NOAA JPSS Monthly Program Office

AMP/STAR FY25

Lihang Zhou, LEO Satellite Product Manager
Ingrid Guch, Acting JPSS STAR Program Manager

February, 2025

Highlights from the Science Teams (January 2025)

STAR Satellite-$PM_{2.5}$ Product used to Support Idaho's "Exceptional Event" Petitions to US EPA

The Idaho Department of Environmental Quality (DEQ) used NOAA's VIIRS-estimated surface fine particulate matter ($PM_{2.5}$) product as evidence of wildfire smoke impacts in their 2022 and 2023 "Exceptional Event" demonstrations to the US Environmental Protection Agency (EPA). Developed by the STAR Aerosols and Atmospheric Composition (AAC) Science Team, this product is generated using VIIRS AOD from the SNPP and NOAA-20 satellites in a geographically weighted regression (GWR) algorithm.

"Exceptional Event (EE)" demonstrations are petitions filed by states for the exclusion of certain air quality regulatory monitor data that indicate exceedances of the National Ambient Air Quality Standards (NAAQS). If a state agency like DEQ proves that poor air quality occurred because of a natural "exceptional event", such as a wildfire, then the state is not held responsible for any violations of the NAAQS caused by the event.

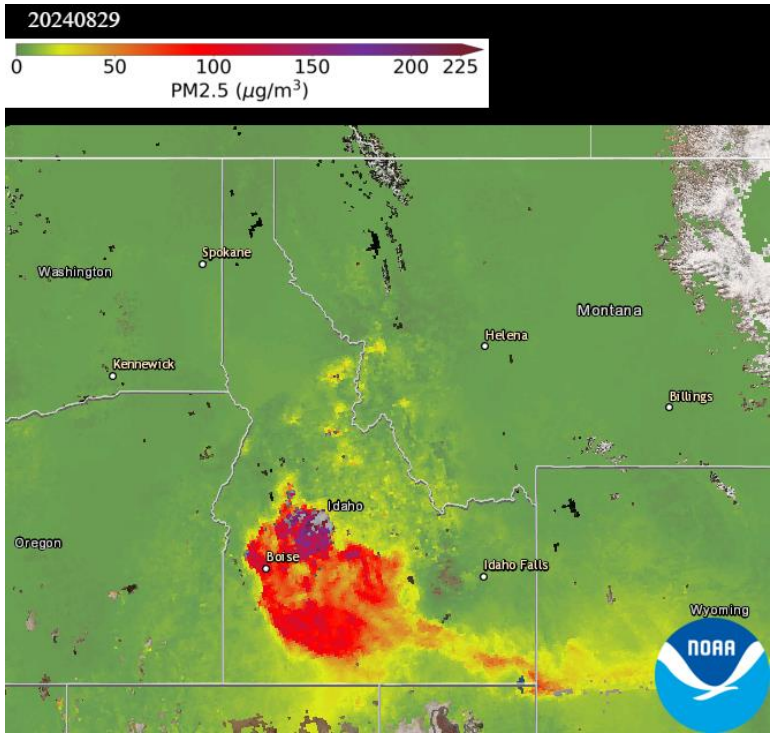


Figure. Daily VIIRS-estimated surface $PM_{2.5}$ for August 29, 2024 from the *AerosolWatch* website showing exceedances of the daily NAAQS in Idaho.

Highlights from the Science Teams (January 2025)

Collaboration on integrating dynamic land surface properties in Noah-MP model

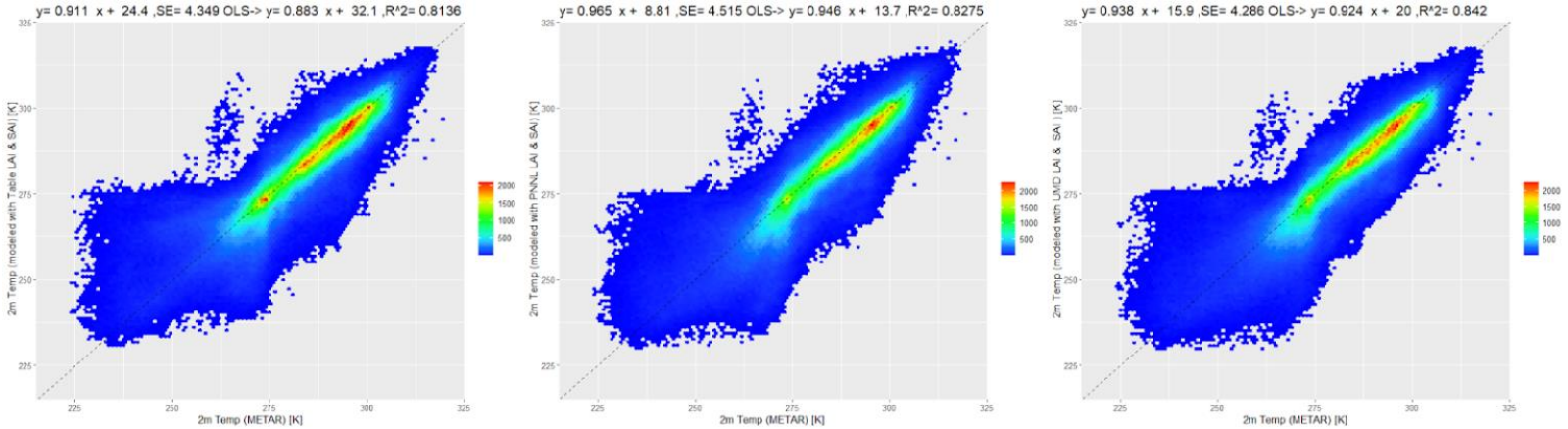


Figure. Comparisons in prediction accuracy of 2 m air temperature in USF land model by using different LAI datasets as inputs. Left: tabulated LAI; Middle: PNNL LAI; Right: NESDIS VIIRS LAI.

The STAR Land Product Development Team is collaborating with NCEP/EMC on the implementation of the current operational Leaf Area Index (LAI) and the development of a new vegetation index, the Stem Area Index (SAI).

According to EMC's tests, incorporating VIIRS operational LAI into the Unified Forecast System (UFS) land model improves the model's performance in predicting 2 m air temperature. The figure compares the prediction accuracy of 2 m air temperature in the UFS land model using LAI data from three sources: tabulated values, values from the Pacific Northwest National Lab, and VIIRS operational LAI. The results demonstrate that: 1) both PNNL and NESDIS VIIRS LAI data enhance the 2m temperature forecast over North America compared to tabulated LAI.; 2) VIIRS LAI data achieve the best performance, with higher R^2 values (lower scatter and greater density along the 1:1 line) and the lowest RMSE. Accordingly, the STAR Land Team is partnering with the EMC for further development and R2O transition.

Highlights from the Science Teams (January 2025)

LEO Snowfall Rate Product Demonstrates Value in Weather Forecasting

Area Forecast Discussion

National Weather Service Baltimore MD/Washington DC

401 AM EST Sun Jan 19 2025

...

Model trends early this morning show Arctic front has slowed down considerably since yesterday and is not fcst to clear the northern half of the fcst area until after 18Z. Meanwhile, models trends and microwave imagery through the snowfall rate product show precip arriving sooner than previously expected.

Microwave passes since 0220Z showed that snow has been falling in the mountains since that time and a more recent pass from 0800Z showed that snow, at least aloft, has made it to areas just west of I-81. Further east, gridded NUCAPS data showed that 925 and 850 mb 0C isotherms are further north than model guidance suggest and given current temps in the upper 30s and slower trend on the passage of the Arctic front indicate that areas along and south of Interstate 66 and US-50 will see more rain or mixing with rain at the beginning of the precip event.

...

The Baltimore MD/Washington DC Weather Forecast Office referenced the NESDIS LEO Snowfall Rate (SFR) product during their Area Forecast Discussion on January 19. The product provided situational awareness for the progress of the snowstorm and demonstrated its usefulness as a tool for weather nowcasting. Additionally, H. Meng has been corresponding with Luis Rosa, the Lead Meteorologist at the Baltimore MD/Washington DC WFO, about the SFR and the merged radar-satellite snowfall rate product, mSFR. Mr. Rosa expressed appreciation for these products, particularly for their low latency. The SFR team produces the products using direct broadcast data and posts the images online within 15-25 minutes of satellite overpasses. The SFR website is designed to support nowcasting and undergoes continuous development based on user feedback.

Highlights from the Science Teams (January 2025)

NUCAPS Sounding Temperature Products Observe Cold-Air Outbreak over North America

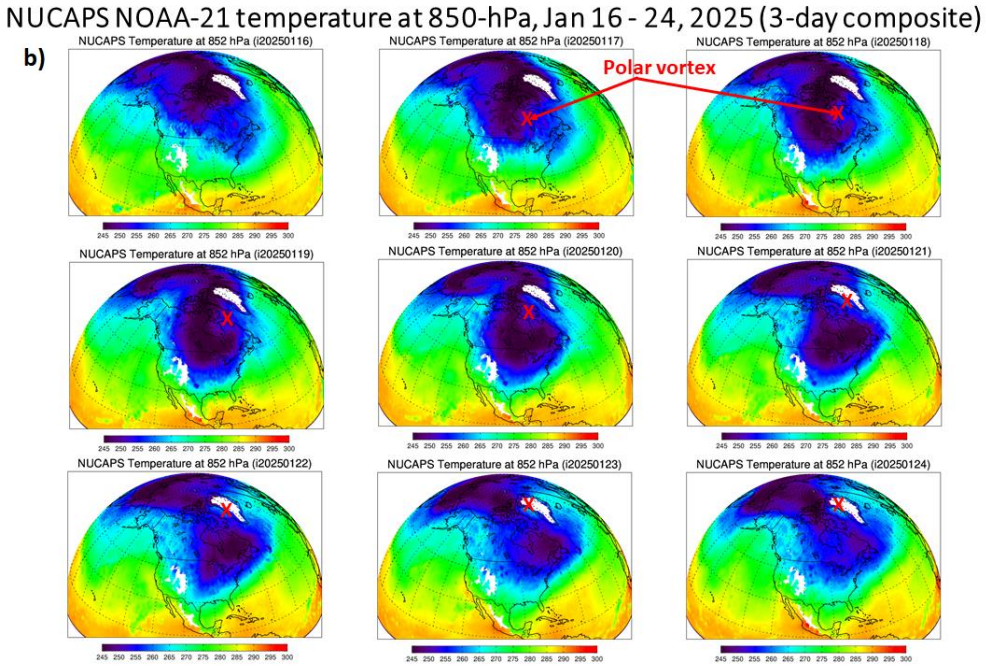


Figure. Daily NUCAPS 850 mb Northern Hemisphere temperature maps, showing the extent of freezing (blue shading) in the contiguous United States. The center of the southern extension of the polar vortex is marked by a red “X”.

In January 2025, a cold air outbreak from the Arctic caused record-low temperatures and historic snowfall in parts of the United States and was monitored and anticipated by the NUCAPS. The outbreak was caused by a combination of factors that included a prominent extension of the polar vortex centered over eastern Canada and a persistent strong ridge of high pressure near Alaska, a dominant synoptic pattern from January 1 to January 20, 2025. Daily NUCAPS 850 mb Northern Hemisphere temperature maps, indicate the extent of freezing (blue to indigo shading), with temperatures at or below -25°C moving into the northern contiguous United States (CONUS) between January 18 to January 22, 2025, as well as the location of the center of the polar vortex (red “X”). The NUCAPS daily temperature maps show the persistence of the polar vortex over eastern Canada from early to mid-January.

Highlights from the Science Teams (January 2025)

Successful Recovery of SNPP ATMS Microwave Sensor Observations

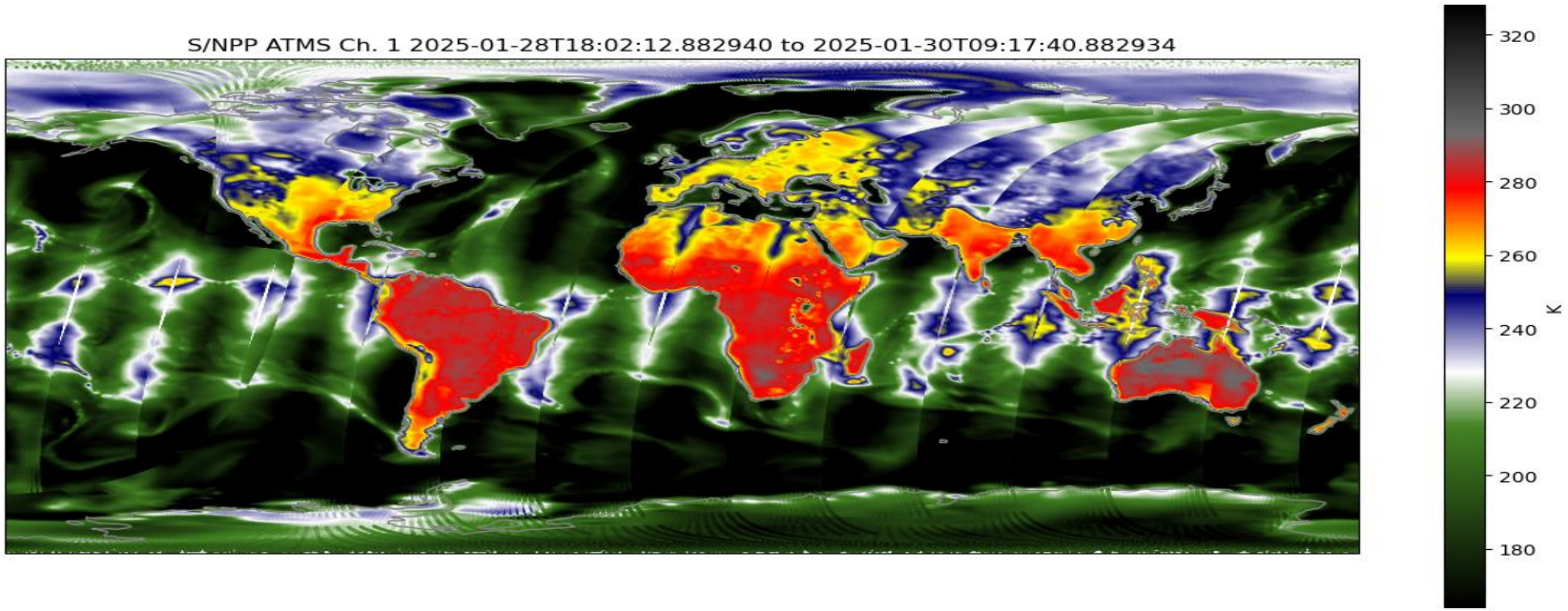


Figure. Microwave Observations from the S-NPP ATMS sensor after the instrument reactivation on January 28, 2025.

On January 28, 2025, at 18:00 UTC, the SNPP ATMS instrument was reactivated after being temporarily disabled due to anomalous elevated motor currents and temperatures on November 19, 2024. The STAR's ATMS Calibration/Validation (Cal/Val) Team conducted a rapid assessment of the recovered ATMS data, enabling the OSPO to resume data distribution promptly. Following a comprehensive evaluation, the Cal/Val Team confirmed that the sensor's calibrated data had returned to pre-anomaly quality and met operational requirements. Based on this analysis, the team recommended resuming SNPP ATMS data distribution to users at 00:00 UTC on January 31, 2025. This marks the successful recovery of the SNPP ATMS microwave sensor after more than two months of deactivation. The Cal/Val Team will continue to collaborate with the OSPO office to monitor sensor data quality, ensuring adherence to operational standards.

Highlights from the Science Teams (January 2025)

VIIIRS Captures major Los Angeles Wildfires

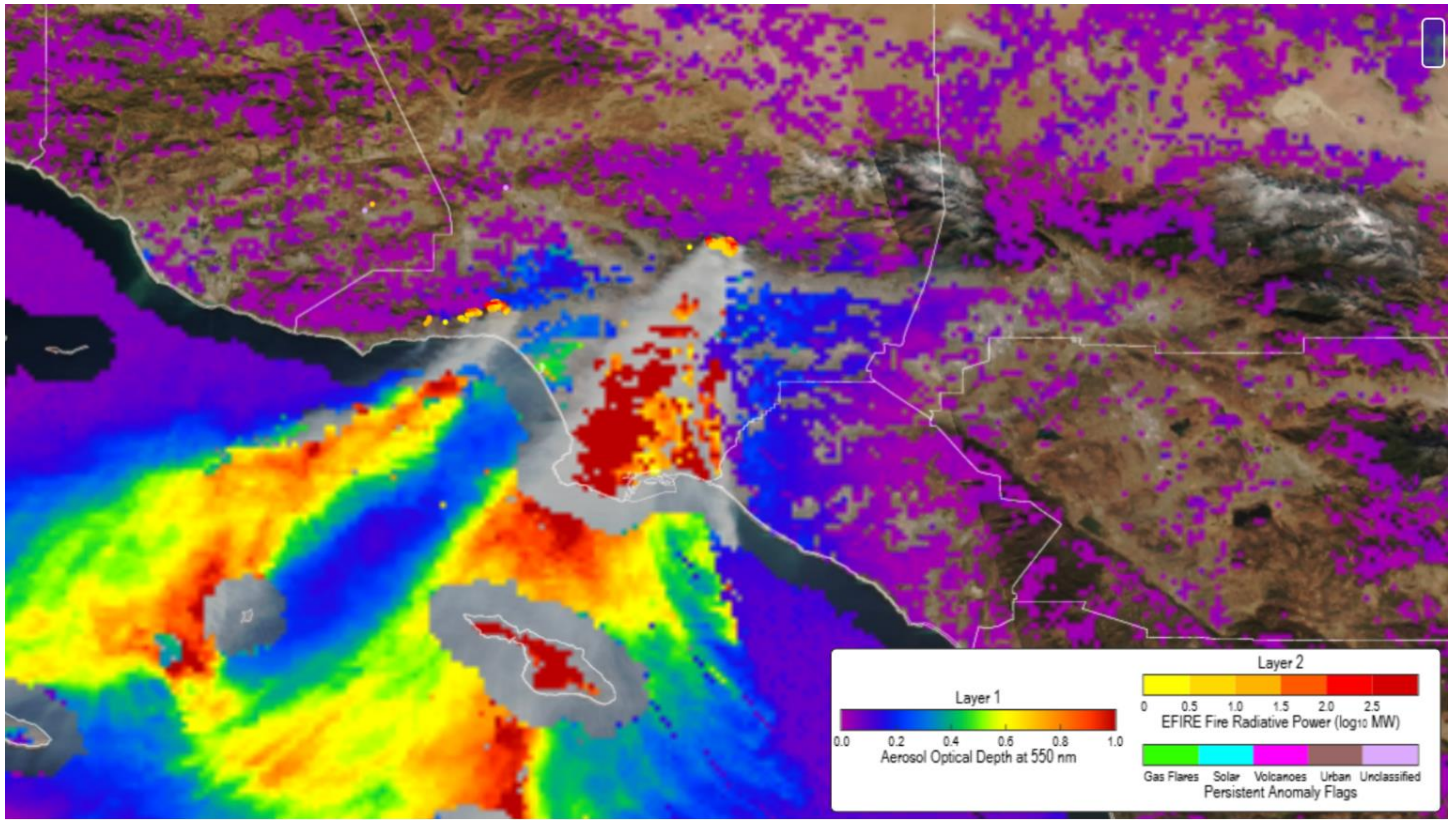


Figure. NOAA-21 VIIRS Active Fire hotpost (red and yellow dots), overlaid with VIIRS Aerosol Optical Depth (rainbow) on top of a VIIRS True Color background for January 9.

The combination of a wet 2023 and a very dry fall and winter in 2024 set the stage for explosive wildfires in the Los Angeles area starting on January 7, 2025. Several large wildfires broke out in the Los Angeles metro area destroying nearly 20,000 homes and displacing several hundred thousand residents.

These fires were captured by VIIRS as shown in the figure above.

Accomplishments

Delivery Date	Cloud Containerized Algorithm Packages (CCAPs) – Enterprise Products:	Recipient
01/06/2025	**EN-CloudMask_v1: SCR**: Preliminary EN-CloudMask CCAP v1-0 delivery for software code review by OSPO. This CCAP includes Cloud Mask updates and a separate unit for Ancillary files.	SCR to OSPO
01/13/2025	**LAI_V1-2:** Full patch CCAP delivery for LAI to include a fix for the end of year weekly cases.	NCCF
01/17/2025	**Toolkit_v9:** v9 Patch Delivery of BUFR Toolkit v7.0 to the NCCF S3 bucket. This update includes GOME2 V8TOz encoder to fix overflow and update OMPS-LP encoder to v2.7..	NCCF
01/31/2025	**TOAST_V1-2:** This is a patch CCAP of TOAST delivery to update the images produced by the science code to match (closely) what images at NCCF are outputting. Update names of image files and minor metadata updates.	NCCF
02/07/2025	**EN-Toz_V1:** This is a patch CCAP of TOAST delivery to update the images produced by the science code to match (closely) what images at NCCF are outputting. Update names of image files and minor metadata updates.	NCCF
02/04/25	**CCR 25-7579 ADR 11191 N21:** VIIRS SDR LUT Update F-PREDICTED #11 (STAR Science Team Delivery to IDPS)	IDPS
02/10/2025	**MiRS-V5:** This Final Delivery for MiRS release version 5 to CSPP which includes the yearly maintenance update to the MiRS algorithm to v11.10. This includes removing the SnowFall Rate algorithm from this package as well as changing the IMG netCDF4 data from packed integers to float values.	NCCF

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**
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**
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**
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**
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**
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**
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**
NOAA-20	Monthly VIIRS LUT Update of DNB Offsets and Gains	9/9/24, 10/9/24, 11/7/24, 12/6/24, **01/7/25, 2/4/25**
NOAA-21	Monthly VIIRS LUT Update of DNB Offsets and Gains	9/9/24, 10/9/24, 11/7/24, 12/6/24, **01/7/25, 2/4/25**
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)

All NOAA-21 products attained Validated Maturity !!

FY25 STAR JPSS Milestones (1 of 2)

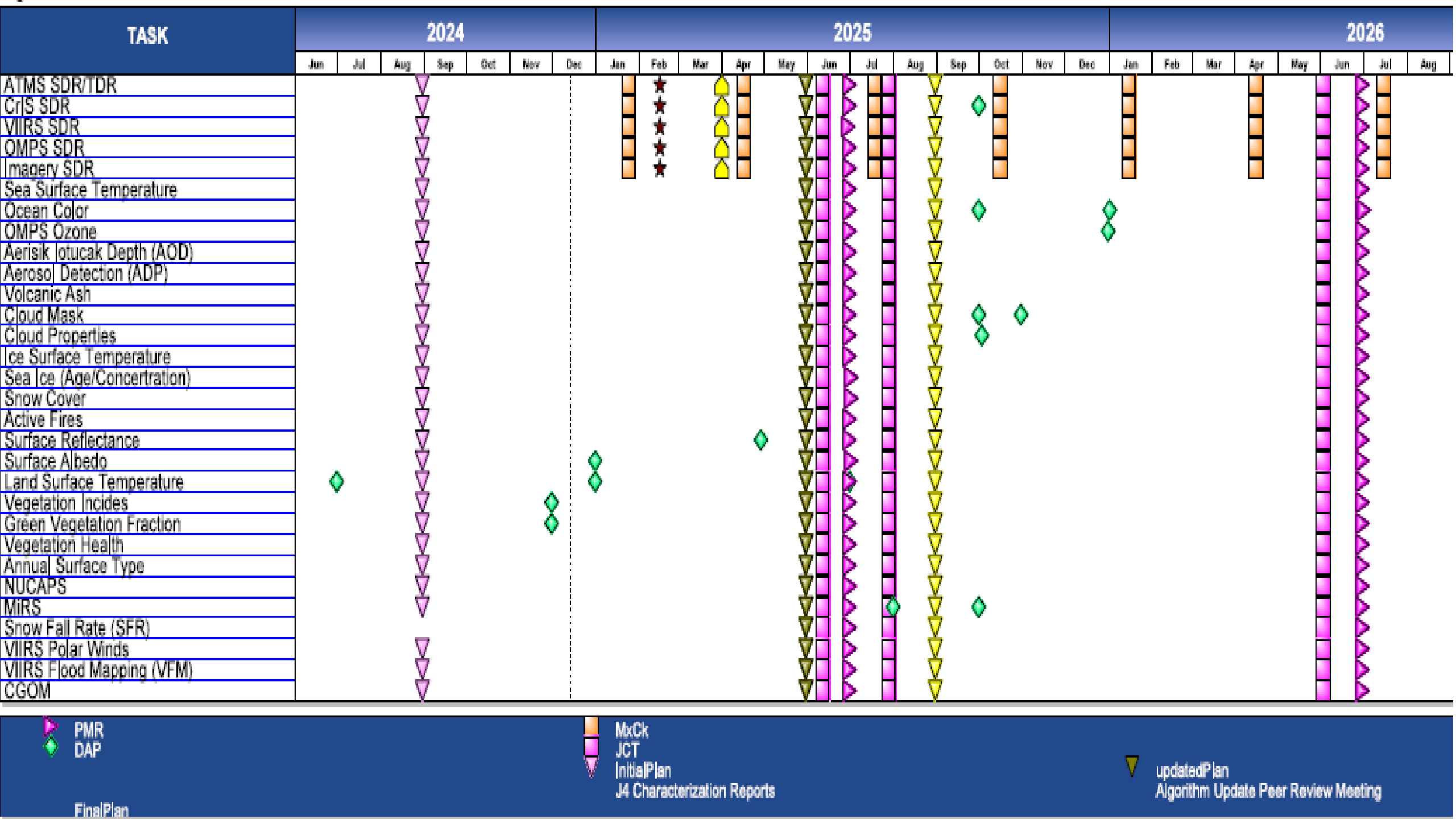
Milestones/Algorithm Updates	Original Date	Forecast Date	Actual Completion Date	Variance Explanation	Status
Ocean Color_v2 (Legacy migration to NCCF)	Jan-25	Jan-25	On-track for January 27, 2025 **Pushed to February 13.**	ASSISTT has provided the full list of products to OSPO, NCCF, and STAR for review on December 13, 2024. We received feedback OSPO and currently 3 regions data are produced, and 5 more regions need to be included. **Fill values are getting tested to ensure correctness. This requires additional time.**	Being tracked as part of FY25
Blended SST (Legacy migration to NCCF)	Jan-25	Jan-25	On-track for January 21, 2025. **Pushed to February 13.**	ASSISTT moved CCAP from 01/07 to 2/13 They received approval from OSPO and STAR for two day test case. **Adding capability for automated emails to PALs if 50% of samples are missing from any satellite. This requires testing and integration needing additional time.**	Being tracked as part of FY25
OMPS NP		Feb 20, 2025	On-track for February 20.	Final CCAP delivery to NCCF (OMPS LP will be in NCCF operations in March 2025)	
VOLCAT (Phase 1) NCCF implementation	Dec-23	May-25	SCR: August 17, 2023 Target CCAP Moved from January 9 to Jan 30, 2025 **and now scheduled for Feb 26, 2025**	Received MSG/HRIT code and test case from science teams on Dec 22, and final CCAP planned for 2/26/2025. **Verification runs are in progress**	Being tracked as part of FY25
Cloud Mask J2 Validated; No code updates needed only maintenance CCAP (we can keep it as FY25 milestone). Tracked as FY25 maintenance releases	Mar-25	Mar-25	Target CCAP Moved from Feb 6 to March 18, 2025 (ASSISTT to NCCF)	Maintenance updates (separate unit for Ancillary files to be included) as well as solving for latency issues. **CBH, CCL, Cloud Height pushed to April 15, Cloud Phase and cloud type pushed April 23 due to other priority CCAPs. Possibility of final CCAP pushed to June, 2025.**	Being 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	Mar-25	Mar-25	Target CCAP Pushed one month from January to Feb 6, 2025, and now to March 18, 2025.		
Aerosol Detection Product (ADP) Updates	Mar-25	Mar-25	**SCR moved from 1/27 to 3/6 and final CCAP (3/20/25).**	Updates to use Volcanic ash input. Removes dependency on volcanic ash product. **Final CCAP may be moved from 3/20 to 5/22 for implementation in AO.**	Being tracked as part of FY25 Maintenance release
Enterprise AOD		Jan -25	**Pushed to February 10th earlier, and moved to August 8th since these will be implemented in Algorithm Orchestration (AO).**	**Implementation in AO,** ASSISTT integrators will need to be trained to set the production rules and there are also some upstream dependencies which need to be in place for the algos to run on AO.	Being tracked as part of FY25 Maintenance release
Hurricane Intensity and Structure Algorithm (HISA) maintenance CCAP (uses MiRS from S-NPP/NOAA-20/21, MetOp-B/C	Mar-25	Mar-25	On-track. Science team delivered the code updates to ASSISTT on December 16, 2024.	Awaiting feedback from science teams.	Being tracked as part of FY25 Maintenance release
AST-2024 (VIIRS Annual Surface Type)	Sep-25	Sep-25	On-track		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 as part of FY25

