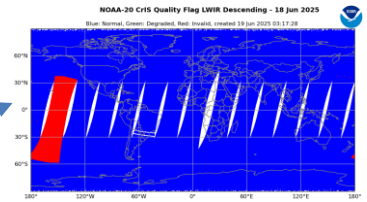
Red: It has been announced that JPSS-4 TVAC data and documents are now ITAR. STAR IT does not have a secured environment to host or process ITAR data.

Yellow: The CrIS Team is still in need of hardware resources. Presently, there is only two servers dedicated to 5 CrIS Team members. Access to additional servers is still desirable. There is a risk for the CrIS SDR Team to continue on such a dual-server environment for the operational CrIS Cal/Val activities that include 5 CrIS sensors (SNPP, JPSS-1 to -4). This may affect the timely completion of deliverables and program milestones. The recommendation is to have one additional server as soon as possible (< 2 months) and add another server in the next months. Corresponding hardware quotations and SNO have been submitted. Corresponding JSTAR CrIS Risk/Issue on Hardware and Software have been submitted for JSTAR interval review on Jan. 6, 2023. UPDATE: The purchasing of the corresponding hardware is currently in progress, in coordination with STAR IT. A new MATLAB license has been delivered and installed properly. There was a SCDR data disruption starting June 30 and ending July 11. Data gaps are unfilled 30 days later. This complicated S/NPP GPS Anomaly investigations. SCDR outages may be increasing.

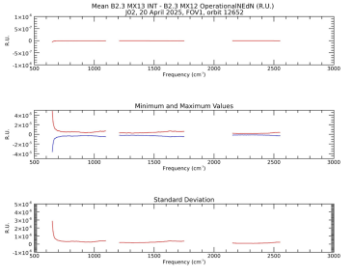
Blue: ASSIST Team has agreed to accept ADL code change tested on CentOS 9.

Highlights:

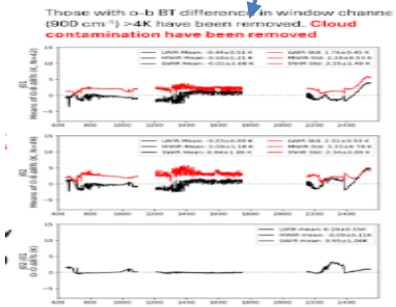
(1) NOAA-20 2025-06-18 LWIR Data Quality, Descending



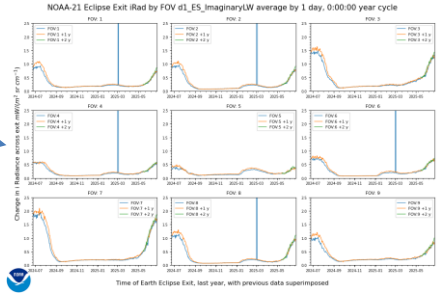
(2) NOAA-21 CrIS MX 13 I&T check out showing the OPS minus MX13 I&Tdifference statistics.



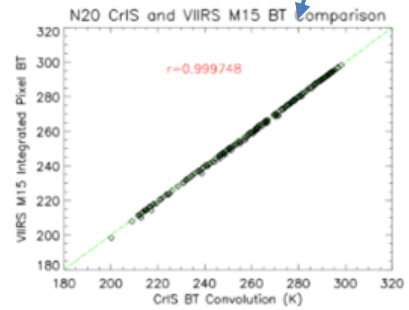
(3) CrIS O minus simulated CRTM over ice (BT < 265 K) using collocated ROAB. Low residuals are observed



(4) NOAA-21 CrIS imaginary part changes at the eclipse exit locations matches the previous years.



(5) CrIS vs VIIRS intercomparison shows excellent matches..



Accomplishments / Events:

Comparison of NESDIS and NASA VIIRS Snow products. VIIRS snow products derived at NESDIS have been compared to similar snow products generated at NASA. To perform a comparison, we converted NOAA daily snow cover maps gridded at 1 km resolution to the global latitude-longitude grid at 5 km resolution used by NASA. This projection is often referred to as the Climate Modelling Grid (CMG). Matched NOAA and NASA daily VIIRS snow products were compared over a 2.5-year time period from the beginning of 2023 to June 2025. Both products, NOAA and NASA, were also compared to daily IMS snow cover charts to estimate their accuracy.

The visual comparison of NOAA and NASA VIIRS CMG snow products has shown their qualitative agreement both on the snow cover and cloud cover distribution (see Figure 1 for an example of matched snow products). Differences mostly concern the mapped snow cover in the high-latitude region of North America and Eurasia and are associated predominantly with differences in the cloud mask used in the two products. The results of quantitative validation of NOAA and NASA products versus IMS daily snow and ice maps over the Northern Hemisphere are presented in Figure 2. As seen from the graphs, the two products demonstrate a similar performance with NOAA products providing a slightly higher rate of agreement to the IMS than NASA (94.2% vs 92.9% over the year-long time period). These estimates were obtained for snow retrievals over the areas where snow cover was climatologically possible at the time of observations. The fraction of clear-sky grid cells (and, hence, the effective area coverage) in the two products was close during the cold period of the year (October to March) and ranged generally between 40 and 50%. During the warm season (April to September) the cloud mask in the NOAA snow product becomes more relaxed as compared to NASA resulting in a 5-10% better effective area coverage.

The comparison of NOAA and NASA daily snow maps and validation with IMS data is ongoing. Statistics of comparison and corresponding plots are updated on a daily basis.

Cryosphere

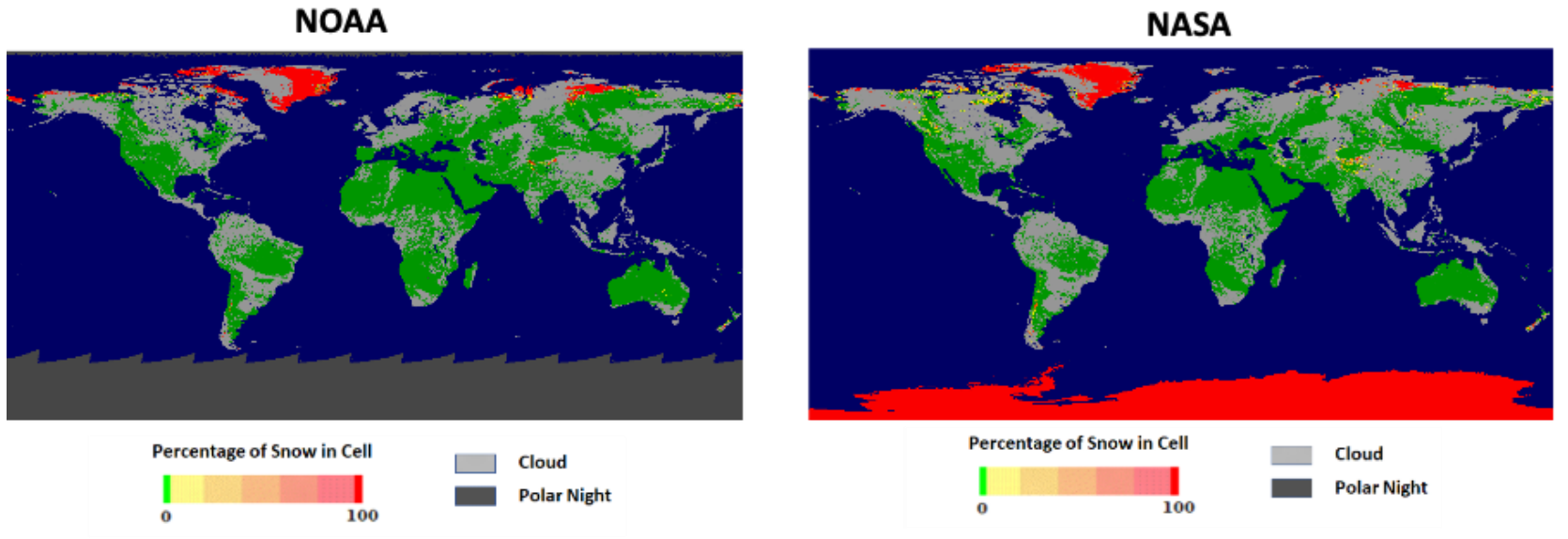


Figure 1. Example of NOAA and NASA VIIRS daily snow products on the Climate Modeling Grid (CMG). Note qualitative similarity between the snow mapped in the two products. CMG Snow products have been produced with VIIRS SNPP data.

Cryosphere

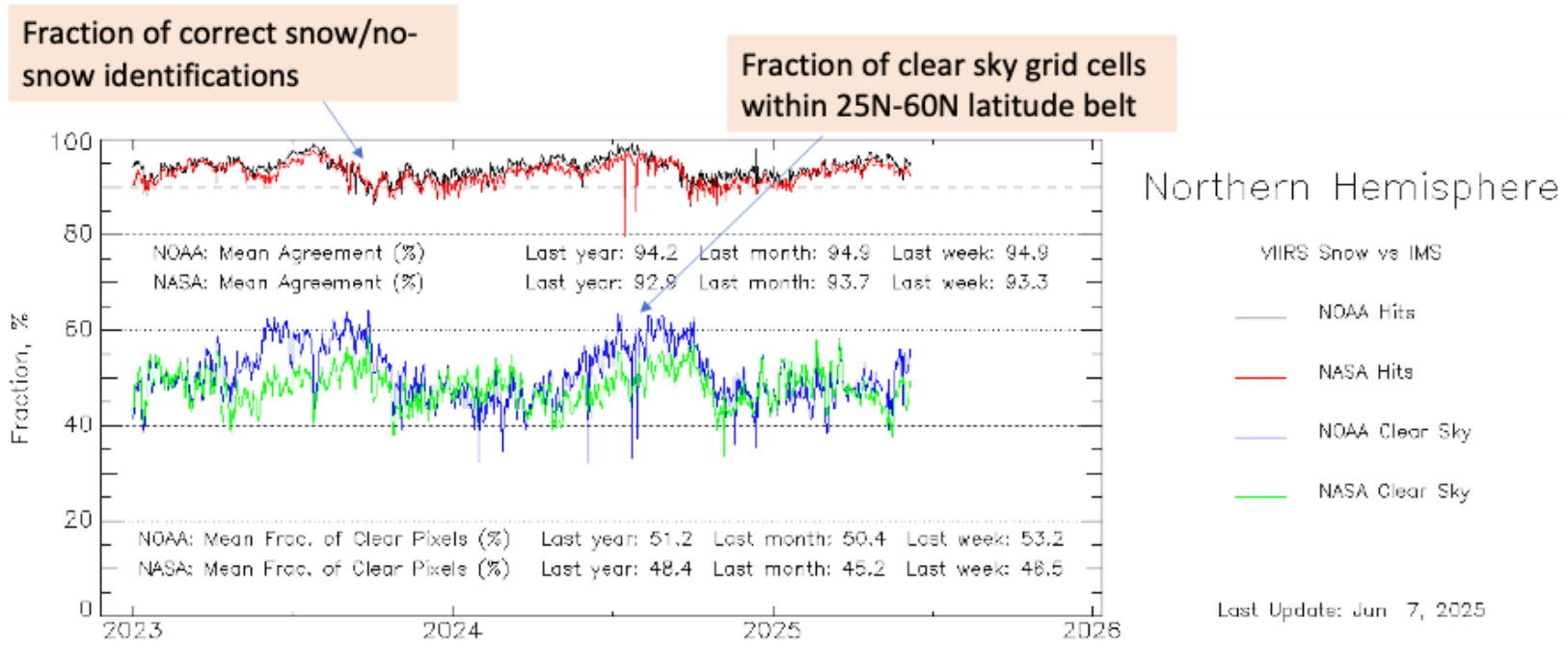


Figure 2: Statistics of comparison of NOAA and NASA VIIRS snow products with IMS. The upper plot (red and black lines) presents the rate of agreement between the products, the lower plot (blue and green) shows the fraction of clear-sky grid cells in the two products in midlatitudes.

Cryosphere FY25 Milestones/Deliverables (in general)

June 2025

Task Category	Task/ Description	Start	Finish	Deliverable	Requirement (Dev Only)
Development (D)	Blend AMSR2 into the VIIRS binary snow product, finalize the algorithm, Begin routine offline generation.	10/2024	9/2025	Routinely generated daily blended gap-free snow map based on combined VIIRS and microwave data	Same as snow product EDRs
Development (D)	Melting/frozen snow pack discrimination. Algorithm and software development	10/2024	6/2025	Daily map of the snowpack state (melting/frozen)	Same as snow cover EDR
Development (D)	Upgrade web-page displaying VIIRS snow cover products. Enable viewing and analysis of gridded snow product at full (1km) spatial resolution	10/2024	3/2025	Enhanced web page	N/A
Development (D)	Finalize supplemental cloud mask for daily VIIRS snow products: Compensate for weaknesses of the cloud mask	10/2024	9/2025	Final algorithm and software to generate VIIRS supplemental cloud mask	N/A
Development (D)	Melt/freeze discrimination and degrees above melting.(Daytime only)	10/2024	12/2025	Expansion of IST product	Enhanced usability by analysts and forecasters.

Cryosphere FY25 Milestones/Deliverables (in general)

June 2025

Task Category	Task/ Description	Start	Finish	Deliverable	Requirement (Dev Only)
Development (D)	Updates on the ice surface temperature, including research on impacts of angular emissivity of snow and ice	06/2024	03/2025	IST surface temperature algorithm update	Improved accuracy for all users
Integration and Testing (I&T)	Improvements to the Sea Ice Concentration product.	10/2023	09/2026	Algorithm enhancements to improve SIC near sea ice edge	Same as ice concentration EDR
Integration and Testing (I&T)	Include Blended SIC and NOAA-21 ice products into RealEarth	10/2024	06/2025	Graphics	**Streamlined validation**
Integration and Testing (I&T)	Improvements to the Ice Thickness and age products.	10/2024	09/2025	Improved ice thermal and physical dynamic parameterizations (growing and melting processes), using ice-snow interface temperature product	IceAge EDR
Maintenance	Additions and Improvements to Blended Sea Ice Concentration product	10/2024	06/2025	Include observational weights into output Netcdf files.	**Request by users**

GCOM-W/AMSR2 & AMSR3

June 2025

Accomplishments / Events:

- The GCOM Precipitation team investigated further the AMSR2 geolocation issue. It appears the problematic data only exists in the NOAA AMSR2 data while both JAXA L1 and NASA L1C data is free of such geolocation error. A discussion with NOAA operation will continue to find the root cause of the issue. In the meantime, the team has developed a technique to temporarily mitigate the problem, where an orbit with geolocation issue is identified if the average 18h GHz brightness temperature over the ocean is above a certain threshold. Test on the 2025 AMSR2 data has demonstrated that the technique is very effective at detecting erroneous orbits while retaining normal orbits. Currently, ASSISTT is implementing this temporary 'fix'. Since it is at L1b level, the fix will benefit all GAASP L2 EDRs once it becomes operational.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Develop a neural network-based GPROF Precipitation retrieval for AMSR instrument series. Support transition of AMSR2 Precipitation package to operational NCCF.	1/2025	1/2025	1/2025	
Build an evaluation package to support development of ML-based products; evaluate the need for constructing a new a priori database to support GPROF algorithm	6/2025	L1b availability+ 4mo		Partially completed; awaiting L1b
Implement advanced microphysics in the preliminary AMSR3 SFR algorithm	6/2025	9/2025		Due the GOSAT-GW launch delay, focus is on implementing advanced microphysics for the operational satellites
Test and implement near real-time validation for AMSR3 precipitation product, develop AMSR3 long-term validation	9/2025	L1b availability+ 6mo		Awaiting L1b
Analyze AMSR3 measurements post-launch and perform radiometric bias correction	9/2025	L1b availability+ 4mo		Awaiting L1b

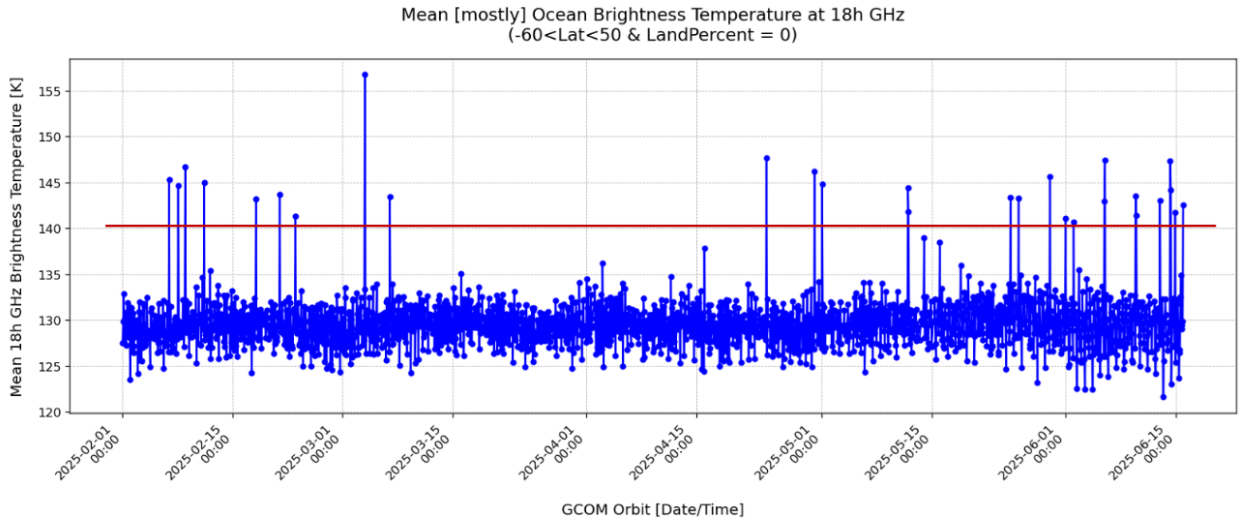
Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

Highlights:



Orbital mean 18h GHz TBs over ocean from 2025; the red line is the threshold for identifying orbits with erroneous geolocation.

GCOM-W/AMSR2 & AMSR3 Sea ice

Accomplishments / Events:

- AMSR3 proxy TBs continued assessment
- Continued validation and maintenance of operational algorithm
  - 24-hour field, updated with most recent swath
  - Total and multi-year concentration
- Algorithm enhancements in development
  - Software rewritten from C/Fortran into Python
  - Refactored to be more modular
- Validation data being prepared for further comparisons
  - Landsat
  - ICESat-2 concentration
  - Mooring data
- Preparation for AMSR3 – algorithm modifications, for intercalibration with AMSR2
- SSMIS ending July 31: AMSR2 and AMSR3 will continue long-term time series

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Continuing assessment of AMSR2	12/2024		Ongoing	
Recoding/refactoring software	9/2024		9/2024	
Initial software delivery for AMSR3	12/2024	2/2025	3/2025	
Delivery of further algorithm updates	5/2025	8/2025		

Overall Status:

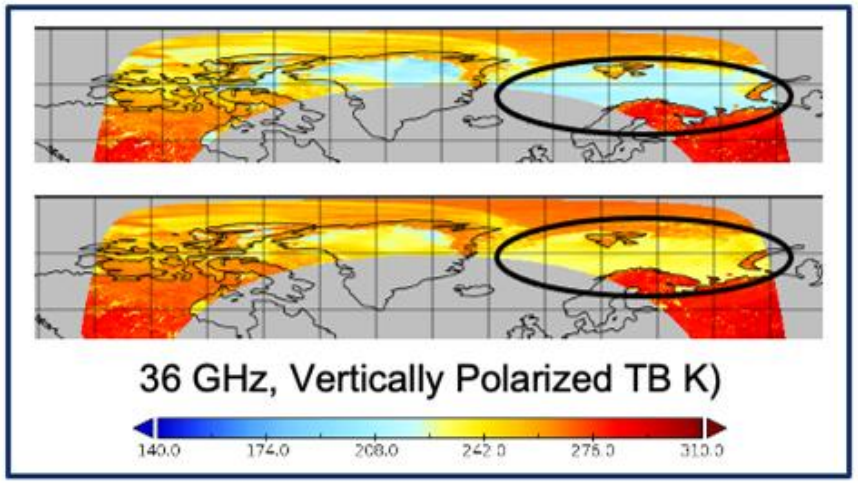
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic			x		Slight delay in code delivery (delivered 10 March
Schedule		X			

1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

Highlights:

AMSR3 proxy data downloaded and assessed. Initial indication that TB proxy data are very different from AMSR2 (e.g., circled region) and may not be realistic, but will investigate further



GCOM-W/AMSR2 & AMSR3 snow

June 2025

Accomplishments / Events:

- **In-Progress:** Training a new snow depth algorithm using the matchup satellite-reanalysis dataset
- **In-Progress:** Testing of the new snow algorithms for AMSR2 and AMSR3 using in situ snow data from GHCN-Daily
- **In-Progress:** AMSR2 and AMSR3 software upgrades

Major Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Testing of the new AMSR2 and AMSR3 SWE algorithm	**5/2025**		**5/2025**	
Training of the new snow depth algorithm for AMSR2 and AMSR3	**9/2025**			
Testing of the new Snow Depth/SWE algorithms for AMSR2 and AMSR3	**3/2025**			
AMSR2 and AMSR3 snow package deliveries	**5/2026**			

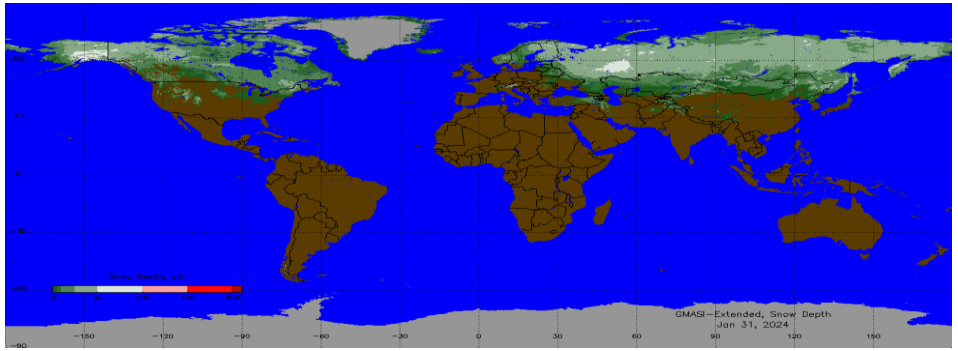
Overall Status:

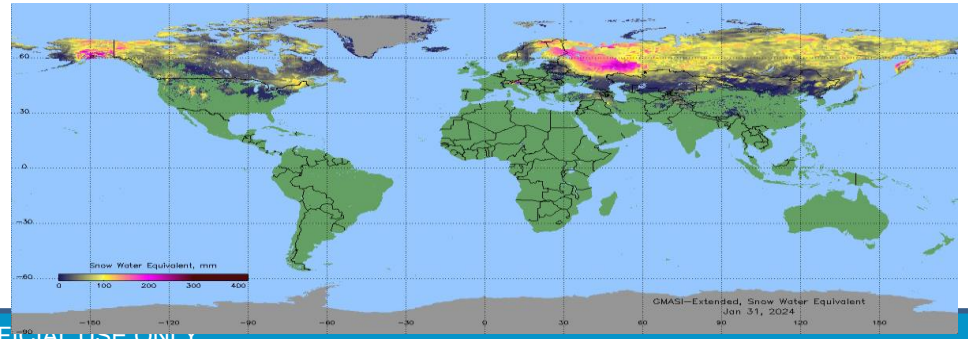
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

Highlights:





GOSAT-GW Schedule

Date	Event
June 9-13, 2025	Pre-launch testing on ASSIST side with the JAXA Executable. *If time allows they will also run current AMSR2/3 code. Either way STAR will pull the pre-launch output from ASSIST to SCDR for testing offline with their AMSR2/3 code.*
June 24, 2025	Launch - *ASSIST will have a version of the JAXA executable running in real time with results available to pull over to SCDR for core cal/val team members.*
September 2025	AMSR3 starts nominal operational mode (3 month commissioning phase for GOSAT-GW)
October 2025	CCAP delivery from ASSISTT to NCCF. *This is the point where the JAXA Executable and current AMSR2/3 Code will be available on NCCF Dev to start the move to NCCF UAT. The process to finish the promotion could take 1-4 months (1 month if the new Algorithm Orchestration functionality is working as anticipated and longer if it is not - this is a new capability)*
November 2025	Algorithms expected to be declared Beta and products can be made available to a wider cal/val team if JAXA concurs (otherwise products will stay with original core cal/val team).
December 2025	Initial L1 (brightness temperature) characterization against AMSR2 and GMI complete - *this is required for L2 algorithms to generate high quality products*
June 2026	Provisional Review for GOSAT-GW continuity products and products can be made available to user community. *Any updated Executables/LUTs will be provided from STAR to ASSIST*
July 2026	Implementation of provisional executables/LUTs on NCCF DEV by ASSIST
Aug 2026	Implementation of provisional executable/LUTs on NCCF UAT
Sep 2026	Implementation of provisional executables/LUTs on NCCF Ops, products made available operationally to user community

Maturity Review Schedule for GOSAT-GW satellite which is currently targeted for Monday, June 23, 2025, at 4:33 PM UTC (1:33 AM JST on June 24).

Sensor	Algorithm	Beta	Provisional	Validated
AMSR-3	GOSAT-GW: Microwave Imagery	Nov-2025	June-2026	Jun-2027
AMSR-3	GOSAT-GW: Sea Surface Temperature	Nov-2025	June-2026	Jun-2027
AMSR-3	GOSAT-GW:Sea Surface Wind Speed	Nov-2025	June-2026	Jun-2027
AMSR-3	GOSAT-GW:Total Precipitable Water	Nov-2025	June-2026	Jun-2027
AMSR-3	GOSAT-GW:Precipitation Type/Rate	Nov-2025	June-2026	Jun-2027
AMSR-3	GOSAT-GW:Cloud Liquid Water	Nov-2025	June-2026	Jun-2027
AMSR-3	GOSAT-GW:Sea Ice Concentration	Nov-2025	June-2026	Jun-2027
AMSR-3	GOSAT-GW:Sea Ice Type	Nov-2025	June-2026	Jun-2027
AMSR-3	GOSAT-GW:Snow Cover/Depth	Nov-2025	June-2026	Jun-2027
AMSR-3	GOSAT-GW:Snow-Water Equivalent	Nov-2025	June-2026	Jun-2027
AMSR-3	GOSAT-GW:Soil Moisture	Nov-2025	June-2026	Jun-2027
AMSR-3	GOSAT-GW:Snowfall Rate-new	Nov-2025	June-2026	Jun-2027

ICVS

June 2025

Accomplishments / Events:

- Continue the development of ICVS functional based product navigation page (new ICVS monitoring framework) as a complimentary navigation function to current satellite dependent product navigation page. The new navigation page can better support users to obtain target monitoring product information quickly. Use ATMS as example to demonstrate the idea and website design in ICVS-beta (Figure 1)
- Continue the operational testing of VIIRS striping index monitoring products. The previous package is a research code and need to be transitioned to ICVS operational package for NRT monitoring. Shown in Figure 2 is an updated NPP VIIRS striping trending of one POI area.
- Continue the development of a new OMPS vs. VIIRS inter-sensor comparison package to provide NRT OMPS and VIIRS science data quality monitoring capability in ICVS.
- Continue to work with STAR ITS and OCS NCCF system developers to set up NCCF environment for ICVS light transition project. Activate the IDL license and install scdr-files command line app in NCCF science sandbox EC2. Will set up the synchronization of STAR gitlab ICVS light to NCCF gitlab rep for additional testing.
- Update ICVS public website homepage to provide more accurate description of ICVS project.
- Worked with OSPO POC to verify the output data of delivered ATMS SDR processing package.