FY25 STAR JPSS Milestones (2 of 2)

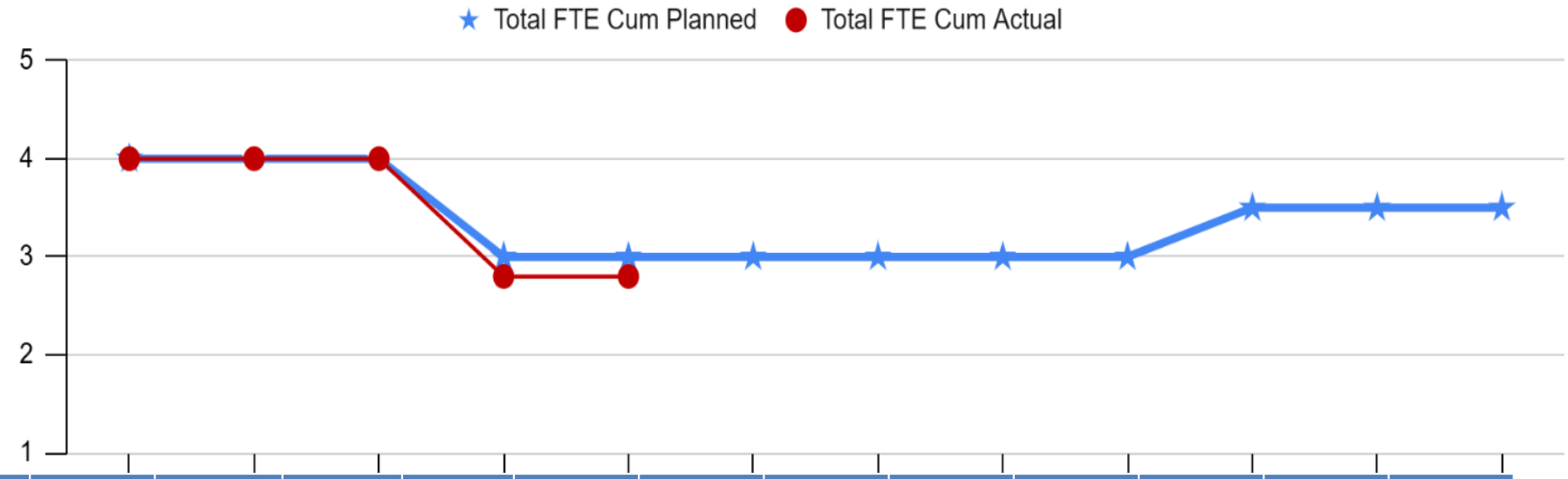
Milestones (Algorithm Cal/Val and LTM)	Original Date	Forecast Date	Actual Date of Completion	Variance Explanation	Status
NEON (Quick Sounder pre-launch and post-launch Cal/Val Plan)	Dec-24	Dec-24		Two CCRs already approved. Cal/Val Document released in MIS. 471-CCR-24-0069 471-CCR-24-0070	
FY26 Program Management Review (all teams)	Jun-25	Jun-25	Continue as part of FY25 milestones	N/A	On-track
Maintain / Update ICVS (develop ICVS modules to support various activities: monitoring, inter-sensor comparison, …)	Sep-25	Sep-25	Follow FY25 PMR schedules	N/A	Ongoing
Maintain / Expand (to include JPSS-2 products) JSTAR Mapper, adopting to STEMS	Sep-25	Sep-25	Follow FY25 PMR milestones	N/A	Ongoing
Images of the Month	Monthly	Monthly	Follow FY25 PMR milestones	N/A	Ongoing
SDR and VIIRS Imagery Cal/Val Plans that include finalized J4 schedules: June 30, 2025	Jun-25	Jun-25			Ongoing
SDR and VIIRS Imagery Look-Up Table Deliveries for J4: June 30, 2025	Jun-25	Jun-25			Ongoing
JPSS-3/JPSS-4 pre-launch test data review/analysis and activity support (SDR teams);	Sep-25	Sep-25		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	J4: ATMS team delivered in June 2024. J4: CrIS team delivered Pre-Launch Characterization Report	J3 ATMS: Team delivered pre-launch report in Dec 2024 J3 CrIS: Team delivered J3 pre-launch report in June 2024.	Ongoing
GOSAT-GW End to End	Aug-24	Apr-25	GOSAT launch: **June/July 2025** Will be continued as part of FY25 milestones	Test Planning TIM held Feb. 6, 2025.. New test data sets will be provided by JAXA that would be more valuable to the science teams. ASSISTT will work with the AMSR3 delivered product algorithms(e.g. SFR) and plan to update the CCAP with the new product algorithms as and when available from the STAR science teams. There is no hard deadline as of now from the STAR science teams to deliver product algorithms to the ASSISTT.	Ongoing as part of FY25

FY 25 IDPS Mx Build Review/Checkout

IDPS Mx Schedule	Mx12	Mx13	Mx14
SOL (DP_FE) regression test	Nov. 4 – Dec. 9, 2024 Completed.	Feb. 18 - Mar. 18, 2025	May. 15 – Jun. 17, 2025
STAR SOL review/checkout feedback (Go/No-Go & Report)	Offline verification by STAR team for J3/J4 VIIRS granule size change using early look of Mx12 ADL	Mar. 18, 2025	Jun. 17, 2025
I&T (DP-TE) regression test	Dec. 19, 2024 - Jan. 23, 2025. Dataflow enabled through GRAVITE (1/9)	Apr. 3 – Apr. 16, 2025	Jul. 3 – Jul. 18, 2025
STAR I&T review/checkout feedback (Go/No-Go & Report)	Jan. 24, 2025 STAR teams recommended a 'GO' and move forward to TTO	Apr. 16, 2025	Jul. 18, 2025
TTO	Feb. 18, 2025	May. 6, 2025	Aug. 5, 2025


TASK
2024
2025
2026
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
ATMS SDR/TDR
CrIS SDR
VIIRS SDR
OMPS SDR
Imagery SDR
Sea Surface Temperature
Ocean Color
OMPS Ozone
Aerisik otucak Depth (AOD)
Aeroso Detection (ADP)
Volcanic Ash
Cloud Mask
Cloud Properties
ce Surface Temperature
Sea ce (Age/Concertration)
Snow Cover
Active Fires
Surface Reflectance
Surface Albedo
Land Surface Temperature
Vegetation ncides
Green Vegetation Fraction
Vegetation Health
Annua Surface Type
NUCAPS
MiRS
Snow Fall Rate (SFR)
VIIRS Polar Winds
VIIRS Flood Mapping (VFM)
CGOM
PMR
DAP
FinalPlan
MxCk
JCT
InitialPlan
J4 Characterization Reports
updatedPlan
Algorithm Update Peer Review Meeting

J-STAR FY25 Planned Program Management Staffing Plan v Actuals



J-STAR FTEs	Oct'24	Nov '24	Dec '24	Jan '25	Feb '25	Mar'25	Apr'25	May'25	Jun'25	Jul '25	Aug '25	Sep '25
Cum Planned (CS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00
Cum Actual (CS)	0.00	0.00	0.00	0.0	0.0							
Cum Planned (WYE)	4.00	4.00	4.00	3.00	3.00	3.00	3.00	3.00	3.00	2.50	2.50	2.50
Cum Actual (WYE)	4.00	4.00	4.00	2.80	2.80							
Total FTE Cum Planned	4.00	4.00	4.00	3.00	3.00	3.00	3.00	3.00	3.00	3.50	3.50	3.50
Total FTE Cum Actual	4.00	4.00	4.00	2.80	2.80							

CS: Vacant (prev. Alisa Young)

WYE: Qingyuan Richard Zhang (through Dec), *Prasanjit Dash, Murty Divakarla, Tom Atkins, Jeffrey Weinrich, Wei W. Li , Tess Valenzuela*

Color code:

Green: **Completed Milestones**

Gray: **Ongoing FY24 Milestones**

Active Fires

January 2025

Accomplishments / Events:

- The team performed analysis of the reprocessed VIIRS I-band Enterprise Fire data record
  - characteristics of the input data and the internal cloud mask were analyzed
  - noticeable differences in key input VIIRS SDR statistics were found between Suomi NPP, NOAA-20 and NOAA-21
  - noticeable inter-satellite differences were found in the internal cloud mask
  - no noticeable inter-satellite differences were found in fire detection time series
  - differences in fire radiative power due to VIIRS M13 SRF shift were evident
- Ivan Csiszar presented this analysis at the 2025 AMS Annual Meeting

Overall Status:

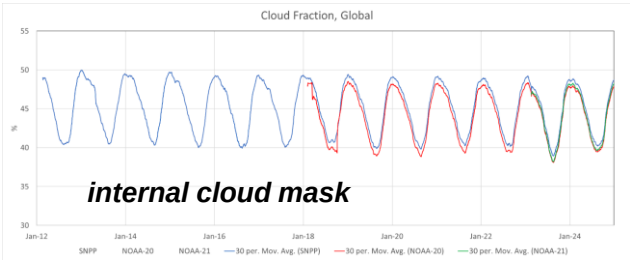
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

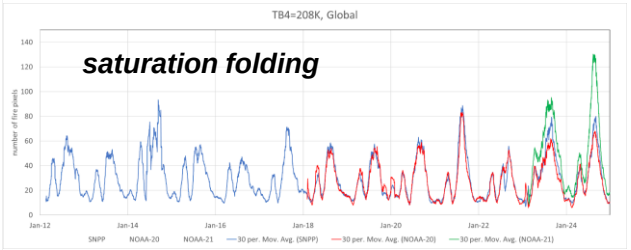
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

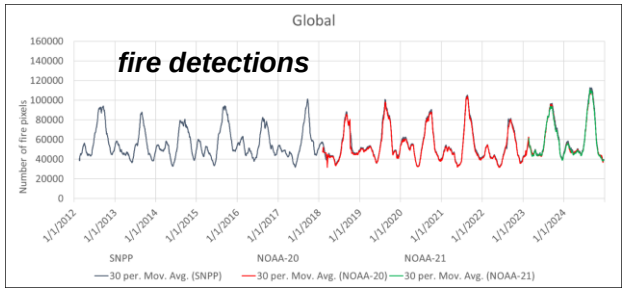
Issues/Risks:

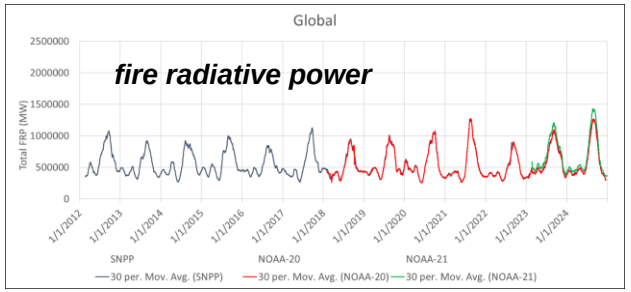
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
eFire cal/val	Sep-25	Sep-25		
eFire – NGFS cross-verification	Sep-25	Sep-25		
Direct Broadcast support	Sep-25	Sep-25		
Maintenance, LTM and anomaly resolution	Sep-25	Sep-25		

Highlight: reprocessed VIIRS EFIRE data record









Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Task 1: eFire cal/val	*September 2025*			
Subtask 1.1: Evaluate Suomi NPP and NOAA-20 reprocessed data record	*March 2025*			
Subtask 1.2: Identify environmental and observing conditions with inferior algorithm performance	*June 2025*			
Subtask 1.3: Create science code update for algorithm improvements	*September 2025*			
Task 2: eFire – NGFS cross-verification	*September 2025*			
Subtask 2.1: Generate cross-verification datasets, including opportunistic in-situ reference data	*December 2024*			
Subtask 2.2: Generate / update opportunistic in-situ reference data	*March 2025*			
Subtask 2.3: Generate statistical analysis for eFire – NGFS detection performance	*September 2025*			
Task 3: Direct Broadcast support	*September 2025*			
Subtask 3.1: Feasibility analysis for CSPP update	*December 2024*			
Subtask 3.2: Implementation of science code updates as determined by Task 4.2	*March 2025*			
Subtask 3.3: CSPP user support as needed for transition	*September 2025*			
Task 4: Maintenance, LTM and anomaly resolution	*September 2025*			
Subtask 4.1: Reactive maintenance of Suomi NPP, NOAA-20 and NOAA-21 I-band NCCF products	*September 2025*			
Subtask 4.2: Sensor anomaly resolution support	*September 2025*			
Subtask 4.3: Suomi NPP, NOAA-20 NOAA-21 data analysis and feedback	*September 2025*			

ATMS SDR

January 2025

Accomplishments / Events:

- On January 28, 18:00 UTC, The S-NPP ATMS instrument was turned on after being disabled due to anomalous elevated motor currents and temperatures on November 19. The ATMS SDR team provided rapid analysis of ATMS data after the sensor recovery. This SDR data assessment included Radiometric assessment using comparisons between Observed and Simulated brightness temperatures biases for the various ATMS channels (**Fig. 1**), double differences with respect to NOAA-20/NOAA-21 ATMS **(Fig. 2)**, Noise analysis before, during, and after the anomaly, Quality Flag assessments, and relevant instrument telemetry assessments.
- Currently researching and developing on-orbit nonlinearity assessment methodologies (Using simulated brightness temperatures as radiometric reference and inter-sensor comparisons) (**Fig. 3**).
- Provided feedback to the CCR 7388 regarding the ATMS Algorithm Spec Vol 1: SRS for the ATMS RDR/SDR/TDR document revision.
- Developing and Reviewing the NOAA-21 ATMS Government Calibration Data Book.
- Currently Developing a stand-alone ATMS RDR reader based on MIT-LL code base, for the benefit of ATMS Cal/Val team analysis tools.
- Developing improvements of the ATMS Geolocation Uncertainty assessments to reduce the evaluation period. Also, a presentation was provided during the ATMS Cal/Val science meeting outlining further improvements in the Geolocation assessment algorithms.
- Completed the evaluation of the ATMS Scan Drive Motor Anomaly assessment of the data noise impact during the anomaly (**Fig. 4**).
- Completed the IDPS Mx12 I&T ATMS Science Data Checkout Verification.
- Continuing to evaluate the radiometric impact of using measured Spectral Response Functions (SRF) compared to the use of basic Boxcar SRFs.
- Continuing the development of the ATMS-TROPICS intercomparison evaluation tools (**Fig. 5**).

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 Date	Variance Explanation
JPSS-3 SN306 ATMS Pre-launch Characterization Report	Dec-24	Dec-24	Dec-24	
Update ATMS ATBD	Mar-25	Mar-25		
Final Version of the JPSS-4 SN305 ATMS Cal/Val Plan	Jun-25	Jun-25		
Review/Checkout of IDPS Mx Builds SOL and I&T Deploy Regression data	Sep-25	Sep-25		
Support JPSS-4/JPSS-3 JCT and Test events (J3 Pre-Storage TVAC, IDPS JPSS-3/JPSS-4 Test data Flow, etc.)	Sep-25	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.	Sep-25	Sep-25		
NOAA-21 ATMS Spectral Response Function (SRF) analysis/report to allow replacement of simulated NOAA-21 ATMS SRFs with measured values	Sep-25	Sep-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	Sep-25	Sep-25		
Enhance the ATMS Calibration Website with new capabilities for rapid anomaly and SDR data evaluation response	Sep-25	Sep-25		

Highlights:

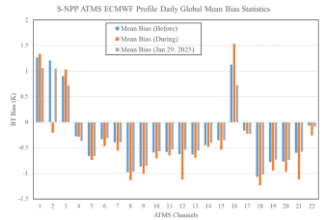
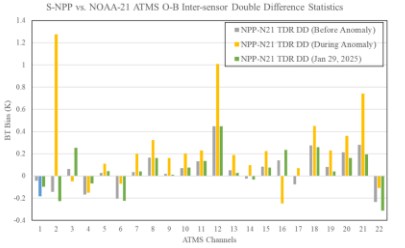


Fig. 1: SNPP ATMS Obs-Calc brightness temperature biases before (blue), during (orange), and after (gray) the scan motor drive anomaly

Fig. 2: SNPP vs NOAA-21 ATMS Double Differences before (gray), during (yellow), and after (green) the SNPP Scan Motor Drive anomaly



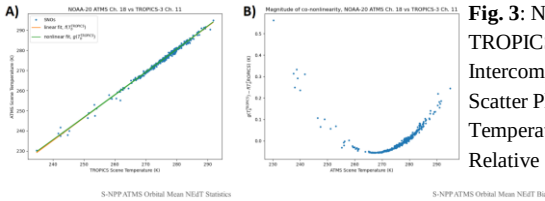


Fig. 3: NOAA-20 ATMS Ch. 18 vs TROPICS-3 Ch. 11 Nonlinearity Intercomparison development. Left: Scatter Plot of SNO Measured Scene Temperatures, Right, Magnitude of Relative (co)-nonlinearity

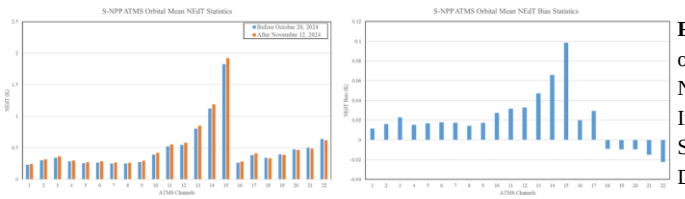
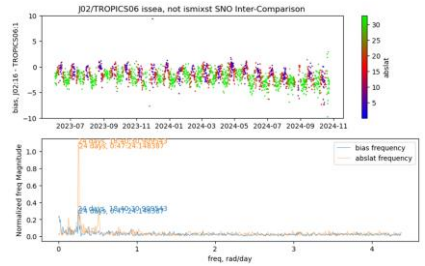


Fig. 4: Extension of SNPP ATMS NEdT Noise Impact during Scan Motor Drive Anomaly

Fig. 5: NOAA-21 ATMS vs TROPICS-5 Intercomparison Bias (top) and Fourier analysis (bottom) using SNO method



FY25 Milestones/Deliverables (1/2)

Task Category	Task/Description	Start	Finish	Deliverable	Requirement (Dev Only)
Development (D)	(1) Develop and test calibration algorithm for improvement of SDR data product.	10/1/2024	7/31/2025	Report	
	(2) Review and analysis of JPSS-3 and JPSS-4 ATMS pre-launch data to provide Flight and Ground support.	10/1/2024	9/30/2025	DAP/Report	
	(3) Support ATMS SDR processing system assessment and refinement.	10/1/2024	9/30/2025	DAP	
Integration & Testing (I)	(1) ATMS SDR code integration with ADL	10/1/2024	9/30/2025	ADL package	
	(2) Review/Checkout of IDPS Mx Builds SOL and I&T Deploy Regression data.	10/1/2024	9/30/2025	Report	
Calibration & Validation (C)	(3) Sustain the quality of SNPP, NOAA-20 and NOAA-21 ATMS SDR data products.	10/1/2024	9/30/2025	Report	
	(4) Support J4/J3 JCT and Test events (J3 Pre-Storage TVAC, IDPS J3/J4 Test data Flow, etc.)	10/1/2024	9/30/2025	Report	
	(5) Cal/Val planning of J3/J4 post-launch	10/1/2024	9/30/2025	Report	
	(6) Deliver J4 Pre-launch Characterization Report	10/1/2024	12/31/2025	Report	
	(7) Radiometric inter-comparison of S-NPP, NOAA-20 and NOAA-21 ATMS SDR data against other LEO/GEO Microwave observations and GNSS-RO.	10/1/2024	9/30/2025	Report	
	(8) Support new developments and studies align with NOAA' mission to improve value and usage of present and future satellite data	10/1/2024	9/30/2025	Report	

DAP: Delivery Algorithm Package. PCT: Processing Coefficient Table. LUT: Look-Up Table. JCT: Joint Compatibility Test. I&T: Integration and Test

FY25 Milestones/Deliverables (2/2)

Task Category	Task/Description	Start	Finish	Deliverable	Requirement (Dev Only)
Management & Maintenance (M)	(1) ATMS SDR team day-to-day management and coordination.	10/1/2024	9/30/2025	Report	
	(2) Discrepancy and risk reports to inform present or potential departures from specifications due to the presence of anomalies.	10/1/2024	9/30/2025	Report	
	(3) Annual, quarterly, monthly and weekly ATMS SDR performance reports.	10/1/2024	9/30/2025	Report	
	(4) Update ATMS ATBD.	10/1/2024	3/31/2025	Report	
	(5) Support of ATMS SDR JPSS reviews and science meetings.	10/1/2024	9/30/2025	Report	
	(6) Report results in international conferences.	10/1/2024	9/30/2025	Presentation	
	(7) Submit manuscripts.	10/1/2024	9/30/2025	Manuscript	
LTM & Anomaly Resolution (L)	(2) Perform regular RDR and SDR data analysis for instrument and data health.	10/1/2024	9/30/2025	Reports	
	(3) Implement new or improved capabilities for LTM, after properly assessing the methodologies for the validation and monitoring of the ATMS instruments and SDR data.	10/1/2024	9/30/2025	Reports	
	(4) Support anomaly event investigation and resolution of SNPP, NOAA-20 and NOAA-21 ATMS sensors.	10/1/2024	9/30/2025	Reports and solutions	

DR: Discrepancy Report. ATBD: Algorithm Theoretical Basis Document. RDR: Raw Data Record. SDR: Raw Data Record. LTM: Long Term Monitoring.

Clouds

January 2025

Accomplishments / Events:

- Continued the evaluation of of the ECM phase as a replacement for the Enterprise Phase algorithm. The Cloud Team, at the GOES-19 Provisional review recommended that the ECM Phase be implemented as a replacement for the Enterprise cloud Phase.

- During the GOES-19 review, it was pointed out that both the cloud height from the GOES-R GS and operational VIIRS processing at NCCF show that there is a preferred pressure level at ~986mb for the cloud top pressure. The cloud team is investigating this, as it affects cloud top **pressure and height** as well as wind assignments for both systems. The current code within the SAPF does not seem to show this, but the source is currently unknown.

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		
Investigate new AI/ML techniques to improve multiple products (e.g., ECM, DCOMP/NCOMP)	Sep-25	1-4Q		
Investigate DCOMP precipitation applications	Sep-25	1-4Q		
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:

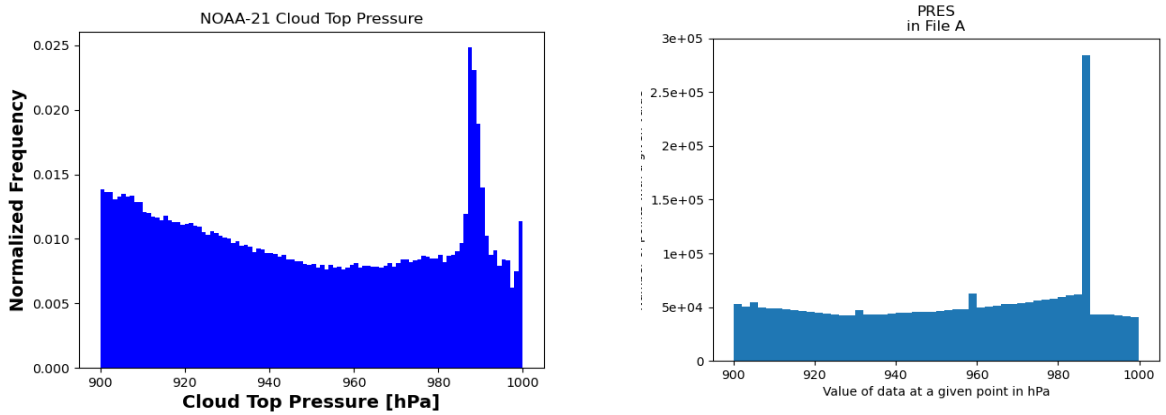


Figure 1.This shows the “ring of fire” effect on the cloud edges over the Pacific from NOAA-20 on 2 January 2025 along the ascending node.

Cloud Team FY25 Milestones

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
FY25 Program Management Review	Aug-24	Aug-24	Aug-24	
FY25 Mid-term Program Management Review	Dec-24	Dec-24		
Assist with operational DAP deliveries, updates, and post-delivery product reviews	Sep-25	1-4Q		
Conduct long term monitoring of all products	Sep-25	1-4Q		
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		
Investigate new AI/ML techniques to improve multiple products (e.g., ECM, DCOMP/NCOMP)	Sep-25	1-4Q		
Investigate DCOMP precipitation applications	Sep-25	1-4Q		
Prepare tools that leverage new datasets for algorithm development and validation (e.g., EarthCARE)	Sep-25	1-4Q		

Cloud Team FY25 Milestones

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Continue evaluating all products using surface and satellite observations	Sep-25	1-4Q		
Interact with operational users and obtain user feedback	Sep-25	1-4Q		
Develop a test data package to help AWIPS-2 implementation and develop enhanced product displays based on user feedback	Sep-25	1-4Q		
Provide algorithm cal/val documents and review materials	Sep-25	1-4Q		
Continue product demonstration and public release for general users	Sep-25	1-4Q		
Identify limitations of products through continued intensive validation and refine algorithms accordingly	Sep-25	1-4Q		
Provide information on prospective algorithm refinements to improve operational algorithm performance	Sep-25	1-4Q		
Support JPSS Aviation and Hydrology Initiatives	Sep-25	1-4Q		
Update ATBD's as needed	Sep-25	1-4Q		

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.

CrIS SDR

January 2025

Accomplishments / Events:

- Drafted and submitted “Algorithm for Mitigating Eclipse-Exit Calibration Error Detected in the CrIS Sensor Data Record”. for IGARSS 2025 (**Fig. 1**)
- Submitted abstract “On-Orbit Radiometric Noise Characterization of the ATMS instruments Using PCA Methodology” for IGRASS 2025.
- Drafted a conference abstract for EUMETSAT 2025 titled “Exploring the Benefits of Implementing the Single-Scan Calibration Approach for Processing NOAA CrIS Observations”.
- Completed the Mx12 I&T Regression Data Checkout. (**Fig. 2**)
- Generated improved intercomparison imagery for CrIS Imagery manuscript. (**Fig. 3**)
- Noted a slight increase in S-NPP CrIS DA-X tilt error standard deviation possibly correlating with S-NPP ATMS reactivation. (**Fig. 4**)
- Released development and integration schedule for the NOAA-21 elevated noise artifact. (**Fig. 5**)
- Analyaized JPSS-4 CrIS TVAC data to assess the Side 2 ICT PRT calibration with the new R0 calibration coefficient to support the decision to launch with Side 2 as primary.
- Delivered the JPSS-4 CrIS PreLaunch Characterization Report.

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
Delivery of the Final JPSS-4 CrIS Cal/Val Plan	Sustain	Jun-25		
Delivery of the JPSS-4 CrIS Initial PCT LUT	Sustain	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		
Perform the transition of Cal/Val activities to the Cloud environment	Maintain	Sep-25		
Conduct maintenance including investigation and anomaly resolution of on-orbit CrIS sensors	Maintain	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	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.*

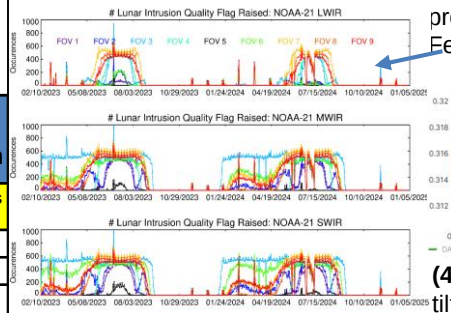
Issues/Risks:

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.

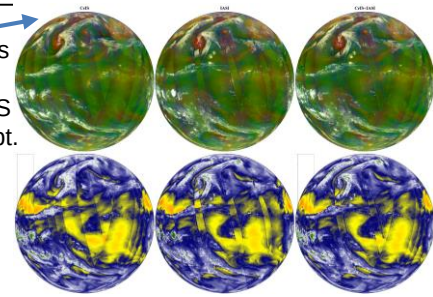
Blue: ASSIST Team has agreed to accept ADL code change tested on CentOS 9.

Highlights:



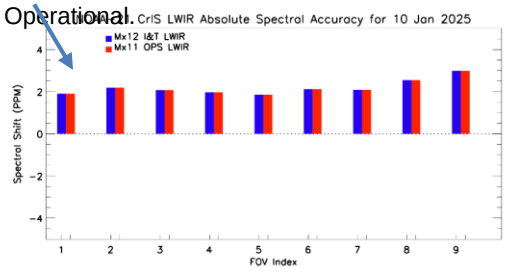
(1) Lunar intrusion quality flags NOAA-21 CrIS SDR product since February 10, 2023

(3) Updated comparison images of CrIS, IASI, and CrIS + IASI for CrIS Imagery Manuscript.

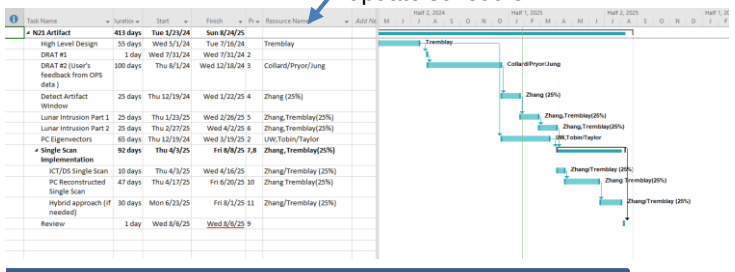


(4) Slight increase in S-NPP CrIS DA-X tilt error standard deviation

(2) NOAA-21 CrIS spectral accuracy, Mx12 I&T vs. Mx11 Operational.



(5) NOAA-21 elevated noise artifact update schedule



FY25 Milestones/Deliverables (1/2)

Task Category	Task/Description	Start	Finish	Deliverable	Requirement (Dev Only)
Development (D)	(1) Implement and test calibration solutions for imaginary radiance reduction in the NOAA-21 CrIS SDR product.	10/1/2024	6/30/2025	Report	
	(2) Review and analysis of JPSS-3 and JPSS-4 CrIS pre-launch data to provide Flight and Ground support.	10/1/2024	9/30/2025	DAP/Report	
	(3) Support CrIS SDR processing system assessment and refinement.	10/1/2024	9/30/2025	DAP	
Integration & Testing (I)	(1) CrIS SDR code integration with ADL	10/1/2024	9/30/2025	ADL package	
	(2) Review/Checkout of IDPS Mx Builds SOL and I&T Deploy Regression data.	10/1/2024	9/30/2025	Report	
Calibration & Validation (C)	(3) Sustain the quality of SNPP, NOAA-20 and NOAA-21 CrIS SDR data products.	10/1/2024	9/30/2025	Report	
	(4) Support J4/J3 JCT and Test events (J3 Pre-Storage TVAC, IDPS J3/J4 Test data Flow, etc.)	10/1/2024	9/30/2025	Report	
	(5) Cal/Val planning of J3/J4 post-launch	10/1/2024	9/30/2025	Report	
	(6) Deliver J4 Pre-launch Characterization Report	10/1/2024	12/31/2025	Report	
	(7) Radiometric inter-comparison of S-NPP, NOAA-20 and NOAA-21 CrIS SDR data against other LEO/GEP IR observations and GNSS-RO.	10/1/2024	9/30/2025	Report	
	(8) Support new developments and studies align with NOAA' mission to improve value and usage of present and future satellite data	10/1/2024	9/30/2025	Report	

DAP: Delivery Algorithm Package. PCT: Processing Coefficient Table. LUT: Look-Up Table. JCT: Joint Compatibility Test. I&T: Integration and Test

FY25 Milestones/Deliverables (2/2)

Task Category	Task/Description	Start	Finish	Deliverable	Requirement (Dev Only)
Management & Maintenance (M)	(1) CrIS SDR team day-to-day management and coordination.	10/1/2024	9/30/2025	Report	
	(2) Discrepancy and risk reports to inform present or potential departures from specifications due to the presence of anomalies.	10/1/2024	9/30/2025	Report	
	(3) Annual, quarterly, monthly and weekly CrIS SDR performance reports.	10/1/2024	9/30/2025	Report	
	(4) Update CrIS ATBD.	10/1/2024	3/31/2025	Report	
	(5) Support of CrIS SDR JPSS reviews and science meetings.	10/1/2024	9/30/2025	Report	
	(6) Report results in international conferences.	10/1/2024	9/30/2025	Presentation	
	(7) Submit manuscripts.	10/1/2024	9/30/2025	Manuscript	
LTM & Anomaly Resolution (L)	(1) Upgrade the JSTAR CrIS Website.	10/1/2024	9/30/2025	Website	
	(2) Perform regular RDR and SDR data analysis for instrument and data health.	10/1/2024	9/30/2025	Reports	
	(3) Implement new or improved capabilities for LTM, after properly assessing the methodologies for the validation and monitoring of the CrIS instruments and SDR data.	10/1/2024	9/30/2025	Reports	
	(4) Support anomaly event investigation and resolution of SNPP, NOAA-20 and NOAA-21 CrIS sensors.	10/1/2024	9/30/2025	Reports and solutions	

DR: Discrepancy Report. ATBD: Algorithm Theoretical Basis Document. RDR: Raw Data Record. SDR: Raw Data Record. LTM: Long Term Monitoring.

Cryosphere

Accomplishments / Events:

Validation of VIIRS sea ice thickness product with IceBird airborne thickness measurements. To validate the VIIRS sea ice thickness product V6.5, which is a research version not yet operational, the thickness is compared to airborne observations during the IceBird Winter 2019 campaign. IceBird, conducted by the Alfred-Wegener Institute (AWI), acquires geolocated total (ice+snow) thickness data from an airborne electromagnetic (EM) induction sensor. Each IceBird ice thickness data point represents the average within the approximately 40 m diameter footprint of the EM sensor, with a point spacing of approximately 5-6 meters, and thus considerable overlap.

On April 5, 2019, the AWI IceBird aircraft flew over sea ice in the Beaufort Sea, near the Northwest Territories. During the flight, there were few intervening clouds (Figure 1).

The IceBird-derived sea ice thickness along this track is compared to collocated VIIRS V6.5 sea ice thickness. Given the 5-meter spacing of the IceBird data, each IceBird/VIIRS pair is run through a 100-point smoothing filter to emulate the resolution of the VIIRS thickness product. The VIIRS Ice Thickness Product shows reasonable agreement with the IceBridge data along the flight track (Figure 2), although better agreement is achieved for the second half of the flight. Statistics are shown in Table 1. It is possible that the overestimate of ice thickness along the first portion of the flight track may be due to low cloud and/or fog that may have been undetected in the VIIRS cloud mask. This issue will be investigated next by examining the IST acquired by IceBird and the VIIRS IST product.

Flight Date	Mean IceBird thickness (m)	Mean VIIRS thickness (m)	IceBird Std. Dev. (m)	VIIRS Std. Dev. (m)
April 7, 2019	1.84	2.34	0.79	0.23

Table 1. Ice thickness results for IceBridge (OIB) and VIIRS products for the 2 OIB flights.

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:

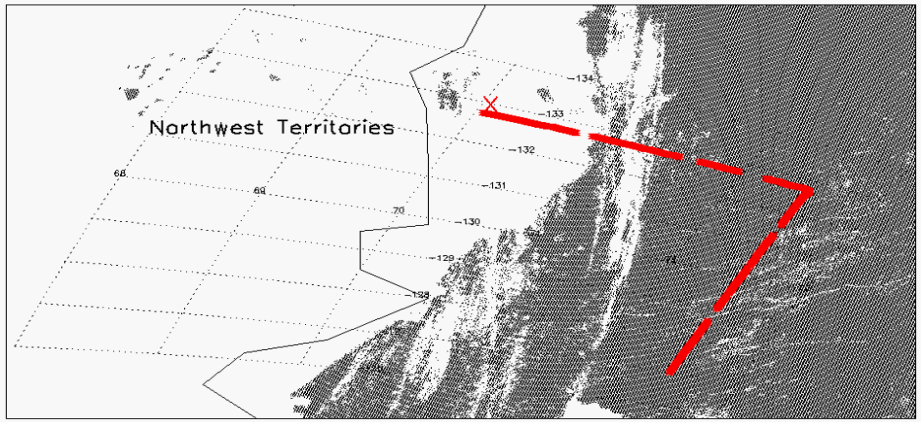


Figure 1. AWI IceBird aircraft flight track (red line) on April 7, 2019. "X" indicates the beginning of the flight track. VIIRS coverage shown in grey.

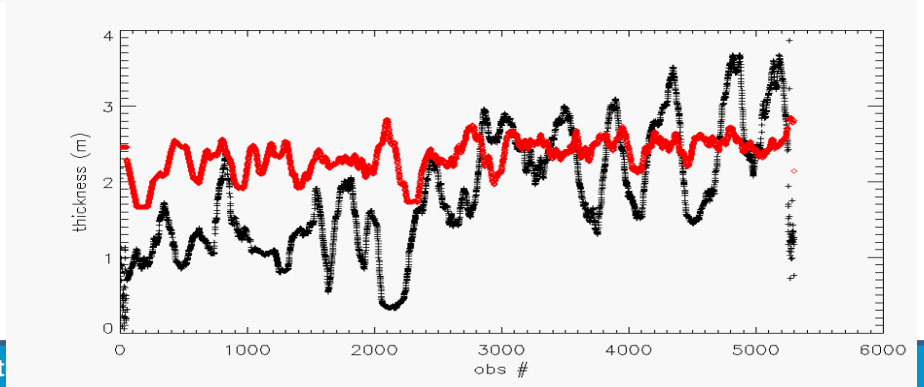


Figure 2. Example of ABI-based snow cover maps (G-16 and G-17) and matching IMS products on the same day and on the day after. ABI snow maps exhibit a better agreement to the IMS product labeled with the next day date. This is explained by a different approach to the time stamping of the two products.

FY25 Milestones/Deliverables (in general)

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	9/2025	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	9/2025	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	9/2025	Expansion of IST product	Enhanced usability by analysts and forecasters.

FY25 Milestones/Deliverables (in general)

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	9/2026	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	09/2025	Graphics	**Streamlined validation**
Integration and Testing (I&T)	Improvements to the Ice Thickness and age products.	10/2024	9/2025	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	9/2025	Include observational weights into output Netcdf files.	**Request by users**

Polar Winds

August, 2024

Accomplishments / Events:

- **Tandem JPSS winds for SWIR band are now generated:** Currently, VIIRS single band Atmospheric Motion Vectors (AMVs) from the shortwave-infrared band (SWIR, M11, 2.2 µm) is being prepared for operational implementation in the near future. The next logical step was to expand the use of SWIR band into the tandem orbit setting, where successive orbits of NOAA-20 and -21 satellites are used to develop AMVs with greater coverage and smaller time differences, which should result in a more accurate winds product. Recent examples of the experiment product are shown in Figure 1.
- The Tandem SWIR product does a good job in covering mid-upper-level wind motions associated with jet stream across northern Russia and mid-lower-level winds associated with polar cyclone over the central Arctic. Initial comparisons to single JPSS SWIR AMVs (either NOAA-20 or -21) show speed (direction) RMS of under 3 ms^{-1} (20 deg).

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation

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:

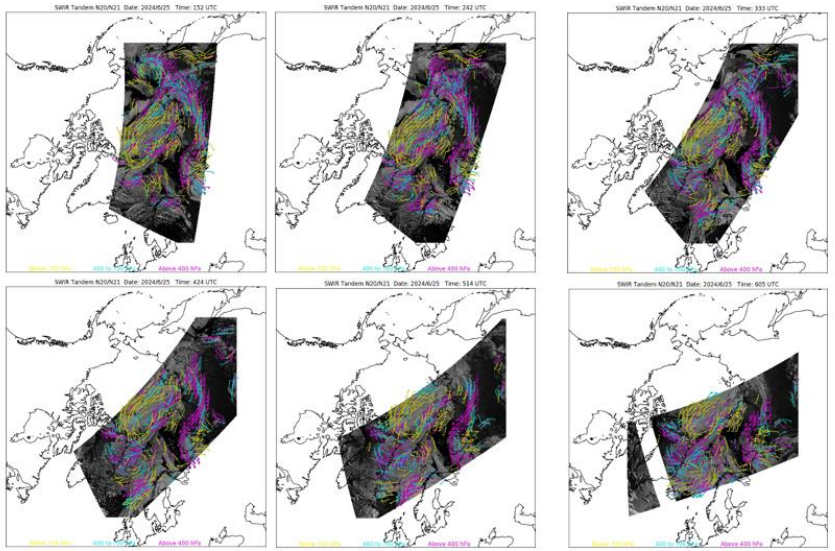


Figure 1: VIIRS JPSS (NOAA20/21) Tandem SWIR AMVs overlaid with 2.2 µm reflectances from 25 June 2024 over the Arctic region in polar stereographic projection. Near polar crossing times starting from upper-left and ending at lower-right: 01:52, 02:42, 03:33, 04:24, 05:14 and 06:05 UTC.

Status of FY25 Milestones/Deliverables *(1/2)*

Task Category	Task/ Description	Start	Finish	Deliverable	Requirement (Dev Only)
Development (D)	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	Aug 2024	Jun 2025	Polar ***"Tandem-Satellite"*** VIIRS SWIR & LWIR wind BUFR datasets; Wind validation results	Refer to IORD/L1RD; NESDIS priorities.
Development (D)	Incorporate VIIRS DNB (Near-Constant Contrast) updates from heritage to enterprise winds algorithm in FW2.x	Aug 2024	Jun 2025	Updated enterprise winds software.	INNOVATION
Development (D)	Develop and validate approaches to generate VIIRS winds from tandem-satellite pairs of images (enables global coverage)	Aug 2024	Jun 2025	Updated enterprise winds software Validation study reports	INNOVATION
Development (D)	Feature tracking QC for VIIRS winds: Investigate scan angle diffs between successive orbits & impact on VIIRS winds quality; account for parallax	Aug 2024	Jun 2025	Informal/internal assessment report. Updates to enterprise winds software	
Development (D)	Development of updated VPW Validation and monitoring system	Oct 2024	Jun 2025	Updated validation software Updated winds monitoring web pages Documentation	

Status of FY25 Milestones/Deliverables *(2/2)*

Task Category	Task/ Description	Start	Finish	Deliverable	Requirement (Dev Only)
Integration & Testing (I)	Support transition of ***"Single-Satellite"*** VIIRS SWIR winds into operations	Oct 2024	Sep 2025 (Est)	Validation reports	Refer to IORD/L1RD; NESDIS priorities
Integration & Testing (I)	Begin transition of ***"Tandem-Satellite"*** VIIRS LWIR and SWIR winds to operations *(if funded)*	Oct 2024	Sep 2025 (Est)	Updated enterprise winds software & enterprise winds ATBD Validation reports	Refer to IORD/L1RD; NESDIS priorities
Calibration & Validation (C)					
Maintenance	Deliver enterprise winds algorithm updates, as needed	Oct 2024	Sep 2025	Updated software, as needed; Updated Enterprise Winds ATBD, as needed	
LTM & Anomaly Resolution (L)	Dev and testing of minor algorithm updates as needed. Continued monitoring and validation of VPW winds; Addition of ERA5 analysis to winds team's validation tool set	*Oct 2024*	*Sep 2025*	Graphics, statistics Webpage product monitoring graphics; Updated winds validation/monitoring software, as needed	

GCOM-W/AMSR2 & AMSR3

January 2025

Accomplishments / Events:

- Prepared and presented AMSR2 Precipitation validation for the AMSR2 Precipitation operation briefing to the OSPO/SPSD management. The algorithm is updated to GPROF2017 from GPROF2010.
- Finished training a machine learning algorithm for AMSR2 soil moisture EDR using daily gridded TBs with SMAP soil moisture as the reference
- Generated historical daily AMSR2 soil moisture product using the ML algorithm (2012-2024)
- Evaluated the new product using in-situ measurements and Compared the new product with the current operational product.
- Worked on the new AMSR2 SM EDR package with the ML algorithm using GAASP orbital TB as the input
- Rewritten AMSR2 sea ice algorithm software from C/Fortran into Python
- Carried out AMSR2 sea ice concentration validation via comparison with Landsat imagery
- Adapting AMSR2 sea ice algorithm for AMSR3 using AMSR3 proxy data
- Updated the AMSR2 Snow Depth to SWE conversion and Snow Depth bias correction in the AMSR2 snow algorithm
- Carried out AMSR3-GFS study using AMSR2 data as proxies in snow products

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Assessment of all EDR's for AMSR2, initiate changes for AMSR3	6/2025			
Reprocessing of L2 EDR's	7/2025			
Continue AMSR2 L1 monitoring; develop AMSR3 capabilities	9/2025			
Deliver any algorithm updates	5/2025			

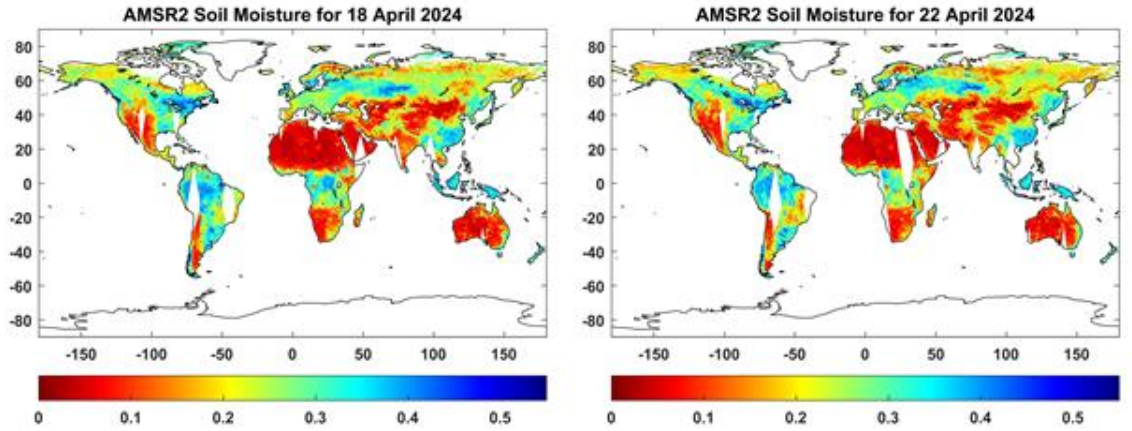
Overall Status:

	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.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

Highlights:



AMSR2 Soil Moisture product using machine learning algorithm with SMAP soil moisture as the reference

GCOM-W/AMSR2 & AMSR3 (2)

January 2025

Precipitation (Rain Rate and Snowfall Rate)

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Developing a neural network-based GPROF Precip retrieval for AMSR instrument series. Support transition of AMSR2 Precipitation package to operational NCCF.	**1/2025**			
Deliver Day-1 AMSR3 Precip package to ASSISTT.	**3/2025**			
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**			
Implement advanced microphysics in the preliminary AMSR3 SFR algorithm	**6/2025**			
Test and implement near real time validation for AMSR3 precipitation product; develop AMSR2 long-term validation.	**9/2025**			
Analyze AMSR3 measurements post-launch and perform radiometric bias correction	**9/2025**			

Soil Moisture

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
AMSR2 SM EDR software package using ML algorithm	**6/2025**			
Reprocessing of L2 SM EDR's and its validations using in-situ soil moisture measurements	**7/2025**			
Evaluation of AMSR3 brightness temperature data – if available, and check the its consistency with AMSR2 brightness temperature data	**9/2025**			
Implementation of AMSR2 SM EDR algorithm using AMSR3 TB inputs	**10/2025**			

Sea ice

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Further development and improvement of the AMSR2 sea ice products	**5/2025**			
Adapt the AMSR2 sea ice algorithm for AMSR3 with the AMSR3 proxy data	**6/2025**			
Continuing assessment of AMSR2 with in situ measurements and other satellite products	**9/2025**			

Snow

Major Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Testing of AMSR2/3 Snow Depth and Snow Water Equivalent upgrades	**5/2025**			
Incorporate the upgrades into operational system	**6/2025**			
Development of new generation of algorithms and testing	**9/2025**			

FY25 Milestones/Deliverables (in general)

Task Category	Task/ Description	Start	Finish	Deliverable	Requirement (Dev Only)
Development (D)	Assessment of all EDR's for AMSR2, initiate changes for AMSR3	Oct 2024	Sept 2025	Beta versions of Pre-launch algorithms and LUTs	Refer to IORD/L1RD; NESDIS priorities; STAR-National Center User Engagements
Integration & Testing (I)	Reprocessing of L2 EDR's	Nov 2024	July 2025	Full L2 products from launch through July 2023	
Calibration & Validation (C)	Continue AMSR2 L1 monitoring; develop AMSR3 capabilities	Oct 2024	Sept 2025	Annual cal/val report; AMSR3 prototype off-line system	
Maintenance	Deliver any algorithm updates	Jan 2025	May 2025	Updated code to ASSISTT	

ICVS

January 2025

Accomplishments / Events:

- Support S-NPP ATMS reactivation activities by ATMS Cal/Val team and OSPO to provide near real time instrument health status, performance, and science data quality monitoring products in ICVS website. Shown in Figure 1 is the NPP ATMS ECMWF profiles bias daily global mean comparison chart for before scan drive anomaly, during the anomaly, and after the reactivation. The science data bias has returned to the same level before the anomaly.
- Update CrIS geolocation accuracy monitoring package to improve the FOV dependent long term trending time series accuracy.
- Work with STAR IT to upgrade the ICVS module processing servers to a more reliable OS. The previous OS frequently has NFS access issue after large volume of data processing. The new OS has run a while and has not got similar NFS issues yet. Will continue to monitor the stability of processing servers to ensure the reliability of ICVS NRT figure generation.
- Analyze S-NPP OMPS NM vs GOME-2 inter-sensor bias trend to estimate the OMPS NM science data quality to support the AMS ICVS-intersenor comparison presentation.
- Presented an oral talk about the ICVS intersensor comparison monitoring results.

Milestone	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's quality in terms of requirements using NOAA-21 SDR data as test data sets	Feb-25		
Develop a new monitoring framework to improve timeliness and performance in preparation of J3/J4 missions	May-25		
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	Sept-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		

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 NPP ATMS ECMWF Profile Bias Daily Global Mean Comparison

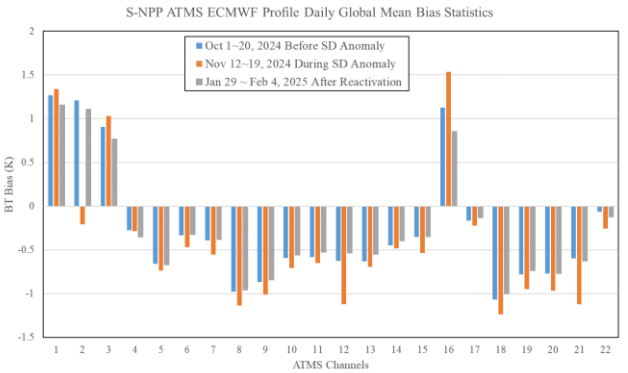
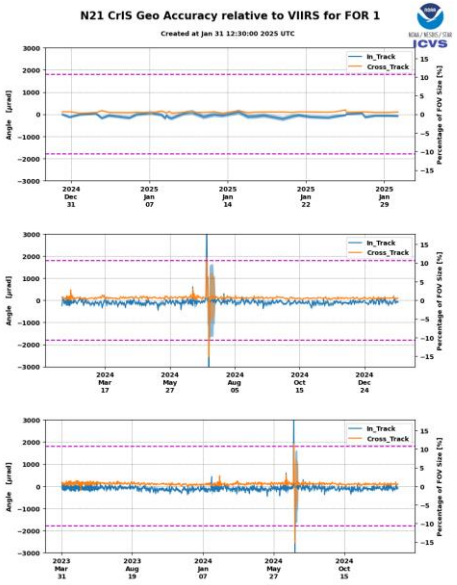


Figure 2 NOAA-21 CrIS FOV1 Relative Geolocation Accuracy Monitoring



ICVS FY25 Milestones/Deliverables

	Milestone	Start	Finish	Deliverable
1	Identify ICVS-lite modules for transition to OSPO operational environment in coordination with OSPO	Oct-24	Nov-24	Deliver a ppt file to introduce basic functions of the ICVS-lite package
2	Initialize new algorithms/functions to monitor SDR data's quality in terms of requirements using NOAA-21 SDR data as test data sets	Dec-24	Feb-25	Provide a dynamically updated color table about NOAA-21 instrument SDR radiance (Tb or reflectance or normalized radiance) per requirement: green, yellow, red
3	Develop a new monitoring framework to improve timeliness and performance in preparation of J3/J4 missions	Mar-25	May-25	A new monitoring framework within the ICVS system
4	Initialize an algorithm for estimating OMPS NM geolocation errors in the absence of VIIRS data from the same satellite	Apr-25	Aug-25	Software and new ICVS products
5	Continue supporting NCCF cloud migration discovery activity: test the ICVS functions in cloud as needed	Feb-25	Sep-25	Software; testing results, updated discovery book
6	Develop new ICVS algorithms\functions/modules in support of future JPSS-04/03 missions	May-25	Sept-25	Module Software and proxy J4 ICVS products
7	Support JPSS spacecrafts and instruments recovery activities, JPSS data anomaly analysis activities by STAR SDR and EDR teams, JPSS flight team, OSPO and NWP	Oct-24	Sep-25	ICVS products; JPSS data anomaly monitoring reports
8	Maintain and sustain the LT ICVS product monitoring performance for SNPP, NOAA-20, NOAA-21, including 3D-ATMS-VIIRS SDR hurricane core observations	Oct-24	Sep-25	ICVS products; module software updates
9	Support STAR SDR calibration/validation activities, including innovation idea test, and LEO program's ad hoc requests (e.g., SDR data impact demonstration)	Oct-24	Sep-25	Software; new ICVS products

D	I	C	M	L
Development	Integration &Testing	Calibration & Validation	Maintenance	LTM & Anomaly Resolution