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Task/Milestone Description	Original Date	Completion Date	Variance Explanation
Identify ICVS-lite modules for transition to OSPO operational environment in coordination with OSPO	Nov-24	Nov-24	
Initialize new algorithms/functions to monitor SDR data quality in terms of requirements using NOAA-21 SDR data as test data sets	Feb-25	Feb-25	
Develop a new monitoring framework to improve timeliness and performance in preparation of J3/J4 missions	May-25	Jun-25	GRAVITE Decommission
Initialize an algorithm for estimating OMPS NM geolocation errors in the absence of VIIRS data from the same satellite	Aug-25		
Continue supporting NCCF cloud migration discovery activity: test the ICVS functions in cloud as needed	Sep-25		
Develop new ICVS algorithms\modules in support of future JPSS-04/03 missions	Sep-25		
Support JPSS spacecrafts and instruments recovery activities, JPSS data anomaly analysis activities by STAR SDR and EDR teams, JPSS flight , OSPO and NWP	Sep-25		
Maintain and sustain the LT ICVS product monitoring performance for SNPP, NOAA-20, NOAA-21, including 3D-ATMS-VIIRS SDR hurricane core observations	Sep-25		
Support STAR SDR calibration/validation activities, including innovation idea test, and LEO program's ad hoc requests (e.g., SDR data impact demonstration)	Sep-25		

Figure 1 ATMS function dependent new web page showing N21/N20/NPP ATMS global map in single page

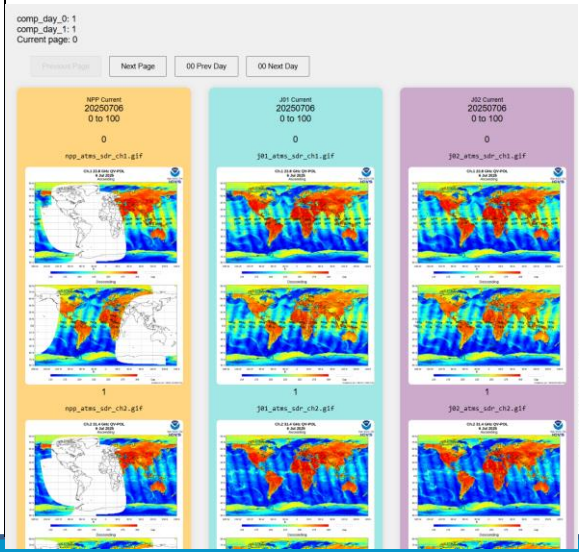
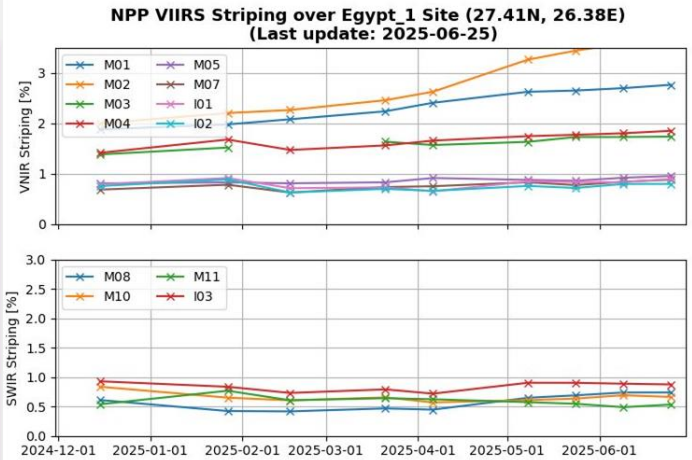


Figure 2 NPP VIIRS striping monitoring figures from one POI area



JPSS SDR Reprocessing Project

- Developed a preliminary cloud detection algorithm for OMPS NM SDR data. An example was given in slide # 2.
- Continued to improve the performance of DNN model to visually detect radiometric features of aerosols in the presence of large wildfires using OMPS NM radiance data above 310 nm (reprocessed and operational SDRs). The results are used to validate the calibration quality of mission-long reprocessed OMPS NM SDRs.

June 2025

Table 1. Milestones of JPSS SDR and VIIRS EDR reprocessing project for FY25

Milestones	Original Date	Forecast Date	Variance Explanation
Assess the quality and accuracy of one-year reprocessed cloud base height and cloud top height EDRs	Dec-24	Dec-24	
In coordination with STAR SDR and IT teams, work out a plan about reprocessing (SDR team), post-processing and archival of SNPP and NOAA-20 SDR data, computing resource, data storage, etc.	Mar-25		
Complete post-processing for available newly reprocessed SNPP (e.g., OMPS NP SDR with new cal. Alg. improvements) and 1st reprocessed NOAA-20 SDR data, including coordination with the CLASS team for (new) requirements in meta data, file naming convention, format, delivery schedule, etc.	Jun-25	Aug-25	
Develop assessment methods for LTM calibration-consistent SDR data sets (e.g., OMPS NM SDR), including discovering scientific value of the data sets	Aug-25	Jun-25	
Work out an archival working plan for (newly) reprocessed SNPP (if applicable) and NOAA-20 SDR data, in coordination with the CLASS team	Sep-25		
Technical analysis and reports per ad hoc request from JPSS and STAR management, including monthly report	Sep-25		

Overall Status: the milestone in June was postponed due to it low priority, per the sensor branch Chief's request. So, the milestones in June and August are suggested to be exchanged

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic				X	
Schedule			X		

1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
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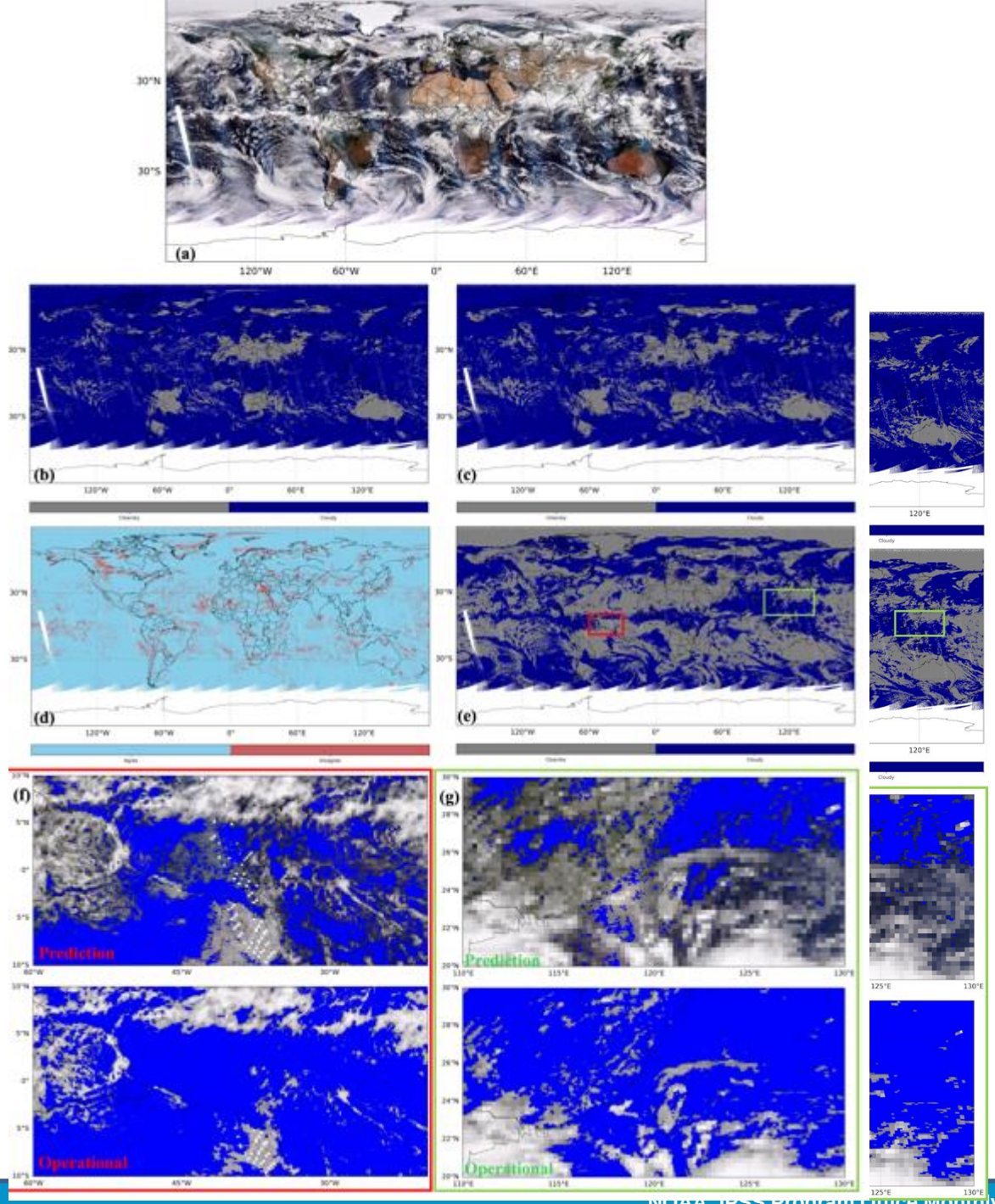


Prediction results for April 11, 2025:

(a) daytime true color image derived from red, green and blue bands of VIIRS;

(b) truth OMPS-NM clear-sky scenes identified by VIIRS cloud mask;

(c) predicted OMPS-NM clear-sky scenes by DNN. Model;

(d) comparison between (b) and (c);

(e) cloud mask derived from cloud fraction data of NOAA's operational OMPS-NM total column Ozone product;

(f) and (g) are the zoom-in visualizations of the comparisons between the model prediction and OMPS-NM operational cloud data with VIIRS true-color image as base layer for the two highlighted regions shown in (e), the blue regions are clear-sky FOVs identified by the two methods.

Microwave Sounding Temperature Reprocessing Project

June 2025

Accomplishments / Events:

- Completed May to June monthly updates and delivery of reprocessed Microwave Sounding Temperature (MST) Products to NCEI
- Continued working on reprocessing the S-NPP and N20 ATMS measurements into the daily gridded MST data for NCEI delivery, data quality check and data analysis.
- Supported the user engagement with EMC and CPC users (an example is given in slide #4).

Milestones	Original Date	Forecast Date	Variance Explanation
Monthly processing and update of reprocessed ATMS microwave sounding temperature (rMST) data products	Sep-25	On schedule	
Explore impacts of ATMS rMST products in observing severe weather events	May-25	May-25	
Evaluate bias drifts and inter-sensor biases in SNPP and NOAA-20 ATMS TDR/SDR data sets to produce quality-consistent rMST data set, in coordination with SDR/ICVS teams; perform recalibration if necessary	Aug-25	Aug-25	
Maintain and sustain the website titled with NOAA Satellite ATMS/AMSU-A Reprocessed Microwave Sounding Temperature Quality Assessment System (rMST-QAS)' (https://www.star.nesdis.noaa.gov/smcd/emb/msas/msas.php)	Sep-25	Sep-25	

Overall Status:

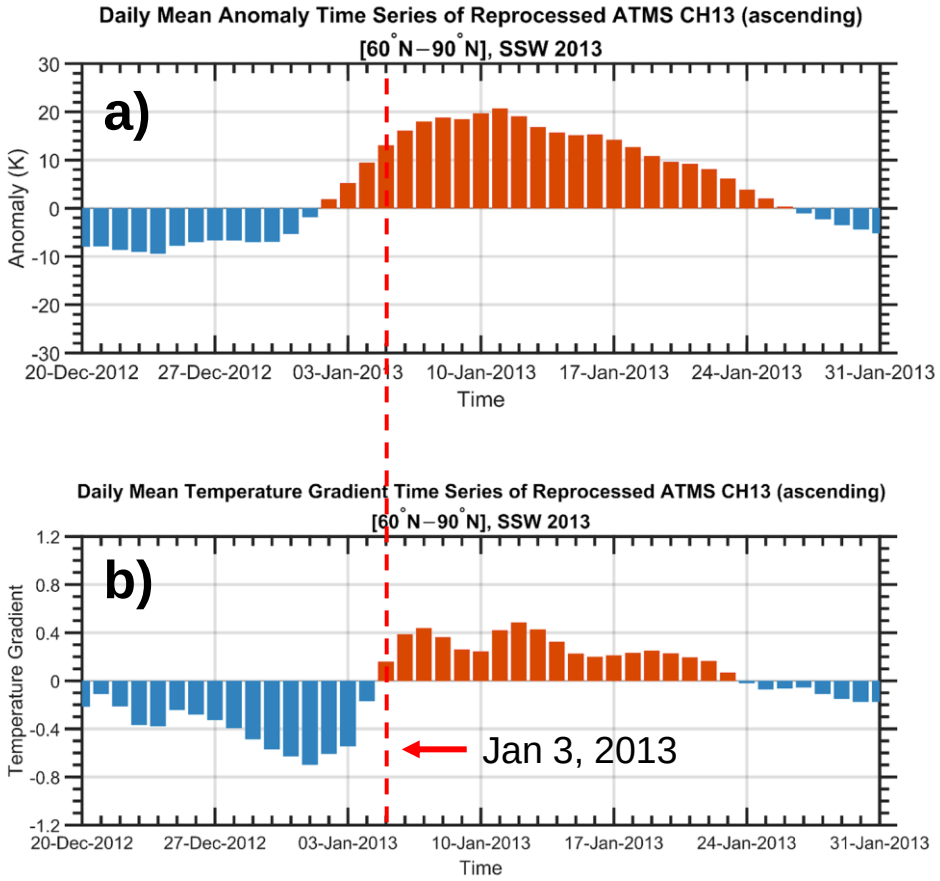
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

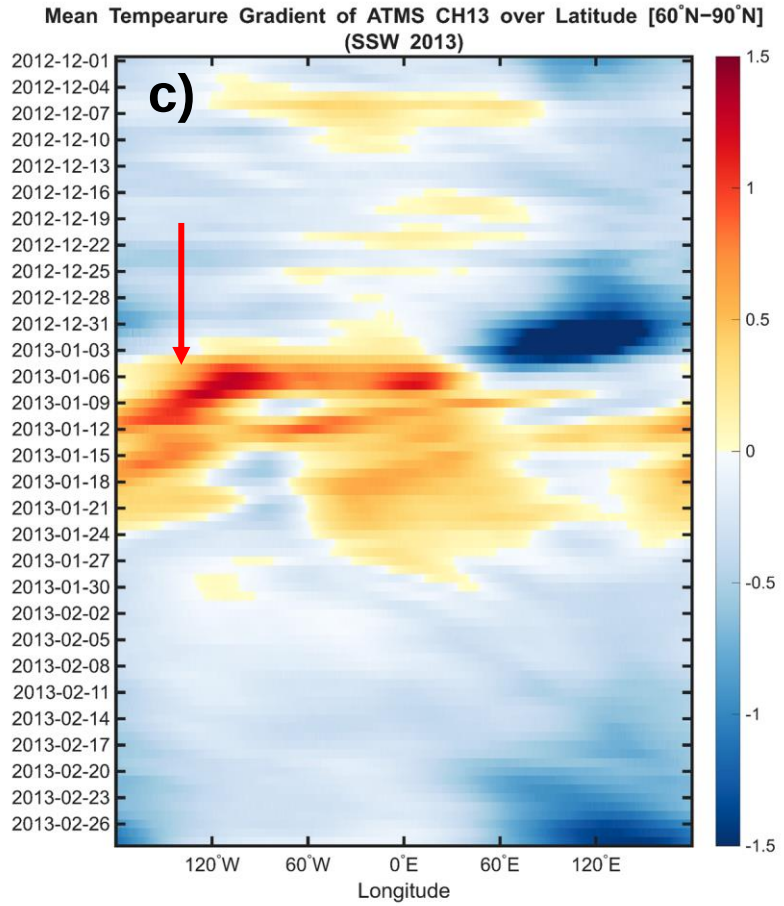
Issues/Risks: None

Applications – Sudden Stratospheric Warming (SSW) Detection: SSW 2013

- SSW 2013
  - Anomaly depends on the time period for getting mean temperature (figure a).
  - Use meridional gradient of temperature can determine onset time more conveniently (figure b), get the same onset time with previous studies (Li et. 2023).



SSW detection with anomaly (a) and meridional gradient (b) of ATMS CH13 brightness temperature



Spatial pattern of meridional gradient of ATMS CH13 brightness temperature

Land Surface Temperature

June 2025

Accomplishments / Events:

- Finalized the PMR slide for VIIRS LST EDR.
- For the all-weather LST: The training science code for LST calculation was updated using modified model parameters. A revised loss function incorporating a bias constraint was tested to jointly optimize RMSE and bias. The new model was validated using real observation data. The finalized training code and associated technical documentation have been completed. Preparation of a manuscript summarizing the development and evaluation of the VIIRS all-weather LST product is underway..
- Further updates to the M-band and I-band LST subset generation: The source of granule overpass information was switched from LTM to M-band L2 subset data to improve consistency. SDR data retrieval has been migrated from SCDR to AWS. Station coverage was expanded to include additional networks, such as UrbanNet and NEON. A software issue related to AWS S3 file system cache updates was identified and resolved. Historical data processing for all three satellites has been completed, and the cron job for routine data generation has resumed normal operation.
- The day/night flag strategy was investigated in preparation for LST reprocessing

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic					
Schedule	X				

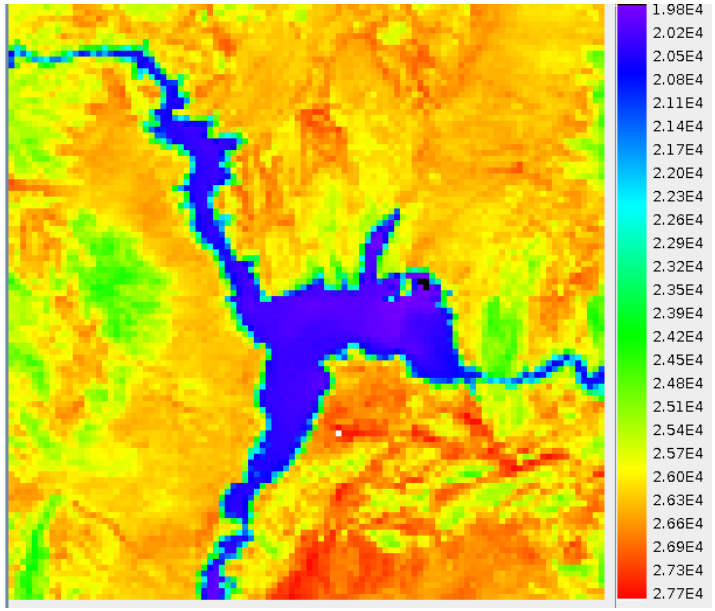
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
N-21 LST data monitoring, consistency and performance evaluation	**Oct-24**	**Dec-24**	**Dec-24**	
L2 & L3 SNPP, NOAA-20 annual validation practice	**Dec-24**	**Jan-25**	**Jan-25**	
Initial Delivery - All weather LST	**Sep-24**	**Jan-25**	**Jan-25**	
Support to JPSS-3 Data System Test Event	**Jan-25**	**Apr-25**		**Upon the availability of J-3 proxy data**
I-band LST validation and applications	**Oct-24**	**May-25**	**May-25**	
All weather LST validation and improvement	**Jan-25**	**Aug-25**		
Monitoring and Anomaly watch, analysis and report	**Oct-24**	**Sep-25**		

Highlights:



Updated I-band VIIRS LST

The image presents the I-band NOAA-21 VIIRS LST subset data over the Vbba3 station in the NDBC network on 2025-06-11 at 20:32 UTC.

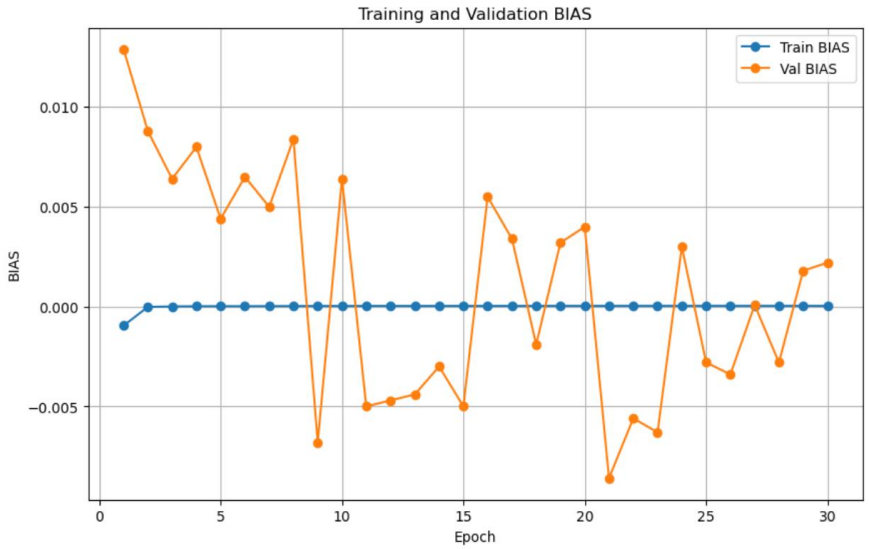
Bias-Constrained Loss Function for Improved Model Stability

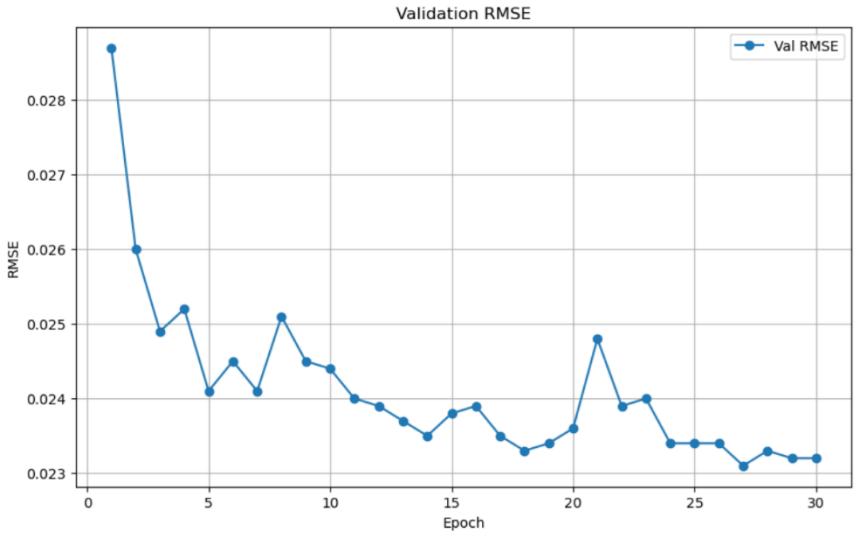
				Day			Night	
Loss	**Epoch**	**Model**	**Bias**	**RMSE**	**STD**	**Bias**	**RMSE**	**STD**
Mean Square Error	8	**Model 3**	**0.4**	**4.3**	**4.3**	**-0.3**	**3.6**	**3.6**
RMSE + 0.1 * abs(bias)	8		**-0.5**	**4.4**	**4.4**	**-0.9**	**3.7**	**3.6**
RMSE + 0.5 *abs(bias)	8		**-0.5**	**4.3**	**4.3**	**-0.3**	**3.6**	**3.6**
RMSE + abs(bias)	8		**-0.7**	**4.4**	**4.3**	**0.6**	**3.7**	**3.6**
RMSE + 0.1 *square(bias)	20		**0.3**	**4.4**	**4.4**	**0.4**	**3.6**	**3.6**
RMSE + 0.2 *square(bias)	20		**-0.4**	**4.3**	**4.3**	**-0.2**	**3.5**	**3.5**
RMSE + 0.1 * abs(bias)	30		**0**	**4.2**	**4.2**	**0.1**	**3.5**	**3.5**

- Several experiments were conducted to evaluate a revised loss function that incorporates both RMSE and bias constraints for improved model stability.
- Multiple weighting combinations between RMSE and bias were tested under various training epochs to assess their influence on model performance.
- As shown in the table, extending the number of training epochs effectively reduces the overall bias, particularly under nighttime conditions. For example, the model trained with the loss function RMSE + 0.1 * abs(bias) and 30 epochs achieved near-zero bias (0.0 day / 0.1 night), without sacrificing RMSE or STD.
- It is important to note that these evaluation statistics are based on simulations where clear-sky LST is used to estimate cloudy-pixel values. Therefore, they reflect the performance of the cloud-filling algorithm rather than the intrinsic performance of the native VIIRS LST under clear-sky conditions

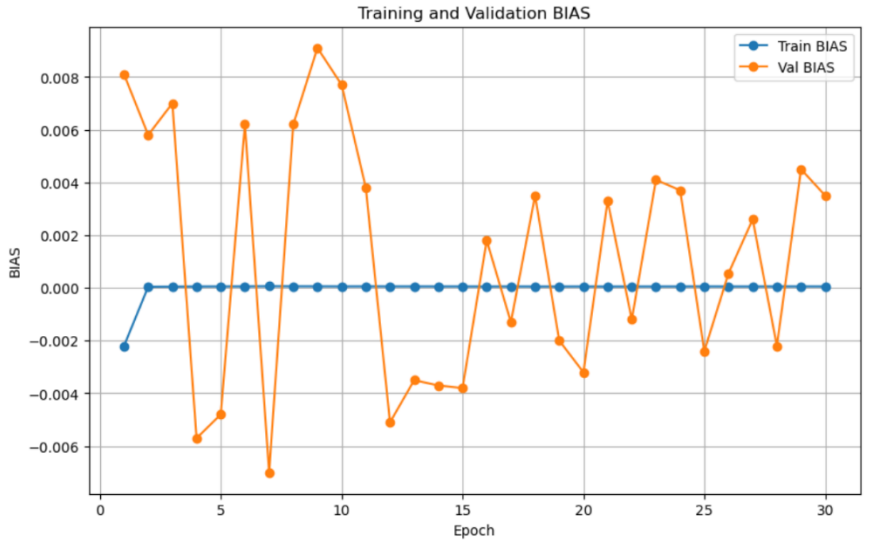
Bias-Constrained Loss Function for Improved Model Stability