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Task 1: Maintain the LT consistency of ICVS products in a NRT mode for monitoring of RDR and SDR LT performance spanning 3 spacecrafts and 12 instruments from SNPP, NOAA-20 and NOAA-21 missions	*October 2024 to September 2025*			
Subtask 1.1: Check the availability of ICVS products in case of any missed products or unexpected stopped cron-jobs	*October 2024 to September 2025*			
Subtask 1.2: Fix the issues to recover *unexpected stopped cron-jobs*	*October 2024 to September 2025*			
Subtask 1.3: Reprocess the data to fill in missed products	*October 2024 to September 2025*			
Subtask 1.4: Produce historical (intermediate) ICVS products per ad hoc requests from key users	*Ad hoc*			
Task 2: Monitor LT performance of the JPSS spacecrafts, instruments and SDR data in a NRT mode and report anomalous feature monitoring results in support SDR team and other key users	*October 2024 to September 2025*			
Subtask 2.1: Monitor performance of the JPSS spacecrafts, instruments and SDR data based on current ICVS products	*October 2024 to September 2025*			
Subtask 2.2: Provide monitoring reports with good ICVS images in the presence of newly detected anomalies for spacecraft, instrument and SDR data	*October 2024 to September 2025*			
Task 3: Maintain and upgrade the ICVS severe weather event (radiometric) feature watch portal in a NRT mode	*October 2024 to September 2025*			
Subtask 3.1: Maintain the ICVS ATMS-VIIRS 3D hurricane warm core monitoring system and analysis tools (e.g., Heat Dome) for other severe events	*October 2024 to September 2025*			
Subtask 3.2: Provide briefing report with good images per event in a timely manner	*October 2024 to September 2025*			
Subtask 3.3: Improve AI-based ATMS global high resolution images for Mapper	*October 2024 to September 2025*			
Subtask 3.4: Develop new functions to better demonstrate new values of SDR data in visually observing severe events' radiometric features such as heat wave and atmospheric rivers	*Ad hoc*			

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Task 4: Monitor and upgrade the N21 LP EDR products in the ICVS web site in support of OMPS EDR review and other cal./val activities	*October 2024 to September 2025*			
Subtask 4.1: Update the ICVS-LP monitoring functions by adding available N21 LP data from the STAR EDR team.	*September 2024*			
Subtask 4.2: Promote the LP monitoring functions to operational ICVS website	*December 2024*			
Subtask 4.3: : Maintain the ICVS LP product website	*October 2024 to September 2025*			
Task 5: Upgrade the ICVS interactive vector tool by adding new products and functions	*September 2025*			
Subtask 5.1: Upgrade the ICVS dynamic interactive tool in the beta ICVS zone by filling in the non-available products in the tables(https://www.star.nesdis.noaa.gov/icvs-beta/metrics_new.php)	*November 2024*			
Subtask 5.2: Upgrade the ICVS dynamic interactive tool with new functions/products towards promotion to operational zone in coordination with the STAR IT team	*January 2025*			
Subtask 5.4: Promote the ICVS dynamic interactive tool with new functions to operational ICVS	*March 2025*			
Subtask 5.3: Maintain and upgrade the ICVS website framework in operational, beta and development zones	*October 2024 through September 2025*			
Task 6: Upgrade the operational ICVS system functions to better monitor/compare LT stability of the spacecrafts/instruments/SDR among 3 JPSS missions	*March 2025*			
Subtask 6.1: Develop new modules to monitor the same parameter in the same figure for 3 spacecrafts (only key parameters)	*October 2024*			
Subtask 6.2: Develop new modules to monitor the same RDR parameter in the same figure for the same instrument among three satellites (only key parameters)	*November 2024*			
Subtask 6.3: Develop new modules to monitor the same statistical parameters (e.g., daily mean and std. over selected sites) in SDR products in the same figure for the same instrument among three satellites	*February 2025*			
Subtask 6.4: Upgrade the ICVS inter-sensor comparison and other advanced capabilities by adding new products to better capture anomalous features in the SDR data	*March 2025*			

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Task 7: Develop new ICVS algorithms\modules in support of existing and future JPSS-04 missions	*July 2025*			
Subtask 7.1: Develop new ICVS modules about OMPS RTM O-B test cases	*February 2025*			
Subtask 7.2: Update the VIIRS inter-sensor comparison modules by adding NOAA-21 VIIRS	*March 2025*			
Subtask 7.3: Reprocess the ATMS lifetime O-B trending to improve the accuracy by using measured SRF	*May 2025*			
Subtask 7.4: Reprocess JPSS lifetime data with improved quality monitoring algorithms/modules	*July 2025*			
Task 8: Continue supporting NCCF cloud migration discovery activity	*September 2025*			
Subtask 8.1: Reorganize ICVS testing modules that will be migrated into the NCCF environment	*February 2025*			
Subtask 8.2: Convert selected code in Matlab into Python (limit to small efforts)	*April 2025*			
Subtask 8.3: Migrate the ICVS testing modules into the NCCF environment	*June 2025*			
Subtask 8.4: Verify the ICVS testing modules in the NCCF environment with off-line ICVS modules' results	*September 2025*			
Task 9: Develop the ICVS prototype in support of JPSS-4 prelaunch Cal/Val activities in the STAR internal development zone	*September 2025*			
Subtask 9.1: Upgrade the ICVS development website in compliance with IT security requirements	*March 2025*			
Subtask 9.2: Develop the ICVS framework for JPSS-04 by using NOAA-21 RDR as proxy	*June 2025*			
Subtask 9.2: Develop the ICVS framework for JPSS-04 by using NOAA-21 SDR as proxy	*August 2025*			
Subtask 9.3: Develop the ICVS modules in support of SDR teams' J3/J4 JCT test data sets	*September 2025*			

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Task 10: Explore potential of monitoring geolocation performance upon individual instrument SDR data in preparation of JPSS-04 missions	*February 2025*			
Subtask 10.1: Investigate the feasibility of monitoring geolocation performance by using individual instrument SDR data at window channels: case studies, e.g., OMPS NM at 380nm	*October 2024*			
Subtask 10.2: Initialize testing modules for more case applications	*January 2025*			
Subtask 10.3: Add the testing modules to ICVS website in development zone	*February 2025*			
Task 11: Develop a new monitoring framework within the ICVS system to improve timeliness and performance in preparation of J3/J4 missions	*April 2025*			
Subtask 11.1: Initialize a conceptual region-based ICVS monitoring framework (e.g., divide the whole global coverage into 24 regions)	*October 2024*			
Subtask 11.2: Initialize modules to monitor performance of regional data, including but not limited to daily regional images, daily 'anomaly' images against a multiple-day average, time series of regional data (daily 'anomaly')	*December 2024*			
Subtask 11.3: Improve the framework and algorithms with regional products towards operational transition	*April 2025*			
Task 12: Develop a conceptual PCA-based monitoring framework within the ICVS system to better monitor hyperspectral satellite data quality	*June 2025*			
Subtask 12.1: Initialize a conceptual PCA-based monitoring framework for JPSS hyperspectral instruments (e.g., OMPS NM, OMPS NP, and CrIS)	*October 2024*			
Subtask 12.2: Initialize PCA algorithm developments for OMPS and CrIS over selected regions (see Task 11)	*March 2025*			
Subtask 12.3: Explore potential of PCA-derived products in monitoring and detecting SDR data anomalies	*June 2025*			

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Task 13: Explore potentials of developing automation monitoring functions for the ICVS system by using innovation techniques in better preparation of J3/J4 missions	*September 2025*			
Subtask 13.1: Investigate feasibility of automatically generating analysis report per event based on the ICVS products from multiple sensors' observations, by taking advantages of task 11 above	*March 2025*			
Subtask 13.2: Develop preliminary innovation-based algorithms to automatically capture large anomaly features, which could be relevant to either radiometric features from severe weather events or spacecraft/instrument/SDR data problems	*May 2025*			
Subtask 13.3: Explore potentials of the new ICVS monitoring functions and innovation algorithms in better capturing impact of JPSS SDR data in better benefit of key users' applications	*September 2025*			
Task 14: Develop an initial algorithm/module to generate OMPS NM Super-Resolution (NOAA-21 resolution) data using CNN in support of geolocation performance monitoring of JPSS OMPS NM SDR data	*August 2025*			
Subtask 14.1: Investigate the feasibility of generating OMPS NM Super-Resolution data using CNN	*March 2025*			
Subtask 14.2: Initialize a testing algorithm for SNPP and NOAA-20	*June 2025*			
Subtask 14.2: Investigate potential of newly generated super-resolution SNPP/NOAA-20 NM SDR data in the geolocation performance monitoring analysis	*August 2025*			

VIIRS Imagery

January 2025

Accomplishments / Events:

- Reviewed B2.3 Mx12 I&T VIIRS Imagery EDR products, recommended to proceed with TTO
- Bill Line presented for the Virtual Alaska Weather Symposium (VAWS) - Link
  - New Satellite Imagery for Sea Spray, Blowing Snow, and Water Vapor Detection in Alaska
- Imagery Team VIIRS Presentations at AMS annual Meeting
  - Jorel Torres - JPSS Fire Monitoring Applications of the Park Fire in California
  - Steve Miller - The Quest for Bioluminescent 'Milky Seas'—What the Smallest Organisms on Earth Have to Tell Us About the Biggest Questions in Earth System Science
  - Jen Delamere - Engaging JPSS for Wildland Fire Management in Alaska: Past, Present, and Future
- Blog Posts with VIIRS Imagery
  - Jan 2025 Southern California Wildfires
  - Central US Blowing Dust and Snow – 17 Jan 2025
  - Power Outages Across Ireland Following Storm Éowyn
  - The Changing Water Levels of the Great Salt Lake Over Twelve Years
- 33 VIIRS Imagery Posts on CIRA Social Media (X) this Month. A few posts:
  - VIIRS Day Fire RGB of California Wildfires (7.8K views)
  - VIIRS Snowmelt RGB of Gulf Coast Snow Cover (1K views)
  - VIIRS Visible Imagery of Greenland Low (25.1K views)

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			

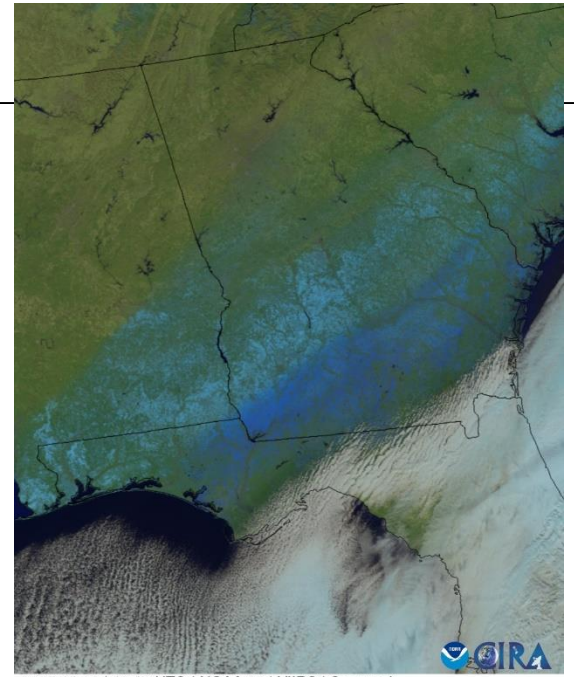
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
FY26 Program Management Review	Jun-25	Jun-25		
Submit for Publication – CrIS Imagery	Mar-25	Mar-25		
Submit for Publication – Blowing Dust Climo	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				

Highlights: Image of the Month

Figure: VIIRS Snowmelt RGB of snowpack over the southeast US. The product delineates areas where snow fell (light blue) vs areas where mixed precipitation (snow/sleet/rain) fell (darker blue).



2025-01-22 | 18:10 UTC | NOAA-20 | VIIRS | Snowmelt

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Task 1: Evaluate/validate VIIRS Imagery EDRs routinely and as part of JPSS ground systems tests.	Ongoing			
Subtask 1.1:				
Subtask 1.2:				
Subtask 1.3:				
Task 2: Continue to pursue the development of new DNB-to-NCC LUTs using recently optimized DNB ASF tool code	Sep - 25			
Subtask 2.1: Generate DNB-to-NCC LUTs specific to NOAA-20, NOAA-21, and S-NPP using new DNB ASF tool code	Mar - 25			
Subtask 2.2: Use new DNB-to-NCC LUTs to produce NCC imagery for each VIIRS, and compare imagery to that using the operational LUT	Jun - 25			
Subtask 2.3: Upon evaluation, if imagery has similar or better quality to that using operational LUT, then pursue operational implementation of new DNB-to-NCC LUTs for each VIIRS.	Sep - 25			
Task 3: Support JPSS Program outreach efforts through the Image Production subgroup.	Ongoing			
Subtask 3.1: Assist the JPSS Program Office and the JPSS Imagery Cal/Val team lead through the production of VIIRS imagery examples	Ongoing			
Subtask 3.2: Distribute VIIRS Imagery examples for use in public relations materials, scientific presentations given by JPSS Program management, forecaster training materials, social media, and scientific blog posts, among others.	Ongoing			
Subtask 3.3:				
Task 4: JPSS-3 and JPSS-4 Cal/Val preparation activities, as requested by the JPSS Program Office.	As Needed			
Subtask 4.1: Cal/val plans and maturity schedules	As Needed			
Subtask 4.2: Data systems test events	As Needed			
Subtask 4.3:				

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Task 5: Continue to support development and production of VIIRS-related products for Polar SLIDER (https://rammb-slider.cira.colostate.edu/?sat=jpss), CIRA-produced VIIRS imagery products that are delivered to CIMSS' RealEarth website (https://realearth.ssec.wisc.edu), and similar products that are produced at UAF/GINA for distribution to NWS Alaska Region offices.	Ongoing			
Subtask 5.1:				
Subtask 5.2:				
Subtask 5.3:				
Task 6: Coordinate with NESDIS/STAR/JPSS, NWS representatives, TOWR-S, and the JPSS Satellite Liaison on the delivery, display, and training of VIIRS imagery products to the NWS and solicit user feedback	Ongoing			
Subtask 6.1: Newly developed VIIRS Imagery Multispectral products	Ongoing			
Subtask 6.2: CrIS Imagery	Ongoing			
Subtask 6.3: VIIRS Imagery for CONUS users	Ongoing			
Task 7: Provide interesting VIIRS Imagery and Blogs on a regular basis throughout grant period, as well as provide presentations and publications where appropriate.	Ongoing			
Subtask 7.1:				
Subtask 7.2:				
Subtask 7.3:				
Task 8: Contribute to monthly reports on the VIIRS Imagery EDR Team activities, and participate in Imagery Team meetings and relevant JPSS science meetings.	Ongoing			
Subtask 8.1:				
Subtask 8.2:				
Subtask 8.3:				
Task 9: Blowing Dust Climatology Paper submitted (includes VIIRS Imagery)	Sep - 25			
Task 9: CrIS Imagery Paper submitted	Mar - 25			
Task 9: Blowing Snow Paper submitted	Jun - 25			

Leaf Area Index

January 2025

Accomplishments / Events:

- Continue working on the LAI Operational Readiness, including verifying operational test data with local data, checking quality flags, conducting inter-comparisons between JPSS satellites, and validating products.
- Collaborate with the land surface model team on the LAI test, feedback on the climatology performance, next step real time LAI test plan, and the ancillary dataset development such as stem area index and static vegetation fraction.
- Evaluate existing LAI products and the climatology derived from them, with a primary focus on user-concerned regions, such as high-latitude.
- Continue improving the algorithm by updating training datasets to align with current surface reflectance, enhancing temporal smoothing, and refining gap-filling methods using machine learning techniques.

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			

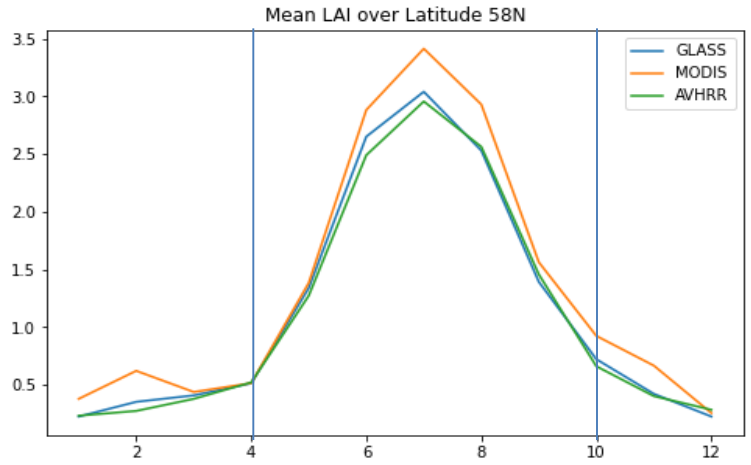
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Develop 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		
LAI product in-situ validation & inter-comparison with other products	Jun-25	Jun-25		
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		

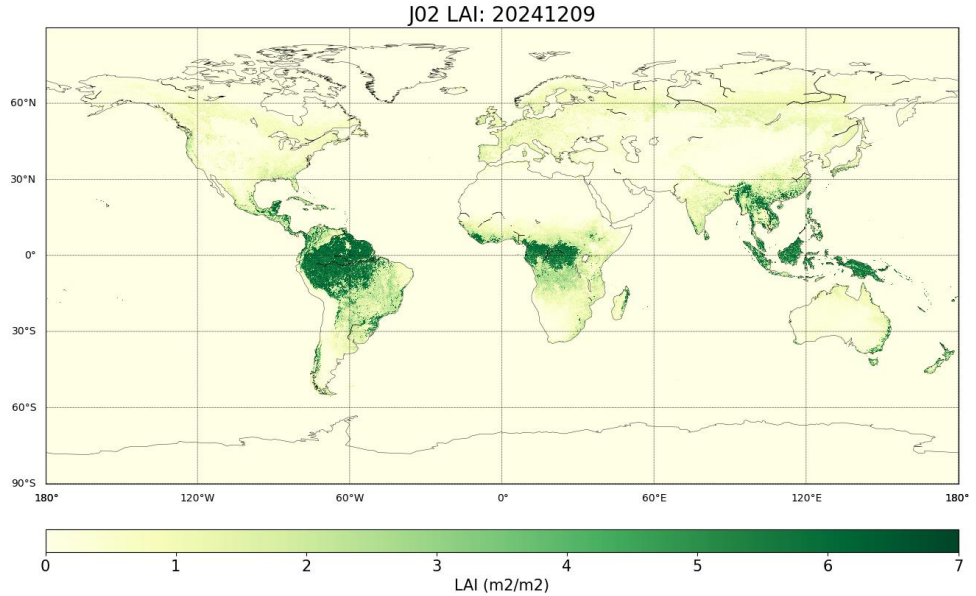
Highlights:



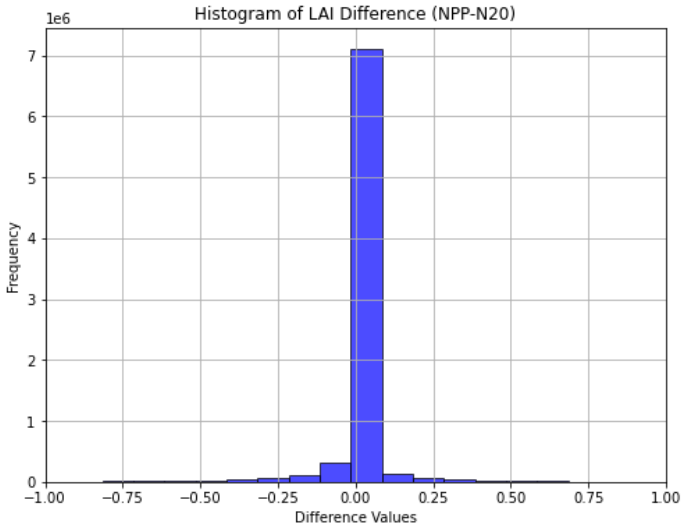
Three LAI monthly climatology have been inter-compared, the 60N area is investigated with MODIS with higher LAI while GLASS and AVHRR closer, the phenology are more consistent.

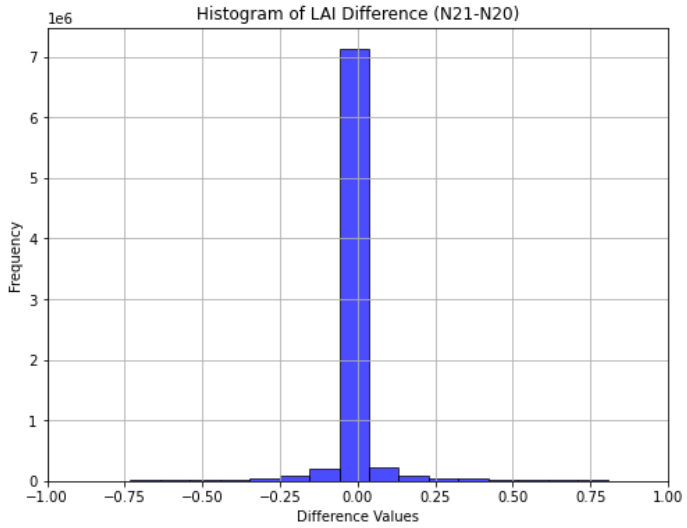
LAI Verification for the Operation Readiness

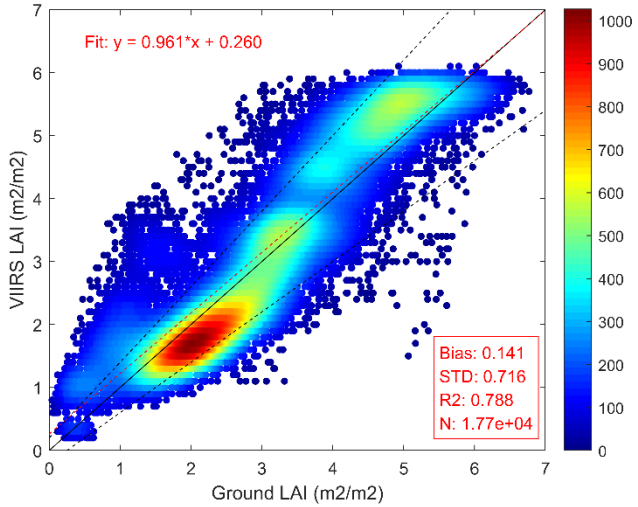
- LAI operational readiness review works
  - LAI verification between operational test data and local LAI.
  - LAI inter-comparison between JPSS satellites (SNPP, N20 and N21, as the bottom histogram shows).
  - LAI historical data in-situ validation using the NEON network measurements (released by GBOV).
  - Inter-comparison with NASA VNP15 LAI product.
  - User feedback on the LAI climatology performance in land surface model. Collect the user requirement for further improvement.



- LAI Inter-comparison between JPSS satellites (NPP, N20 and N21)





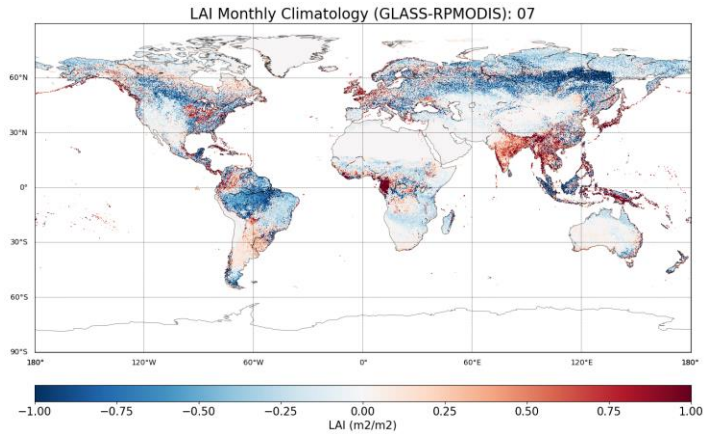


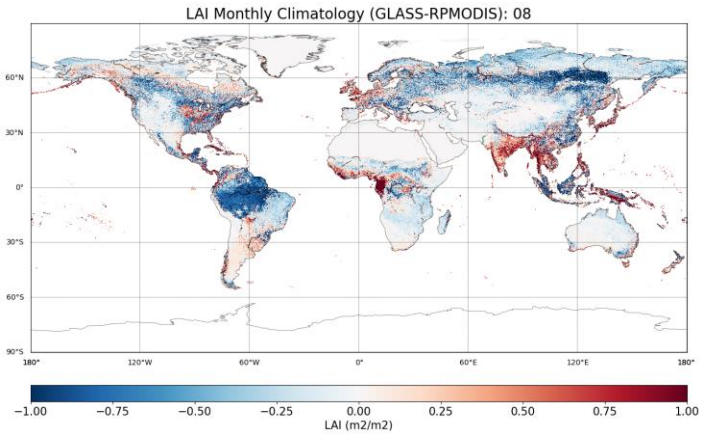
LAI historical data in-situ validation results at the GBOV sites. With most data meat the requirements.

LAI Climatology Inter-comparison

- Background and Objective: two sets of LAI climatology (one is based on reprocessed MODIS, the other is based on GLASS LAI) is under test in the land surface model, For the area with significant difference, more evaluation is conducted.

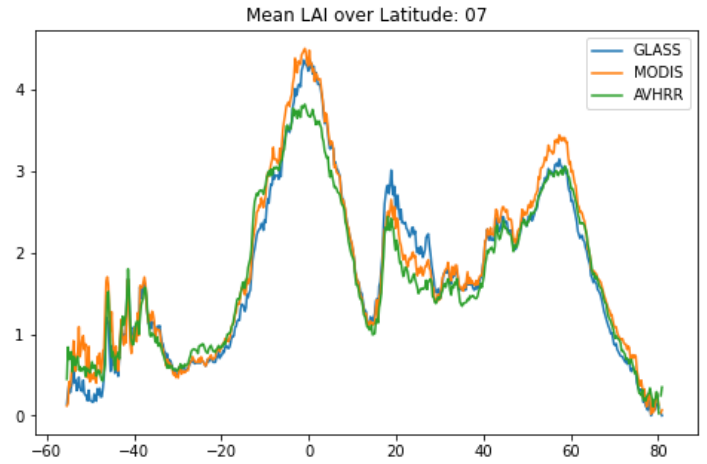
- GLASS based LAI compared with MODIS based LAI climatology.

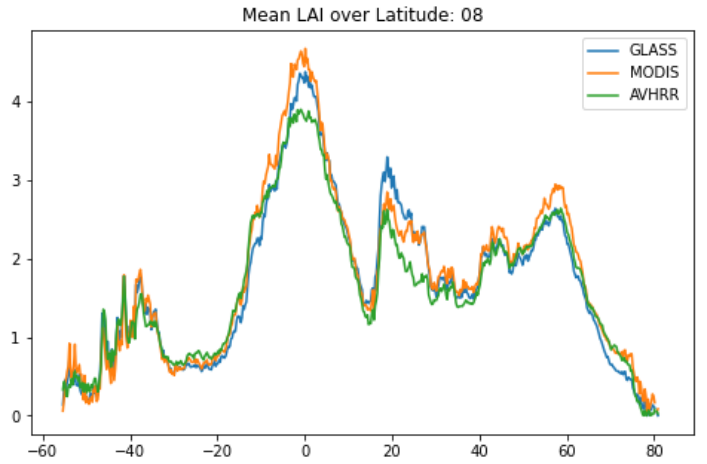


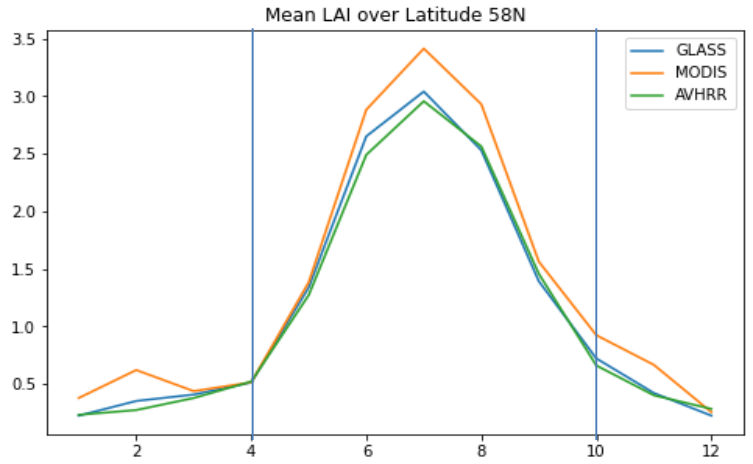


- The LAI difference at 60N Asia area is significant during summertime, MODIS with higher LAI than GLASS.
- AVHRR with similar value with GLASS at these area as the mean LAI over latitude shows.
- The phenology (onset points and senescence points) is consistent.
- More in-situ validation will perform for this area.

- Mean LAI inter-comparison between GLASS, AVHRR and MODIS over each latitude.







FY25 Milestones/Deliverables

Task Category	Task/ Description	Start	Finish	Deliverable	Requirement (Dev Only)
Development (D)	Algorithm & product improvement according to the validation and model test.	7/1/2025	9/30/2025	Algorithm test report	JPSS LAI product requirements
Integration & Testing (I)	LAI operational data verification and adjustment	1/1/2025	3/31/2025		
Calibration & Validation (C)	LAI product in-situ validation & inter-comparison with other products	3/1/2025	6/30/2025	Validation report	
	Incorporate the LAI test data into the LSM model to evaluate the performance in the model	1/1/2025	9/30/2025	Model test report	
LTM & Anomaly Resolution (L)	Develop and apply LAI routine monitoring and validation tool	10/1/2024	05/31/2025	Monitoring tool package	

D	I	C	M	L
Development	Integration &Testing	Calibration & Validation	Maintenance	LTM & Anomaly Resolution

Surface Albedo

January 2024

Accomplishments / Events:

- Continued communication with OCS regarding the Metop-SG LSA package.
- Submitted the FY25 proposal for VIIRS LSA and BRDF.
- Attended AMS 2025 and presented our work on anomaly detection and extreme weather events monitoring.
- Interviewed Lapenta summer intern candidates.
- Revising the VIIRS LSA code to evaluate the plan for LSA reprocessing.

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			

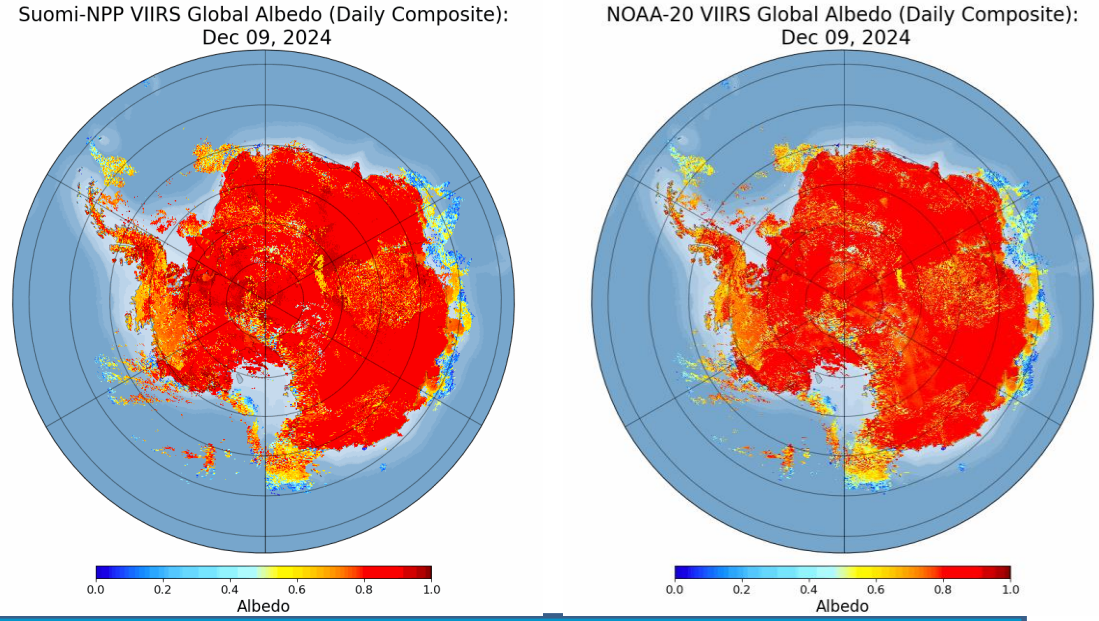
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

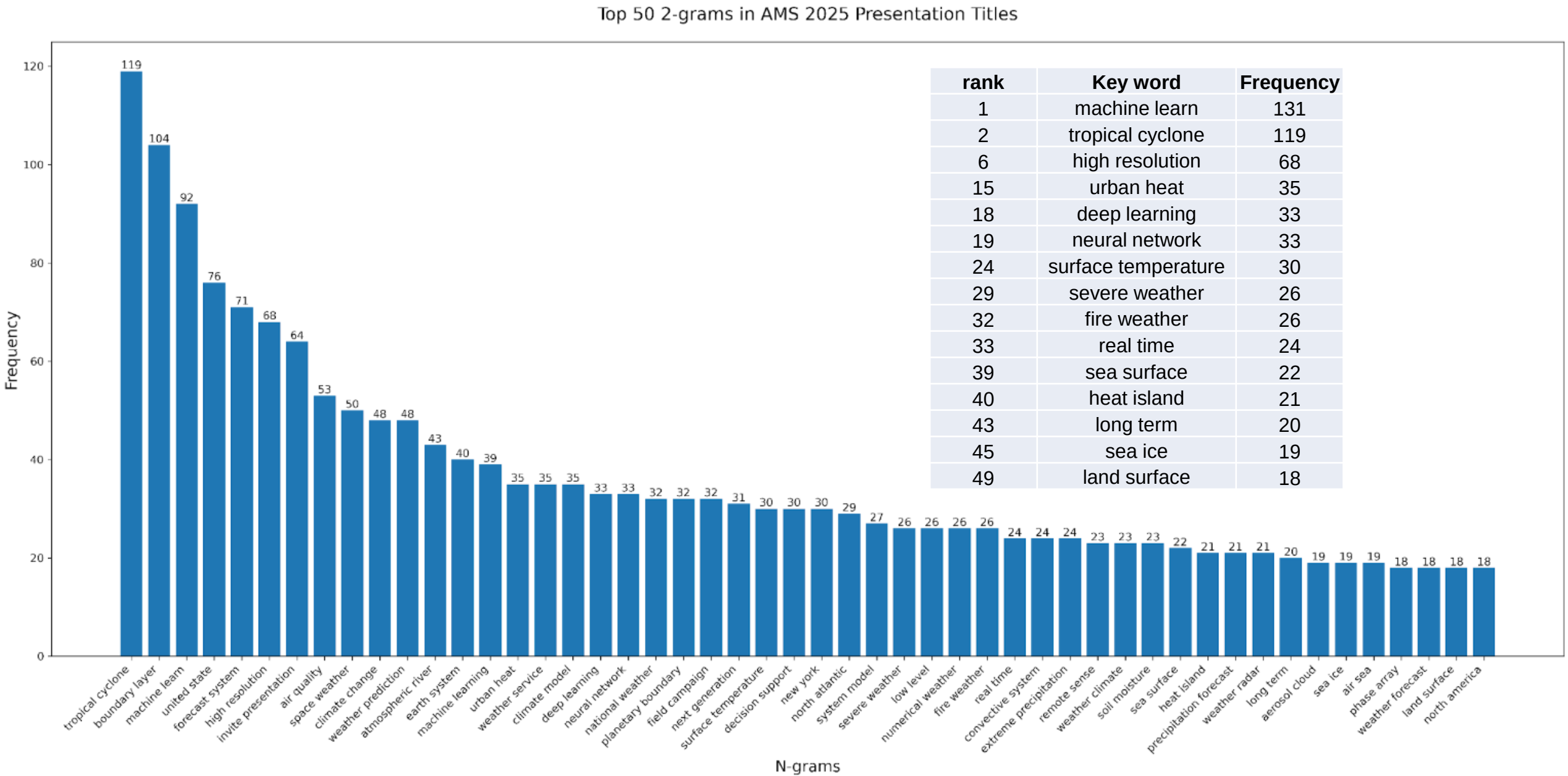
Milestones	Original Date	Forecast Date	Actual Completion	Variance Explanation
Support the integration and cloud transition of the VIIRS BRDF	Dec-2024	Dec-2024	Sep-2024	Delivered in Sep-2024. Integration in 2025
Develop and assess blended VIIRS SURFALB albedo algorithm	Dec-2024	Dec-2024	Dec-2024	
New Satellite Adaptation and algorithm performance improvement	Mar-2025	Mar-2025		
NBAR comparison between LEO and GEO satellites	Jun-2025	Jun-2025		
Generate new VIIRS sea-ice albedo climatology	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:

Excellent monitoring of snow/ice albedo in the new operational v2r2 VIIRS albedo

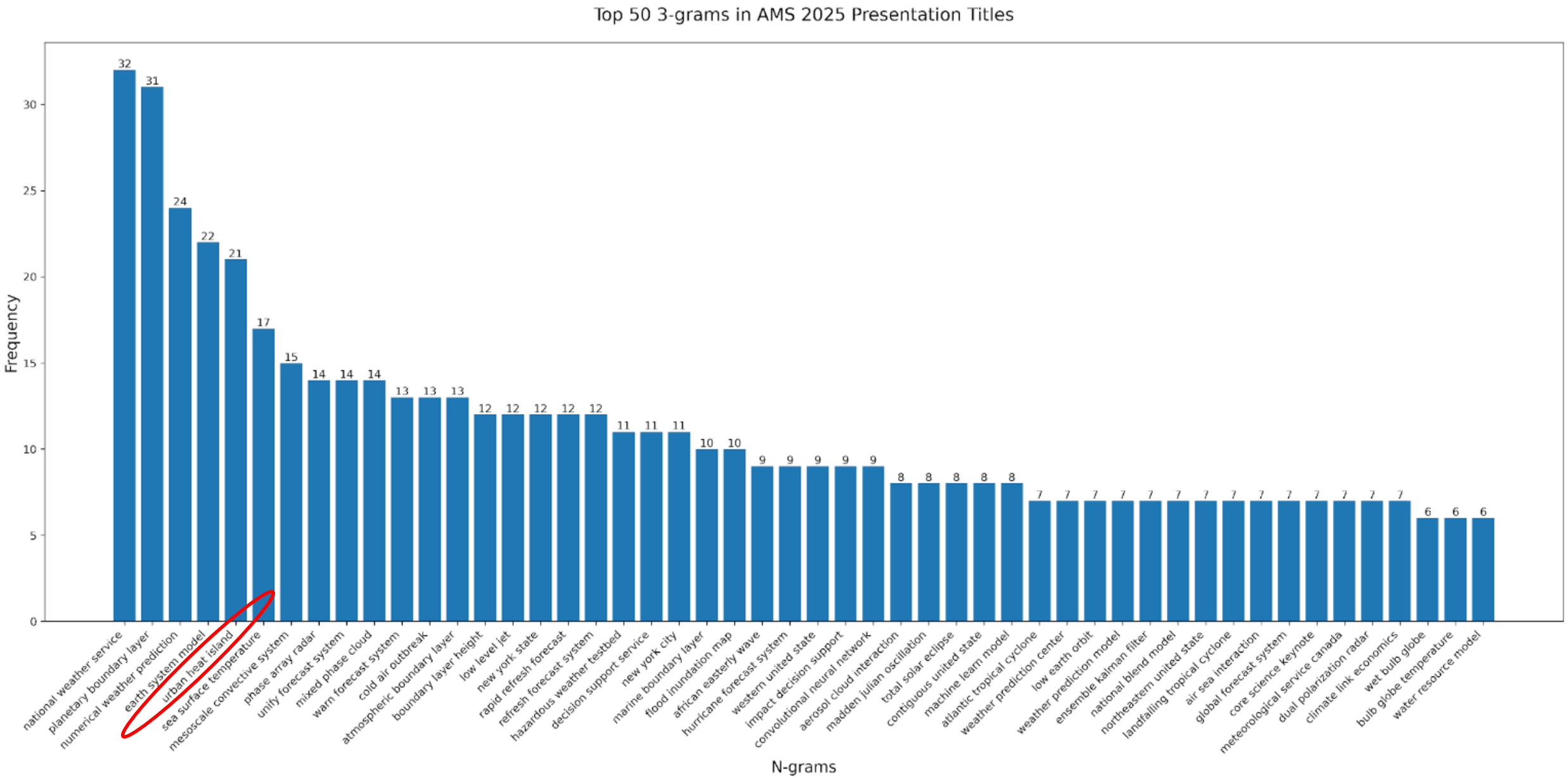


AMS 2-gram Keywords Analysis (3814 Presentations)

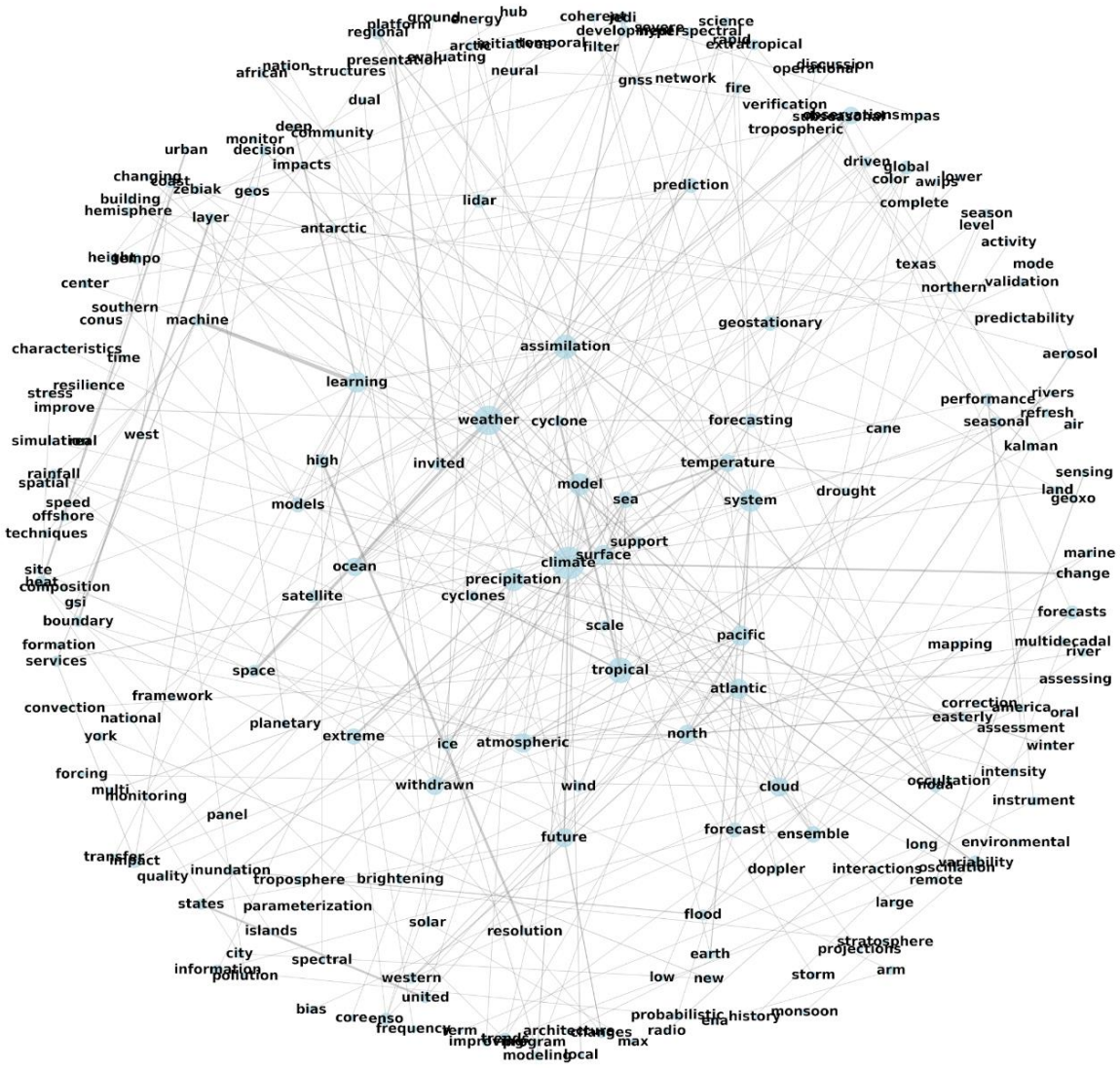


rank	Key word	Frequency
1	machine learn	131
2	tropical cyclone	119
6	high resolution	68
15	urban heat	35
18	deep learning	33
19	neural network	33
24	surface temperature	30
29	severe weather	26
32	fire weather	26
33	real time	24
39	sea surface	22
40	heat island	21
43	long term	20
45	sea ice	19
49	land surface	18

AMS 3-gram Keywords Analysis



AMS presentations Keyword Network



1	model
2	weather
3	climate
4	impact
5	cloud
6	forecast
7	observation
8	system
9	precipitation
10	wind
11	atmospheric
12	tropical
13	prediction
14	aerosol
15	satellite
17	noaa
18	high
19	cyclone
20	air

FY25 Milestones/Deliverables

	Milestone	Start	Finish	Deliverable	Requirement (Dev Only)	Project
1	Software package for blended SURFALB from all VIIRS sensors	Oct-24	Dec-24	L3 code package for using observations from three satellites in generating blended albedo		JPSS-Albedo
2	Sea-ice albedo climatology dataset	Mar-25	Feb-25	VIIRS albedo climatology being updated over the sea-ice pixels and used in VIIRS albedo algorithm		JPSS-Albedo
3	Application of albedo in radiation force report	July-25	Sep-25	A manuscript, or a memorandum		JPSS-Albedo
4	LSA and other land anomaly monitoring interface	Oct-24	Jul-25	An interactive interface to observe the real-time albedo anomaly		JPSS-Albedo
5	BRDF algorithm based on the joint of NPP, JPSS-1, and JPSS-2	Jul-24	Dec-24	DAP: Software, documents, and test data		PPM-BRDF
6	Scientific report of Albedo/BRDF validation and monitoring	Sep-24	Jul-25	A report		PPM-BRDF

D	I	C	M	L
Development	Integration &Testing	Calibration & Validation	Maintenance	LTM & Anomaly Resolution

Land Surface Temperature

January 2025

Accomplishments / Events:

- Resolved the issues related to gaps observed in the all weather LST output data. The problem was identified as a software bug. (slide 2)
- Reviewed and verified all other input data for all weather LST related to mapping, including SRTM, NDVI, and emissivity, ensuring consistency in row directions throughout the data flow. (slide 3)
- Conducted a further review of the source code and fixed minor issues in all weather LST, re-ran all test cases to update the intermediate and final output data.
- Completed and submitted the initial scientific software package for all-weather LST to the ASSISTT and OCS teams. The package includes the software code, test input, intermediate output, final output, and a README file (slide 4 & Highlights).
- Modified the script for collecting NOAA21 LST data. The data source has been switched to the SCDR repository.
- Conducted the LST validation against ground observations and validation results are analyzed.(slide 5, 6,7)
- Attended AMS 2025 and presented a poster titled "All-weather VIIRS LST: Machine Learning-Based Methodology and Experiment."
- Prepared a draft proposal for innovation and sustainment tasks for JPSS LST and MetOp-SG LST.
- Provided input for VIIRS LST users and related applications.

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.*

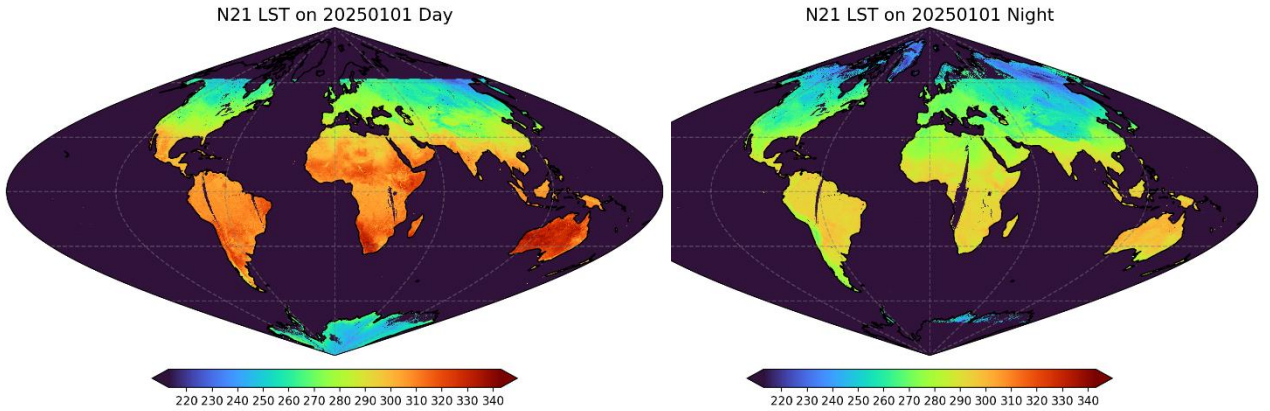
Issues/Risks:

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		
I-band LST validation and applications	Oct-24	May-25		
All weather LST validation and improvement	Jan-24	Aug-25		
Monitoring and Anomaly watch, analysis and report	Oct-24	Sep-25		

Highlights:

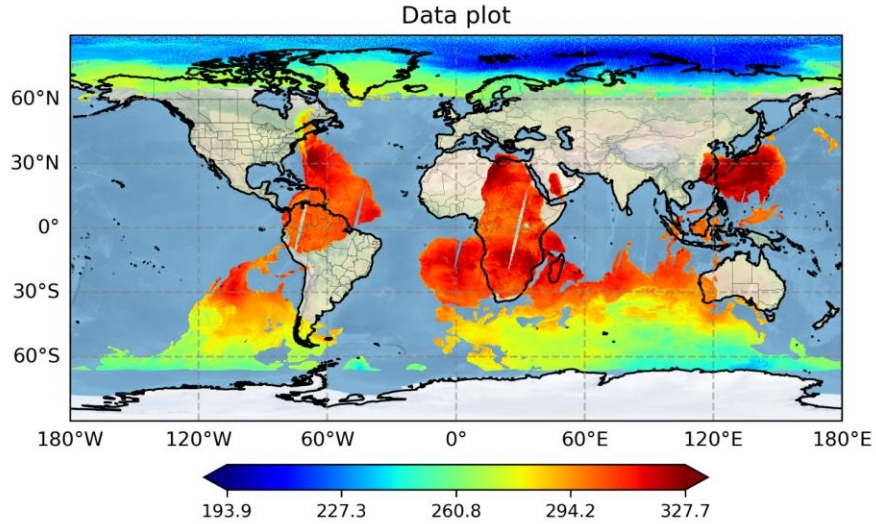
All Weather LST for NOAA-21



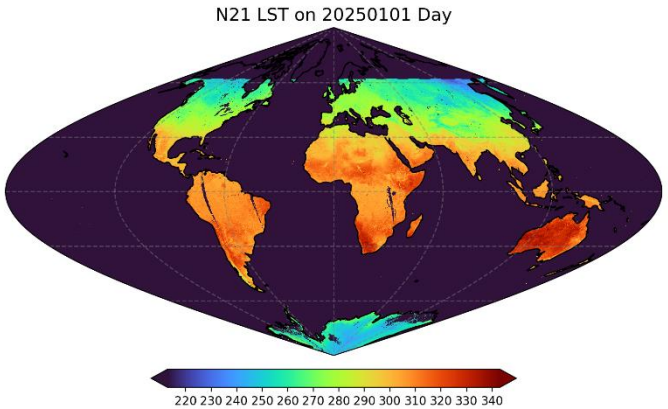
The all weather LST image for both daytime(left) and nighttime(right) on January 1, 2025 are displayed. The data used is the test data included in the delivered dataset.

Issue Fixed in the all-weather LST Code

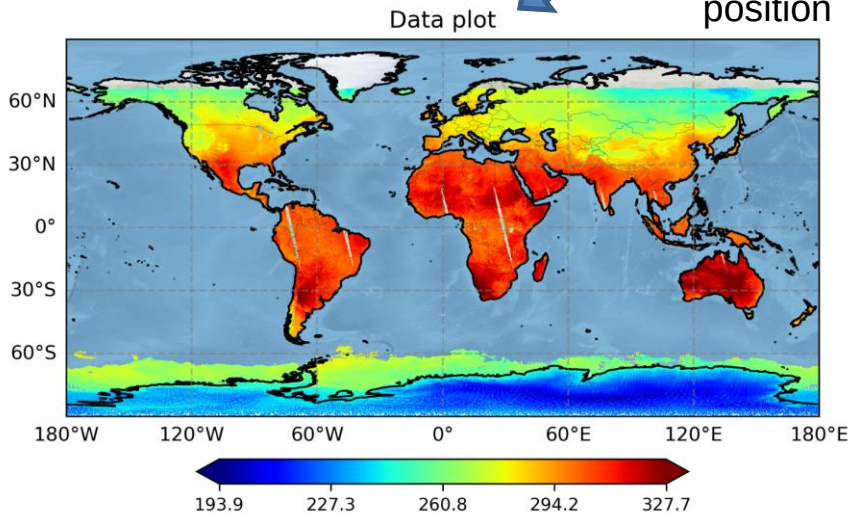
- An issue was observed with missing values in the all weather LST daytime output (as shown in bottom right figure)
- The Intermediate output of daily MIRS composite was found to be flipped in the row direction for both daytime and nighttime. (top right figure)
- The software code did not adjust the data position correctly, which caused the problem.
- The issue has been fixed by adjusting the IP output for MIRS LST to the correct position and reading in the data accordingly. The corrected LST image is shown in the bottom left figure.