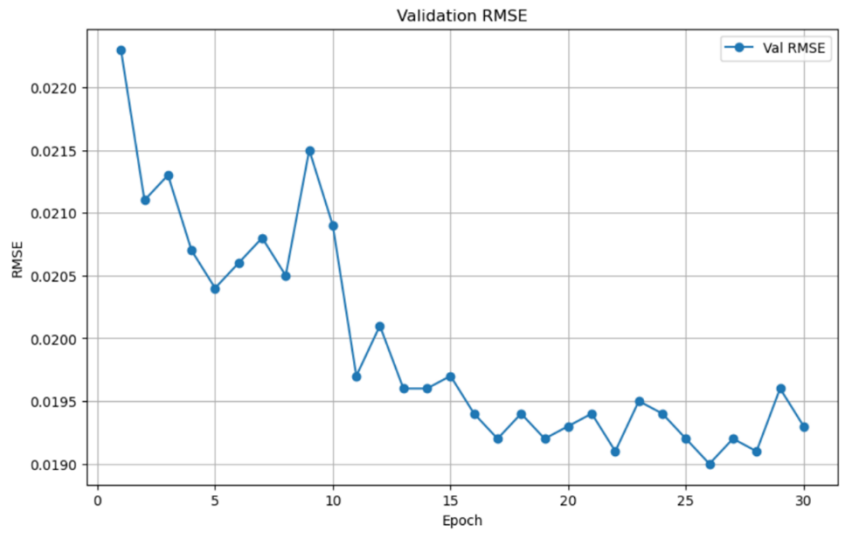
Day





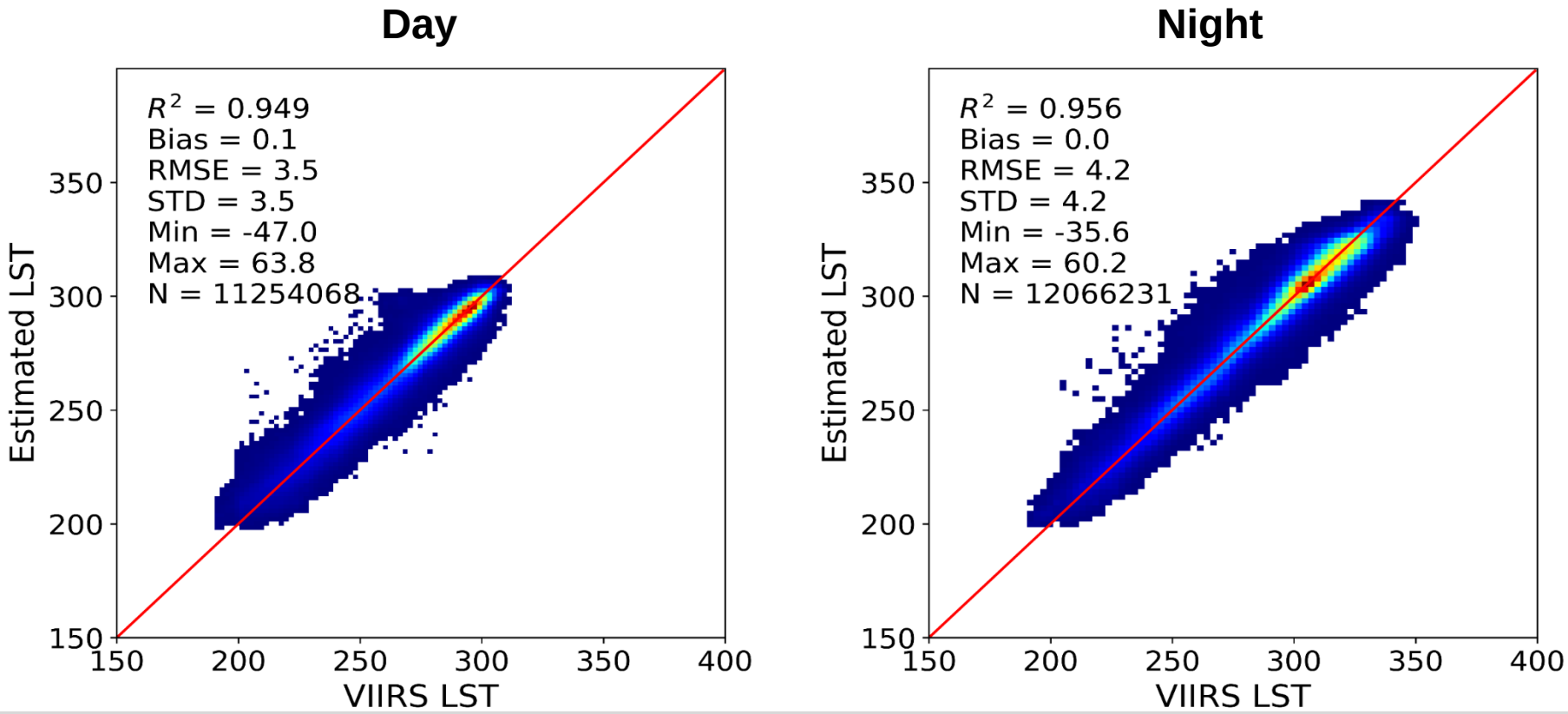
Night





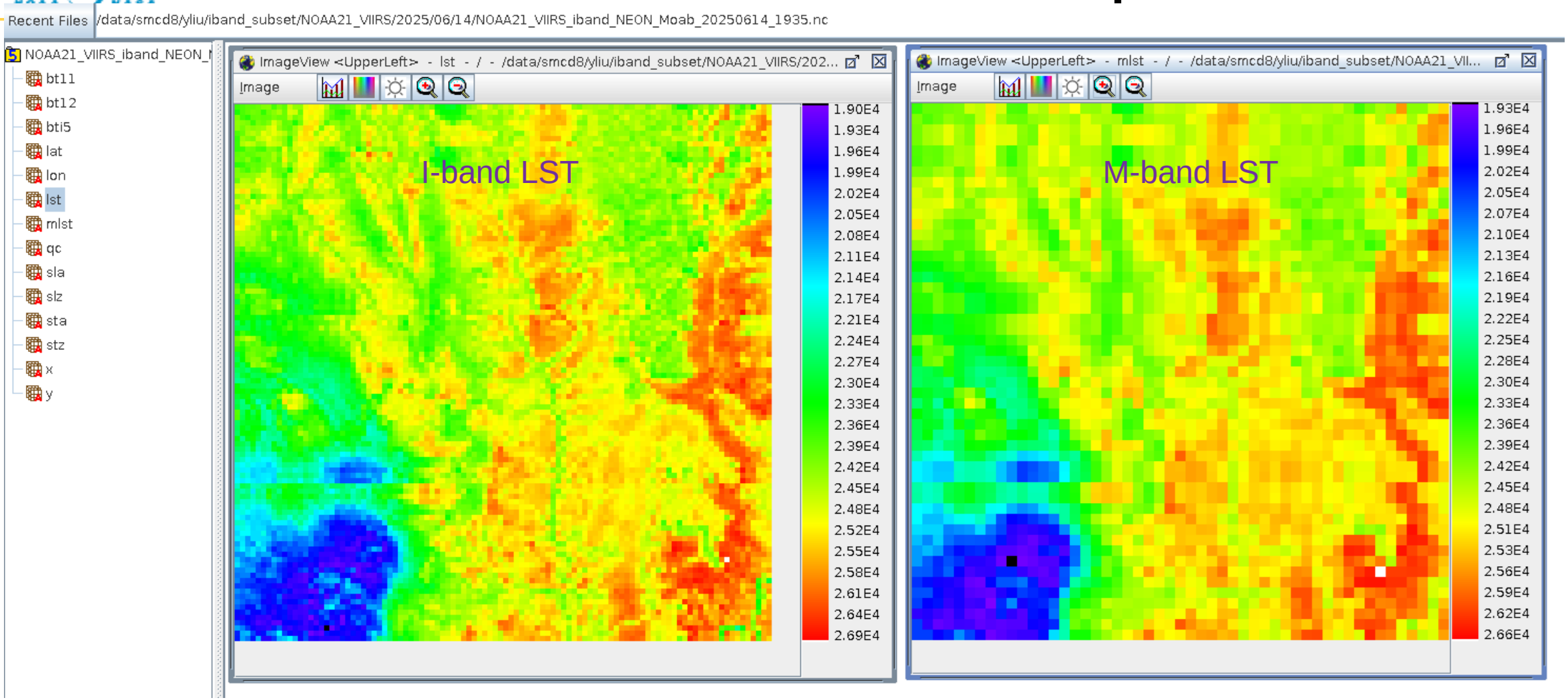
- To improve the stability of model predictions, we conducted a series of tests incorporating a bias constraint into the loss function.
- Several weighting factors for the bias term were evaluated (i.e., 1.0, 0.5, 0.2, and 0.1), and the number of training epochs was increased to enhance convergence. Among all tested configurations, the combination of a bias weighting of 0.1 and 30 training epochs yielded the best performance in terms of both RMSE and bias stability.
- The accompanying figures illustrate the evolution of RMSE and bias throughout the training process, highlighting the effectiveness of the modified loss function in reducing bias fluctuation while maintaining overall accuracy.

Bias-Constrained Loss Function for Improved Model Stability



- Among all tested configurations presented in the tables on slide 2, the combination of a bias weighting of 0.1 and 30 training epochs yielded the best performance in terms of both RMSE and bias stability.
- Above two figures shows the prediction error between the VIIRS LST and estimated LST for daytime (left) and nighttime(right). Both bias and RMSE are improved compared to those of the previous model.
- It is important to note that these evaluation statistics are based on simulations where clear-sky LST is used to estimate cloudy-pixel values. Therefore, they reflect the performance of the cloud-filling algorithm rather than the intrinsic performance of the native VIIRS LST under clear-sky conditions.

I-band LST Subset Data Update



- The I-band LST subset data is available for three satellites — S-NPP, NOAA-20, and NOAA-21 — up to the present.
- The ground data network has been extended to include UrbanNet and NEON.
- The input data for I-band LST calculation is obtained from AWS.

Leaf Area Index

June 2025

Accomplishments / Events:

- Continue developing the temporal smoothing and gap-filling algorithm, with a primary focus on phenology model climatology. Use the MODIS phenology product as a first guess to enhance model fitting efficiency and address fitting failures to produce gap-free datasets.
- Evaluate the operational LAI product by investigating issues reported through OSPO monitoring and diagnosing potential causes and solutions.
- Deploy local LAI monitoring tools and display results on the website through animations for visual inspection.
- Continue mentoring the summer intern, focusing on leveraging high-resolution Landsat/Sentinel-2 data to bridge and generate globally distributed training datasets, calibrated with ground measurements from GBOV.

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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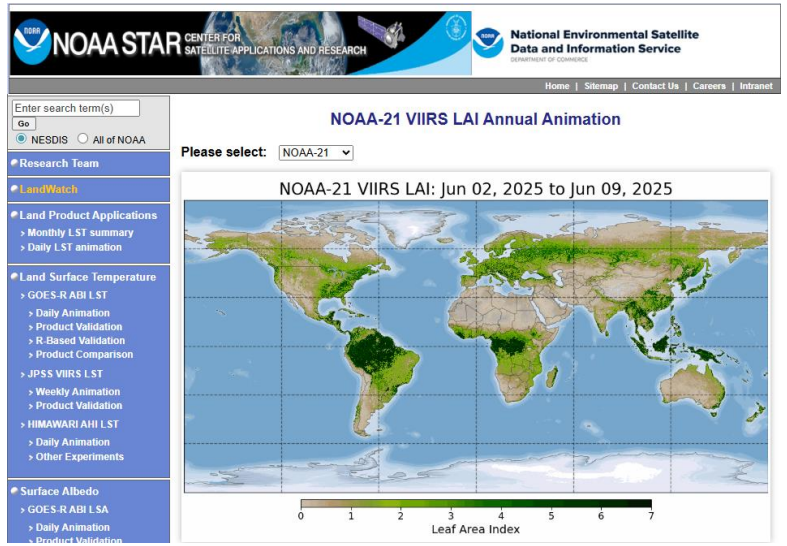
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Develop LAI routine monitoring and validation tool	Sep-24	Sep-24	Sep 27, 2024	
Apply the LAI routine monitoring and validation tool on the operational product	Dec-24	Dec-24	Jan 31, 2025	Operational test data postponed
LAI operation data verification and adjustment	Mar-25	Mar-25	Mar 11, 2025	
LAI product in-situ validation & inter-comparison with other products	Jun-25	Jun-25	June 27, 2025	
Incorporate the LAI test data into the LSM model to evaluate the performance in the model	Jun-25	Aug-25		
Algorithm & product improvement according to the validation and model test.	Sep-25	Sep-25		

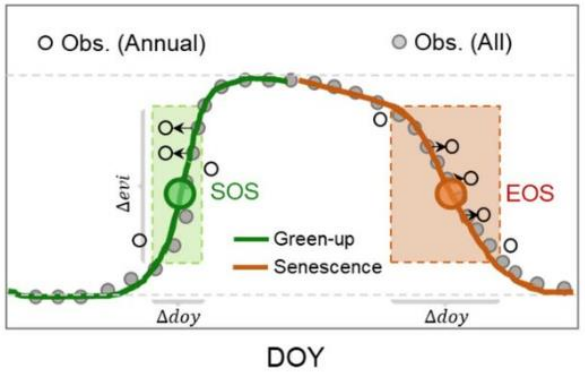
Highlights:



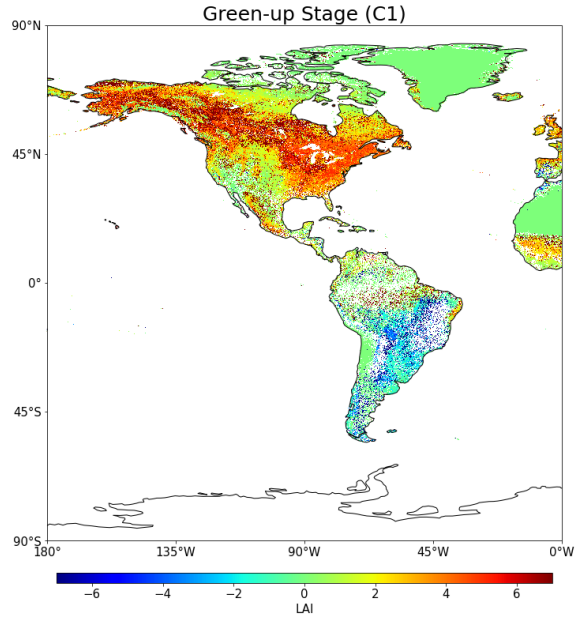
The LAI monitoring website is release for product demonstration and visual check, routine validation and evaluation is under development

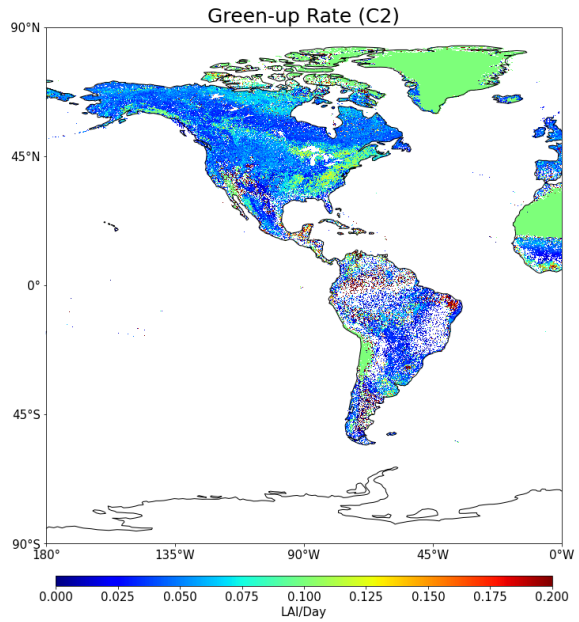
Phenology Model Climatology Generation

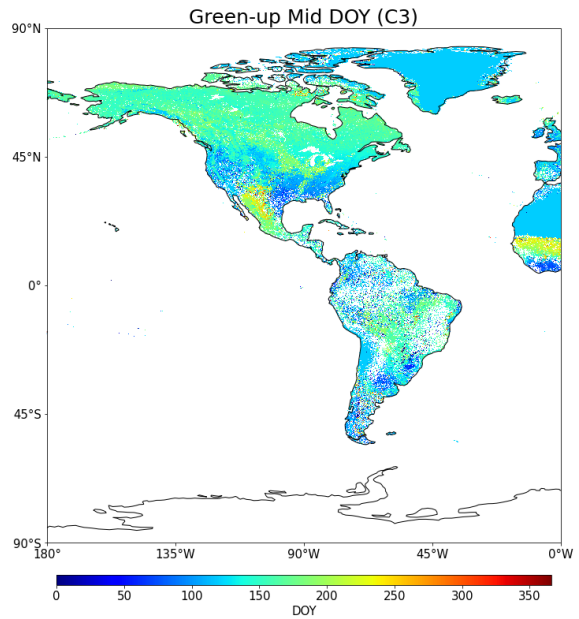
June 2025

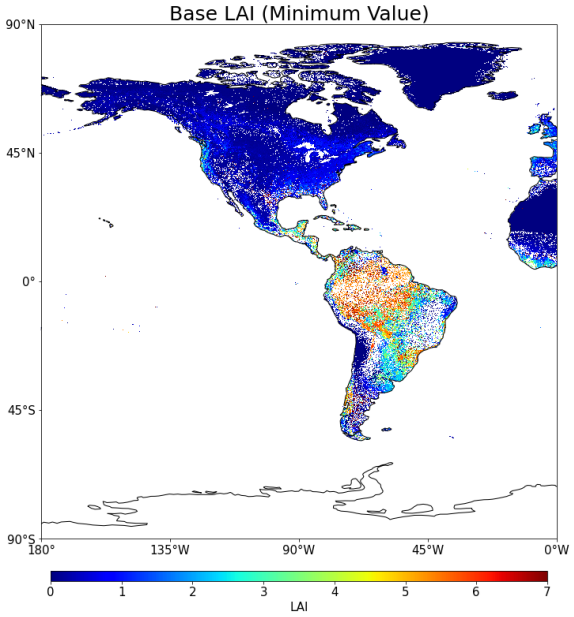


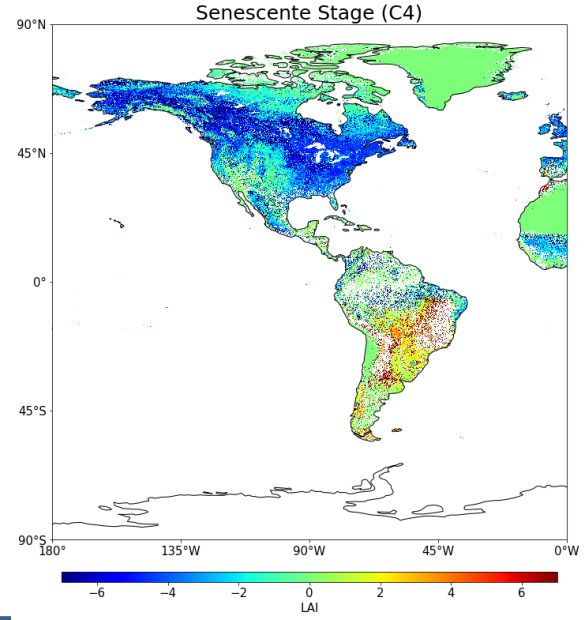
Model: LAI = LAI0 +
(c1 / (1 + exp(-c2 * (DOY - c3))))
+
(c4 / (1 + exp(-c5 * (DOY - c6))))

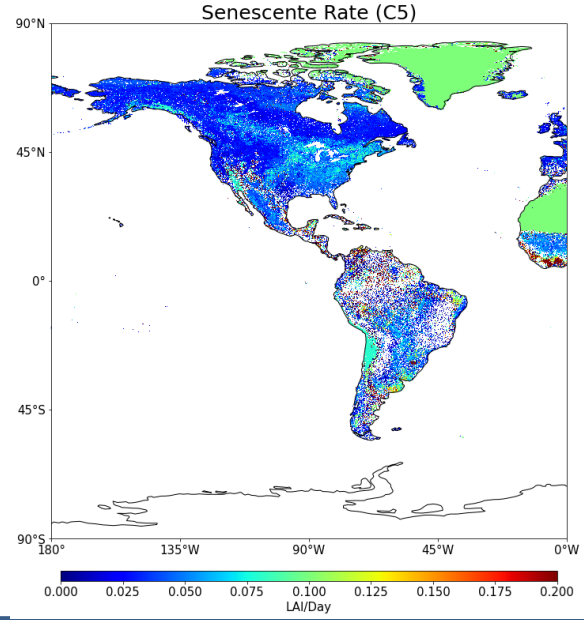


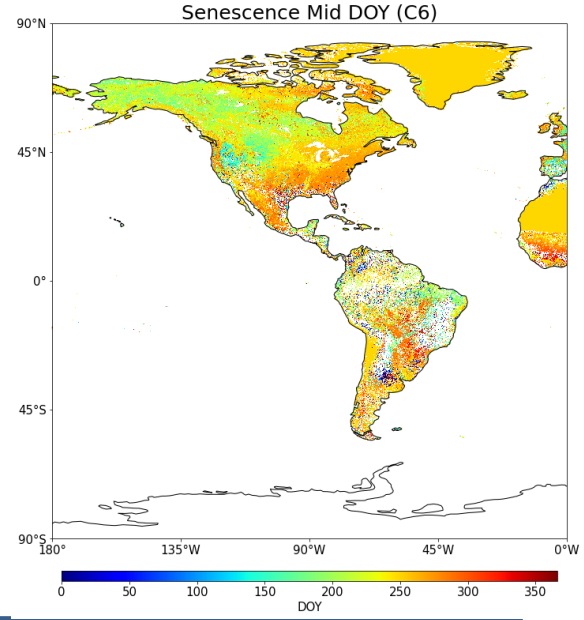






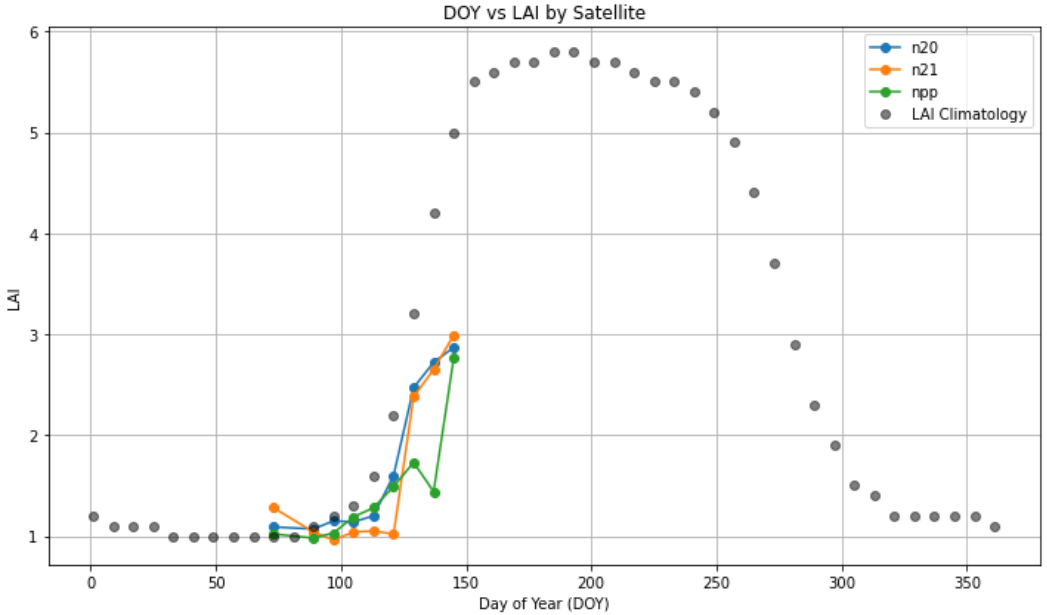






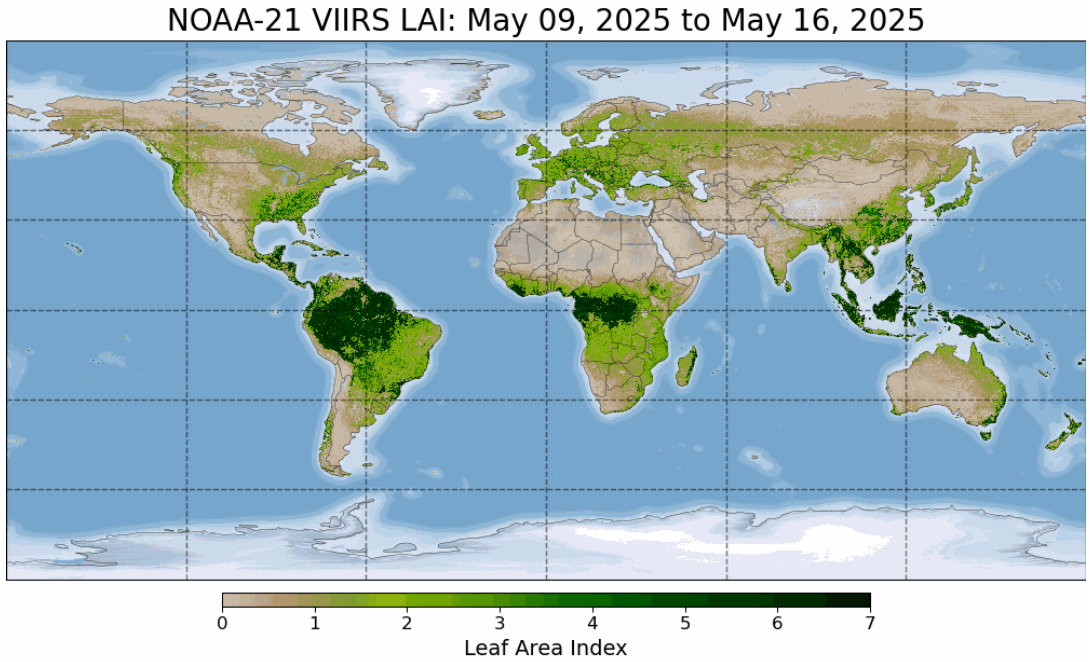
LAI Product Verification and Monitoring

- **Issue found in monitoring**
  - Bias percentage increase from -5% to -10%
- **Possible reason**
  - The current smoothing method using too much weight for the previous date, for fast growing season, the LAI will be underestimated.
- **Proposed solution**
  - Use the new temporal smoothing algorithm (Site tested, need global test).



SNPP, N20 & N21 Operational LAI time series compared with climatology

- **Monitoring Website**
- Operational LAI are routinely updated through the NOAA STAR website for result demonstration and visual check. (https://www.star.nesdis.noaa.gov/smcd/emb/land/animation.php?sat=JPSS2&product=LAI#)
- The routine evaluation is under development, including inter-comparison with existing product and climatology, and in-situ validation.



LEO QuickSounder ATMS SDR

June 2025

Accomplishments / Events:

- Made progress on developing an ATMS noise monitoring tool using ATMS warm load calibration target. Figure 1 shows total, flicker, and thermal noise from S-NPP channels 16 and 17. The noise exhibits stability over the 2 months analyzed (April 2025 - June 2025).
- Finished weighting function evaluation using CRTM V3 for Microwave Sounders. Calculated the weighting functions of tomorrow.io microwave instruments using CRTM coefficients provided by tomorrow.io. Finished the channel matchup between tomorrow.io and ATMS for the SNO inter-sensor comparisons. Figure 3 shows examples of tomorrow.io's weighting functions compared to ATMS weighting functions for two sample channels.
- Reviewed the QS ATMS calibration data handbook and provided feedback.
- Continued development of ATMS reflector emissivity calculation tool. Preparing initial ATMS emissivity values to be tested with the operational ATMS calibration algorithm. Some results from the initial version of the ATMS reflector emissivity calculation tool are shown in Figures 2 and 3 for the NOAA-20 ATMS.
- Continued work on the ATMS Antenna Pattern Correction (Fig.4) and examined the role of potential spurious Earth/satellite contributions (via sidelobes) to the data used to derive reflector emissivity.

Milestones	Original Date	Actual Date	Variance Explanation
QS Algorithm Package Delivery #1 to LEO Ground (post Instrument-Level TVAC assessment)	Nov-24	Nov-24	
QS Pre/Post-launch Cal/Val Plan	Jan-25	Jan-25	
Identify updates to the web-based Integrated Calibration and Validation System (ICVS) and provide scheduled to perform the updates	Apr-25	Apr-25	
QS Algorithm Package Delivery #2 to LEO Ground (post Observatory Environmental Testing assessment)	Jul-25		
Instrument-Level TVAC assessment to process the TVAC data, generate the calibration parameters, and develop and test calibration updates	Sep-25		

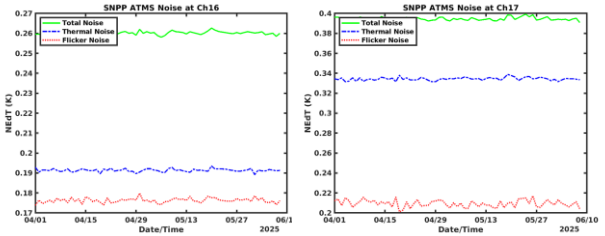
Overall Status:

	Green1 (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic			x		See Issues/Risks
Schedule			x		See Issues/Risks

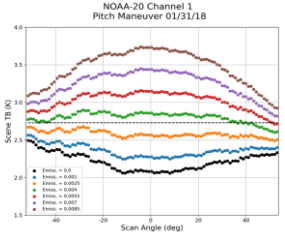
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks: **The lack of a computer environment that can handle CUI information and the need of ADL with QS restricts STAR's ability to support QS pre-flight activities. Options are being explored, including a potential CUI server that has an ETA of August.**

Highlights:

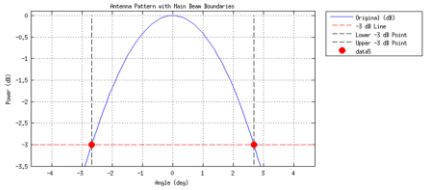


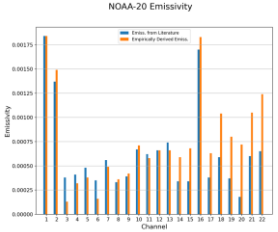
(1) S-NPP Noise time series for channels 16 (left) and channel 17 (right)



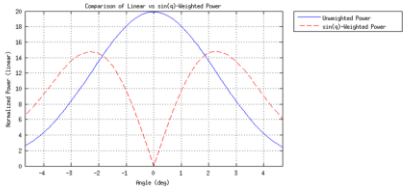
(2) Pitch maneuver Ta vs. FoV curves for NOAA-20 Ch. 1 corrected using the ATMS emissivity calculation tool assuming various emissivities

(3) Comparison of NOAA-20 ATMS emissivity reported in current literature (blue) with calculated emissivity using an initial version of the ATMS reflector emissivity calculation tool (orange).





(4) Computation of the Main Beam for the Antenna Pattern Correction



MiRS Products

June 2025

Accomplishments / Events:

- Since the initial capability delivered in 2007, the MiRS team has successfully implemented many satellite microwave instruments including AMSU-A/MHS on NOAA-18, NOAA-19, Metop-A, Metop-B, and Metop-C, SSMIS on F-16, F-17, F-18, and F-19, GMI on GPM, and ATMS on SNPP, NOAA-20, and NOAA-21, and etc. With the era of new satellite microwave measurement (traditional or unique channel selections: additional frequencies or different polarization) coming such as Metop-SGA1 MWS, QuickSounder ATMS EDU and many smallsats including TROPICS, tomorrow.io, it would be necessary and interesting to investigate how much information content is included for each satellite microwave instrument. Therefore, MiRS team is preparing a study to compare the information contents of the satellite microwave instruments it supports. The efforts will include the Averaging Kernel calculation. Averaging Kernel quantifies the information content of optimal estimation retrieval systems and are key in understanding retrieval uncertainty and error which would be beneficial for the NWP data assimilation and the weather forecast. As one of the continuing efforts, an example of the Averaging Kernel for N20 ATMS is included and the diagnostic analysis will be extended to more satellites and instruments.