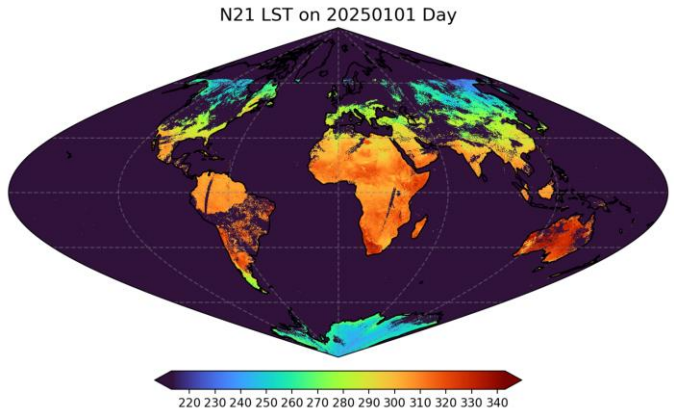


IP output MIRS_20241115_Day.nc in above position



fixed

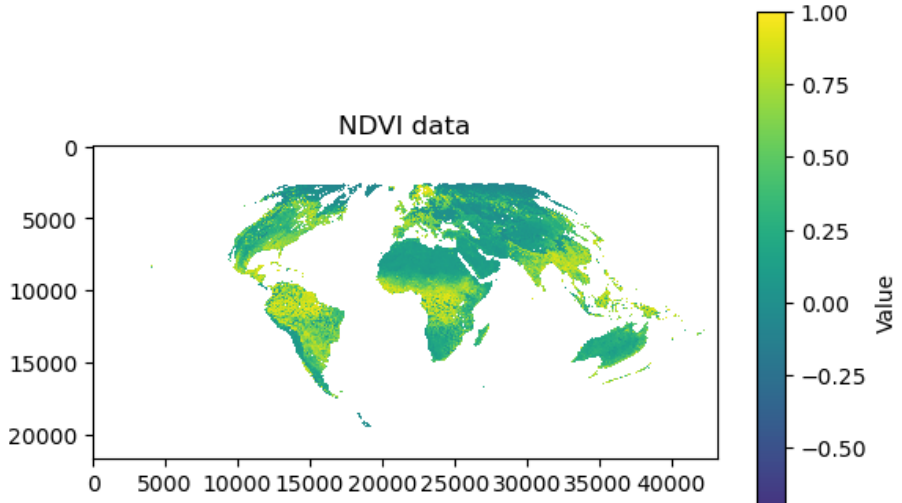


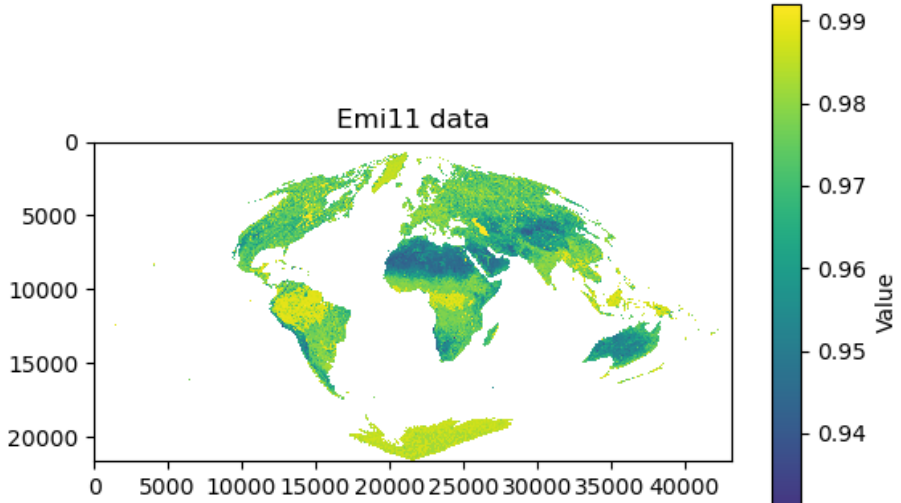


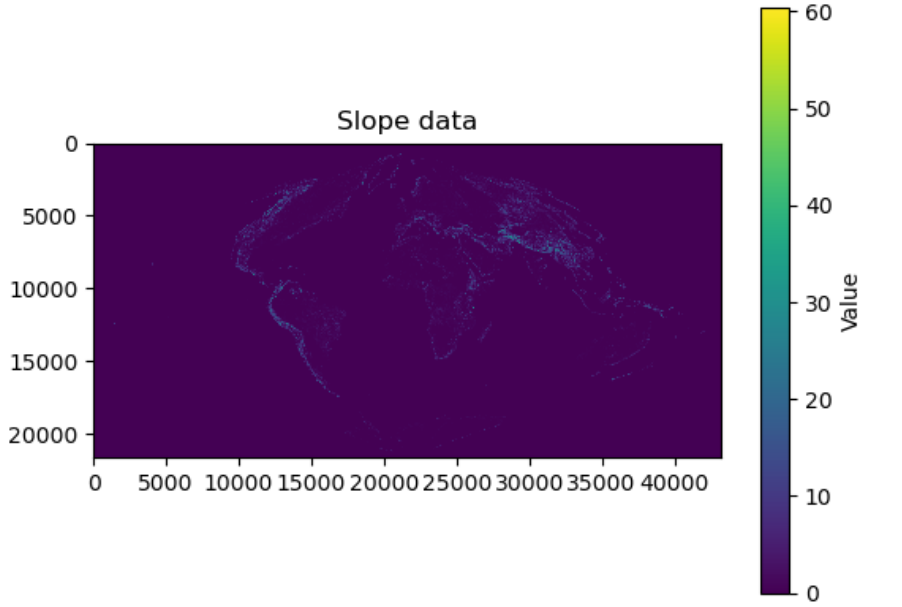
Missing values are observed in the all weather LST output

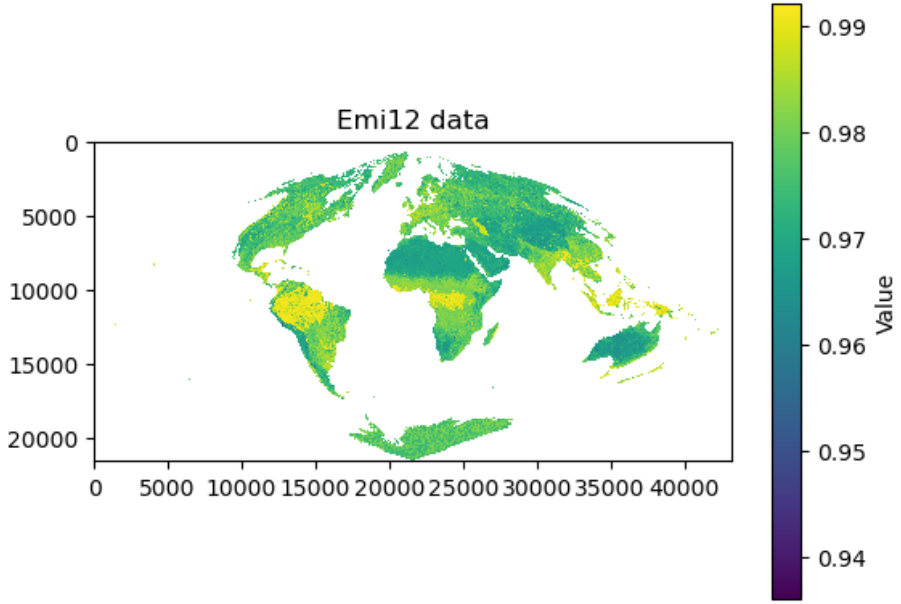
The issue was identified and resolved.

All Weather LST Input Data Position Verification









- Slope data, NDVI data, and emissivity data on a randomly selected day were checked for their data positions.
- The results indicate that the input dataset have correct and consistent positions.

All weather LST DAP Ready

/data/smcd9/yliu/allWeatherLST/DAP_202501/

Name
..
Input
Intermediate
Output
src
Readme.docx

/data/smcd9/yliu/allWeatherLST/DAP_202501/I

Name
..
Auxiliary_Data
MIRS_1_L2_World_NC
Model_Parameters
VIIRS_1_Emissivity_World_NC
VIIRS_1_LST_World_NC
VIIRS_1_NDVI_World_NC_BWKL

/data/smcd9/yliu/allWeatherLST/DAP_202501/Input/Aux

Name
..
glb_sin_1km_latlon.nc
SRTM_World_Slope_Complete_0p009_Double.tif

/data/smcd9/yliu/allWeatherLST/DAP_202501/Input/Model_Parameters/

Name
..
NN_Model_8Variables_Day_layer_1_param_1.csv
NN_Model_8Variables_Day_layer_1_param_2.csv
NN_Model_8Variables_Day_layer_2_param_1.csv
NN_Model_8Variables_Day_layer_2_param_2.csv
NN_Model_8Variables_Day_layer_3_param_1.csv
NN_Model_8Variables_Day_layer_3_param_2.csv
NN_Model_8Variables_Night_layer_1_param_1.csv
NN_Model_8Variables_Night_layer_1_param_2.csv
NN_Model_8Variables_Night_layer_2_param_1.csv
NN_Model_8Variables_Night_layer_2_param_2.csv
NN_Model_8Variables_Night_layer_3_param_1.csv
NN_Model_8Variables_Night_layer_3_param_2.csv
Variables_MinMax_Day.npz
Variables_MinMax_Night.npz

/data/smcd9/yliu/allWeatherLST/DAP_202501/Intermediate/

Name
..
MIRS_2_LST_World_Output

/data/smcd9/yliu/allWeatherLST/DAP_202501/Output/

Name
..
NN_LST_World_Output

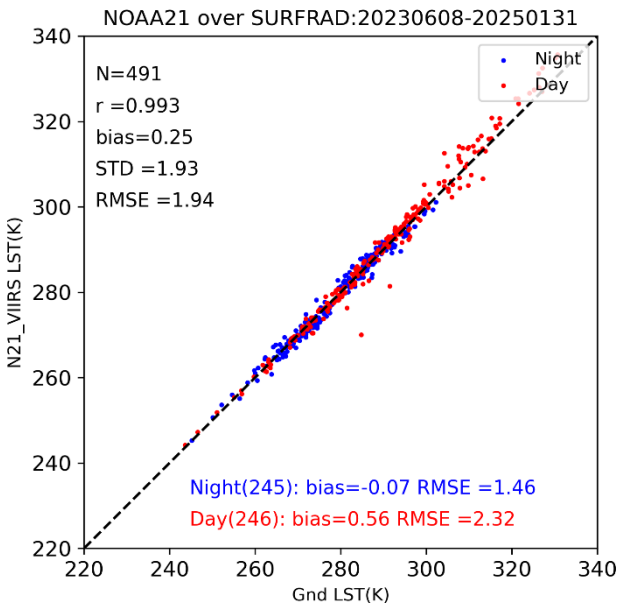
/data/smcd9/yliu/allWeatherLST/DAP_202501/src/

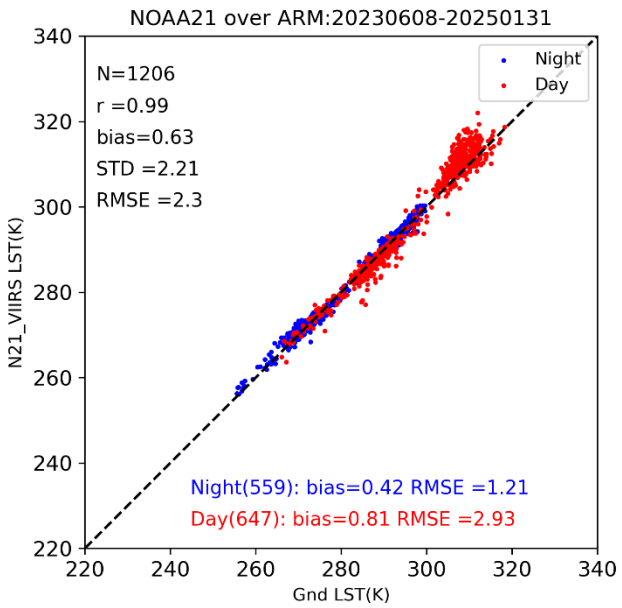
Name
..
function_allweatherLST.py
NN.py

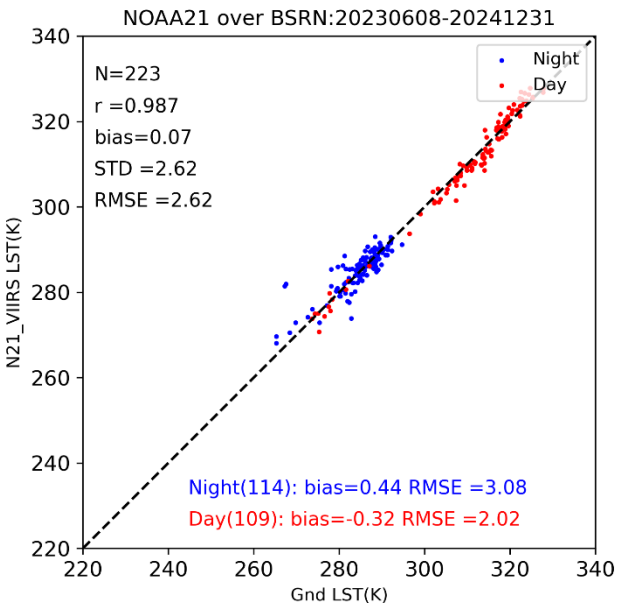
20241115
20241201
20250101

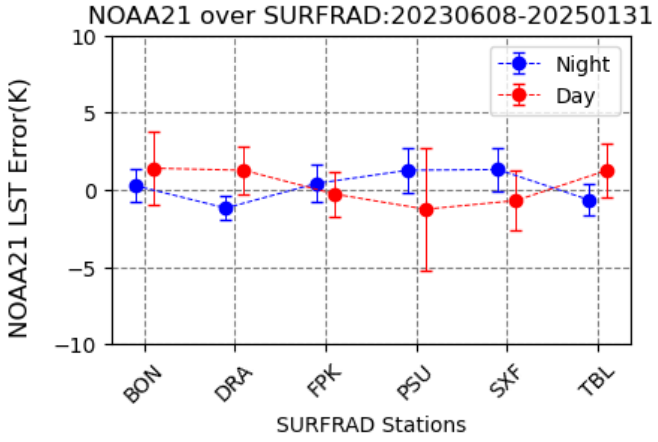
Three days of data were provided:
November 15, 2024 for SNPP;
December 1, 2024 for NOAA-20, and
January 1, 2025 for NOAA-21

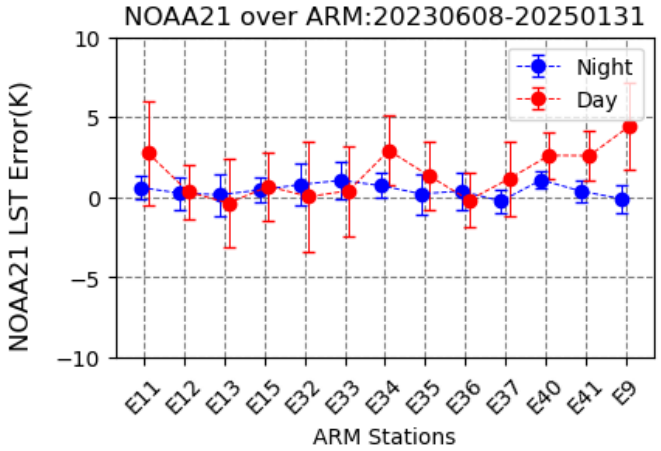
NOAA21 LST Validation

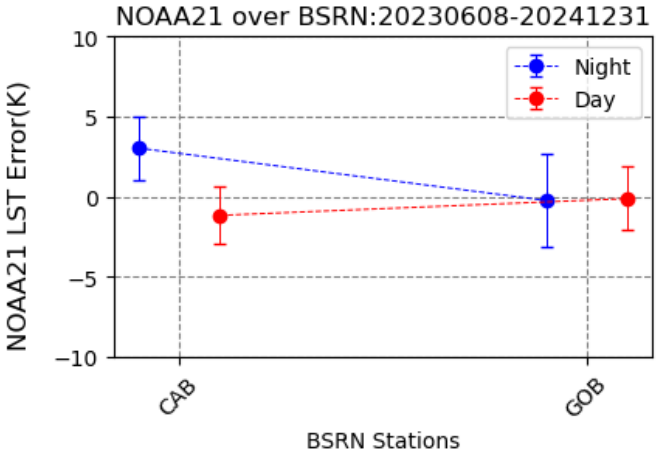






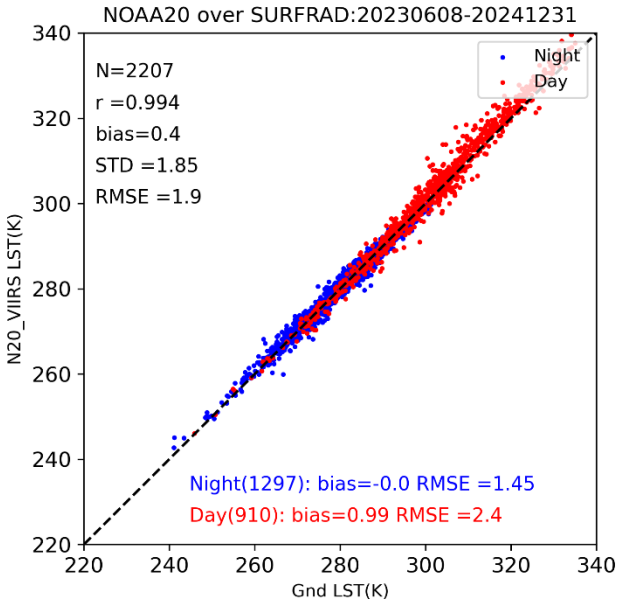


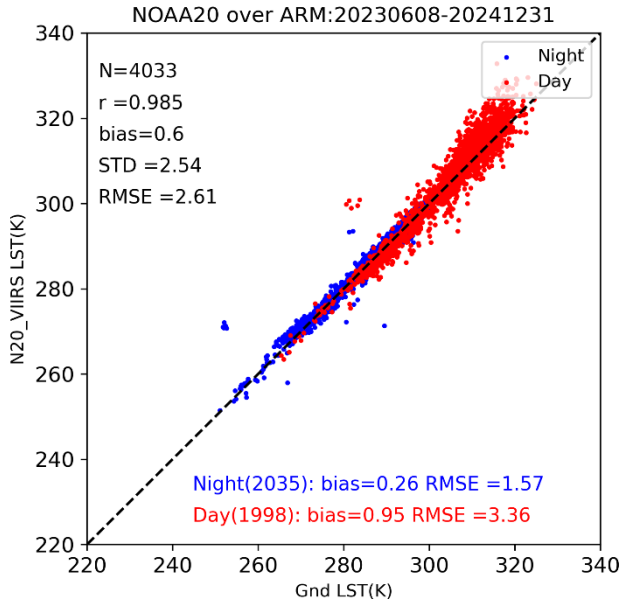


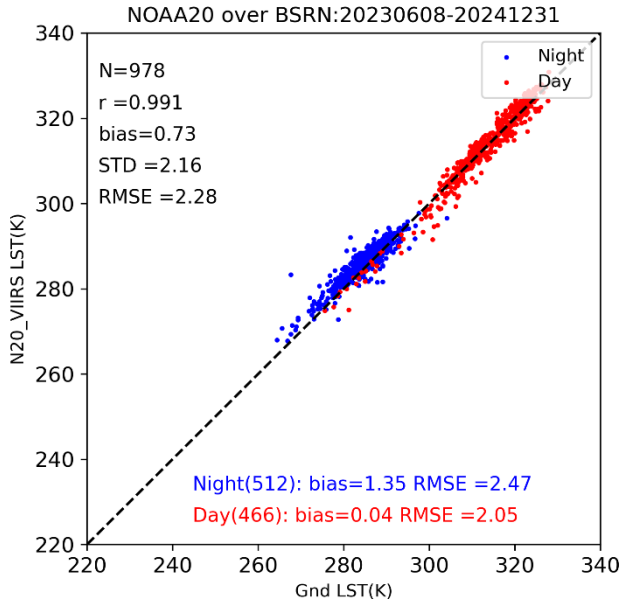


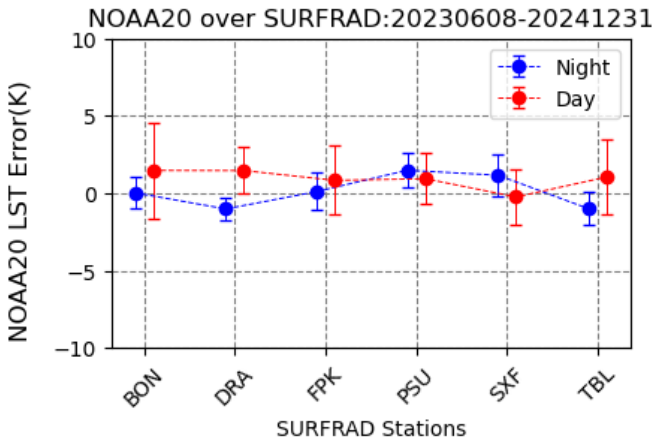
- L3 NOAA21 LST is validated against ground observations from SURFRAD,ARM, and BSRN.
- The data covers the period from June 8, 2023 to January 31, 2025, however data availability is very limited.
- The over results indicate better agreement during nighttime with RMSE of less than 1.5 K for SURFRAD and ARM than daytime.
- The sitewide analysis reveals varying level of agreement among stations with obvious overestimation observed at some ARM stations such as E9, E11, E34, and E41
- Some outliers appears to be related to possible cloud contamination.

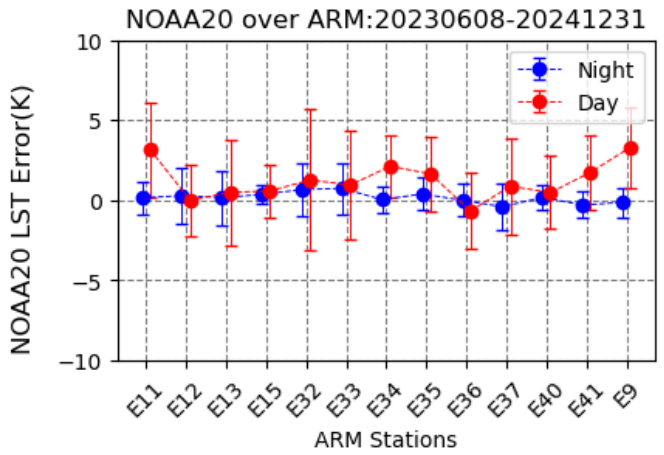
NOAA-20 VIIRS LST Validation

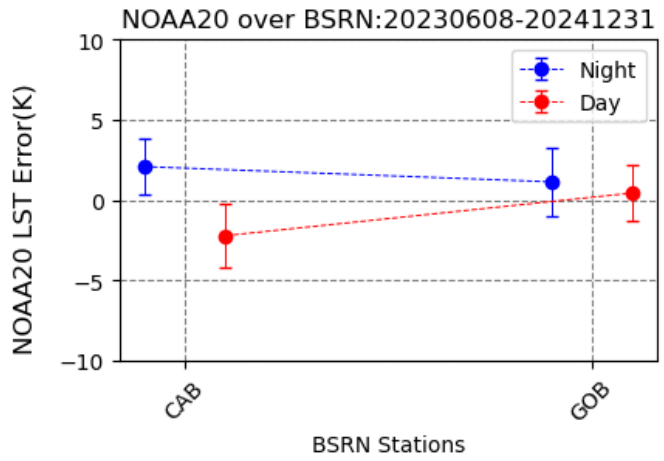






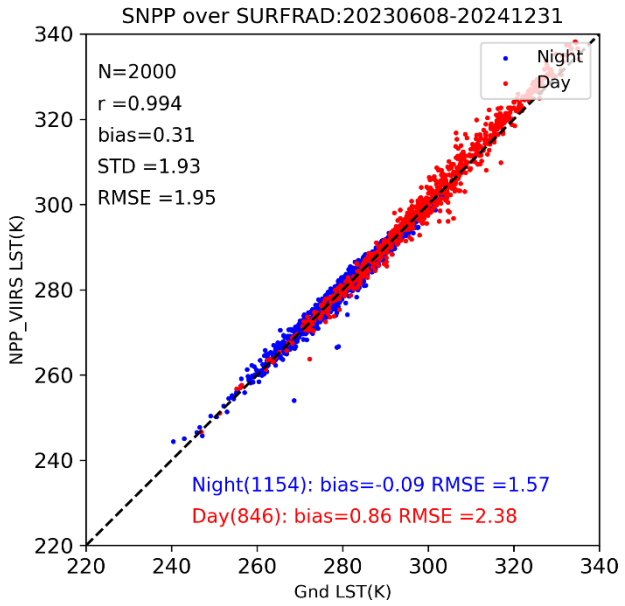


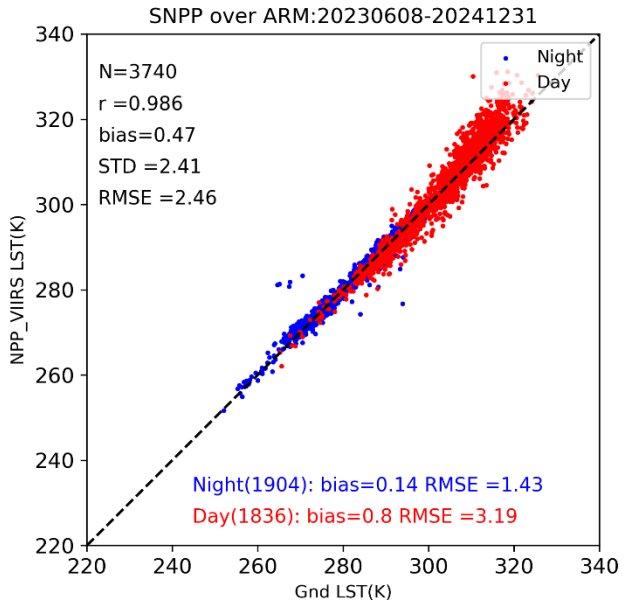


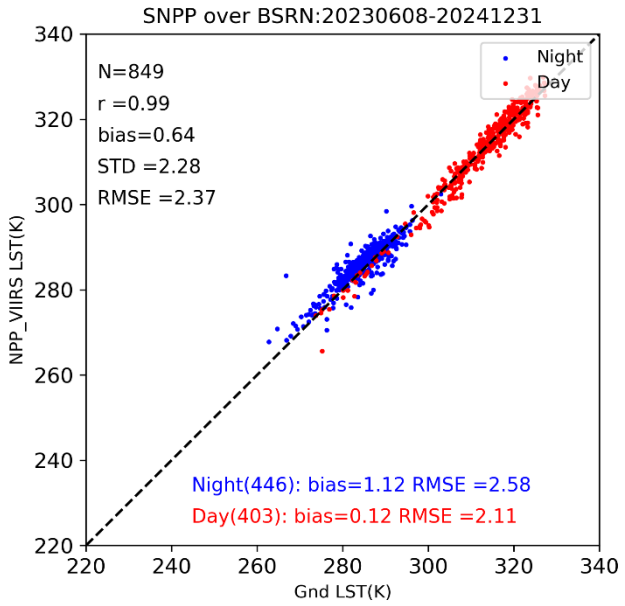


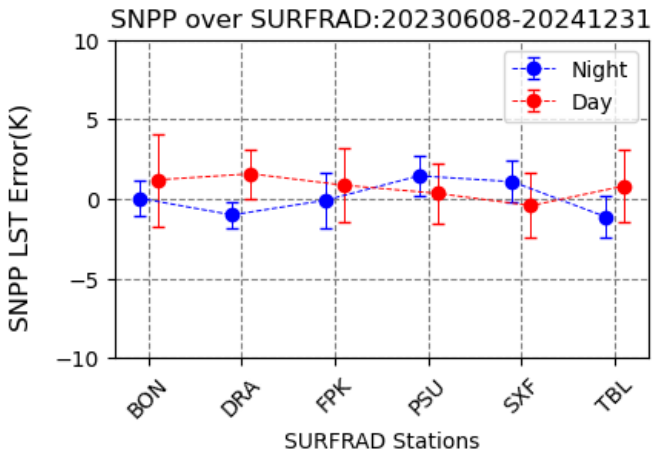
- L3 NOAA20 LST is validated against ground observations from SURFRAD,ARM, and BSRN.
- The data covers the period from June 8, 2023 to December 31, 2024.
- The overall results indicate better agreement during nighttime with RMSE of less than 1.6 K for SURFRAD and ARM than daytime.
- The sitewide analysis reveals varying agreement among stations with obvious overestimation observed at some ARM stations such as E9, E11, and E41

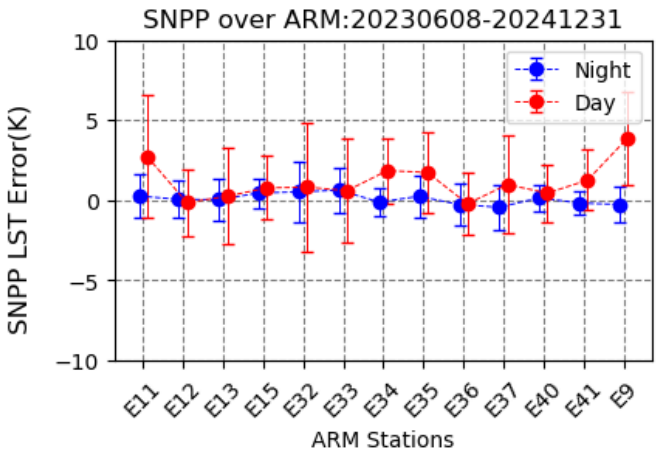
SNPP VIIRS LST Validation

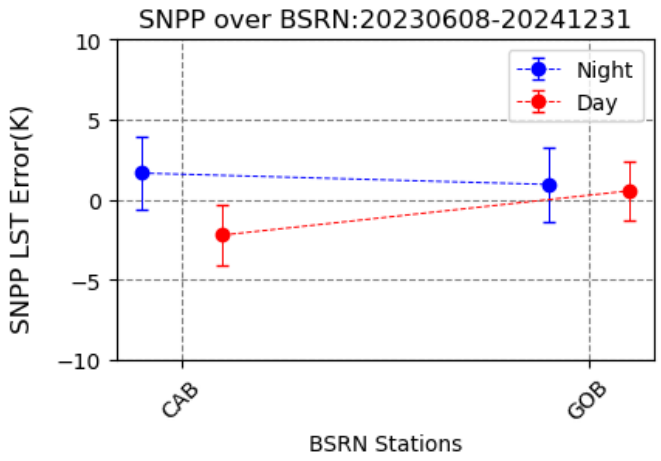












- L3 SNPP LST is validated against ground observations from SURFRAD,ARM, and BSRN.
- The data covers the period from June 8, 2023 to December 31, 2024.
- The overall results indicate better agreement during nighttime with RMSE of less than 1.6 K for SURFRAD and ARM than daytime.
- The sitewide analysis reveals varying level of agreement among stations with obvious overestimation observed at some ARM stations such as E9, E11, and E33.
- Overall, the validation results are consistent among the three LST products.