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget	x				
Technical / Programmatic	X				
Schedule	x				

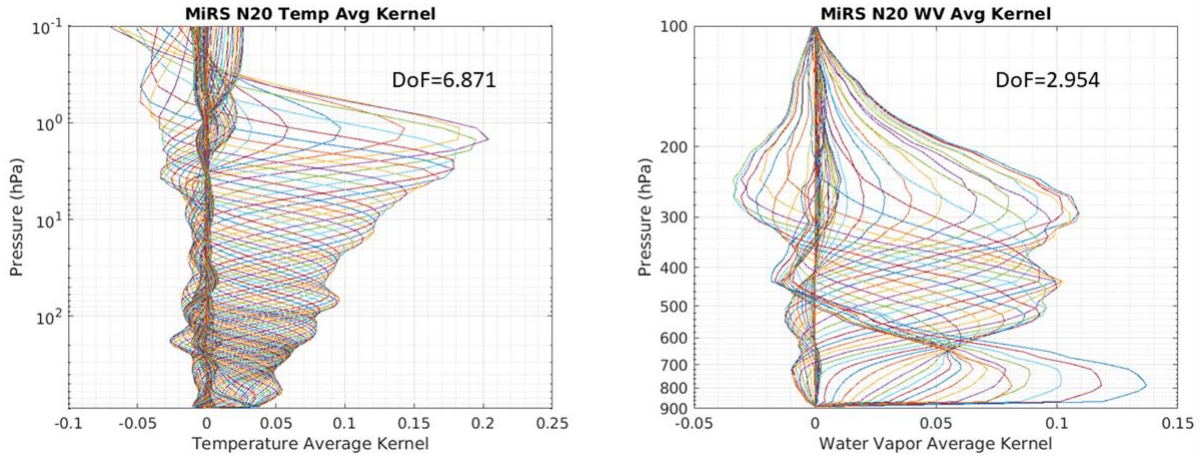
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
The MiRS system currently uses the CRTM version 2.1.1 forward operator in its physical retrievals. The CRTM version was released 10 years ago. The newly released CRTM version 2.4.0 includes the new science improvement. However, the CRTM version doesn't have the jacobian for the surface emissity which is specific component for the MiRS. The team will add the specific part to the CRTM for the MiRS.	*Jul--2025*			
Develop and evaluate AI/ML MiRS post-processing for precipitation over CONUS and global SST retrieval improvement	*Sep-2025*			

Highlights:



An example of Averaging Kernel of (a) temperature and (b) water vapor using the MiRS N20 ATMS retrieval. Y-axis is in log-scale.

NOAA Products Validation System (NPROVS) and JSTAR Mapper/STEMS

June 2025

Accomplishments / Events:

- NPROVS collocations were reprocessed from May 2024 through May 2025 to apply a new thinning technique to high-resolution radiosonde profiles. (see attached PDF)
- Data from GOES G16, GOES G18 and GOES G19 are being collocated within NPROVS.
- Data from STAR COSMIC-2 are being collocated within NPROVS.
- GCOM AMSR2 Sea Ice Concentration was added to JSTAR Mapper as part of site wide review.
- IDL scripts that were part of the NPROVS special process were replaced with Python scripts having the same functionality

Overall Status:

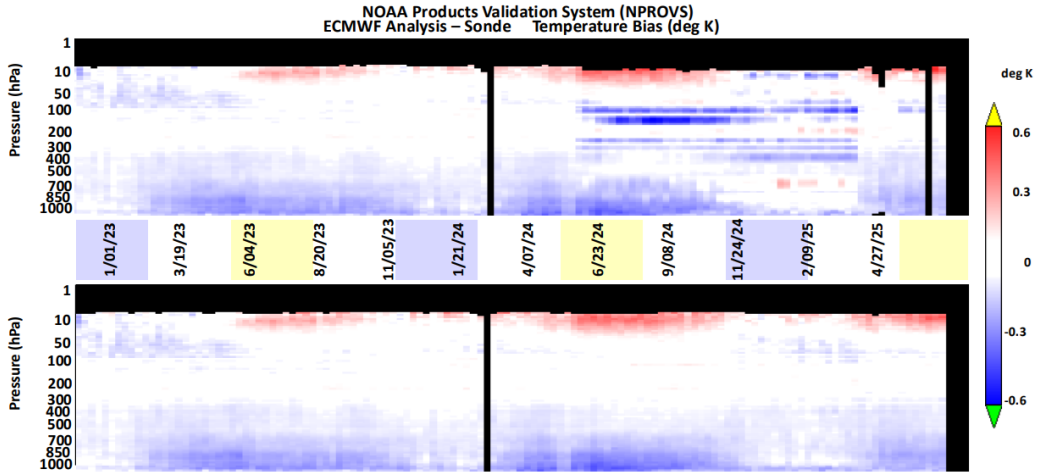
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks: None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Conduct Site Wide Review of image tiles for JSTAR Mapper	**Q3**	**Q3**	Q3	
JSTAR mapper review and evolution to STEMS	**Q4**	**Q4**		
Dedicated Radiosonde Programs: 1) DOE/ARM to include new BNF site in Alabama, 2) AEROSE 2025 campaign support	**Q3**	**Q3**		
Cal/Val including NUCAPS / MiRS 1) routine monitoring and 2) severe weather case studies	**Q4**	**Q4**		

Highlights



Result of applying a new thinning technique to high-resolution radiosondes prior to their use within NPROVS. NPROVS initially had trouble handling high-resolution radiosondes which resulted in poor quality statistics (top) from May 2024 to March 2025. A technique to thin the radiosonde profiles was implemented and collocations for the bad period were reprocessed (bottom)

OMPS SDR

June 2025

Accomplishments / Events:

- Derived and delivered OMPS weekly dark LUTs for 3 NPs and NMs.
- Derived and delivered OMPS solar bi-weekly LUTs for 3 NPs.
- Validated the new N20 OMPS NM 139CT SDR data set product using CRTM (see Figure on the right right).
- Developed a preliminary Stray-Light LUT for JPSS-04 OMPS NM.
- Continued to routinely monitor OMPS Dark, Linearity, and Gain measurements.
- Continued analyzing the SNPP OMP NP and NM solar flux data sets to quantify the degradation feature of the instrument.
- Tested a new cloud detection algorithm in CRTM OMPS O – B computations.
- Investigated the root cause in sudden jumps of OMPS NM SDR long-track wavelength shifts.

	Milestone	Finish	Deliverable
1	Complete the JPSS-4 OMPS SDR calibration plan	Oct-24	JPSS-4 OMPS SDR calibration plan
2	Complete the solar activity adjustment analysis for SNPP, NOAA-20 and NOAA-21 OMPS NP (part of DR10832)	Dec-24	Software; new OSL tables; reprocessed OMPS NP SDR test data sets;
3	Complete beta version of JPSS-04 OMPS nadir sensor pre-launch analysis report	Jan-25	JPSS-04 OMPS analysis report
4	Complete delta review for J4 OMPS NM SDR algorithm	Feb-25	J4 OMPS NM SDR algorithm report
5	Derive new wavelength and stray light LUTs for NOAA-20 medium resolution SDR data, including verification and validation of the LUTs	Apr-25	New LUTs to generate NOAA-20 NM SDR high resolution of test data sets
6	Complete test and verification of 139CT-NOAA-20 OMPS NM SDR data sets using new NOAA-20 OMPS SDR LUTs (e.g., WV and SL LUTs)	May-25	139CT-NOAA-20 OMPS NM SDR test data sets
7	Validate 139CT-NOAA-20 OMPS NM SDR data towards validated maturity review	Jun-25	A delta validated maturity review is delayed to August to figure out an optimal approach for implementation
8	Develop proxy calibration coefficient LUTs to support JPSS-4 OMPS NM SDR processing with a new wavelength range from 380 to 439nm	Jul-25	Various proxy calibration coefficient LUTs for JPSS-04 OMPS NMs
9	Complete the degradation analysis for SNPP, NOAA-20 OMPS NP (part of DR10832) and NM (a new DR is needed)	Jul-25	New solar wavelength and flux tables; reprocessed test data sets for OMPS EDR team
10	New (3rd) reprocessing of SNPP OMPS NP SDR data, by implementing new dark correction, solar activity adjustment, and degradation correction	Aug-25	Mission-long calibration-improved SNPP OMPS NP SDR data sets
11	Establish an off-line OMPS SDR processing package in order to meet new requirements in future JPSS-03 and JPSS-04 missions	Aug-25	An off-line OMPS SDR processing ADL package applicable for future JPSS-03 and JPSS-04
12	Continuous radiometric data quality stability validation analysis across SNPP/NOAA-20/NOAA-21 OMPS NM and NP instruments: e.g., SL correction model standardization/accuracy improvements; wavelength shift gradient impact mitigation; new validation methods; new inter-sensor comparison methods/assessments	Sep-25	New/improved calibration methods; new/improved validation methods; Quality-improved OMPS SDR data
13	Support CRTM-VLIDORT project for OMPS radiance simulations	Sep-25	Test results

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule			x		

1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
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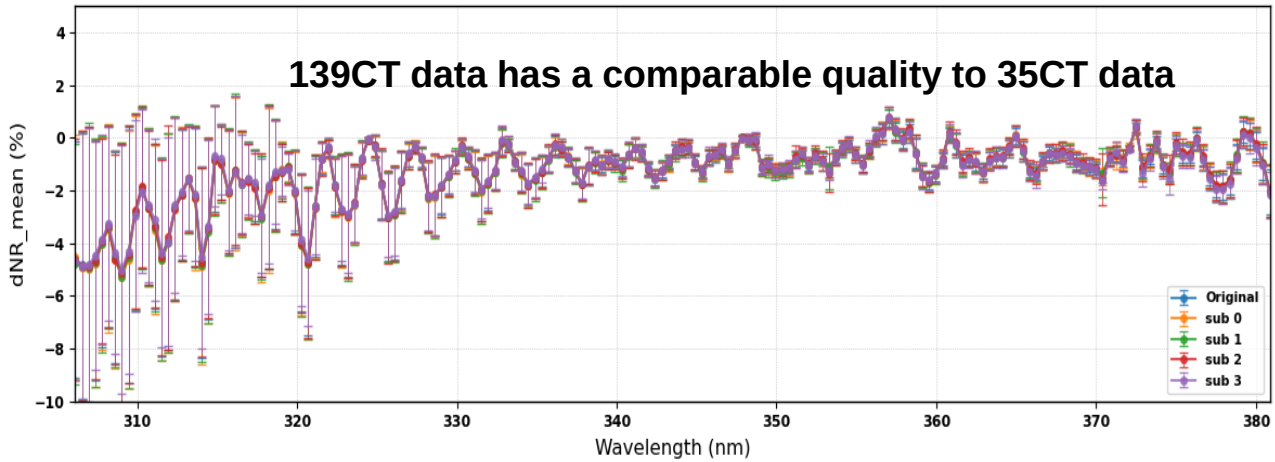
Issues/Risks:

NOAA-20 OMPS NM O – B (%) Comparison over the Saharan **Desert between Operational (35CT) and New Resolution (139CT) SDRs**



Operational NOAA-20 OMPS NM SDR data: 35 FOVs per scan
New (Medium) Resolution NOAA-20 OMPS NM SDR Data: 139 FOVs per scan, which are split into four subsets: Sub 0/1/2/3: the subset, i.e. 1 out of 4 pixels per FOV, of new SDR data with 139 FOVs for each scan

NUCAPS Products

June, 2025

Accomplishments / Events

- FY26 Program Management Review (PMR) successfully presented (June 17).
- Performed an impact evaluation on the NUCAPS products for the proposed ATMS Beam Alignment Corrections (ADR-11197). NOAA-20 and NOAA-21 NUCAPS retrievals were performed for focus days of 03/24, 05/15, 09/21, and 12/18 of 2023 using operational CrIS and, (a) using the new ATMS TDR/GEO test data provided by the ATMS TDR/GEO, and (b) using the operational TDR/GEO in the NUCAPS. No detrimental impact on the NUCAPS suggesting operationalization of necessary updates for ATMS Beam Alignment Corrections.
- Reprocessed 18 months of NOAA-20NUCAPS products on AWS Cloud sever. Provided a project plan for the continuation of this activity beyond June 30 to finish mission-long reprocessing for S-NPP/NOAA-20 and a mini-validation review. Attempts to receive S-NPP SDR/TDRs (that are not currently on the S3-bucket) through bulk data transfer are in progress and results are encouraging.
- Continued validation and sustainment activities for the NUCAPS EDR products. These include VALAR datasets and processing GRUAN RAOBs (AVTP, AVMP), trace gases (CO, CO_2, and CH_4) validation with TCCON measurements, and collection and processing of validation datasets for O_3 and OLR.
- Continued NUCAPS preprocessor and the retrieval system augmentation and testing with the EUMETSAT synthetic data for EPS-SG. IASI-NG/MWS. Testing of the science code changes are in progress.
- Initiate a new collaboration on long term ozone trends with NOAA Chemical Sciences Laboratory (CSL).

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule			X		

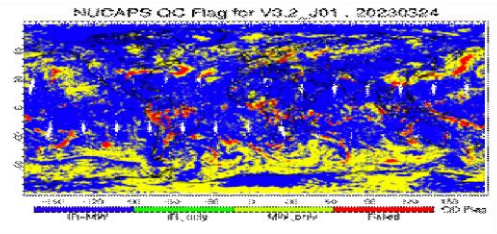
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

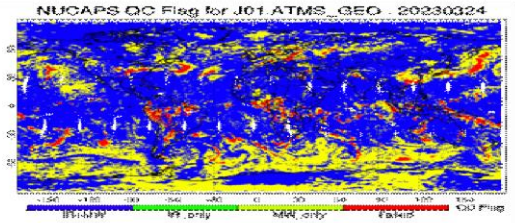
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Continued validation and sustainment activities for all the NUCAPS EDR products: AVTP, AVMP, O3; OLR, and Trace gases (CO, CO2, and CH4).	Sep-25	Sep-25		
Cross-Functional support for CrIS/ATMS SDR teams providing downstream user support required for operations (DRAT) and JSTAR Mapper Visualizations	Sep-25	Sep-25		
NUCAPS Product Applications and Case Studies of Environmental Events	Sep-25	Sep-25		
Algorithm Improvements and CCAP deliveries; Hyperspectral Enterprise Algorithm Package: Upgrade for MetOp-SG Science team Delivery	Jan-25	Jul-25		
Abstracts, Presentations and Publications; NUCAPS cal/val plan updates	Sep-25	Sep-25		
Mission-long reprocessing of NOAA-21 NUCAPS products: Reprocessing version and evaluation of reprocessed products	Jun-24	Oct-24	Jun-25	AWS COVID-19 server abruptly closed on 4/3 and reinstated as PWS on May 5. This has caused a 4 week delay of processing.

Impact of ATMS Beam Alignment Corrections on NUCAPS Products





- **No detrimental impact on the NUCAPS products using ATMD TDR/GEO test data**
- **Minor improvement observed on % accepted retrievals with the new ATMS GEO**
- **An increase of accepted cases by 0.2% for NOAA-20 retrieval, and 0.1% for NOAA-21.**
- **Global statistics indicate a slight improvement in NOAA-20 retrieval bias, while no clear impact was observed for NOAA-21 retrieval.**

Surface Albedo

June 2025

Accomplishments / Events:

- Generate the new sea-ice albedo climatology
  - The first version has been completed. Further gap filling will be implemented in the next step.
- Compare NBAR between LEO and GEO satellites
  - Compare close bands from VIIRS and GOES-East ABI
  - Good consistency was found between the two products
- VIIRS BRDF package integration and product verification
  - Verified first-round testing data generated by ASSISST team
  - Five months global data were produced by Science team to support product validation and monitoring

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		x			
Technical / Programmatic		x			
Schedule		x			

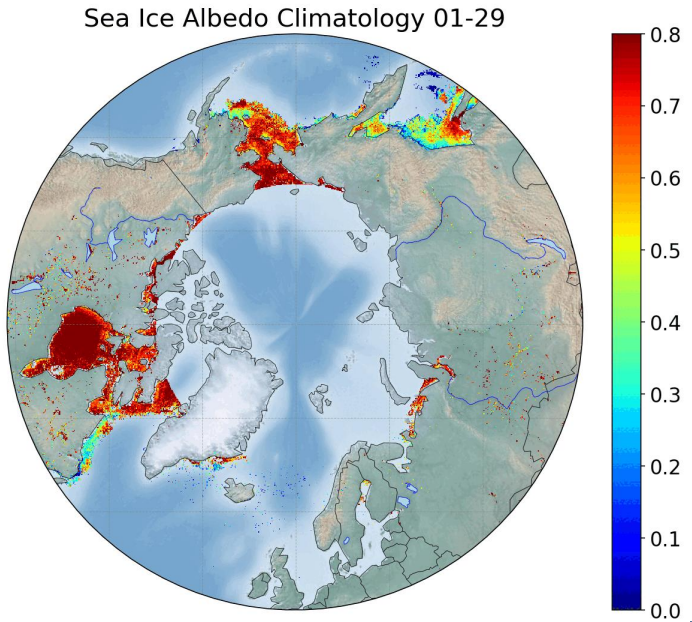
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

Milestones	Original Date	Forecast Date	Actual Completion	Variance Explanation
Support the integration and cloud transition of the VIIRS BRDF	Dec-2024	Dec-2024	Sep-2024	Delivered in Sep-2024. Integration in 2025
Develop and assess blended VIIRS SURFALB albedo algorithm	Dec-2024	Dec-2024	Dec-2024	
New Satellite Adaptation and algorithm performance improvement	Mar-2025	Mar-2025		Deferred due to unavailability of JPSS-3 proxy data
NBAR comparison between LEO and GEO satellites	Jun-2025	Jun-2025	Jun-2025	
Generate new VIIRS sea-ice albedo climatology	Jun-2025	Jun-2025	Jun-2025	
Exploring albedo applications in radiation force	Aug-2025	Aug-2025		
VIIRS BRDF/albedo data verification, issue investigation and communication for product monitoring	Sep-2025	Sep-2025		
VIIRS albedo data verification, issue investigation and communication for product monitoring	Sep-2025	Sep-2025		

Highlights:

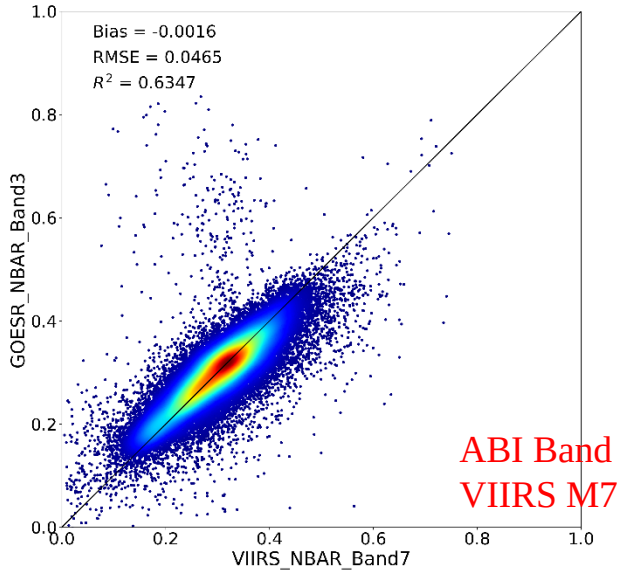
New VIIRS sea-ice albedo climatology



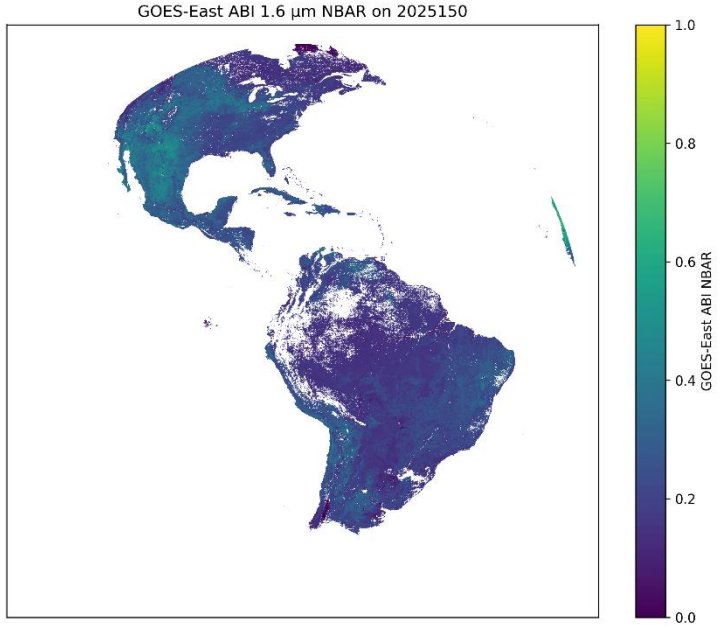
The first version of the sea ice albedo climatology has been completed. It shows higher magnitudes compared to the CLARA dataset and appears more reasonable.

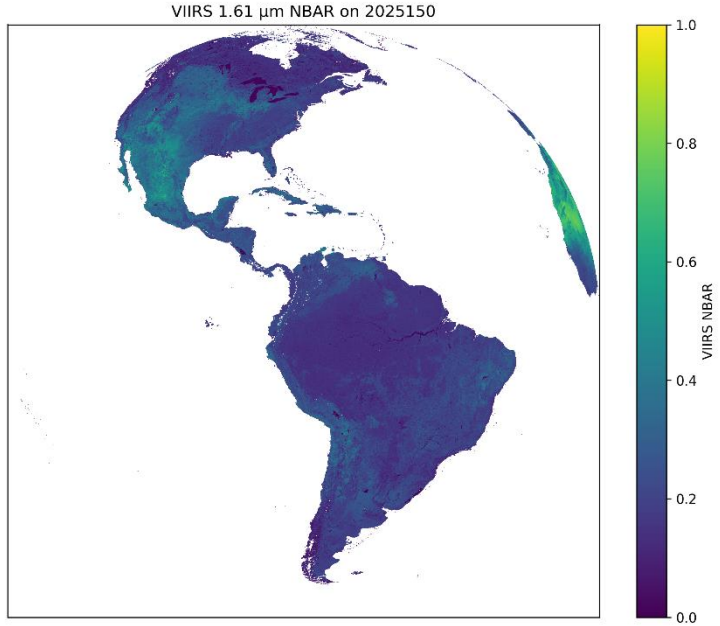
NBAR comparison between LEO and GEO satellites

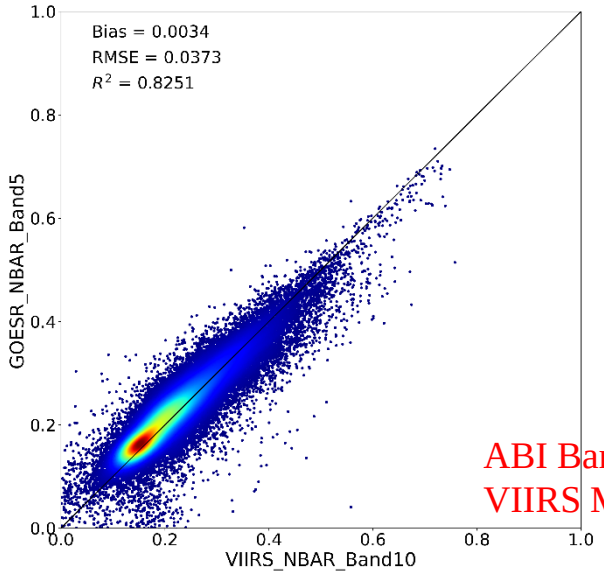
- Both JPSS VIIRS BRDF and GOES-R ABI projects provide NBAR (Nadir Bidirectional Reflectance Distribution Function Adjusted Reflectance) product. Understanding the consistency and difference between them will provide the guidance on the data application.
- Two closest bands between VIIRS and GOES-East ABI were used for the comparison.
  - Good consistency was found between the two NBAR products, with low bias /RMSE and good correlations.
  - VIIRS NBAR shows better spatial coverage mainly due to different gap filling strategy.



ABI Band 3 (0.86 µm)
VIIRS M7 (0.865 µm)





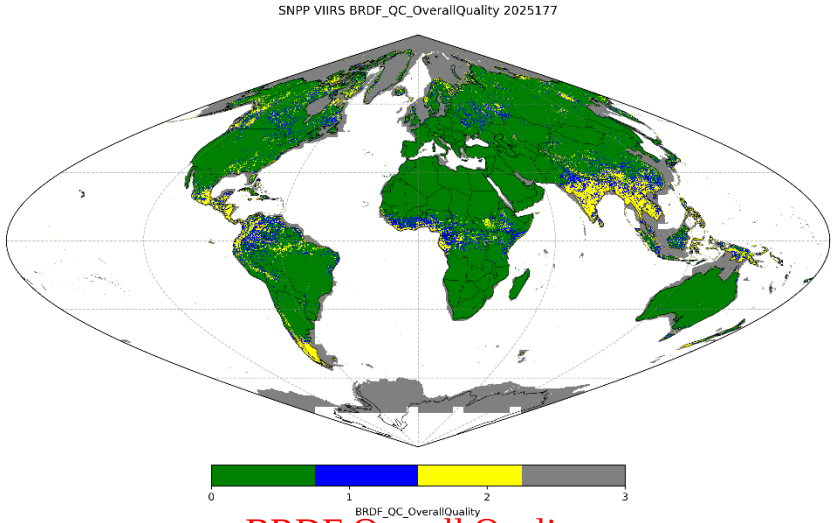


ABI Band 5 (1.6 µm)
VIIRS M10 (1.61 µm)

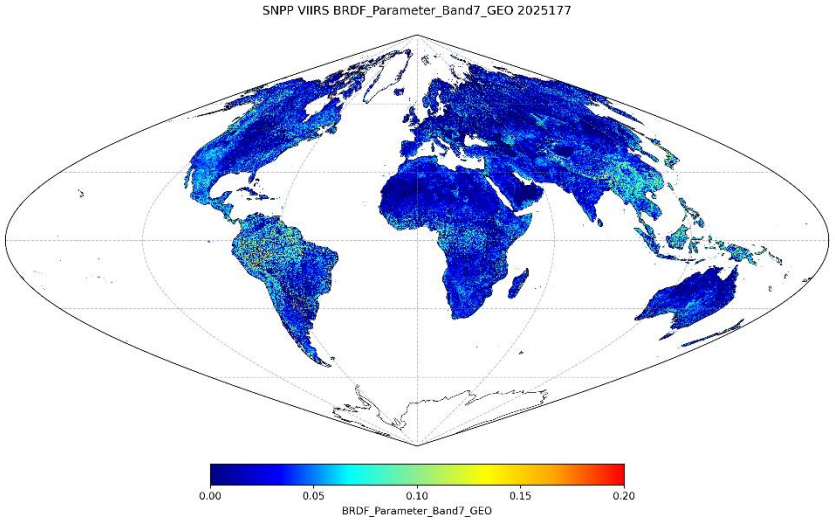
VIIRS BRDF package integration and product verification

- Collaborate with ASSISST team on VIIRS BRDF package integration, verified the first round testing data. A complete product verification at global region will happen next month.

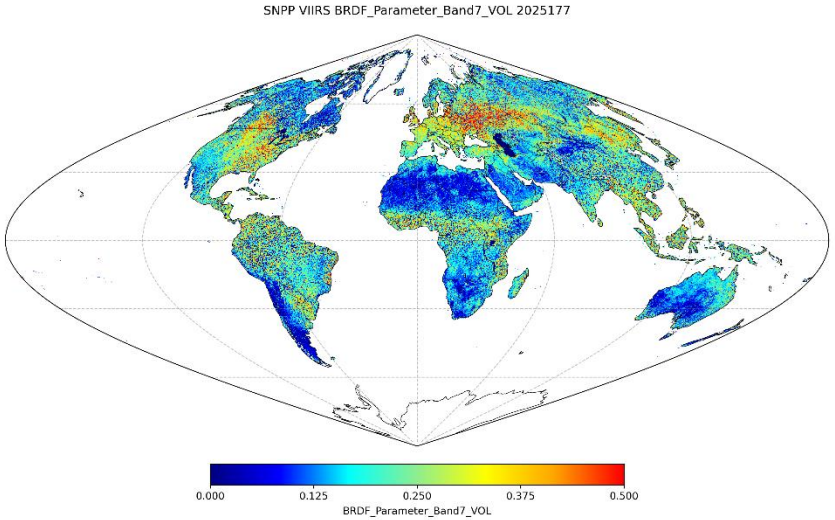
- Global testing data in the last five months were produced by science team, to support the product verification, ground validation and product monitoring plans for operational production.



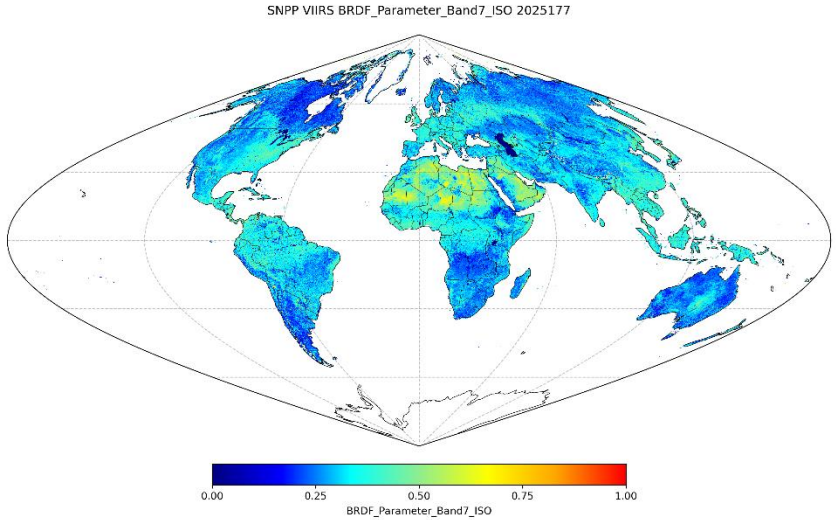
BRDF Overall Quality



BRDF Parameter Band7: GEO



BRDF Parameter Band7: VOL

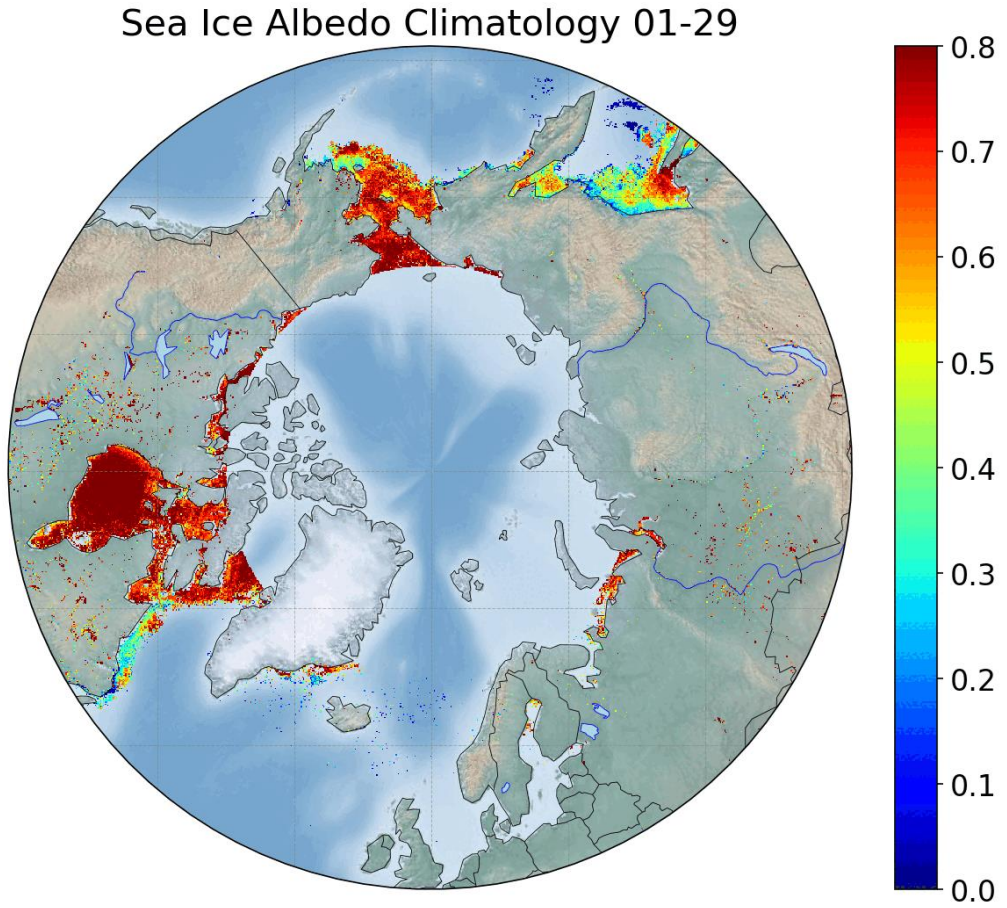


BRDF Parameter Band7: ISO

New VIIRS sea-ice albedo climatology

- The first version of the sea ice albedo climatology has been completed. It shows higher magnitudes compared to the CLARA dataset and appears more reasonable.

- There are still gaps due to limited historical clear-sky observations in some regions. Gap-filling techniques will be needed to complete the second version. The climatology animation is shown below.



Ocean Color

June 2025

Accomplishments / Events:

- Continue working on mission-long OC data reprocessing for three VIIRS sensors (SNPP, NOAA-20, and NOAA-21).
- Routinely producing VIIRS (SNPP, NOAA-20, and NOAA-21) true color/false color images in OCView.
- Routinely Producing global VIIRS (SNPP, NOAA-20, and NOAA-21) ocean color products and showing in OCView routinely : https://www.star.nesdis.noaa.gov/socd/mecb/color/index.php
- VIIRS OC data are being distributed through NOAA CoastWatch, including global gap-free ocean color products, i.e., Chl-a, K_d(490), and SPM.
- Worked on the contract issue (several GST folks have to stay home for almost entire June).
- We have several slides for the for the PACE HABs related work, with our PACE vs. VIIRS works, showing comparison results of PACE and VIIRS ocean color data with those from AERONET-OC in situ measurements. These are presented in the next 5 slides. The detailed report is also submitted (see Report-OC-CALVAL-CCNY.pdf).
- Therefore, we complete/close all FY25 OC milestones now.

Issues/Risks:

- Due to the GST contract issue, all GST folks in the OC team forced to stay at home to June 27. So, we were significantly short supported in June.
- The OC CIRA (CI) FY2025 funding was cut entirely. We are short of funding in support of JPSS OC tasks.

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		x			
Technical / Programmatic		x			
Schedule		x			

1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Ocean Color J2 Provisional Code delivery to ASSIST	Apr-2024	Apr-2024	Apr-2024	
Ocean Color Beta Maturity	Nov-2023	Mar-2023	March 2024	
Ocean Color Provisional Maturity	Mar-2024	Mar-2024	March 2024	
Ocean Color Validated Maturity	Jul-2025	Jul-2025	March 2024	

Ocean Color Milestone	Completion Date	Comments
1. VIIRS true color and ocean color data, imagery and product enhancements and innovations.	Jun-25	Wang, M. and L. Jiang, “On-orbit system vicarious calibrations for three VIIRS sensors using the NIR-SWIR ocean color data processing approach,” IEEE Trans. Geosci. Remote Sens., 63, 4203416, 2025. https://doi.org/10.1109/tgrs.2025.3542331 Wang, M., L. Jiang, “Recovery of pixels with extremely turbid waters and intensive floating algae from false cloud masking in satellite ocean color remote sensing,” Int. J. Appl. Earth Obs. Geoinf., 137, 104408, 2025. https://doi.org/10.1016/j.jag.2025.104408 Mikelsons, K. and M. Wang, “Characterization and removal of striping artifacts in VIIRS-derived ocean color products,” Opt. Express, 33, 5382–5395, 2025. https://doi.org/10.1364/OE.542177
2. Engage with OCS/NCCF team to develop new/improved ocean color data processing approaches to support future deliveries to NCCF	Jun-25	Working with NCCF schedules
3. Work on VIIRS mission-long ocean color data reprocessing for SNPP and NOAA-20.	Jun-25	The OC team has carried out the mission-long OC data reprocessing for three VIIRS (SNPP: 2012–present, NOAA-20: 2018–present, and NOAA-21: 2023–present).
4. Improve and enhance VIIRS true/false color images using available hyperspectral data.	Jun-25	Initial study completed, briefed to NESDIS AA
5. Producing new and enhanced ocean color data products using MSL12 from satellite-based multi/hyperspectral measurements for comparing and further improving VIIRS ocean color products	Jun-25	Initial study completed, briefed to NESDIS AA
6. Improvement of VIIRS (multi-spectral) ocean color calibration/validation approaches using government procured multi and hyperspectral field measurements	Jun-25	Initial study completed, briefed to NESDIS AA
7. Development of multi-spectral (VIIRS) and hyperspectral synergies resulting in NOAA unique ocean color data for research and applications.	Jun-25	Initial study completed, briefed to NESDIS AA

Satellite Ocean Color Data Matchup Comparisons with AERONET-OC In Situ

PACE OCI, VIIRS (SNPP and NOAA-20), OLCI (S3B)

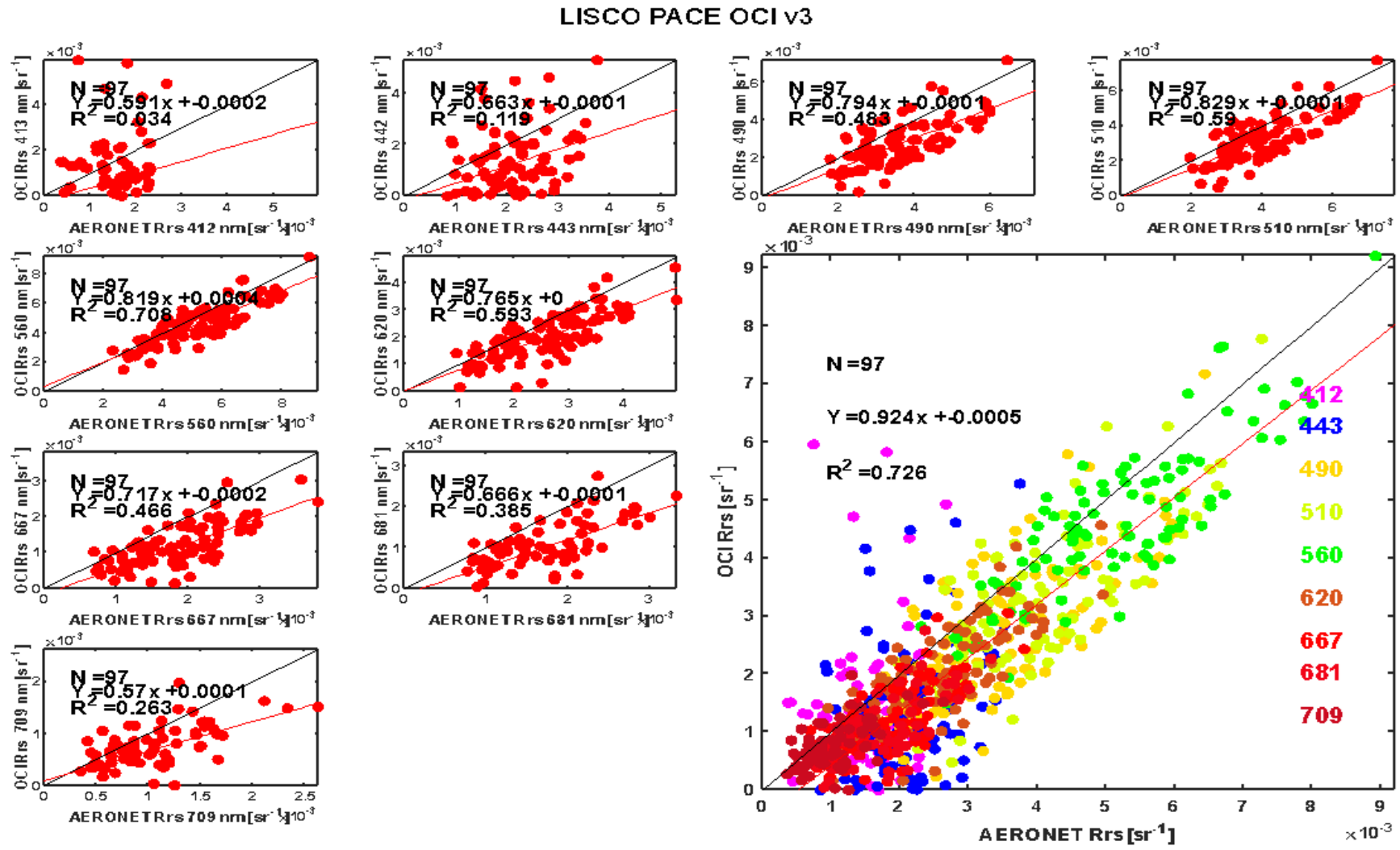
Alex Gilerson and Eder Herrera, CCNY

VIIRS Ocean Color Cal/Val Team

For details, please see the included "Report-OC-CALVAL-CCNY.pdf"

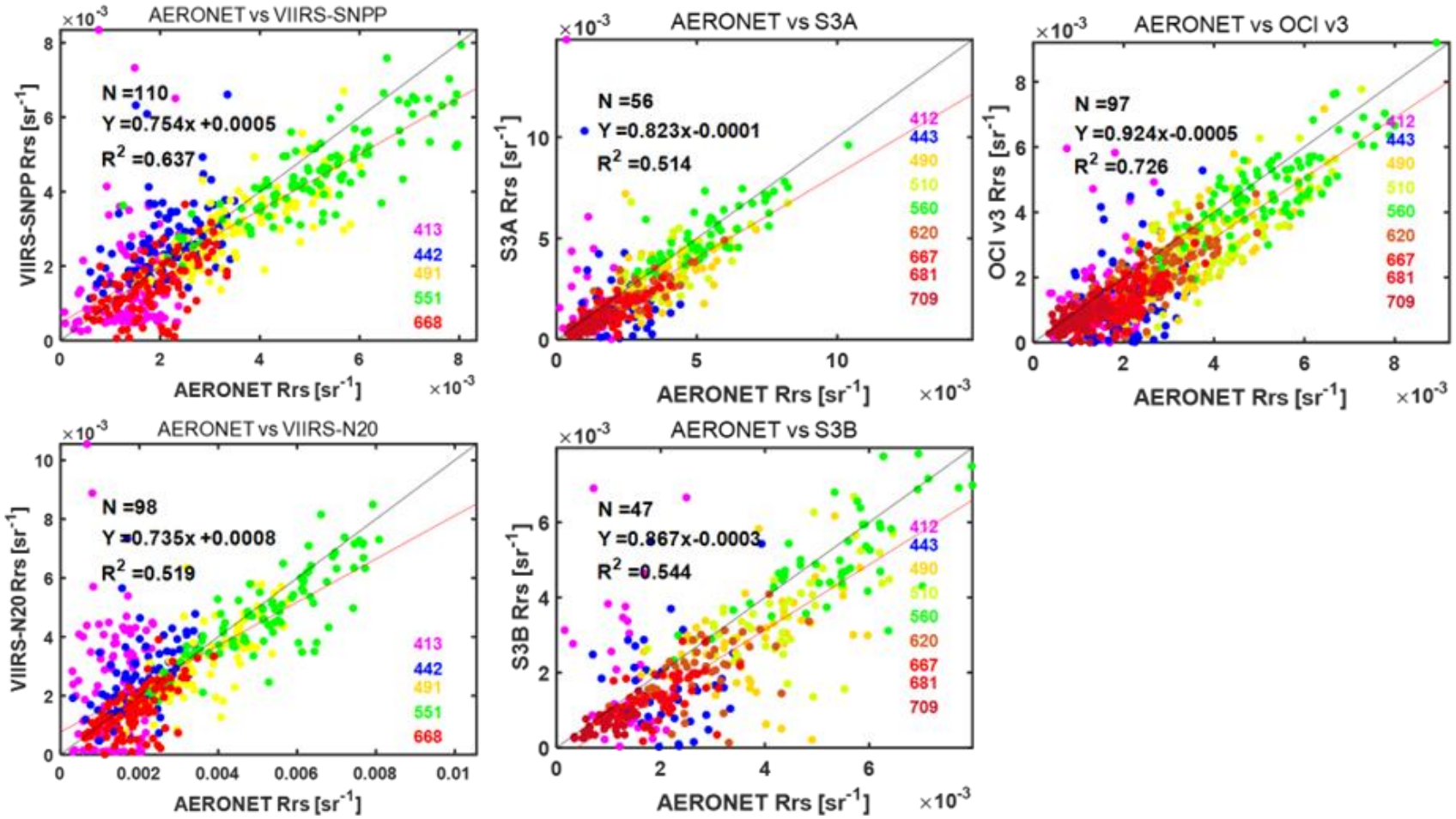
R_{rs} PACE OCI vs. AERONET-LISCO regression at each of the nine bands, available on the LISCO SeaPRISM instrument and for all nine bands together

June 2025



R_{rs} from all five satellite sensors vs. R_{rs} from AERONET-LISCO regression for all available bands

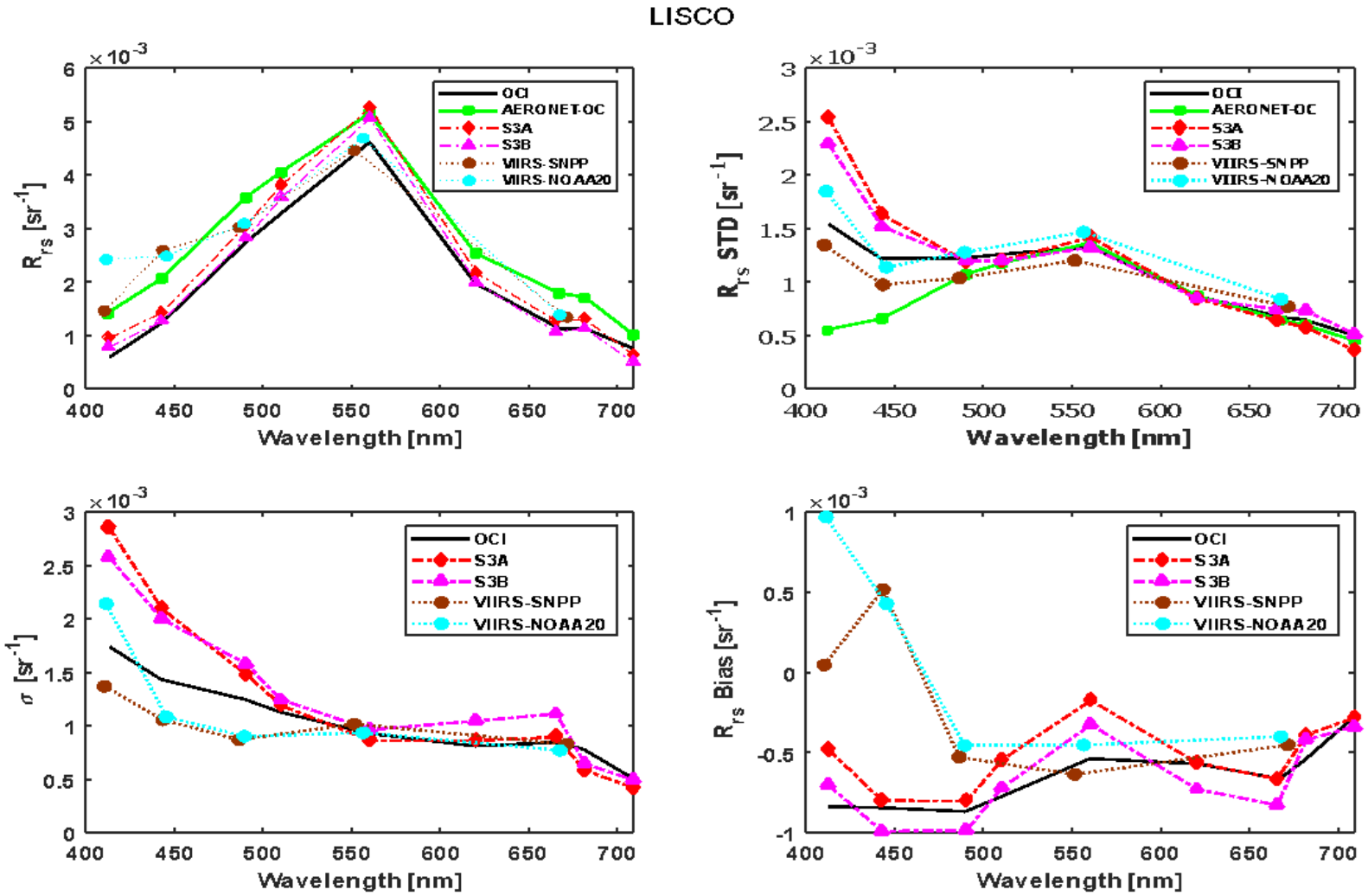
June 2025



Average LISCO R_{rs} spectra, uncertainties and biases for all satellite sensors.

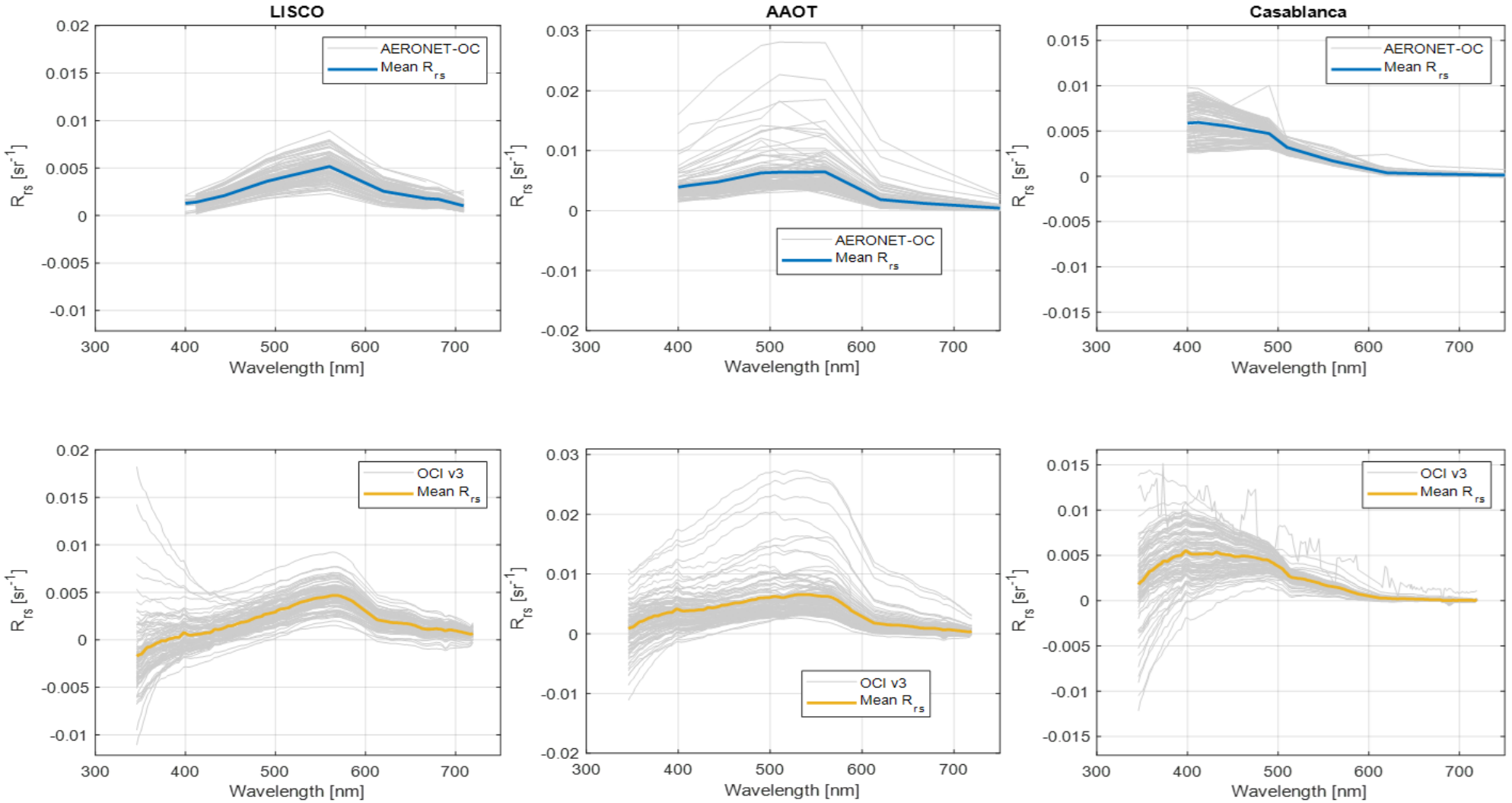
June 2025

Top: R_{rs} and R_{rs} stds, bottom: R_{rs} uncertainties and biases



AERONET-OC, OCI v3 spectra for: LISCO, AAOT and Casablanca

June 2025



OMPS Ozone (V8Pro, V2Limb & V8TOz)

June 2025

Major Accomplishments / Last Month:

Milestones on the next two slides.

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule			X		ProTech Follow-on, SDR improvements

1. Project has completed. 2. Project is within budget, scope and on schedule.
3. Project has deviated slightly from the plan but should recover.
4. Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks: ASTA 2.0 Option Year one is an unknown. Three incumbents have moved over to STC. A fourth contractor is in the badging queue. Funding looks good. SDR test datasets are needed.

Limb

FY25 Milestones: JPSS Ozone EDRs and Level 3 from OMPS Nadir Instruments

Tasks/Deliverables/Milestones	Estimated Completion
Task 1: *Maintain, Sustain, Validate, Improve and Reprocess OMPS V8Pro Ozone Profile EDRs, V8TOz Total Column Ozone EDRs, V8TOS Total Column Ozone and SO2 EDRs.*	May 2026
Subtask 1.1: *Monitor and validate operational OMPS products by using ground-based assets and time series analysis and comparisons. Create and deliver (Monthly) regular overpass datasets for NOAA ground-based networks. Maintain STAR internal monitoring pages (Monthly) and work with the STAR IT group to help coordinate resources for the ozone team. Keep STAR Linux Cluster OMPS databases up to date.*	Monthly Updates
Subtask 1.2: *Construct, improve and deliver tables and codes, and perform validation studies. Make changes to V8Pro soft calibration adjustment tables as the OMPS SDR Team implements solar calibration changes. Provide presentation of results to maintain and demonstrate Ozone EDR Maturity and Improvements.*	As Needed June 2025 (NDE OPS July 23, 2025)
Subtask 1.3: *Reprocess the full V8Pro records for NPP and N20 after developing soft calibration adjustments to create a homogenized Climate Data Record. Reprocess the full V8TOz record with time dependent soft calibration adjustments to account for degradation. Provide presentations validating and document each set of results.*	NPP V8Pro completed April 2025 N20 V8Pro completed May 2025 (except for 2018) NPP V8TOz August 2025
Subtask 1.4: *Maintain, monitor, trouble-shoot all NOAA OMPS Nadir Ozone and SO_2 products.*	Ongoing
Subtask 1.5: *Test and implement approaches to improve SNR for small-FOV N21 OMPS V8TOS EDRs. Coordinate OMPS Processing capabilities with Enterprise DOAS Trace Gas EDR advances.*	September 2025
Subtask 1.6: *Support preparation, testing, table development and code changes for J04 OMPS Nadir Products. Deliver initial instrument and soft calibration tables.* Subtask 1.7: *Modify and deliver V8TOs and V8Pro for application to higher resolution NOAA-20 OMPS NM SDRs.*	September 2025 (waiting for sample data from SDR Team) July 2025 (Code at NDE is ready) September 2025 (Better soft calibration)
Task 2: *Maintain, Sustain, Validate and Improve the Nadir Total Ozone Analysis using Stratospheric and Tropospheric sources (NTOAST) products.*	Sept 2025
Subtask 2.1: *Validate operational NTOAST processing and help to prepare the Algorithm / Operational Readiness Reviews and associated documents (ATBD, UMM, SMM)*	June 2025 - Both NTOAST and LTOAST are on NDE. STAR ARR/ORR validation slides are complete.
Subtask 2.2: *Monitor operational implementation and performance and provide expertise to resolve any issues.*	Ongoing
Task 3: *Transition research DOAS trace gas retrieval algorithms (NO2 and HCHO) applied to OMPS measurements to STAR. Convert output generating code to provide NOAA-standard NetCDF EDR files. Provide a report confirming duplication of research processing results and as a preliminary Algorithm*	September 2025. Week of 139 CT SDR data for NOAA-20 is in test processing.

Tasks/Deliverables/Milestones	Estimated Completion
Task 1: ***Maintain, Sustain, Validate, Update, and Improve OMPS V2Limb codes, calibration tables, monitoring systems and overpass data.***	**May 2026**
Subtask 1.1: ***Provide delta-DAPs to ASSISTT as NOAA implements improved temperature logic and NASA provides improved Level 1 corrections and aerosol retrievals, or makes other tables, corrections or code modifications.***	**May 2025** **September 2025** **Paused to concentrate on getting the Limb to Ops.**
Subtask 1.2: ***Provide weekly table deliveries for Darks, Wavelengths and Orbital Definition files.***	**Weekly**
Subtask 1.3: ***Complete NOAA-21 V2Limb validation and move to operations. Validate operational LTOAST processing and help to prepare the Algorithm / Operational Readiness Reviews and associated documents (ATBD, UMM, SMM). Provide guidance on OSPO Limb Monitoring.***	**V2Limb is on NDE Dev. It will move to Ops in Sept.**
Subtask 1.4: ***Monitor and validate operational products by using ground-based assets and time series analysis and comparisons. Create and deliver (Monthly) regular overpass datasets for NOAA ground-based networks. Maintain STAR internal monitoring pages (Monthly) and work with the STAR IT group to help coordinate resources for the ozone team. Keep STAR Linux Cluster OMPS databases up to date.***	**Monthly Updates**
Subtask 1.5: ***Provide sample days of N21 and NPP V2Limb NetCDF files to teams working on LTOAST, BUFR, and Monitoring.***	**Provided May 2025**
Subtask 1.6: ***Support Cal/Val Plan preparation, testing, table development and code changes for J04 OMPS Limb***	**Plan May 2025 Tables Dec**

Sea Surface Temperature

June 2025

Accomplishments / Events:

- SST staff was furloughed for the majority of the month (June 1-25) due to OSTA 2.0 contract renewal delay. The remainder of the month the staff spent time renewing CAC cards, reestablishing access to IT and compute resources, and remaining team members taking over critical duties of departed staff.