FY25 Milestones/Deliverables

	Milestone	Start	Finish	Deliverable	Requirement (Dev Only)
1	Annual report of L2 and L3 VIIRS LST validation	Nov-24	Dec-24	PowerPoint presentation of the validation results	
2	I-band LST LUT improvement and validation	Oct-24	May-25	Presentation slides of algorithm development and validation results	
3	LST reprocessing preparation	Ocr-24	Sep-25	Progress report	
4	JPSS-3 pre-launch test and evaluation	Jan-25	Apr-25	Presentation slides and LUT (rely on the availability of the sensor response function)	
5	All weather LST scientific readiness and availability	Oct-24	Aug-25	Experimental data and evaluation results	Collaborative works with PPM and EMC
6	Monitoring and Anomaly watch, analysis and report	Oct-24	Sep-25	Report as the cases come up	

D	I	C	M	L
Development	Integration &Testing	Calibration & Validation	Maintenance	LTM & Anomaly Resolution

MiRS Products

January 2025

Accomplishments / Events:

- The MiRS team has been developing and testing various machine learning models for the improvement of satellite microwave rainfall retrievals. One such model is a U-Net, which has already been evaluated over the CONUS using ground-based MRMS and Stage IV analyses as reference data. In order to further evaluate the model in other regions, a U-Net was trained for the European region using the European climatological high-resolution gauge-adjusted radar precipitation dataset, EUropean RADar CLIMatology (EURADCLIM). The data are based on 138 ground-based radars and ~7,700 rain gauges. The highlight figures show results for instantaneous precipitation on 01 March 2021, and compare the EURADCLIM, MiRS operational SNPP, and U-Net estimates, respectively. It can be seen that the U-Net estimates more closely match the ground reference data. Further results on development of machine learning precipitation models were presented at the AMS 2025 annual meeting in New Orleans. Poster: “Applying Machine Learning Techniques to Improve ATMS Based Precipitation Estimates” by Shuyan Liu et al.

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				

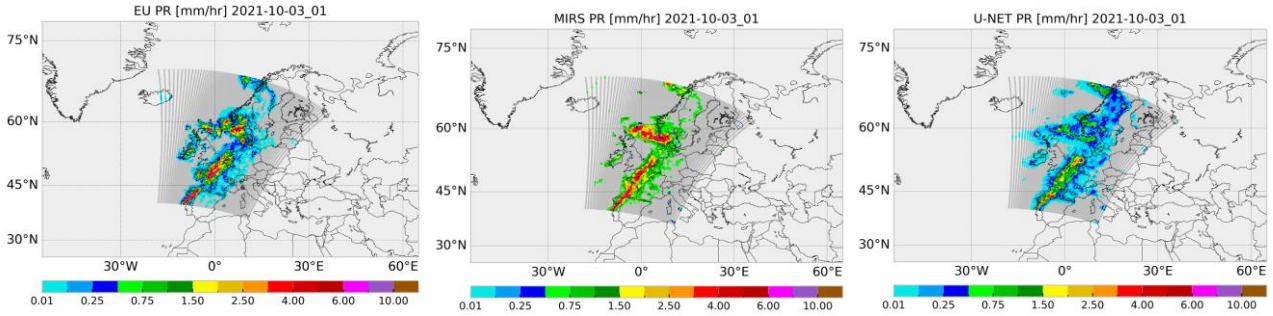
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
MiRS Development Algorithm Package (DAP) version 12.0 delivery	*Oct 2024 to Sep 2025*			
MiRS EDRs Reprocessing and data analysis	*Oct 2024 to Sep 2025*			
MiRS EDRs Maintenance and Monitoring	*Oct 2024 to Sep 2025*			
Implementing new CRTM version into MiRS System	*Sep 2025*			
Develop and evaluate AI/ML MiRS post-processing for precipitation over CONUS and global SST retrieval improvement	*Sep 2025*			
Framework for MiRS JPSS-3/4 ATMS	*Sep 2025*			

Highlights:



Comparison of EURADCLIM ground reference precipitation with MiRS operational SNPP ATMS and U-Net machine learning model retrieval from SNPP ATMS. Data are valid on 2021-03-01.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Task 1: MiRS Development Algorithm Package (DAP) version 12.0 delivery	*October 2024 to September 2025*			
Subtask 1.1: Preparation of the MiRS DAP 12.0 *Two key updates: 1) upgrade the CRTM version 2.1.1 to the latest 2.4.0 in the MiRS DAP; The CRTM version 2.1.1 was released 10 years ago. New sciences and new capabilities have been implemented in the version 2.4.0.* *2) Some' values are stored as integer values in the MiRS EDRs files for saving the storage space and users read the files and converted back to floating values. The process caused the loss of numerical precision that affects the trend study in climate change. Today's data storage is much powerful than previous so that we can directly store the floating values.*	*October 2024 to July 2025*			
Subtask 1.2: The DAP testing and delivery	*October 2024 to September 2025*			
Task 2: MiRS EDRs Reprocessing and data analysis	*October 2024 to September 2025*			
Subtask 2.1: Data Reprocessing *SNPP MiRS EDRs data are reprocessed till December 2021 and NOAA-20 MiRS EDRs data are reprocessed till December 2020. The team will reprocess the NOAA-18 MiRS EDRs data..*	*October 2024 to July 2025*			
Subtask 2.2: Reprocessed Data Analysis *The MiRS reprocessed EDRs provided consistent long data records for study climate changes. The MiRS team will analyze the trends of total precipitable water (TPW) and rain rate at the surface.*	*October 2024 to September 2025*			
Task 3: MiRS EDRs Maintenance and Monitoring	*October 2024 to September 2025*			
Subtask 3.1: Maintenance *MiRS team is responsible for debug and upgrades of the MiRS system. The team is response for any issues reported by OSPO, Community Satellite Processing Package (**CSPP**) and other users.*	*October 2024 to September 2025*			
Subtask 3.2: Monitoring *The MiRS team maintains a visualization system to display daily images of global and CONUS distributions of MiRS 11 EDRs. The system also displays time series of statistical errors (biases and standard deviations) those EDRs.*	*October 2024 to September 2025*			

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Task 4: Implementing new CRTM version into MiRS System	*September 2025*			
Subtask 4.1: Implementation *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.*	*July 2025*			
Subtask 4.2: Testing and Assessment of the Performance *After the implementation of the CRTM new version, the team will test and evaluate the performance of the new implementation in terms of the accuracy and efficiency.*	*September 2025*			
Task 5: Develop and evaluate AI/ML MiRS post-processing for precipitation over CONUS and global SST retrieval improvement	*September 2025*			
Subtask 5.1: Develop AI/ML MiRS post-processing *AI/ML algorithm can greatly improve the accuracy of MiRS EDRs. For a low cost, we first proposed AI/ML post-processing system without changing MiRS. The MiRS EDRs will be inputs to a deep-learning system to improve the accuracy of EDRs.*	*July 2025*			
Subtask 5.2: Demonstrate the improvement for precipitation and sea surface temperature *The AI/ML MiRS post-processing system will be evaluated the improvements for two candidate EDRs: surface rain rates and the sea surface temperatures.*	*September 2025*			
Task 6: Framework for MiRS JPSS-3/4 ATMS MiRS is an enterprise algorithm. However, the bias correction and tuning still exist deficiency. The MiRS applies the bias correction over oceans to both lands and oceans. Over land, snow and ice surfaces, the bias correction is very challenge because of large uncertainties in the surface emissivity models. The new framework *aims to overcome the difficulties.*	*September 2025*			

FY25 Microwave Sounding Temperature CDR Project

Jan. 2025

Accomplishments / Events:

– Algorithm and software maintenance and quality control to keep the MLT CDR products into operations

The S-NPP ATMS data is not available from November 20, 2024 to January 27, 2025, we investigated this issue and revised data merging in MLT operation, removed S-NPP ATMS data from November 2024 to January 2025, using NOAA-20 ATMS data only from November 2024 to January 2025.

– Monthly updates and delivery of CDR Products to NCEI (see figures in next slide)

Produced and delivered the 3 CDR products to NCEI, including

AMSU-A FCDR L1c data product for January 2025
AMSU-A FCDR_Gridded data product for January 2025
NOAA MLT V5.0 data products from November 1978 to January 2025
and investigated global trends and spatial patterns of TLT, TMT, TUT and TLS data.

– Severe weather/climate events observation with long-term fundamental CDR products

Updated FCDR data for Sudden stratospheric warming (SSW) observation with AMSU-A and ATMS daily gridded FCDR data from 2002 to present, investigating long-term monitoring and analysis of SSW events.

– Microwave Sounding Assessment System for CDR Development (MSASCD)

Revised code for MSASCD, we are processing inter-satellite bias data, will make it operational in next reporting period.

Milestones	Original Date	Forecast Date	Variance Explanation
Monthly processing and update of microwave sounding CDR products	Sep-25 (Monthly Update)		
Explore impacts of long-term fundamental CDR products in observing severe weather/climate events	Apr-25	Apr-25	
Evaluate bias drifts and inter-sensor biases in SNPP and NOAA-20 ATMS fundamental CDR (FCDR) to produce long-term quality-consistent CDR data set, in coordination with SDR/ICVS teams; perform recalibration, if necessary	Jul-25	Jul-25	
Maintain and sustain the Microwave Sounding Assessment System for CDR Development (MSASCD) website (https://www.star.nesdis.noaa.gov/smcd/emb/mscat/msascd.php)	Sep-25	Sep-25	

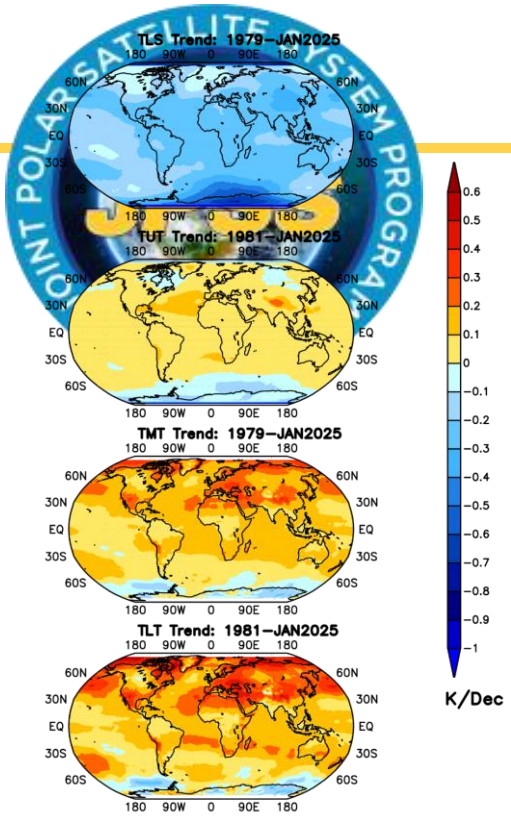
Overall Status:

	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

Monitoring Atmospheric Temperatures Trends with MLT CDR Products



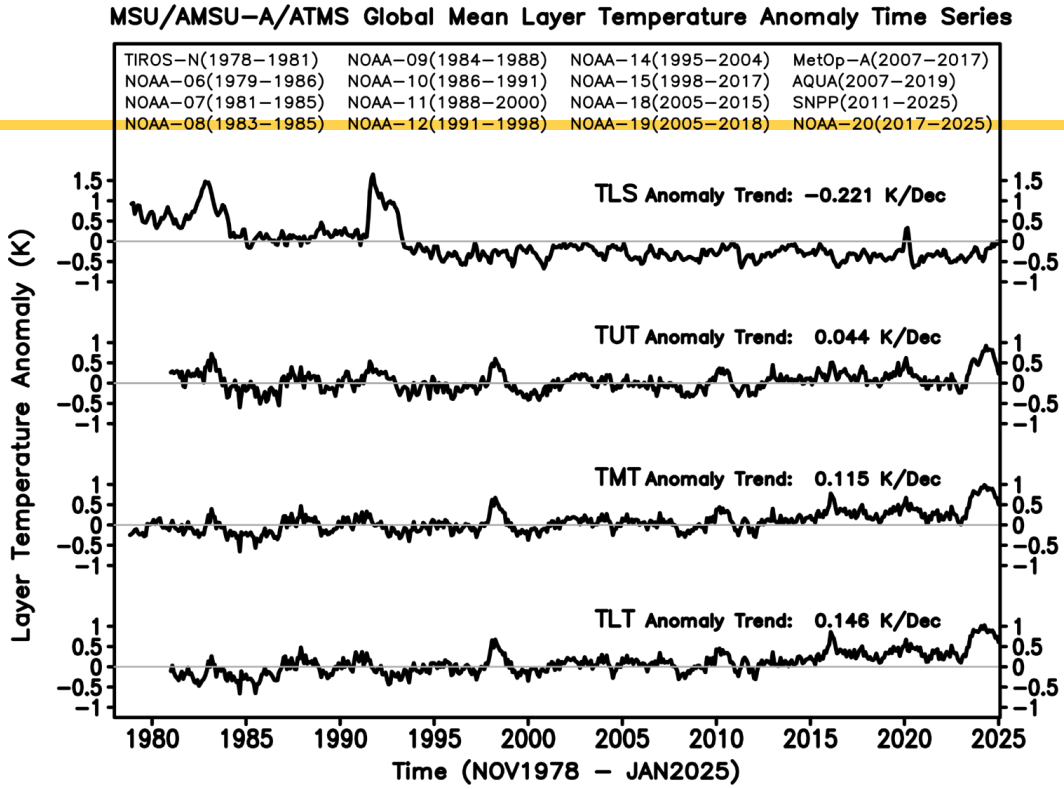


Figure 1. Left: Spatial trend patterns from NOAA/STAR MSU/AMSU-A/ATMS Version 5.0 monthly gridded time series for layer temperatures of lower-troposphere (TLT), mid-troposphere (TMT),upper- troposphere (TUT), and lower-stratosphere (TLS) for 1979 to the latest month. Right: NOAA/STAR MSU/AMSU-A/ATMS Version 5.0, monthly global mean anomaly time series and trends for the layer temperatures of lower-troposphere TLT), mid-troposphere (TMT), upper-troposphere (TUT), and lower-stratosphere (TLS).

FY25 Microwave Sounding Temperature CDR Milestones/Deliverables

	Milestone	Start	Finish	Deliverable
1	Monthly processing and update of microwave sounding CDR products	Oct-24	Sep-25	Deliver monthly microwave sounding CDR Products to NCEI
2	Explore impacts of long-term fundamental CDR products in observing severe weather/climate events	Dec-24	Apr-25	Demonstrate values and impact of long-term (F)CDR data sets in observing severe weather/climate events such as Sudden Stratospheric Warming events
3	Evaluate bias drifts and inter-sensor biases in SNPP and NOAA-20 ATMS fundamental CDR (FCDR) to produce long-term quality-consistent CDR data set, in coordination with SDR/ICVS teams; perform recalibration if necessary	Feb-25	Jul-25	Analysis report (ppt) and/or correction algorithm; long-term quality-consistent CDR data sets
4	Maintain and sustain the Microwave Sounding Assessment System for CDR Development (MSASCD) website (https://www.star.nesdis.noaa.gov/smcd/emb/mscat/msascd.php)	Oct-24	Sep-25	A timely updated MSASCD CDR website

D	I	C	M	L
Development	Integration &Testing	Calibration & Validation	Maintenance	LTM & Anomaly Resolution

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

January 2024

Accomplishments / Events:

.

- JSTAR Mapper/STEMS staff met with the NUCAPS and MiRS science teams to discuss improvements and harmonization of the sounding image tiles and also worked with the Ozone (OMPS) team to improve the presentation of NOAA-21 products which have more noise due to higher resolution

- NPROVS staff continued follow-up planning activities in support of the November Workshop on planned coordinated EUMETSAT Polar System Second Generation ((EPS-SG) and NOAA Cal/Val activities including preparation for an invited presentation (virtual) at the upcoming WMO Global Space-based Inter-Calibration System (GSICS) annual meeting, March 17-21 in Changchun, China.

- NPROVS staff continue to work on problem areas with respect to optimizing the integration of recently available high-resolution conventional radiosonde observations into NPROVS and resolving perceived inconsistencies in vertical profile assessment using the Profile Display (PDISP) versus NPROVS Archive Summary (NARCS) graphical assessment applications

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Integrate high-resolution conventional radiosonde observations in NPROVS	**Q2**	**Q2**		
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**		

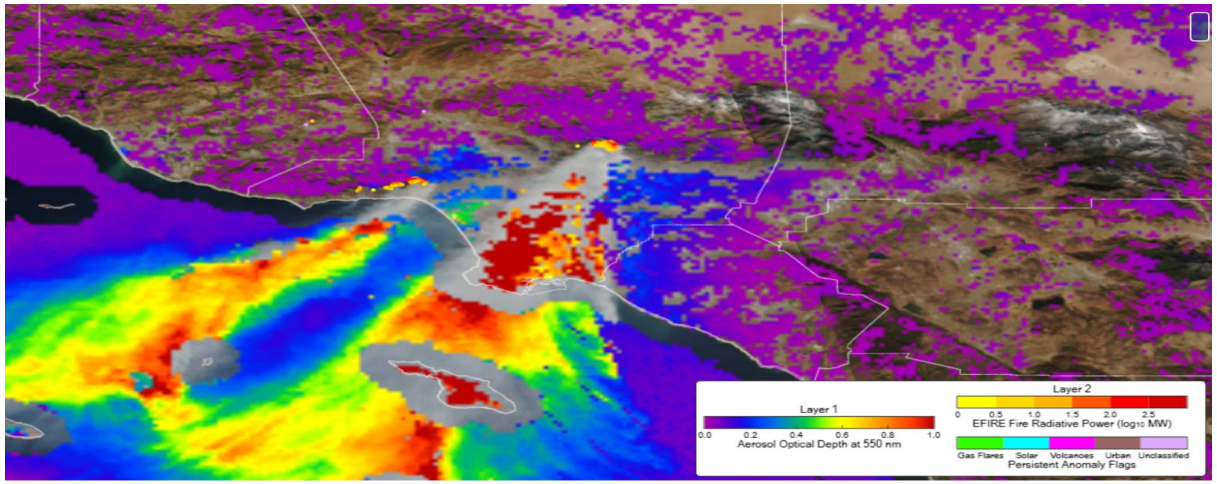
Overall Status:

	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



JSTAR Mapper Imagery of the Southern California (Los Angeles area) fires from January 9, 2025 showing VIIRS True Color background, VIIRS Aerosol Optical Depth (colors) and Active Fire Hotspots (dots); the buffers in the immediate vicinity of land/sea boundaries are actually the True Color background where AOD are not available due to discontinuities in land vs sea algorithm threshold parameters.

NUCAPS Products

- Generated animations of NUCAPS NOAA-21 850-hPa temperature retrievals for the periods of January 1 - 12 and January 16 - 24, 2025. The data clearly depicts two cold air outbreak events over the United States. The second polar vortex brought record-low temperatures and caused a historic winter storm that brought record snowfall to the Gulf Coast.
- Continued validation and sustainment activities for the NUCAPS EDR products. These include generating VALAR datasets and processing GRUAN RAOBs, revising TCCON trace gases validation code, generating newest list files to largely expand sample size of AVTP/AVMP validations, collection and processing of validation datasets for O3 and OLR.
- Continued evaluation of NUCAPS ozone retrievals over Antarctica region and compared total ozone time series for NOAA-20 and NOAA-21 retrievals with O3SNDS and SBUV measurements over the South Pole for the period Sept. to Nov., 2024.
- Prepared a presentation and discussed with the JSTAR Mapper team on troubleshooting the depiction of NUCAPS products on the JSTAR Mapper website. Discussed issues related to the mapping of the total precipitable water on the JSTAR mapper website with possible solutions to fix those issues.
- Continued the AWS trial of cloud-based NUCAPS product reprocessing using AWS team's guidance for NOAA-20 and NOAA-21. Updated the AWS reprocessing python script to include SNPP to evaluate AWS derived S-NPP focus day products with the on-premises offline products.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
DAP Delivery with updates related damping factor, surface corrections, MetOp-B/C Averaging Kernels	Oct-22	Oct-22	11/04/22	
NOAA-21 Ready NUCAPS product evaluations with the upcoming CrIS first light data and ATMS TDRs, and user support for the CrIS Beta Maturity Review	Feb-23	Feb-23	02/23/23	NOAA-21 K-band transmitter swap
NOAA-21 NUCAPS Product Beta Maturity	May-23	May-23	6/1/23	Beta attained effective 3/23
NOAA-21 NUCAPS T(p), q(p), O3(p), OLR, CO, CH4 and CO2 Provisional Maturity	Nov-23	Dec-23	Jan-24	Attained Validated Maturty
Implementing Validation Archive (VALAR) and focus-day data collections for NOAA-21 NUCAPS product validations	May-23	May-23	Mar-24	Continued updates to the data set
NUCAPS Augmentation EPS-SG IASI/NG	Jan-25	Jan-25	On-going Jan/Feb 25	Hopeful to test preprocessor updates and MWS retrieval.
Mission-long reprocessing of NOAA-21 NUCAPS products: Reprocessing version and evaluation of reprocessed products	Jun-24	Jul-24	Delayed but on-going	Pilot-Study in Near Completion

Overall Status:

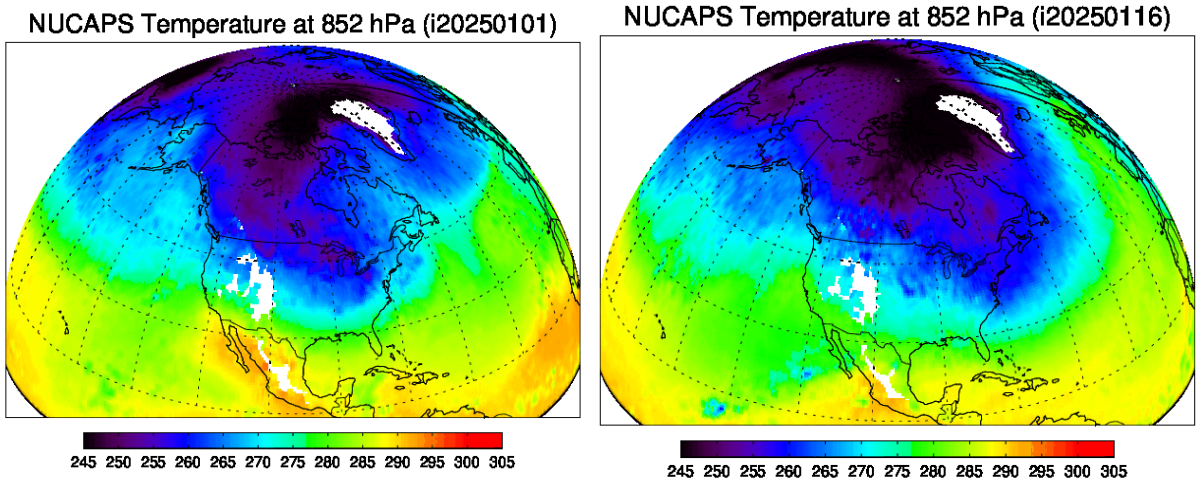
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		x			
Technical / Programmatic		x			
Schedule		x			

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

Animation of NOAA-21 NUCAPS 3-day composite temperatures at 850-hPa on, (a) January 8, and (b) January 21, 2025.



FY25 Milestones/Deliverables
Path Forward ~ High priority tasks/milestones

	Milestones	Type	Original Date	Forecast Date	Variance Explanation
Task 1	Routine and reactive maintenance support for the NUCAPS JPSS (NOAA-20/21) and MetOp (C/B) series enterprise version (HEAP4.0)*	R&D, I&T, CV	Sep-25		
	Subtask 1.1 Generation of MetOp-B cloudy and clear regression updates removing faulty AMSU-A channels		Oct-24	Dec-24	Regression updates appears to work alright. However, requires additional patches for AMSU Brightness temperature adjustments.
Task 2	Intensive validation activities using a collection of a hierarchy of validation data sets, processing and intensive validation activities are planned for all of the NUCAPS products (AVTP, AVMP, O3, CO, CO2, CH4, and OLR). Validation of algorithm updates and improvements	R&D, I&T, CV	Sep-25		**Ongoing and on-time**
	Subtask 2.1 Continued generation of matched data sets, NUCAPS product generation and validation with collocated data sets to evaluate product performance over different seasons and regions.	R&D, I&T, CV	Mar-25		
	Subtask 2.2 Algorithm improvements and operational feasibility/implementation of new products	R&D, I&T, CV	Jun-25		
	Subtask 2.3 Coordination and collaboration with NOAA – GML (Theme 1 & 2) validation activities; Support for Greenhouse Gases (GHG) initiatives; Environmental events	R&D, I&T, CV	Jun-25		
	Subtask 2.4: Validation of NUCAPS products with Single Field-of-view Sounding Atmospheric Product (SIFSAP, LaRC) and matched RAOB measurements	R&D, I&T, CV	Sep-25		
Task 3	Mission-long reprocessing of NUCAPS EDR products	R&D, I&T, CV	Mar-25		Ongoing
	Subtask 3.1 Pilot study on NCIS reprocessing of NUCAPS EDRs		Oct-24	Dec-24	Verified NOAA-20/21 AWS runs with offline runs and found them good. Working on S-NPP focus day evaluations.
	Subtask 3.2 Mission-long S-NPP NUCAPS product reprocessing using reprocessed SDRs and with NUCAPS HEAP 4.0 followed by NOAA-20.	R&D, I&T, CV	Mar-25		Delays due to AWS team funding, and due to contract discontinuity for a month that has ripple effects
	Subtask 3.3 Mini-validation review of reprocessed NUCAPS products	R&D, I&T, CV	Apr-25		

Ocean Color

January 2025

Accomplishments / Events:

- We have been mainly focusing on VIIRS mission-long ocean color data reprocessing for VIIRS-SNPP, due to sensor calibration issues and algorithm updates.
- We have finished VIIRS-SNPP Level-2 ocean color data reprocessing (from 2012-now) and working on mission-long Level-3 ocean color products.
- 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.