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic			X		SST Task descoping
Schedule				X	SST Task descoping

1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

The OSTA 2.0 contract was descoped and the SST contracting staff was reduced from 8.5 to 4 FTEs. As a result, various milestones are delayed or cancelled.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Promote experimental iQuam updates to live access	Aug-24	Dec-24	Dec-24	
Deliver ACSPO VIIRS V3.00 package to ASSISTT	Jan-25	Jan-25	Jan-25	
Migrate legacy IDL iQuam codebase to python	Jun-25	Jun-25		Task descoping
Reprocess historical iQuam SST data using iQuam v2.3	Sep-25	Sep-25		Task descoping
Update CRTM library from v2.3 to 3.0 (needed for inclusion of aerosols in radiance simulations).	Mar-25	Mar-25	Mar-25	
Investigate how inclusion of aerosol information in simulated radiances can be used to improve ACSPO SST and clear-sky mask algorithms.	Aug-25	Aug-25		
Reprocess VIIRS SST using ACSPO V3.00	Dec-25	Dec-25		Task descoping

Highlights:

Snowfall Rate

June 2025

Accomplishments / Events:

- The SFR team is evaluating the S-NPP ML microphysics model while developing models for other satellites.
- With the help of Sheldon Kusselson and his connections, the SFR South America page was promoted to the weather forecasters in Chile and Argentina where is experiencing snow season. The SFR Quick Guide was also distributed to the SA forecasting agencies.
- A University of Maryland summer intern is helping to further develop the SFR website.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
SFR delivery including ocean coverage	12/2024	12/2024	12/2024	
Development of NPreciSe web-portal and archive	12/2024	12/2024	12/2024	
Cross calibration for NOAA-21, NOAA-20, S-NPP, Metop-B, Metop-C, and GPM	4/2025	4/2025	4/2025	
Extending the study to include climatology in NPreciSe	6/2025	6/2025	6/2025	
Advanced microphysics for NOAA-21, NOAA-20, S-NPP, Metop-B, Metop-C, and GPM	6/2025	9/2025		
2D SFR bias correction for NOAA-21, NOAA-20, S-NPP, Metop-B and Metop-C	6/2025	3/2026		**Will evaluate the need for bias correction after implementing advanced microphysics**

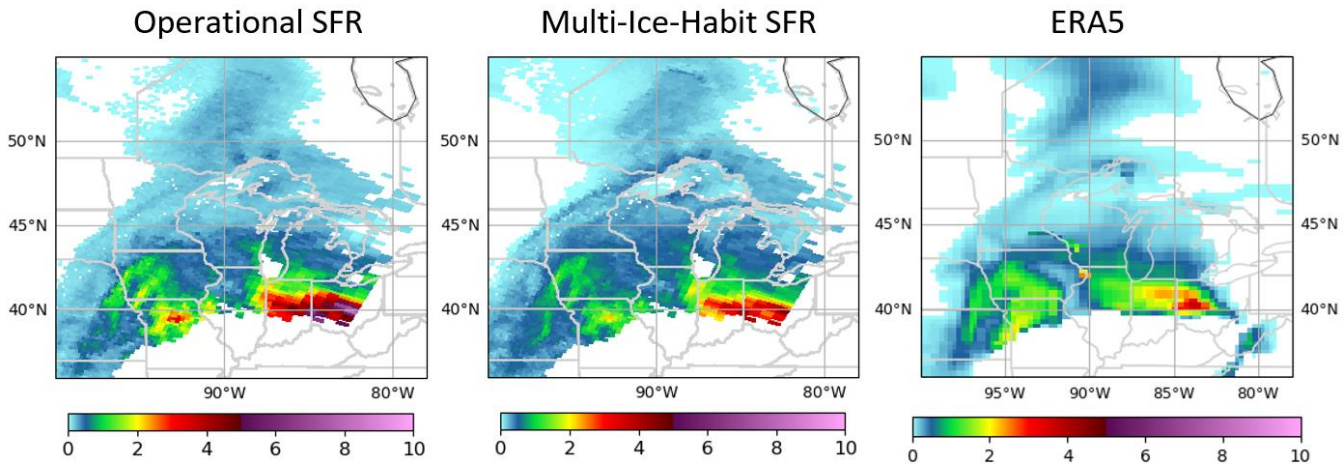
Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks: None

Highlights:



A sample case showing the currently operational SFR (left), the SFR with ML microphysics (middle), and the reference ERA5 snowfall (right). The operational SFR significantly overestimated the snowfall while the algorithm with advanced ML microphysics noticeably reduced the overestimation.

Surface Type

June 2025

Accomplishments / Events:

- STAR-UMD VIIRS Surface Type team has downloaded and processed NOAA-21, NOAA-20, and S-NPP VIIRS daily granule surface reflectance data acquired in June of 2025 for the production of AST25.
- The team is on track in the development of AST24. It has produced an initial classification of 2024 VIIRS observations using the SVM algorithm and is conducting post-processing to fix misclassification issues due to lack of spectral separability among some surface types in different regions.
- The team is exploring new data to improve surface type monitoring. It has developed C++ and Python tools for processing GEDI LiDAR data to produce tree cover and height estimates at the 1km resolution:
  - The derived product has higher data densities near the northern/southern 52° limits of the International Space Station than in low latitude regions. But even in the tropics the forests have been sampled reasonably well (see the Highlights section).
  - The team will use the GEDI samples to support the development of the VIIRS annual surface type product as well as new high resolution vegetation structure products required by next generation EMC models.

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		x			
Technical / Programmatic		x			
Schedule		x			

1. *Project has completed.*
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3. *Project has deviated slightly from the plan but should recover.*
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Issues/Risks:

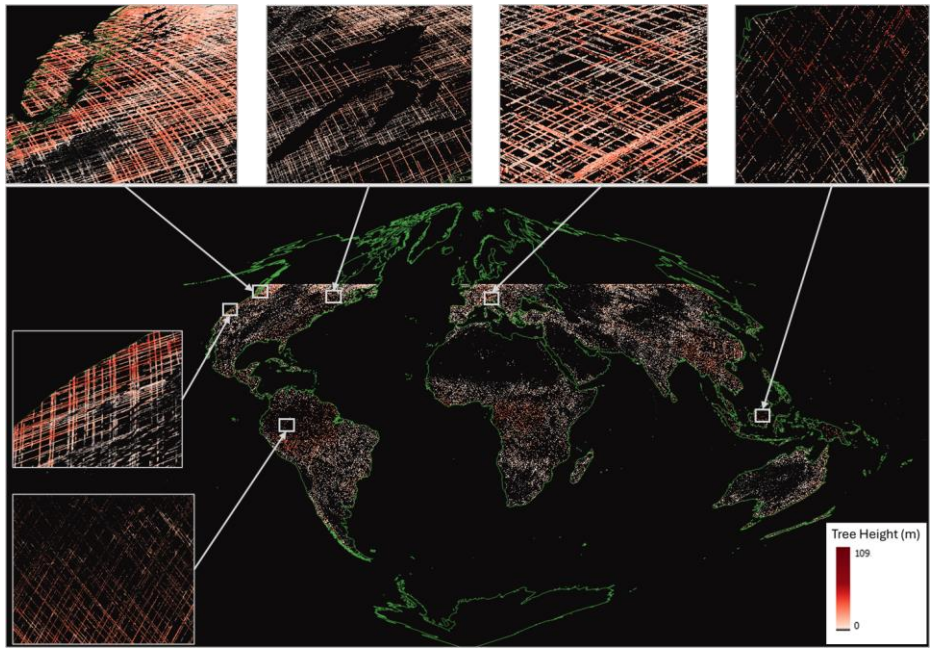
None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Monthly update of the 250m global water surface fraction product	Each M.	Each M.	Each M.	
Complete global monthly composites for each of 2024 months	Feb-25	Feb-25	Feb-25	
Generate global annual classification metrics for 2024	May-25	May-25	May-25	
AST24 of IGBP 17 type map	Aug-25	Aug-25		
AST24 for EMC 20 type map	Aug-25	Aug-25		
AST24 Validation Statistics and delivery to JSTAR and users	Sept-25	Sept-25		

Highlights:

NASA's GEDI mission uses LiDAR to measure tree height at high sampling rates (one 25m sample every 70m in the along track direction). Operating from the International Space Station, the mission provides LiDAR-based estimates of tree canopy cover and height for forests located between 52°N and 52°S. The surface type team has developed tools to calculate tree cover and height at the 1km resolution for areas sampled by GEDI, which will be used as reference data to support the development of the VIIRS annual surface type product as well as high resolution vegetation structure products required by next generation EMC models. This figure shows 1km tree height samples derived based on GEDI data acquired during a 12-month period from April 2022 to March 2023.

Global Sample of Tree Height Measurements by GEDI (April 2022-March 2023)



Vegetation Health

June 2025

Accomplishments / Events:

- Continued monitoring of vegetation health as indicated by publications of weekly vegetation health products (VHP) from currently operational NOAA-20 VIIRS observations via STAR webpage at https://www.star.nesdis.noaa.gov/smcd/emb/vci/VH/vh_browse.php. Reprocessed the daily and weekly maps for days 148 to 150 because VIIRS granules on SCDR remained missing, using data downloaded from AWS as the required SDR inputs.
- Reprocessed 500m VIIRS ND and SM files using the latest version of VHP software (500m VH DAP v3.1). Created web pages to display images of the ND and SM output files for data quality monitoring. Changed the method for aggregating 500m to 4km resolution from sampling to averaging, and compared the results of both methods. Verified the historic records of 500m ND and SM from 2012 to 2025 by comparing the newly reprocessed data with the current version at https://www-dev.star1.nesdis.noaa.gov/smcd/eFire/VH/VHP_verify500mVH.php. Time series and difference statistics for 34 ecosystem regions were also examined in great detail. A small portion of ND and SM data with large differences was identified and re-created. Ultimately, confirmed and recommended periods of SM data that are high-quality, consistent, and ready to be used in climatology calculations.
- Started development of a 500m climatology database for the latest version of VHP software (500m VH DAP v3.1). Designed, implemented and tested the climatology method by applying the 2017 approach at 500m resolution and incorporating additional VIIRS data samples since 2017 to ensure AVHRR-equivalent climatology and a consistent long-term VHP data record. Generated the new climatology dataset for the first round while waiting for final SM data confirmation. Conducted comparative analyses with various climatology datasets to validate that the new climatology method performs as expected. Planned to reprocess specific weeks of climatology data based on the SM data recommendations mentioned above.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Hire staff member to lead work	Mar-25	Mar-25	Mar-25	
Deliver CCAP for VIIRS 500m global Vegetation Health Products	Sep-25	Sep-25		
Develop CCAP for value-added and science-enhanced ASCII and Geotiff data files of regional Vegetation Health Products	Sep-25	Sep-25		

Overall Status:

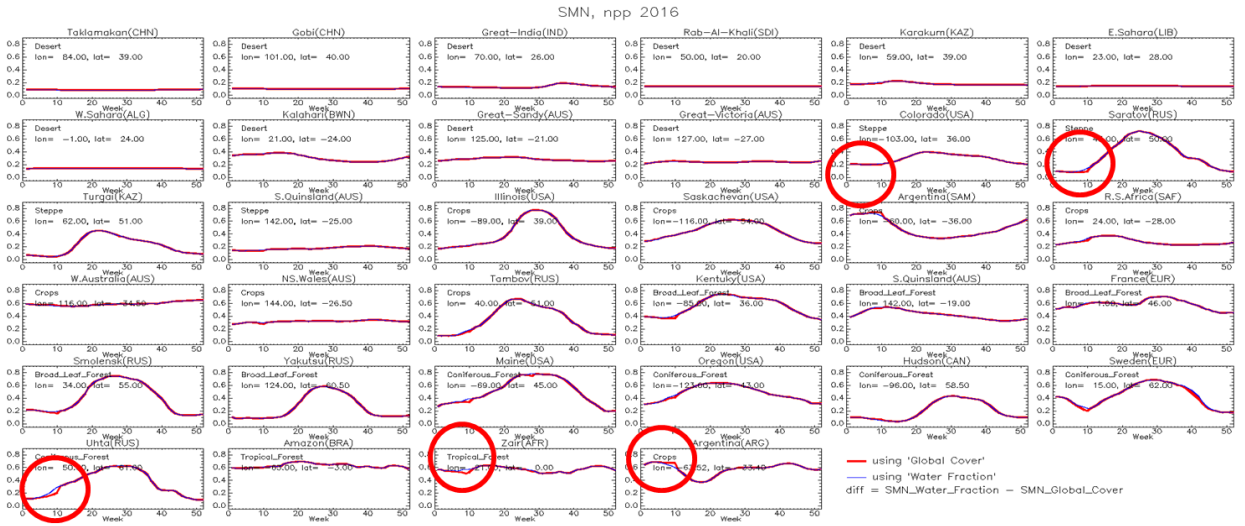
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Highlight: *To verify that the latest SM data are consistent with or even better than the existing version, time series and difference statistics for 34 ecosystem regions were analyzed in more detail. This example below shows that the 2016 S-NPP SMN data in the latest version (blue curve) appear improved, and exhibit smoother trends with fewer fluctuations compared to the current version (red curve).*



Vegetation Index and Green Vegetation Fraction

June 2025

Accomplishments / Events:

- Further GVF validation and update based on EMC user's feedback.
- Further development and implementation of 20m downscaled VI dataset.
- Continued efforts on AI/ML-based GVF algorithm upgrade.
  - ✔ Obtained more HLS vegetation cover and VIIRS VI and GVF data and performed analyses related to further development of machine learning algorithm for GVF;
  - ✔ Determined phenological greenup transition dates for five sites from VIIRS GVF and PhenoCam.

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

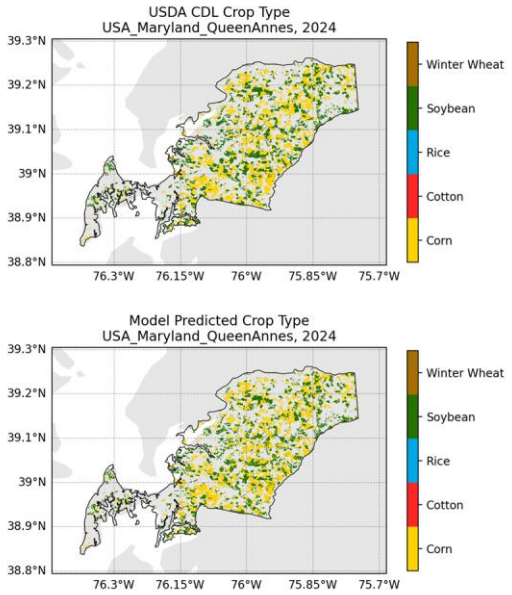
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

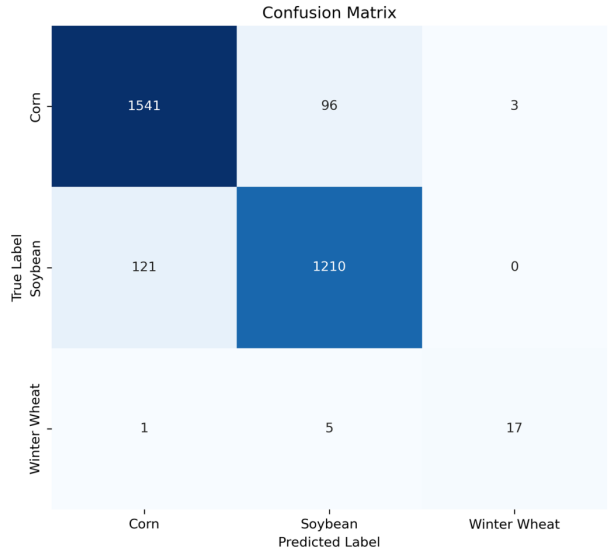
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Calibration/ Validation update for SNPP and NOAA20 VI and GVF products,	Sep-24	Sep-24	Oct-24	Comparison with other data sets necessary
Test blended VI and GVF products for suitability for operational production	Jan-25	Jan-25	Feb-25	Supplemental evaluations conducted in Feb-25
High resolution satellite data collection including Landsat and Sentinel-2 to establish the training datasets for AI-based GVF algorithm upgrade	Feb-25	Feb-25	Feb-25	
Reprocessing software tool for N20 is ready to implement	May-25	May-25	May-25	
AI-based GVF model training, tuning, and validation	May-25	May-25	May-25	
Further development of 20m VI downscaling	Jun-25	Jun-25	Jun-25	
Experimental version of VI and GVF production combined with Vegetation Health	Sep-25	Aug-25		
NVPS product annual validation report	Sep-25	Sep-25		

Highlights: ***Implementation of 20m downscaled VI datasets on crop classification***





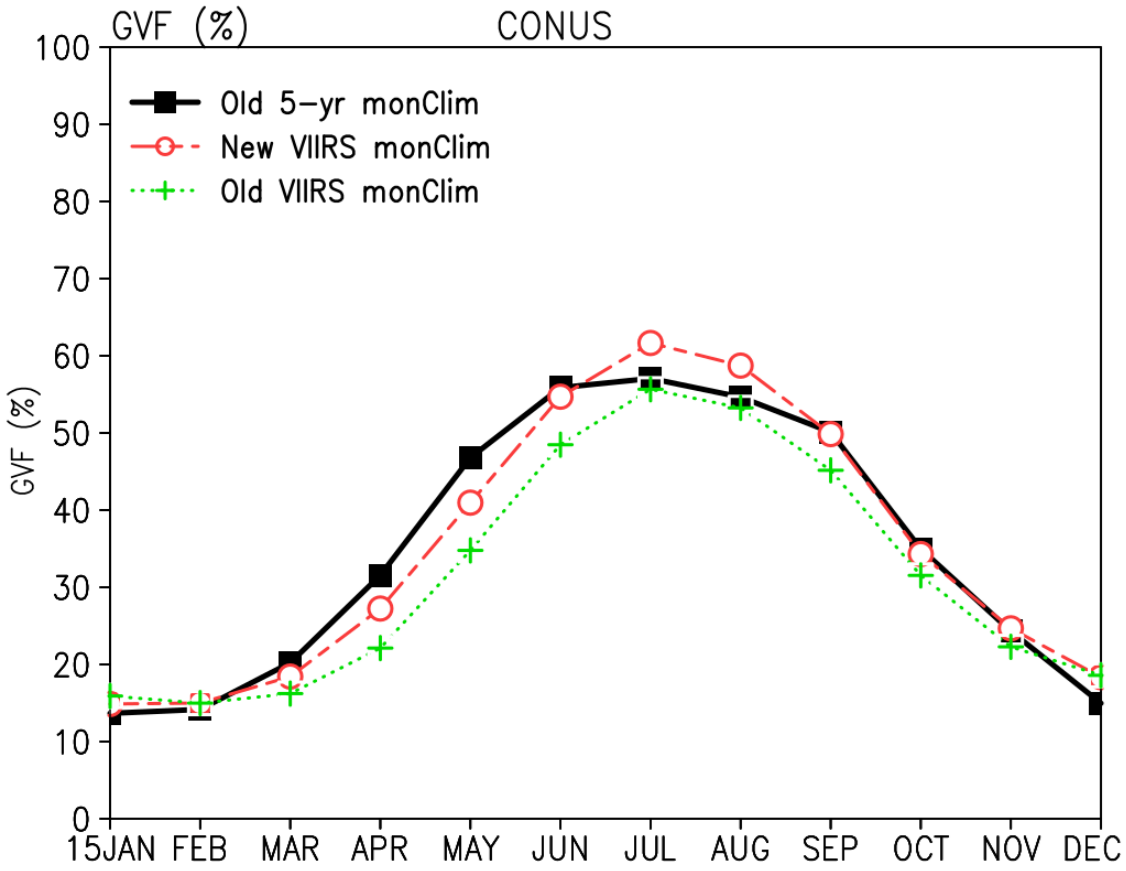
GVF climatology update

- EMC user compared three GVF climatology datasets, and gave the positive feedback on our most recent updated one.
- Further evaluation is ongoing focusing on assess the high GVF values in summer season.

Black: old 5-yr climatology from AVHRR GVF;

Green: VIIRS climatology from operational product obtained from N20 2020-2024 data;

Red: VIIRS climatology from recent updated data from N20 2020-2024 data.

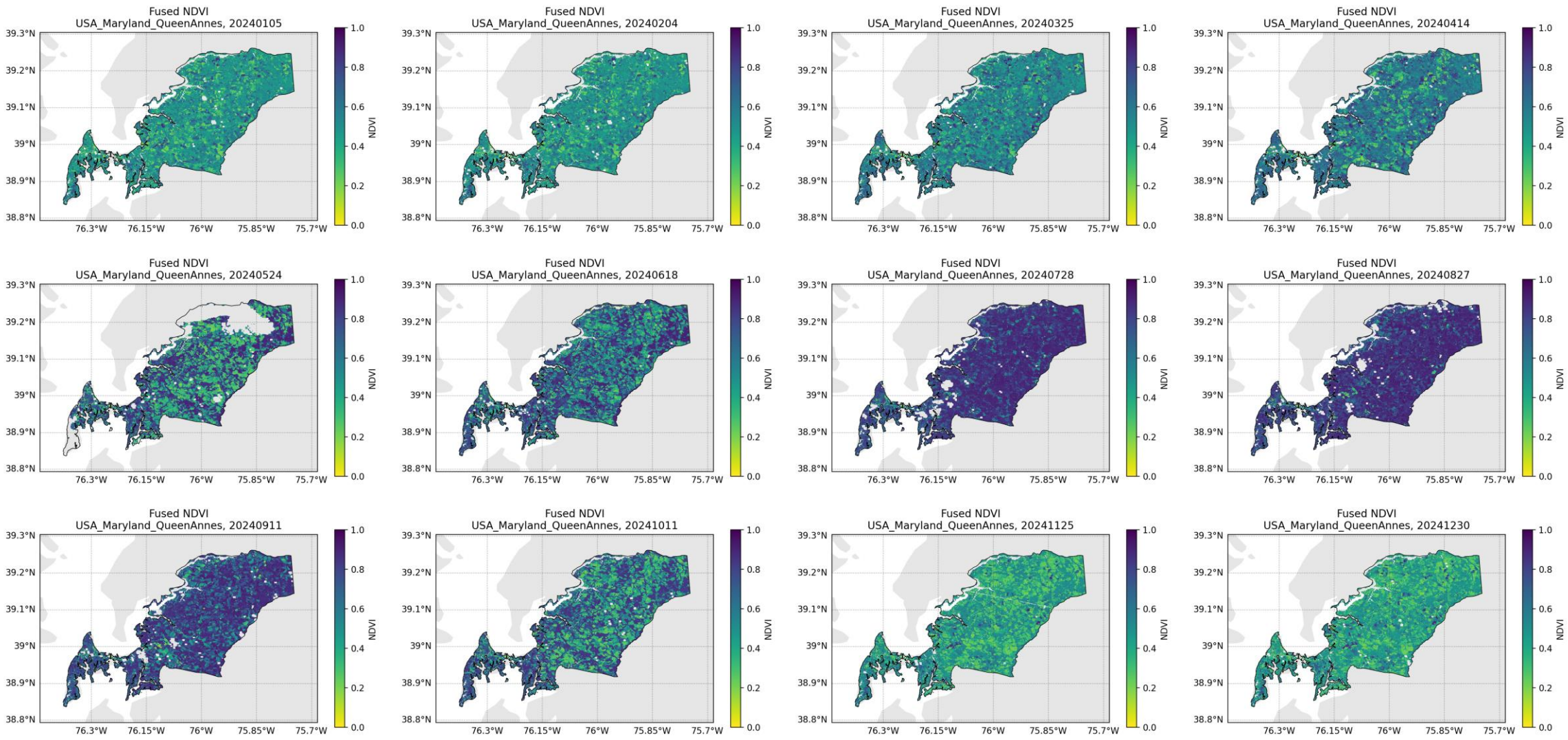


Further development and implementation of 20m downscaled VI

- The downscaling algorithm is applied to 2024 VIIRS VI product for the study area;
- Daily image and VI at 20m resolution is produced for the whole year of 2024;
- Phenology detection is then carried out based on the VI timeseries data;
- Phenological parameters are mapped for the study area;
- With that, crop type classification is conducted using Long-short term memory (LSTM) deep learning model, with input features as the NDVI timeseries and those phenological parameters.
- The overall accuracy of the crop classification is more than 0.9.
- As the next step, we will compare the crop classification accuracy with using other two datasets: original Sentinel-2 data and original VIIRS VI product, to further demonstrate the advantage of the downscaled datasets.

20m downscaled data: 2024 updated VI series

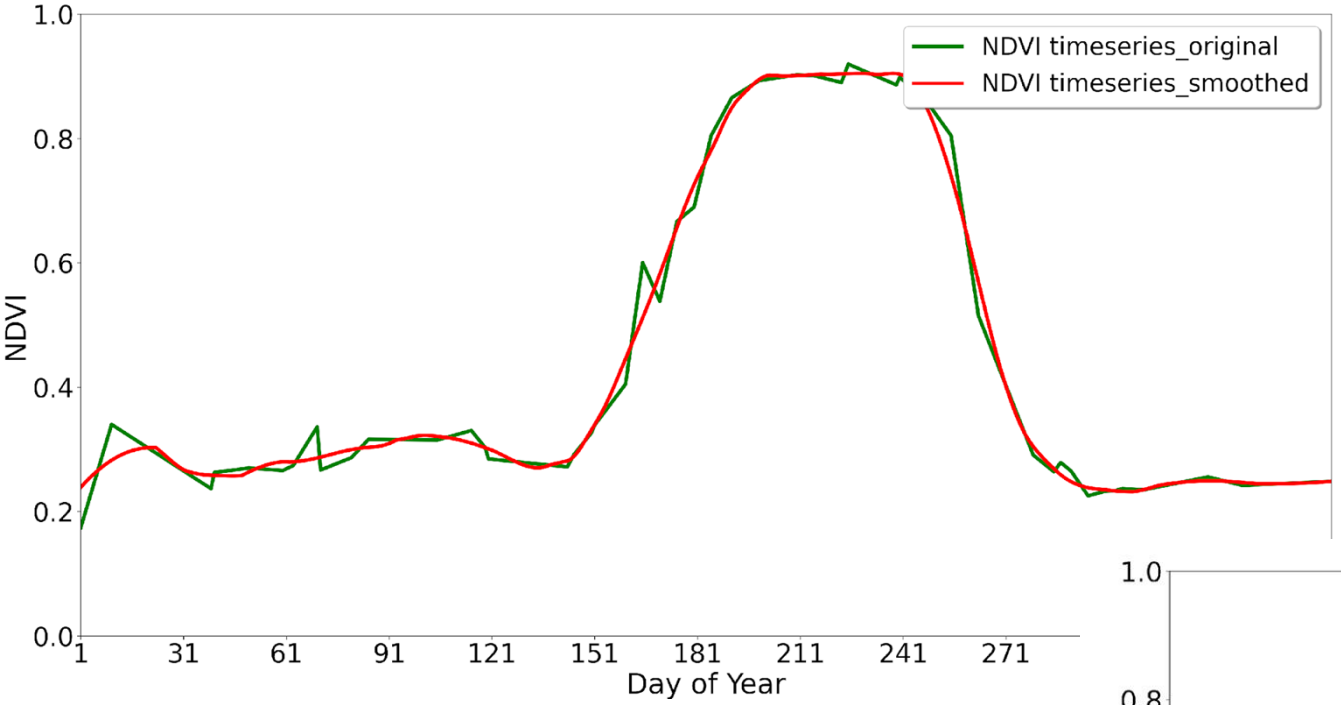
June 2025



20m downscaled data: 2024 updated image series

June 2025

20m downscaled data: phenology detection



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Short communication

Monitoring vegetation phenology using MODIS

Xiaoyang Zhang[a,*], Mark A. Friedl[a], Crystal B. Schaaf[a], Alan H. Strahler[a], John C.F. Hodges[a], Feng Gao[a], Bradley C. Reed[b], Alfredo Huete[c]

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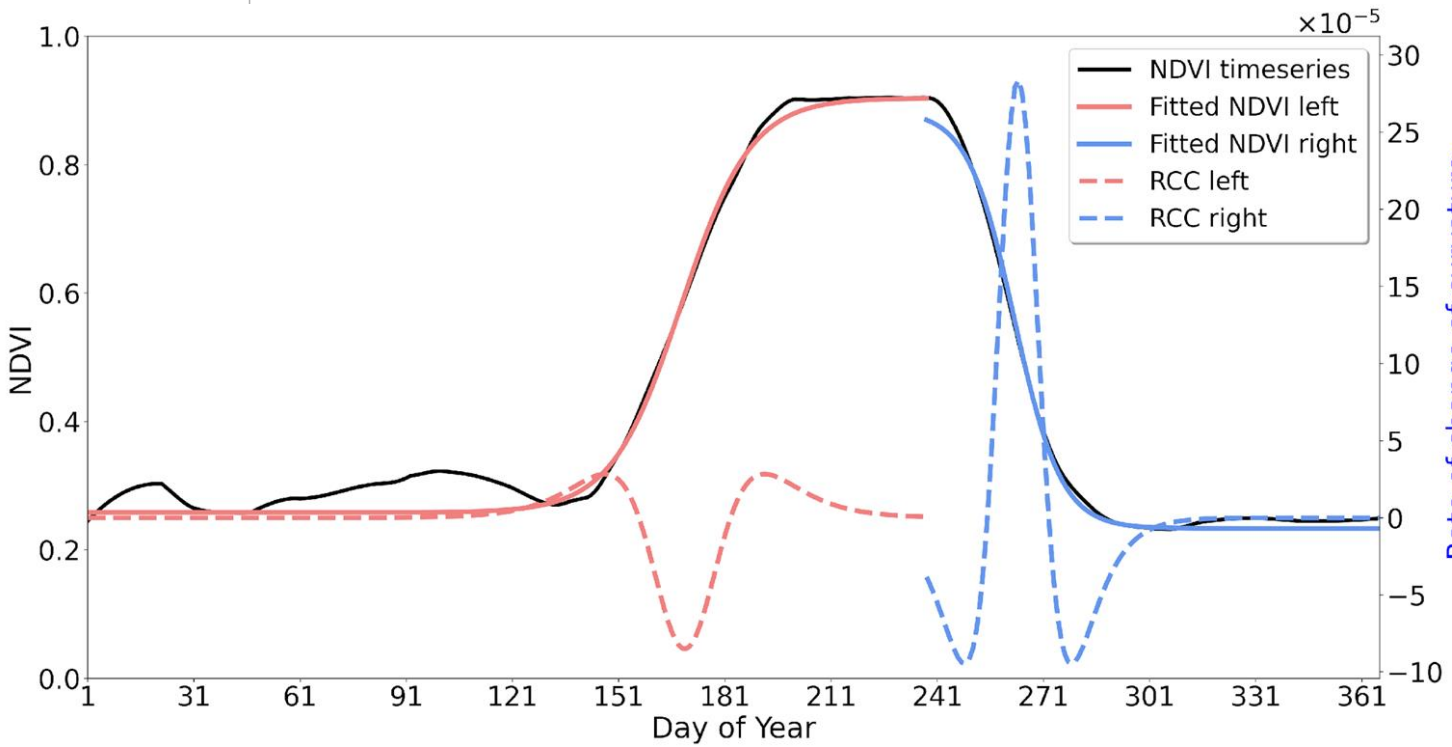
Received 25 May 2002; received in revised form 6 September 2002; accepted 7 September 2002

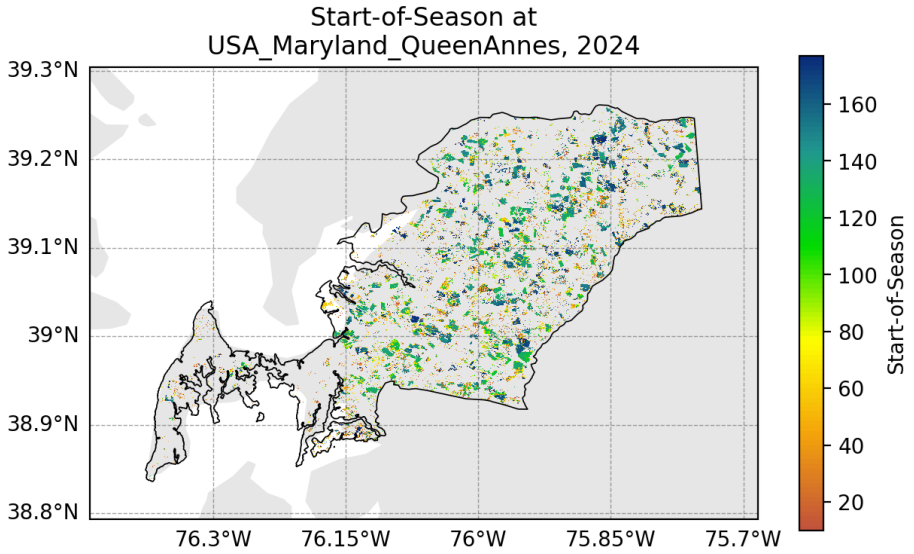
$$K' = b^3 cz \left\{ \frac{3z(1-z)(1+z)^3\left[2(1+z)^3 + b^2c^2z\right]}{\left[(1+z)^4 + (bcz)^2\right]^{\frac{5}{2}}} \right.$$

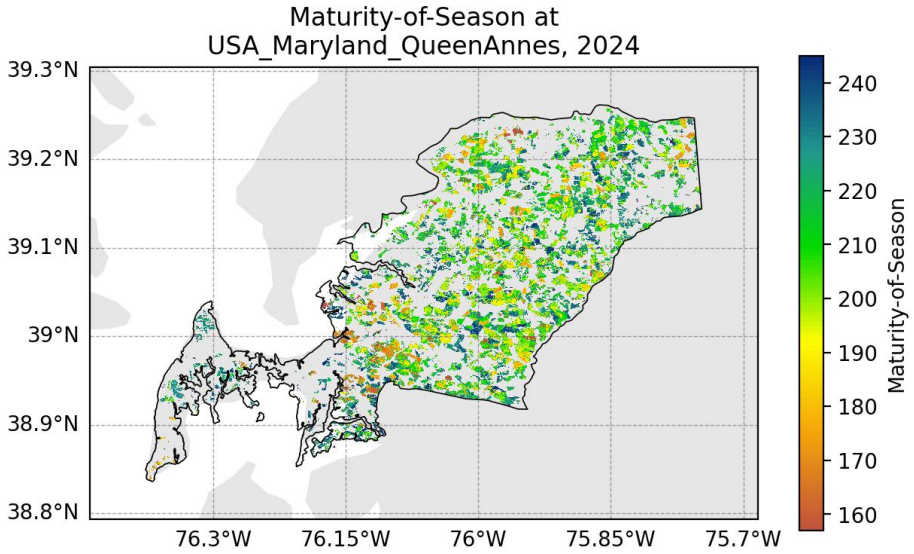
$$\left. - \frac{(1+z)^2\left(1+2z-5z^2\right)}{\left[(1+z)^4 + (bcz)^2\right]^{\frac{3}{2}}} \right\}$$

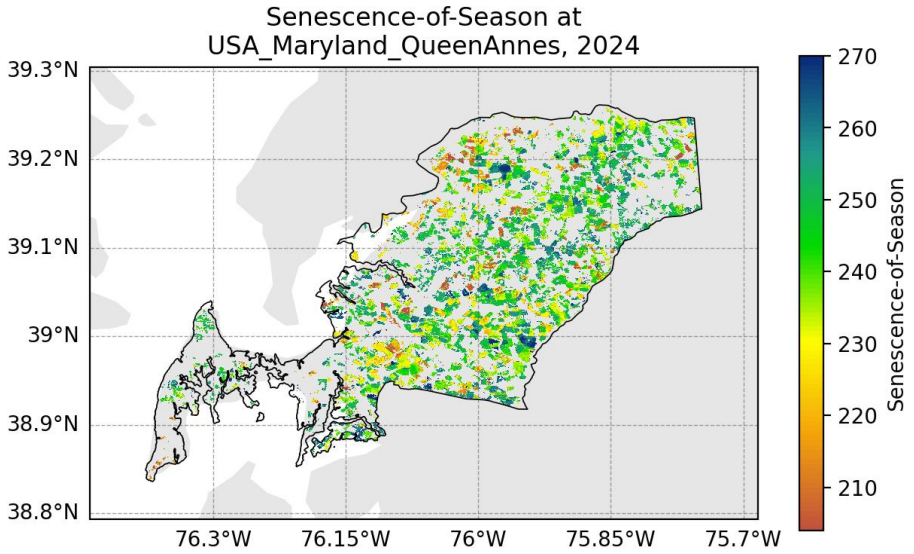


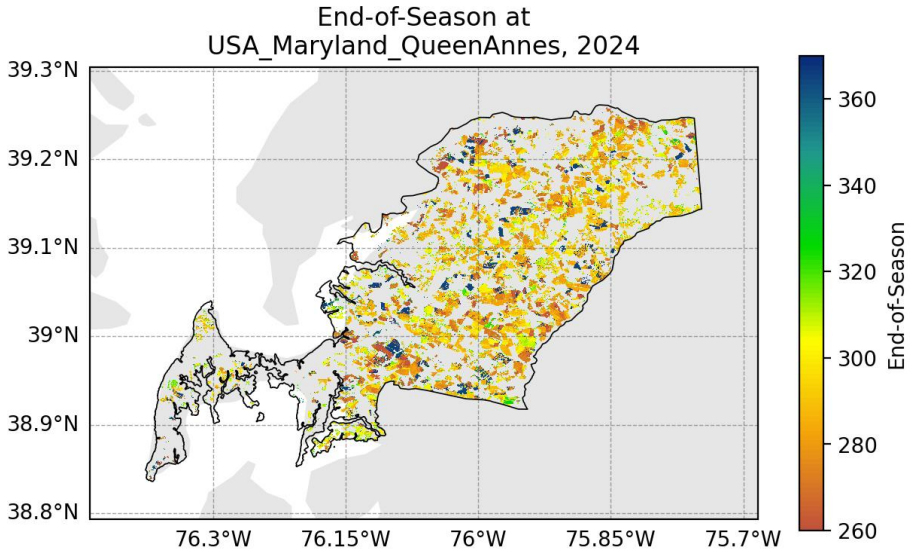
20m downscaled data: phenology detection

Start-of-season, Maturity-of-season, Senescence-of-season, and End-of-season

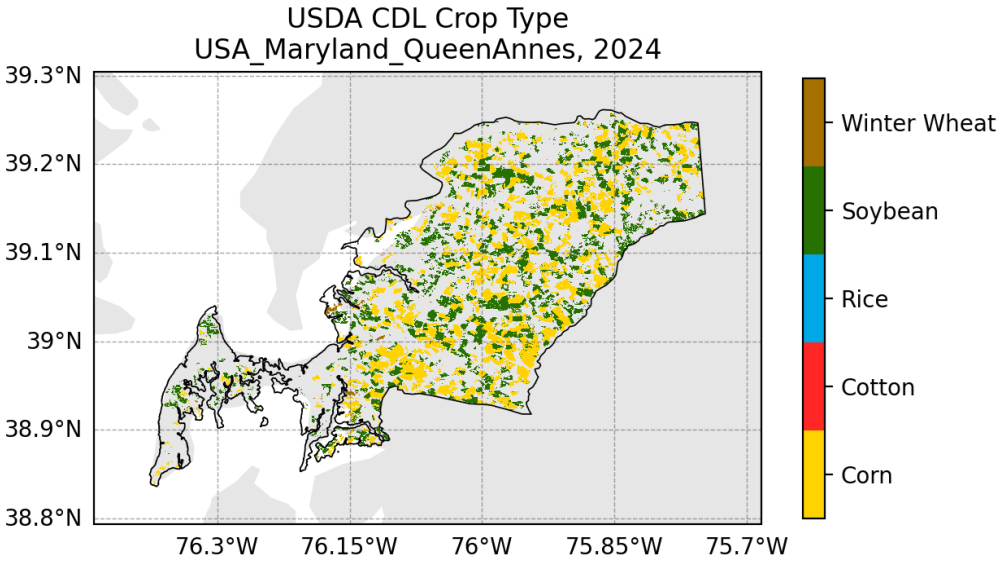


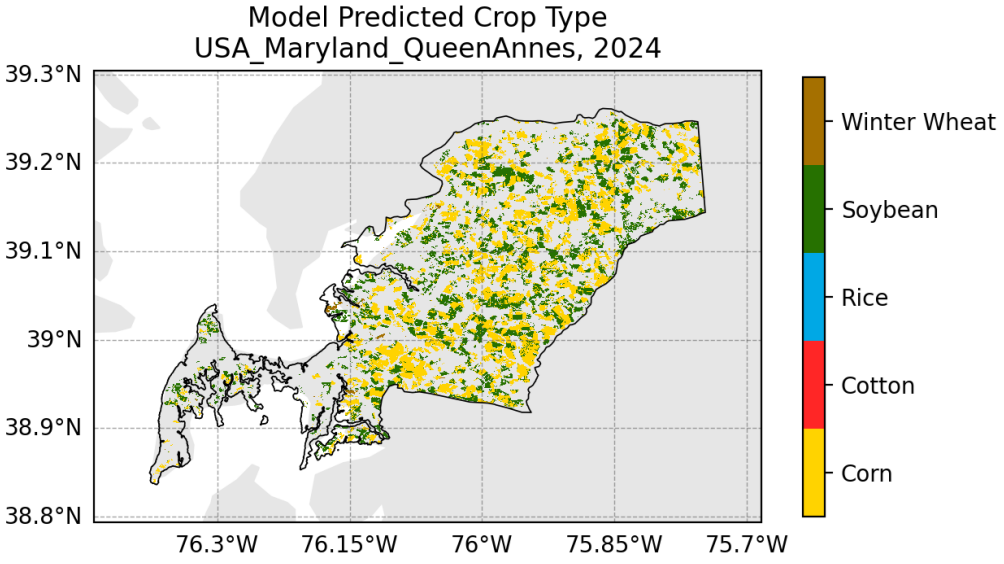


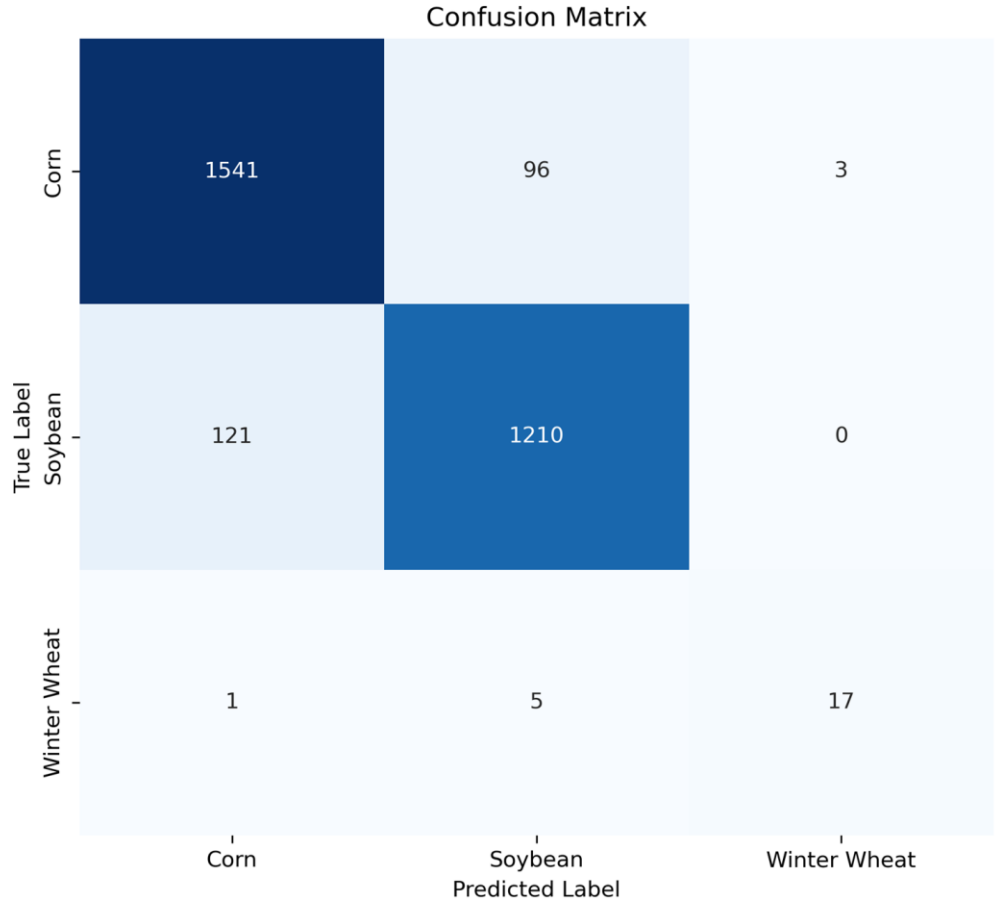




20m resolution VI for crop classification







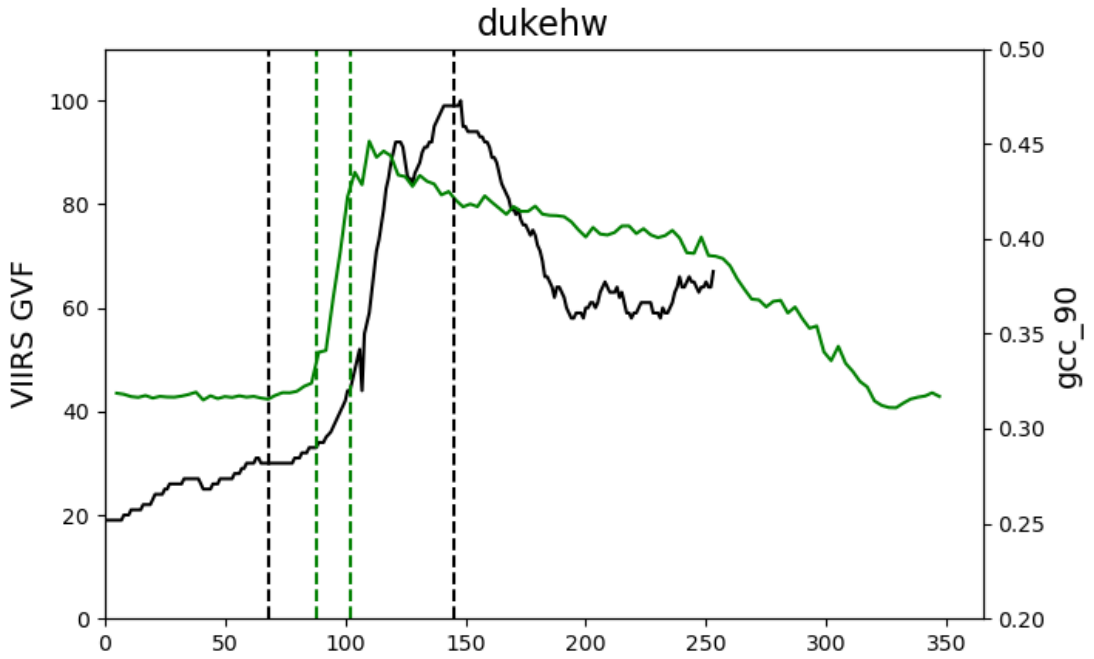
Classification Report (actual class values):

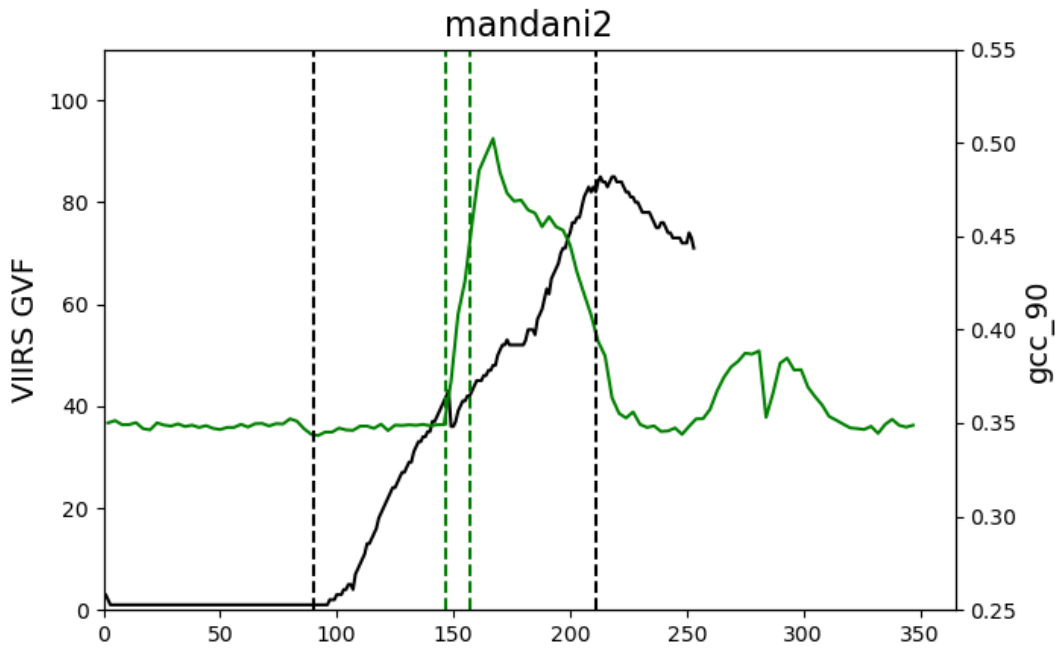
	precision	recall	f1-score	support
Corn	0.93	0.94	0.93	1640
Soybean	0.92	0.91	0.92	1331
Winter Wheat	0.85	0.74	0.79	23

Continued efforts on AI-based GVF algorithm upgrade

- Obtained time series of PhenoCam 90th percentile green chromatic coordinate (gcc_90) and GVF for a year. (GVF data were not available for the end of the year)
- Determined begin and end of greenup from maximum radius of curvature method (Zhang et al.2003)
- Results: In most cases, VIIRS GVF exhibited an earlier beginning of greenup but a later end of greenup than the PhenoCam GVF
- This could be due to the aggregation of VIIRS GVF over larger pixels than the PhenoCam areas.
- It would be useful to look at sites with uniform vegetation cover over the VIIRS pixels.
- More investigation is required to determine the cause of this pattern, and whether it is consistent with other studies.
- A Lapenta summer intern (Scarlett Pinkey) is obtaining data from more sites and years to repeat this analysis.

Continued efforts on AI-based GVF algorithm upgrade





VIIRS GVF

PhenoCam gcc_90

VIIRS Flood Mapping

June 2025

Accomplishments / Events:

- New C/C++ codes are under development due to some potential memory leak issues with current code to load and release decision trees.
- Tracking discrepancies between DB and OSPO VIIRS/ABI/AHI/SLSTR flood products. It appears that the DB system misses more granules than the OSPO system.

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic			X		Delay in executing OSTA Opt Yr 3
Schedule			X		

1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

ProTech/OSTA option year 3 notice to proceed was issued on 20 Jun 2025; therefore, only one week of work was possible in June.

Highlights:

VIIRS Imagery

June 2025

Accomplishments / Events:

- Contributed imagery/expertise to NESDIS stories:
  - Earth From Orbit: NOAA Satellites Monitor Canadian Wildfires and Smoke
  - Feature Story: A Silent Threat: How NOAA Satellites Help Save Lives in Low Visibility and Fog
- Developed and published *VIIRS Day Cloud Phase Distinction RGB* Quick Guide, available here
- 375-m version of the Fire Temperature RGB added to SLIDER JPSS CONUS sector
- Presented on VIIRS applications at the AMS Joint 21st Conference on Mesoscale Processes and 52nd Conference on Broadcast and Digital Meteorology
  - "Analyzing From Above: Viewing the Aftermath of Meteorological Impacts From Weather Satellites"
- 17 VIIRS Imagery Posts on CIRA Social Media (X) this Month. A few posts:
  - VIIRS Ash RGB Imagery of Mount Etna eruption in Italy (2.5K views)
  - VIIRS DNB NCC Imagery of Aurora and Canadian wildfires (6.1K views)
  - VIIRS Geocolor Imagery of melting snow and ice in northern Alaska (4.2K views)

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
FY26 Program Management Review	Jun-25	Jun-25	May-25	
Submit for Publication – CrIS Imagery	Mar-25	Mar-25	Mar-25	
Submit for Publication – Blowing Dust Climo	Jun-25	Jun-25	Mar-25	
Enhanced VIIRS imagery processing workflows by developing code that leverages TLE-based overpass prediction for targeted data collection, and by parallelizing image generation routines to significantly improve processing efficiency for large case studies	Jun-25	Jun-25	Jun-25	
Submit for Publication – Blowing Snow Detection via Satellite Imagery	Sep-25	Sep-25		
Completed new DNB-to-NCC LUTs for S-NPP, NOAA-20, and NOAA-21	Sep-25	Sep-25		
New Imagery products or product enhancements (display on SLIDER)	Sep-25	Sep-25	continuing	
Realtime Imagery monitoring and display systems (SLIDER, etc.)	Sep-25	Sep-25	continuing	
Interesting VIIRS Imagery to Social Media and Blogs	Sep-25	Sep-25	continuing	
McIDAS-X/V Enhancements for processing/display of VIIRS Imagery	Sep-25	Sep-25	continuing	
Block 2.3 Mx builds deploy regression review/checkout (Mx12, Mx13, Mx14			Mx12-Jan25, Mx13-Apr25	

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		x			
Schedule		X			

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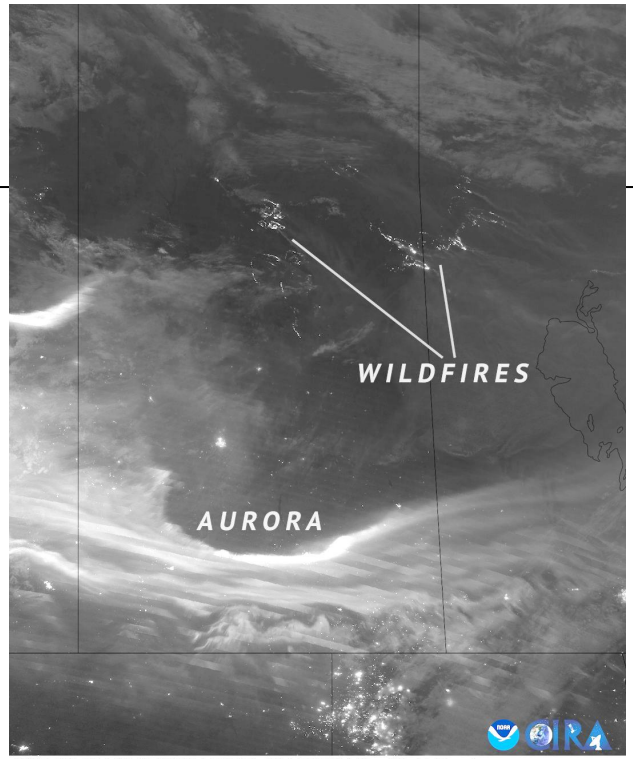
Issues/Risks:

Highlights: Image of the Month

Figure: VIIRS Day Night Band Near Constant Contrast imagery at night of Aurora and wildfires over Saskatchewan and Manitoba, Canada



2025-06-03 | 09:07 UTC | NOAA-20 | VIIRS | Day/Night Band

VIIRS SDR

June 2025

Accomplishments / Events:

- Completed copying JPSS-3/JPSS-4 VIIRS Instrument prelaunch test data from GRAVITE to a designated Google Drive
- Created report from radiometric comparisons between VIIRS and the hyperspectral sensors OCI (PACE) and EMIT (ISS) for desert, ocean, and polar scenes
- Generated NOAA-20 VIIRS SDR reflective band recalibration for 2024: lunar and solar F factors, DCC trends, combined through the Kalman filtering
- Successfully migrated and tested VIIRS geolocation monitoring tool, the version 2 Ground Control Point Matching (CPM_V2), to the NCCF VIIRS SDR Sandbox
- Generated, tested and delivered for deployment in the IDPS operations the updated NOAA-21, NOAA-20, and Suomi NPP VIIRS SDR DNB DN0 and GAIN-RATIOS LUTs that were created based on data acquired during the new moon on 6/25/2025
- Assisted in scheduling and analyzed data from NOAA-21, NOAA-20, and Suomi NPP VIIRS lunar calibration on 6/6/2025: data aligns well with long-term trends and exhibits consistency

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		x			
Technical / Programmatic		x			
Schedule		x			

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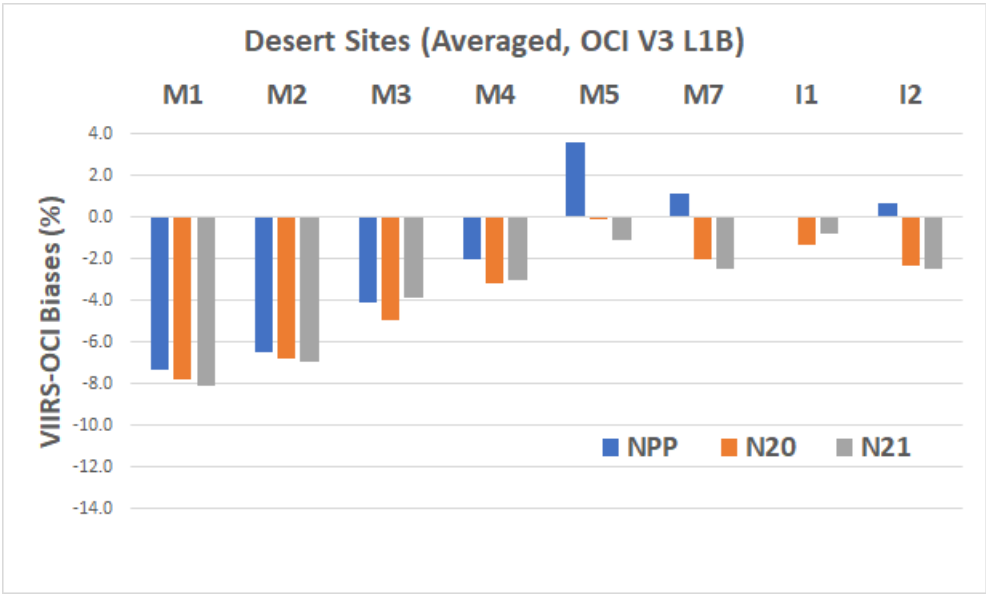
Issues/Risks:

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
TSIS-1 solar spectrum application for JPSS-3/-4 VIIRS	Dec-24		11/15/2024	
JPSS-4 VIIRS pre-launch characterization report	Mar-25		3/13/2025	
JPSS-3/-4 VIIRS granule size change verification	Mar-25		2/27/2025	Mx13 SOL
VIIRS cross-calibration with hyperspectral measurements	Jun-25		6/27/2025	
Suomi NPP and NOAA-20 VIIRS intermediate recalibration	Jun-25	Jul-25		GRAVITE
“Monthly” VIIRS lunar calibration predictions and analyses	Jul-25			
JPSS-3/-4 VIIRS waiver impact studies report	Sep-25			
Cross-calibration and comparison among NOAA-21, NOAA-20, and Suomi NPP VIIRS report	Sep-25			

Highlights:



Comparison results between VIIRS and OCI measurements from the Saharan desert sites in 2024 and 2025

VIIRS Polar Winds

June 2025

Accomplishments / Events:

- Recent efforts focused on generating VIIRS Day-Night Band (DNB) winds for nighttime scenes illuminated by the moon. It was necessary to make changes to enterprise winds algorithm settings used. The figure in the lower right panel shows S-NPP VIIRS DNB winds (left) and the Longwave Infrared (LWIR) winds (right) over the Antarctic on June 18, 2025 06:20 UTC. Qualitatively, the DNB winds look quite good and compare well to the LWIR winds. The geographic coverage of the low level DNB winds is slightly better than the LWIR winds over the Bellinghausen Sea. However, the geographic coverage over the DNB winds is much reduced over the Ross Sea as a result of saturation in the DNB image caused by the Auroras.

- Development of a polar winds pre-processing script is in progress that handles the selection of S-NPP, NOAA-20, and NOAA-21 granules used for generating a triplet of VIIRS orbital imagery that is needed to generate VIIRS tandem winds. Plans call for this script to be delivered to NESDIS/OCS ASSISTT once it is completed and fully tested.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Demonstration and validation of Polar "Tandem-Satellite" VIIRS SWIR & LWIR wind datasets over a 4-6 week time period and make them available to NWP Centers	Jun-25	Jun-25	Jun 25	
Incorporate VIIRS DNB (Near-Constant Contrast) updates from heritage to enterprise winds algorithm in FW2.x	Jun 25	Jun 25	Jun 25	
Develop and validate approaches to generate VIIRS winds from tandem-satellite pairs of images (enables global coverage)	Jun 25	Jun 25	Jun 25	
Feature tracking QC for VIIRS winds: Investigate scan angle diffs between successive orbits & impact on VIIRS winds quality; account for parallax	Jun 25	Jun 25	May 25	
Development of updated VPW Validation and monitoring system	Jun 25	Jun 25	Jun 25	
Support transition of "Single-Satellite" VIIRS SWIR winds into operations	Sep 25	Sep 25	In progress	
Begin transition of Tandem-Satellite" VIIRS LWIR and SWIR winds to operations (if funded)	Sep 25	Sep 25	In progress	
Addition of ERA5 analysis to winds team's validation tool set	Sep 25		Apr 25	
Deliver enterprise winds algorithm updates, as needed			In progress	
Dev and testing of minor algorithm updates as needed. Continued monitoring and validation of VPW winds;	Sep 25		In progress	

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
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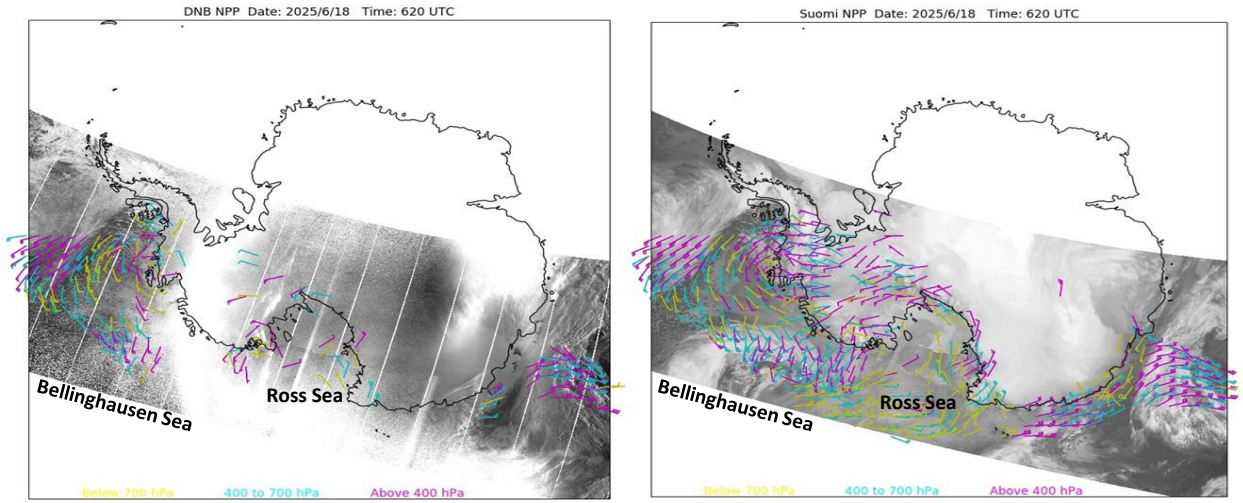
Issues/Risks:



S-NPP VIIRS DNB Winds (left) and LWIR Winds (right)
18 June 2025 06:20 UTC over the Antarctic

Volcanic Ash

June, 2025

Accomplishments / Events:

- Quality/Oversight Continued to ensure high quality Volcanic Ash retrievals from EDR algorithms and VOLCAT. Routine validation of existing JPSS volcanic ash EDRs from current sensors will continue as needed, including support for ASSISTT/NDE evaluations. VOLCAT will replace volcanic ash EDRs upon successful completion of VOLCAT transfer to operations within NCCF.
- VOLCAT VIIRS volcanic ash plume identification and extraction work is an enhancement to the VOLCAT methodology. As reported previously, the newly developed random forest model has demonstrated improved skill score metrics relative to the current VOLCAT methodology using the validation portion of the classified case database. Additionally, it is important to assess the performance of the random forest model on recent real-time results. The VOLCAT team has focused on comparing the random forest results to the current VOLCAT methodology results for 7 days from May and June 2025. This analysis indicates that the random forest performance for these days is consistent with the improvements noted using the validation dataset. The figure to the right shows two current VOLCAT methodology false alarm ash alerts that have been eliminated with the random forest approach. As reported previously, the primary gains in detection scoring are related to false alarm reductions.
- The next focus for the VOLCAT team related to the improved VIIRS-based detections using the random forest approach is to complete assessment using recent real-time results, evaluate any random forest design/training improvements that could further improve results and begin planning for how to implement the random forest into the VOLCAT Fortran workflow.

Overall Status:

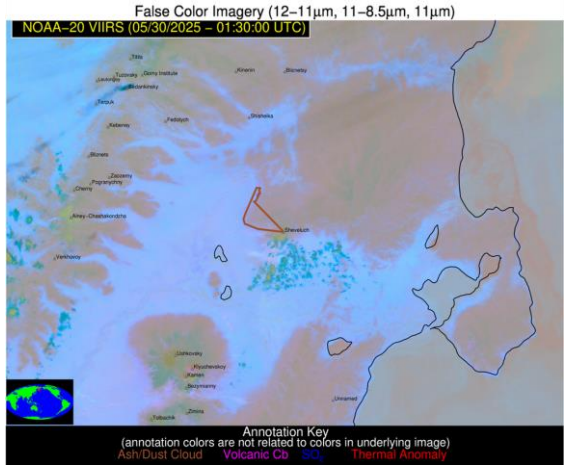
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		x			

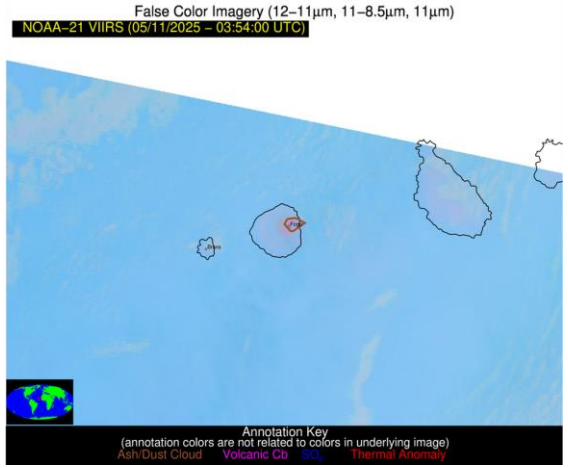
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Develop updated user training material	Jun-25	Jun-25	Jun-25	
Improve VIIRS volcanic ash plume identification and extraction	Mar-25	Mar-25	Apr-25	
Integration of VIIRS I-bands in VOLCAT workflow	May-25	May-25	May-25	
Imaging capabilities of VIIRS I-bands in VOLCAT end-user web graphics	Nov-24	Nov-24	Nov-24	
Quantify added value of VIIRS I-bands	Sept-25	Sep-25		
Update VOLCAT code to ingest any JPSS-3 proxy data if becomes available	Sep-25	Sep-25		

Highlights: Below are two examples of current VOLCAT methodology false alarms from the experimental processing system at UW-CIMSS that have been eliminated using the random forest methodology. The left example from the Sheveluch volcano in Kamchatka and right example from the Fogo volcano in the Azores.





Surface Reflectance

June 2025

Accomplishments / Events:

- Test the surface reflectance mitigation method using long-term AERONET data and investigate the impact of aerosol model changes and differences in AOD550. Explore surface reflectance algorithms using new aerosol model configurations that exclude the dust model.
- Complete the updated DAP delivery package, including software, documentation, and test data for integration by the ASSIST team.
- Draft a manuscript summarizing the VIIRS validation methodology and results and review the progress on understanding aerosol model impacts on surface reflectance retrieval.
- Develop an updated surface reflectance monitoring and display website, featuring enhanced true-color imagery.

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

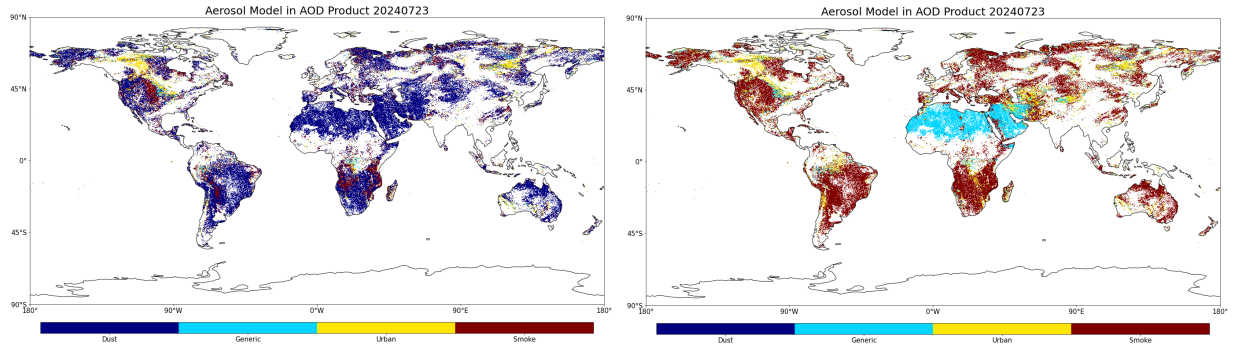
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Develop SR software package using the reprocessed SDR to reduce the inconsistency	Nov-24	Nov-24	Nov 25, 2024	
The reprocessed SR consistency evaluation	Dec-24	Dec-24	Dec 20, 2024	
SR Algorithm improvement to address the issues found in validation	Mar-25	Mar-25	Mar 25, 2025	
updated DAP delivery (include the mitigation algorithm)	Jun-25	Jun-25	Jun 30, 2025	
SNPP, N20 & N21 monitoring and validation and user feedback & response	Sep-25	Sep-25		

Highlights:



Surface reflectance mitigation algorithm replace the dust aerosol model with the other three models, to reduce the bias caused by misclassified dust model, new 3-model configuration shows smoke model is the dominate model, which need further investigation.

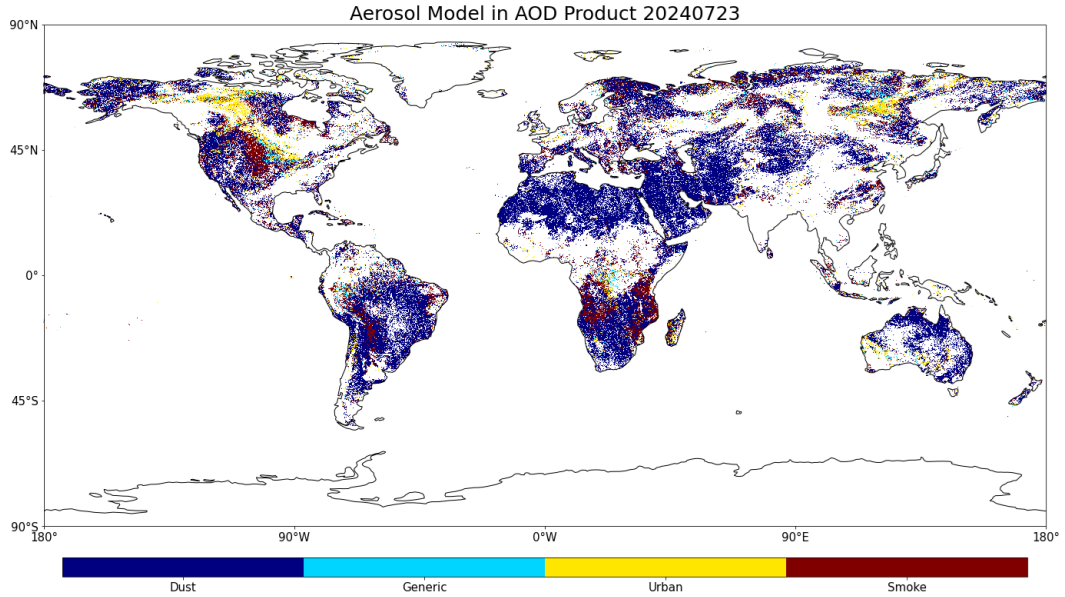
Surface Reflectance Quality Flag & Criteria

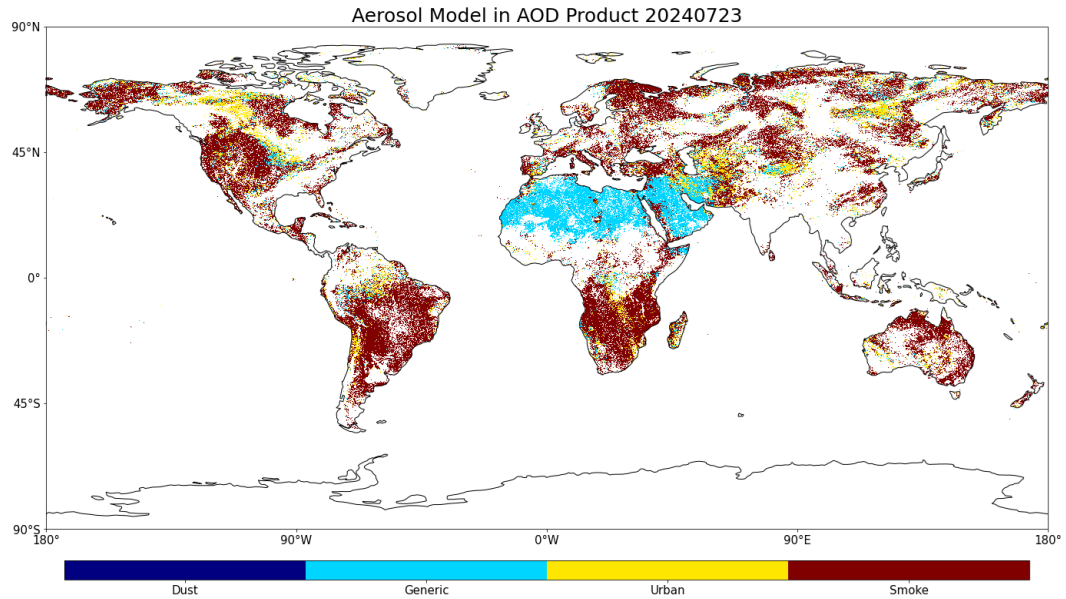
- AOD quality flag
  - High AOD from cloud mask (AOD550 > 1)
  - Internal high AOD test
    - Metrics: the difference between atmospheric reflectance and molecular reflectance of M4 band (green, 550nm)
  - Quality flag from AOD product.
- View conditions
  - Solar zenith angle: night (VZA > 85)
- Input data availability
  - SDR, GEO, AOD, TPW, Ozone, Surface Pressure out of range, here AOD missing value will use climatology.
- Overall retrieval quality (Previous)
  - Any of the following sceanario happen will identified as bad retrieval
    - The low sun (night)
    - Input data out of range
    - SR out of range [-0.01, 1.6]
- Updated retrieval quality (For monitoring)
  - Remove the low sun condition
  - Add non confidently cloudy as condition
  - Reduce the cloudy pixel caused SR out of range.

Aerosol Model for Surface Reflectance Retrieval

- **Aerosol model configurations**
- MODIS AOD C5 product configuration: Dust, generic, Urban, Smoke. Dust and smoke are dominate types which is abnormal.
- The mitigation algorithm using the other three model to replace dust model according to the residual, however, most of them are classified as smoke model.
- In term of AOD550 & SR performance, the 4-model configuration have good AOD performance, with negative bias for dust model in SR, the mitigation algorithm significantly reduce the bias.
- Alternative algorithm will use VNP09 aerosol model configuration, which drop the dust model, using

- **Aerosol model in AERONET validation**
  - Aerosol model parameters
    - Size distribution model
    - Size optical properties (complex refraction indices)
    - Particle shape (non spheric)
  - AERONET aerosol model
    - Regression model derived from long term data
    - Reduce the instant retrieval uncertainty
  - Aerosol model evaluation
    - Use the AERONET regression model derived aerosol model to validated the AOD product.





Aerosol

May 2025

Accomplishments / Events:

- Developing Python code to evaluate GEO-LEO merged Level 3 aerosol optical depth product, developed for the NWS applications. Matchup dataset using AERONET as reference is being generated
- Conducting research work to generate a new aerosol optical depth look-up table using aerosol volume size distributions as an additional variable in anticipation of the availability of PACE data from NASA. The expectation is that having near real time information of PACE volume size distribution could enhance the aerosol optical depth retrievals
- Worked with EPA and NWS and received feedback on the relevance and significance of having near real time aerosol products for their applications. The feedback was provided to SAE to be folded into the white paper they are working on to document a prioritized product list
- Testing image enhancement approaches to display OMPS smoke and dust detection product
- Supported ASSIST team with the conversion of volcanic ash product from its native format (.csv) that is event based to JPSS VIIRS granule based format so it can be imported into the ADP files.

Milestones	Original Date	Forecast Date	Completion Date	Variance Explanation
Subtask 2.1: *Identify source of high latitude false dust detections, especially clouds mis-identified as smoke*	*Mar 2025*	*May 2025*		
Subtask 2.2: *Work with Volcanic Ash team to import the ash detection into ADP*	*Jun 2025*	*Jun 2025*		
Subtask 2.3: *Make code updates to ADP algorithm to implement "smoke call back"*	*Sept 2025*	*Sept 2025*		
Subtask 2.4: *Adapt ADP algorithm to NOAA-21 OMPS*	*Dec 2025*	*Dec 2025*		
Subtask 2.5: *Begin the process to transition VIIRS PM2.5 algorithm to operations*	Mar 2026	Mar 2026		
Adapt the VIIRS AOD algorithm to use PACE OCI data	Feb 2025	Feb 2025	Feb 2025	
Develop new LUTs and PCTs for over bright-land retrieval June 2025	Jun 2025	Jun 2025		
Evaluate Metop-SG AOD retrievals using seasonal samples of VIIRS proxy data	Jul 2025	Jul 2025		
Complete design, coding and testing of simultaneous multi-spectral reflectance fitting for AOD retrieval	Aug 2025	Aug 2925		
Complete assessment of a multi-year VIIRS EPS SNPP, NOAA-20 and NOAA-21 AOD	Aug 2025	Aug 2025		
Deliver updated bright-land AOD algorithm to ASSISTT	Sep 2025	Sep 2025		

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
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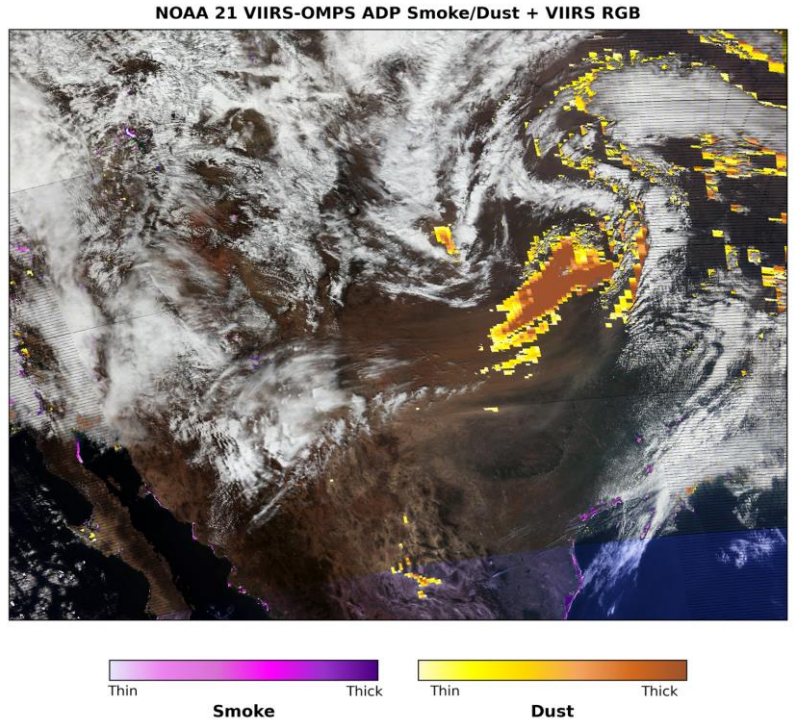
Issues/Risks:

No risks.

Highlight:

An example image showing OMPS ADP product oversampled to VIIRS resolution for a dust event in the US



Aerosol

Task Category	Task/Description	Start	Finish	Deliverable	Requirement (Dev Only)
Development (D)	Investigate potential improvement in AOD retrieval over bright land	Dec 2, 2024	Jun 30, 2025	LUTs and PCTs for over bright-land AOD retrieval	JPSS Level 1 Requirements Document Supplement
	Develop an alternative AOD algorithm using simultaneous multi-spectral fitting of reflectances	Jan 6, 2025	Aug, 29, 2025	Updated algorithm	JPSS Level 1 Requirements Document Supplement
	Evaluate merits of TEMPO/PACE aerosol data for improving VIIRS AOD retrievals	Mar 3, 2025	Sep 28, 2025	Report documenting work done, findings and recommendation	JPSS Level 1 Requirements Document Supplement
Integration & Testing (I)	Work with the ASSIST team in delivering DAPs associated with algorithm updates	Oct 1, 2024	Sep 28, 2025	Updated code, LUT and PCT	
Calibration & Validation (C)	Complete evaluation of extended record of merged/gridded VIIRS global AOD products	Aug 1, 2025	Sep 28, 2025	Summary report on accuracy and precision, and time series	
	Complete assessment of a multi-year VIIRS EPS SNPP, NOAA-20 and NOAA-21 AOD	Feb 1, 2025	Aug 29, 2025	Summary report on accuracy and precision, and time series	
	Update Enterprise Cal/Val plan if needed based on latest lessons learned	May 1, 2025	July 29, 2025	Updated Cal/Val Plan for AOD	
Maintenance	Update surface reflectance relationships in AOD algorithm for all JPSS satellites	Feb 3, 2024	Aug 29, 2025	Updated surface reflectance relationships	
	Extend record of merged/gridded VIIRS global AOD products	Jan 13, 2025	Jul 28, 2025	Extended record of merged/gridded AOD	
LTM & Anomaly Resolution (L)	Develop new concept and tool used for LTM of VIIRS AODs	Dec 1, 2024	May 30, 2025	Updated LTM tool; Demonstration of new concept	

Aerosol

June 2025

Task Category	Task/ Description	Start	Finish	Deliverable	STATUS
Development (D)	Identify source of high latitude false dust detections, especially clouds mis-identified as smoke	Oct 2023	Jan 2025	Potential improvements to algorithm/product	Carried over from FY24
	Work with Volcanic Ash team to import the ash detection into ADP	Oct 2024	Mar 2025	Updated ADP output file	
	Make code updates to ADP algorithm to implement “smoke call back”	Oct 2024	July 2025	Updated ADP algorithm	
	Analyze EarthCare data to determine its applicability to validate ADP	Jan 2025	Sep 2025	Improved validation of ADP	
	Apply ADP to NOAA-21 OMPS	Oct 2024	Sep 2025	New capability/Innovation	
Integration & Testing (I)	Work with ASSIST team in delivering DAPs associated with algorithm updates (algorithm upgrade with call back smoke retrievals)	Sep 2024	Sep 2025	Code delivery	
	Evaluate test data from NDE I&T and ASSISTT as required/needed	Sep 2024	Sep 2025	Assessment report	
Calibration & Validation (C)	Demonstrate NOAA-21 ADP product maturity	TBD	TBD	Report	
	Continue assessment of NOAA-20 and NOAA-21 ADP product quality	Ongoing	Ongoing	Briefings as needed	
	Automated assessment of NOAA-20 and NOAA-21 ADP product quality on daily basis	Ongoing	Ongoing	Report	
Maintenance	Work with SDR teams to maintain reprocessed ADP product current	Oct 2024	Sep 2025	Upload reprocessed product to BDP	
LTM & Anomaly Resolution (L)	Update tool used for LTM to ingest J2 ADP, regularly monitor tool outputs to identify anomalies	TBD	TBD	Report on any anomaly findings	

OSPO LEO TTA FY25 Monthly Update

July 2025

Accomplishments / Events:

- Conduct technical reviews (e.g. operational readiness reviews) and operational briefings for each of the associated transition to operations projects
  - Enterprise Flood Mapping
  - Sentinel 1C SAR Winds
  - Ozone Mapping and Profiler Suite Nadir Profiler (OMPS-NP) V8Pro Update
- Implementation of the algorithms into Operations according to JPSS schedules
- Implementation of the Integrated Calibration/Validation System (ICVS) enhancements for OSPO - to improve the Level 1 (sensor data records) operational data quality monitoring
  - The OSPO has generated the sample output and is now working with STAR to verify the results

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Enterprise Flood Mapping	Jul-25	Jul-25	Jul-25	
Sentinel 1C SAR Winds	Jul-25	Jul-25	Jul-25	
NTOAST	Jun-25	Aug-25		
N21 Ocean Color, OMPS LP, eTRaP	Jun-25	Aug-25		
Complete the ICVS-light subset initial implementation and provide a demo	Mar-26	Mar-26		

Highlight: ALPW during the San Antonio/Central Texas Flood Event

- Andrew Orrision, a Forecast Meteorologist from NOAA/NWS/NCEP/Weather Prediction Center, made the comment in his July 04 email regarding the usefulness of Advected Layered Precipitable Water (ALPW) product for providing precipitation/flood guidance for the San Antonio/Central Texas Flood event: “The ALPW products once again show their powerful value and usefulness!”
- The image of the 00 UTC July 4 Advected Layer Precipitable Water product displayed below indicates an exceptionally high amount of precipitable water in the upper layers over this region.