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

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

Ocean Color FY25 Milestones/Deliverables

Task/Milestone	Planned Completion Date	Fiscal Quarter	Comments
NOAA-21 OC data processing			
NOAA-21 OC EDR Cal/Val evaluations using refreshed/new MOBY data	Sep-25	Q4 FY25	
VIIRS calibration/validation			
Continue VIIRS Cal/Val data analysis (SNPP, NOAA-20, and NOAA-21) (using new MOBY data)	Sep-25	Q4 FY25	
Cal/Val team complete the 10th VIIRS ocean color dedicated cruise	Aug-25	Q4 FY25	
In situ data collections from OC Cal/Val team including NOAA dedicated cruise and other opportunities, particularly for NOAA-21 OC validation	Aug-25	Q4 FY25	
VIIRS algorithm refinement (Maintenance DAP)			
Improvement of the OCView tool for routine global VIIRS true color & OC products monitoring	Aug-25	Q4 FY25	
Continue working on improvement of the ocean color data processing system (MSL12), particularly over global coastal and inland water regions	Sep-25	Q4 FY25	
VIIRS OC data processing/reprocessing			
Mission-long OC data reprocessing for VIIRS-SNPP	Sep-25	Q4 FY25	
Mission-long OC data reprocessing for VIIRS-NOAA-20	Sep-25	Q4 FY25	
Mission-long OC data reprocessing for VIIRS-NOAA-21 (depending on evaluation results from refreshed MOBY data)	Sep-25	Q4 FY25	
Producing consistent VIIRS SNPP, NOAA-20, and NOAA-21 OC products from reprocessed OC data	Sep-25	Q4 FY25	
Updated DAP (MSL12) to CoastWatch, if needed	Sep-25	Q4 FY25	

OMPS SDR

January 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.
- Completed and submitted the J4 OMPS NM and NP instrument pre-launch characterization analysis report.
- Worked on the delta review slides for J4 OMPS NM SDR algorithm.
- Continued assessment of SNPP and NOAA-20 OMPS NP degradation features (part of the approved ADR10832).
- Initialized a working plan for high resolution (135CT) of NOAA-20 OMPS NM SDR data, along with a conceptual demonstration of NOAA-20 OMPS NM SDR data from 35CT (operational) to 139CT high resolution (see Figure for details).
- Continued the study about the potential of machine learning (ML) approach for OMPS Stray-Light (SL) correction: a Generative Adversarial Networks (GAN) based model was initialized.
- Presented two talks about the OMPS SDR analysis results at the AMS meeting.

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:

The FY25 OMPS SDR milestone table has been updated to reflect a new task about 139CT high resolution of NOAA-20 OMPS NM SDR development (3 new milestones added). Contents and schedules of the original tasks are also changed.

	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 beta 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
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

A Conceptual Demonstration of NOAA-20 High Resolution (139 CT) NOAA-20 OMPS Radiance

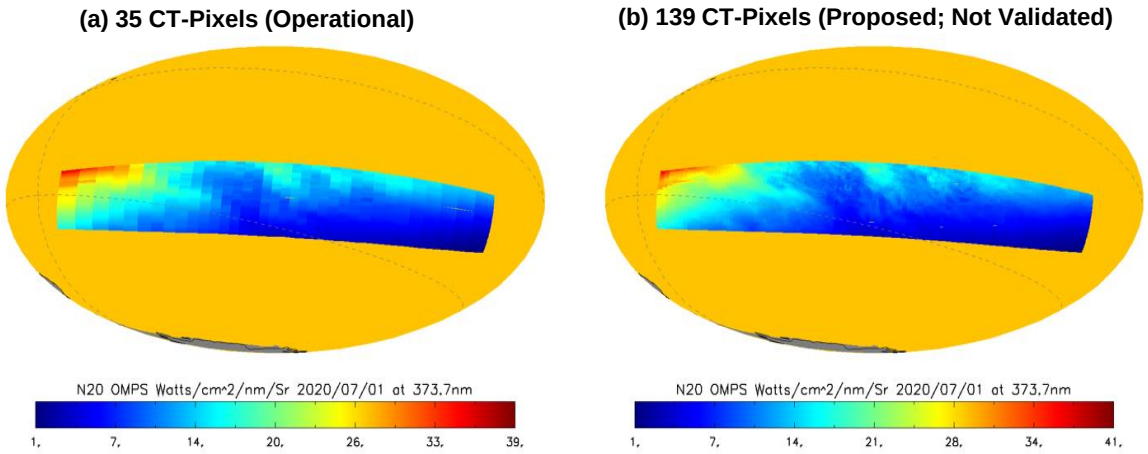


Figure: NOAA-20 OMPS NM radiance values at 373.7 nm from July 1, 2020. The left image shows the operational dataset which has 35 cross-track pixels. The image on the right shows an example of the medium-resolution (139 cross-track pixels) dataset using a very preliminary wavelength and stray light LUTs for a conceptual demonstration.

FY25 OMPS SDR Milestones/Deliverables

	Milestone	Start	Finish	Deliverable
1	Complete the JPSS-4 OMPS SDR calibration plan	Sep-24	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)	Jun-24	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 characterization analysis report	Sep-24	Jan-25	JPSS-04 OMPS nadir sensor pre-launch characterization analysis report
4	Complete the degradation analysis for SNPP, NOAA-20 OMPS NP (part of DR10832) and NM (a new DR is needed)	Dec-24	Mar-25	New solar wavelength and flux tables; reprocessed test data sets for OMPS EDR team
5	Develop various proxy calibration coefficient LUTs to support JPSS-3/4 OMPS NM SDR processing with a new wavelength range from 380 to 439nm	Jan-25	May-25	Various proxy calibration coefficient LUTs for JPSS-03/04 OMPS NMs; various proxy calibration coefficient LUTs for SNPP, NOAA-20 NMs (code compliance)
6	Continuous radiometric data quality stability validation analysis across SNPP/NOAA-20/NOAA-21 OMPS NM and NP instruments: SL correction model standardization/accuracy improvements; wavelength shift gradient impact mitigation	Feb-25	Jul-25	Quality-consistent OMPS SDR radiometric data across NM and NP, SNPP/NOAA-20/NOAA-21; better validation/calibration algorithms applicable for existing and future JPSS missions
7	Establish an off-line OMPS SDR processing package in order to meet new requirements from EDR in retrieving NO2 in future JPSS-03 and JPSS-04 missions (NM wavelength range: from 300-380 nm to 300-430nm)	Feb-25	Aug-25	An off-line OMPS SDR processing package applicable for future JPSS-03 and JPSS-04; ADL code change package for operational processing
8	Complete beta version of JPSS-03 OMPS nadir sensor pre-launch characterization analysis report	Jun-25	Sep-25	JPSS-03 OMPS nadir sensor pre-launch characterization analysis report
9	Continuous radiometric data calibration algorithm accuracy and consistency improvements across SNPP/NOAA-20/NOAA-21 OMPS NM and NP instruments: NM and NP inconsistency in the dichroic, SDR inconsistency across 3 OMPS sensors	Mar-25	Sep-25	Quality-consistent OMPS SDR radiometric data across NM and NP, SNPP/NOAA-20/NOAA-21; better validation/calibration algorithms applicable for existing and future JPSS missions
10	Support CRTM-VLIDORT project for OMPS radiance simulations	Oct-24	Sep-25	Test results
11	Derive and deliver OMPS NM/NP dark and solar calibration tables for SNPP, NOAA-20, and NOAA-21 OMPS SDR data, including recovery activities	Oct-24	Sep-25	Dark, solar SOL LUTs

D	I	C	M	L
Development	Integration &Testing	Calibration & Validation	Maintenance	LTM & Anomaly Resolution

Sea Surface Temperature

January 2025

Accomplishments / Events:

- We completed a Delivered Algorithm Package (DAP) for ACSPO V3.00 and provided to ASSISTT on January 14. The ACSPO V3.00 package contained updates to ACSPO VIIRS and downstream L3S-LEO products.
- We completed an overhaul of the ACSPO ATBD and included it with the ACSPO V3.00 DAP. The new version of the ATBD contains up-to-date description of ACSPO SST retrieval and cloud mask algorithms.
- We worked on updates to ACSPO to support reading and processing aerosol information from NASA MERRA-2 data. The most important aerosol species for SST purposes is dust. However, we are also working to include other aerosol species such as sea salt, organic carbon, black carbon, and sulphate. The first aerosol-related milestone is to more effectively screen out cold-biased SST retrievals in the presence of dust aerosols (see Figure) However, long term plans are to improve SST retrievals in presence of dust instead of simply screening them out.

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			

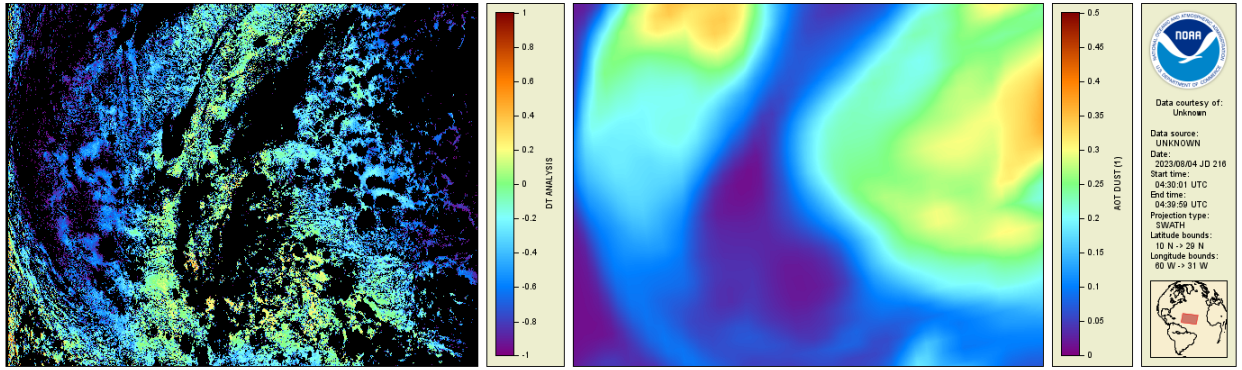
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

Delays with STAR cloud migration combined with our inability to buy computer hardware makes the viability of future reprocessing efforts uncertain

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			
Reprocess historical iQuam SST data using iQuam v2.3	Sep-25			
Update CRTM library from v2.3 to 3.0 (needed for inclusion of aerosols in radiance simulations).	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			
Reprocess VIIRS SST using ACSPO V3.00	Dec-25			

***Highlights*: Inclusion of dust aerosol information in ACSPO**



NPP VIIRS nighttime imagery from the Northern Atlantic on August 4, 2023. Left figure shows ACSPO SST minus L4 Analysis SST (CMC). Note that the ACSPO cloud mask is not overlaid, so both clear and cloudy pixels are shown. Right figure shows the dust aerosol optical thickness from MERRA-2. Comparison of the two figures shows that retrieved SST is biased cold in the presence of Aerosols.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Task 1: Deliver L3S-LEO Daily to ASSISTT/OSPO; contingency on non-JPSS and non-NOAA data inputs	*June 2025 (FY25)*			
Subtask 1.1: Created and test Delivered Algorithm Package (DAP), containing L3S Daily code along with required libraries, ancillary data, and sample files	*May 2025 (FY25)*			
Subtask 1.2: Deliver L3S Daily DAP to ASSISTT and work with ASSISTT on troubleshooting and validation	*June 2025 (FY25)*			
Task 2: Full-mission Reanalysis (RAN) of VIIRS SST data from NPP, N20 & N21 using the latest version of ACSPO (Version 3.00)	*September 2025 (FY25)*			
Subtask 2.1: Recruit and familiarize staff	*October 2024 (FY25)*			
Subtask 2.2: Evaluate long term stability of VIIRS SST and compare with stability of VIIRS thermal bands.	*April 2025 (FY25)*			
Subtask 2.3: Investigate stabilization (de-trending) of long-term SST bias drift to create a maximally stable, long-term VIIRS SST dataset.	*July 2025 (FY25)*			
Subtask 2.4: Perform reprocessing using on-premise NOAA STAR compute hardware	*August 2025 (FY25)*			
Subtask 2.5: Deliver RAN data sets to PODAAC, CoastWatch & NCEI	*September 2025 (FY25)*			
Task 3: Continue improvements, validation of thermal fronts; shore up processing to use fronts to improve the ACSPO clear sky mask	*September 2025 (FY25)*			
Subtask 3.1: Support for using position and strength of thermal fronts to improve ACSPO clear-sky mask will be included in the ACSPO VIIRS 3.00 DAP delivery (see Task 5) to ASSISTT.	December 2024 (FY25)			
Subtask 3.2: Investigate viability of validating accuracy of thermal fronts using in situ SST from Sail Drones.	September 2025 (FY25)			

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Task 4: Collaborate across NESDIS and NOAA on "next generation SST product suite" , including exploring ACSPO L4	*September 2025*			
Subtask 4.1: Identify best way forward towards creating a STAR L4 SST product that covers the 1981-on era. Two viable approaches are (1) Extend the ACSPO L3S-LEO Daily product to fill in data gaps due to clouds. (2) Use existing Geo-Polar Blended L4 SST algorithm using reprocessed ACSPO SSTs from AVHRR, MODIS, VIIRS, ABI, and AHI sensors.	September 2025			
Subtask 4.2: Perform full-mission reprocessing of all ACSPO SST datasets to improve SST quality and uniformity	September 2025			
Task 5: Continue refining ACSPO Clear Sky Mask to reduce over screening and residual cloud leakages. The overarching goal is improving both quantity (number of clear sky pixels) and quality (accuracy/precision).	*Ongoing; target next update for delivery of ACSPO 3.00 (FY25)*			
Subtask 5.1: Create and test Delivered Algorithm Package (DAP) for ACSPO V3.00 VIIRS. ACSPO version 3.00 contains substantial improvements to the VIIRS clear-sky mask in terms of reduced cloud leakages and improved coverage in dynamic regions.	*November 2024 (FY25)*			
Subtask 5.2: Deliver DAP to ASSISTT and work with ASSISTT on troubleshooting and validation	December 2024 *(FY25)*			

Snowfall Rate

January 2025

Accomplishments / Events:

- Continue the development of advanced microphysics for S-NPP SFR. Once the methodology is finalized, similar models will be developed for other satellites.
- Started developing code for multiple ice habits in the SFR processing system. The advanced microphysics requires multiple ice habits in the 1DVAR model to better represent the complex snowfall systems.
- Started reprocessing SFR all satellites following the SFR v3.0 delivery.
- Had many user interactions and supported user application of the SFR product. Users have appreciated the SFR website for its low latency and features specifically designed for supporting nowcasting.

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		
Extending the study to include climatology in NPreciSe	6/2025	6/2025		
Advanced microphysics for NOAA-21, NOAA-20, S-NPP, Metop-B, Metop-C, and GPM	6/2025	6/2025		
2D SFR bias correction for NOAA-21, NOAA-20, S-NPP, Metop-B and Metop-C	6/2025	6/2025		

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.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks: None

Highlights:

Area Forecast Discussion

National Weather Service Baltimore MD/Washington DC

401 AM EST Sun Jan 19 2025

...

Model trends early this morning show Arctic front has slowed down considerably since yesterday and is not fcst to clear the northern half of the fcst area until after 18Z. Meanwhile, models trends and microwave imagery through the snowfall rate product show precip arriving sooner than previously expected.

Microwave passes since 0220Z showed that snow has been falling in the mountains since that time and a more recent pass from 0800Z showed that snow, at least aloft, has made it to areas just west of I-81. Further east, gridded NUCAPS data showed that 925 and 850 mb 0C isotherms are further north than model guidance suggest and given current temps in the upper 30s and slower trend on the passage of the Arctic front indicate that areas along and south of Interstate 66 and US-50 will see more rain or mixing with rain at the beginning of the precip event.

...

The Baltimore MD/Washington DC Weather Forecast Office referenced the SFR product during their Area Forecast Discussion on January 19.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Task 1: Advanced microphysics for NOAA-21, NOAA-20, S-NPP, Metop-B, Metop-C, and GPM	*June 2025*			
Subtask 1.1: Study scattering properties of various ice habits and their impact on S-NPP snowfall rate retrieval	*December 2024*			
Subtask 1.2: Develop AI/ML-based optimal combination scheme for multiple ice habits to improve S-NPP SFR 2/2025	*February 2025*			
Subtask 1.3: Develop advanced microphysics for the other satellites	*June 2025*			
Task 2: Cross calibration for NOAA-21, NOAA-20, S-NPP, Metop-B, Metop-C, and GPM	*April 2025*			
Subtask 2.1: Select reference satellite	*October 2024*			
Subtask 2.2: Create collocated datasets for all satellites with the reference satellite	*January 2025*			
Subtask 2.3: Perform cross satellite calibration and derive correction model for each satellite	*April 2025*			
Task 3: 2D SFR bias correction for NOAA-21, NOAA-20, S-NPP, Metop-B and Metop-C	*June 2025*			
Subtask 3.1: Feature analysis and construction of training datasets for 2D ML models	*March 2025*			
Subtask 3.2: Train 2D bias correction models	*June 2025*			
Task 4: Development of NPreciSe web-portal and archive	*December 2024*			
Subtask 4.1: Develop and implement new webpage interface to enable hosting the NPreciSe web portal	*September 2024*			
Subtask 4.2: Migrate the processing and archiving system to a new server	*December 2024*			
Task 5: Extending the study to include climatology	*June 2025*			
Subtask 5.1: Add monthly statistics of detection and estimation errors of the MiRS product to the NPreciSe system	*June 2025*			

Surface Reflectance

January 2025

Accomplishments / Events:

- Evaluate the reprocessed Top of Atmosphere reflectance and compare it with NASA VIIRS results, analyze the underlying reasons, and explore practical methods for recalibration.
- Outline and adjust objectives and milestones for the new year, while gathering user requirements for product improvements.
- Prepare the updated algorithm delivery, including the software package, documentation, test data, and validation results. Perform a local test run of the algorithm, evaluate its performance, and establish monitoring criteria.
- Continue long-term monitoring and validation. In addition to maintaining routine processes and the website, improve validation methods and incorporate in situ validation using RadCalNet data.

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			

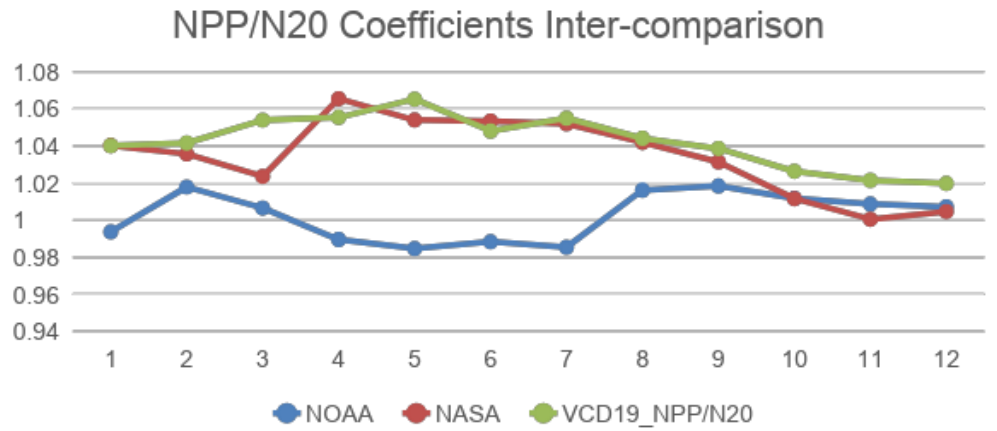
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

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	
updated DAP delivery (include the mitigation algorithm)	Mar-25	Mar-25		
SR Algorithm improvement to address the issues found in validation	Jun-25	Jun-25		
SNPP, N20 & N21 monitoring and validation and user feedback & response	Sep-25	Sep-25		

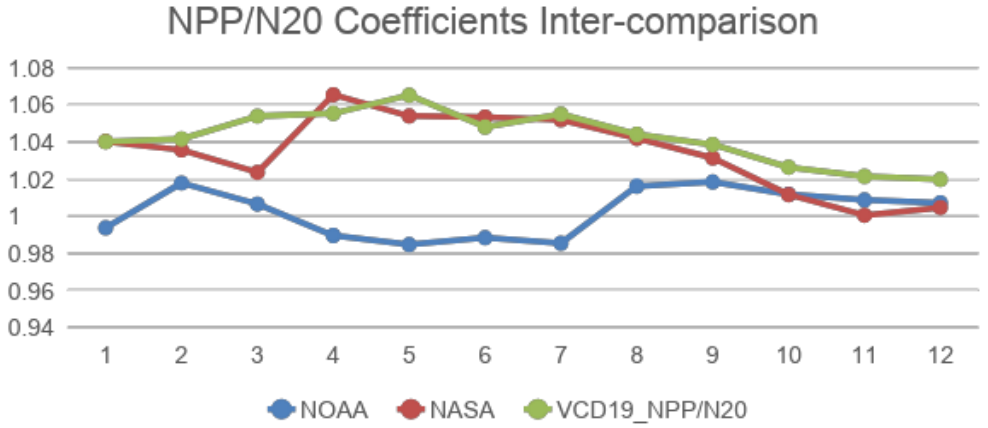
Highlights:



NPP/N20 recalibration coefficients comparison between NOAA and NASA approaches. X: (I1, I2, I3, M1-5, M7-8, M10-11)

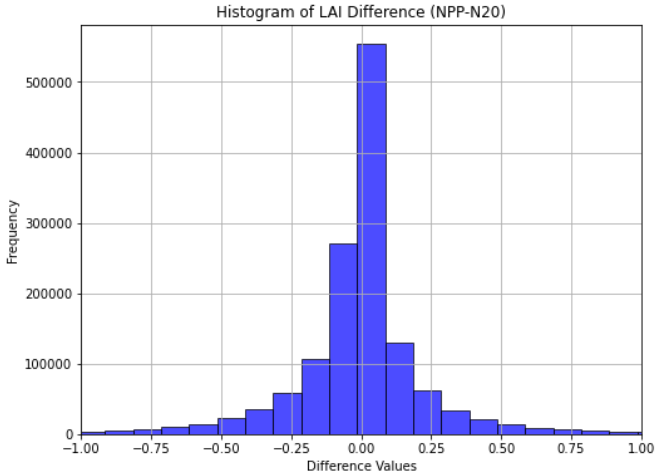
Surface Reflectance Recalibration Investigation

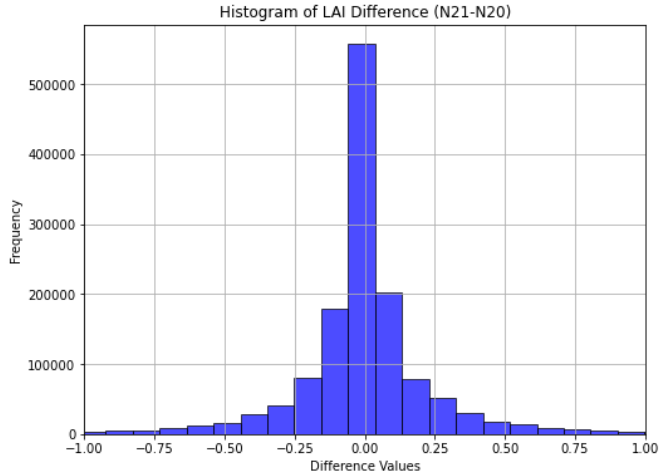
- Recalibrated Top of Atmosphere datasets inter-comparison and evaluation.
- Datasets
  - NASA VIIRS Surface reflectance (version 2)
  - NASA VIIRS multiangle implementation of atmospheric correction (MAIAC) products
  - NOAA reprocessed SDR
- Results
  - Significant differences are observed between NASA and NOAA's recalibration coefficients. Particularly for the visible bands.
  - NASA approach seeking the VIIRS continuity with MODIS, so systematic bias could be expected.
  - Further investigation is required to evaluate the recalibration data.



NPP/N20 recalibration coefficients comparison between NOAA and NASA approaches. X: (I1, I2, I3, M1-5, M7-8, M10-11)

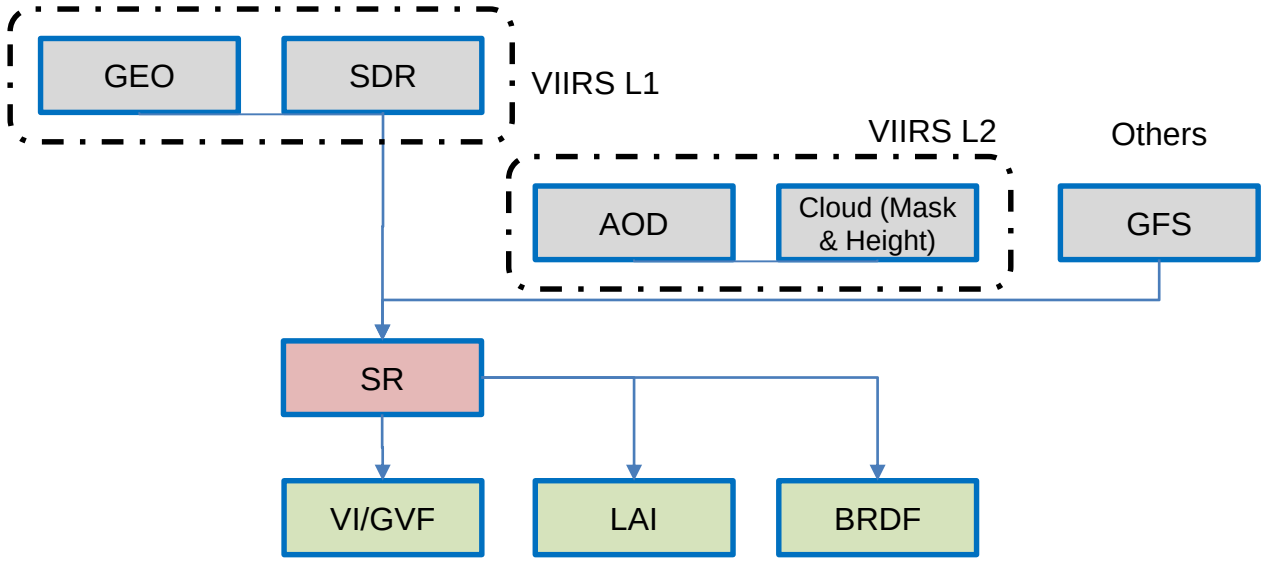
- Downstream users impact
  - Traditional algorithm-based products, such as VI and physically-based LAI, will be directly affected by the inconsistency, as I2 bands exhibit a bias greater than 2%. This could lead to a downstream product discrepancy of up to 5%.
  - Machine learning-based algorithms have limited impact, as data-driven methods can reduce systematic bias. However, some bias remains, as shown in the right JPSS LAI figures.





SR Reprocess Dependence and Preparation

- Up to date SR algorithm (updated algorithm)
  - Updated algorithm address the bias issue caused by misclassified dust aerosol model.
  - Updated quality flag due the cloud mask updates.
  - Updated data format to reduce the storage.
  - To reduce the dependence to upstream products, an alternative algorithm is under development for the reprocess purpose.
- Recalibration between JPSS satellites
  - Explore a practical recalibration method for the TOA reflectance. Instead of direct use reprocess SDR, Derived a linear regression model from the NOAA reprocessed SDR and applied on TOA reflectance.
  - Considering the difference between NASA and NOAA recalibration coefficients, more in-situ validation and inter-comparison will be performed.
- Dependence and Computing efficiency
  - Check the data availability and high efficient access method.
  - Optimize the algorithm to reduce the dependency.
  - Collaborate with other VIIRS products to reprocess



FY25 Milestones/Deliverables

Task/ Description	Start	Finish	Deliverable	Requirement (Dev Only)
Develop SR software package using the reprocessed SDR to reduce the inconsistency.	10/1/2024	12/31/2024	New test datasets	
SR Algorithm improvement to address the issues found in validation.	04/1/2025	06/30/2025	Algorithm test report.	JPSS L1RD requirement
updated DAP delivery (include the mitigation algorithm)	01/01/2025	03/31/2025	mDAP delivery to ASSIST	
The reprocessed SR consistency evaluation	10/1/2024	12/31/2024	Validation report	
SNPP, N20 & N21 monitoring and validation and user feedback & response	7/1/2025	9/30/2025	Analysis reports	

D	I	C	M	L
Development	Integration &Testing	Calibration & Validation	Maintenance	LTM & Anomaly Resolution

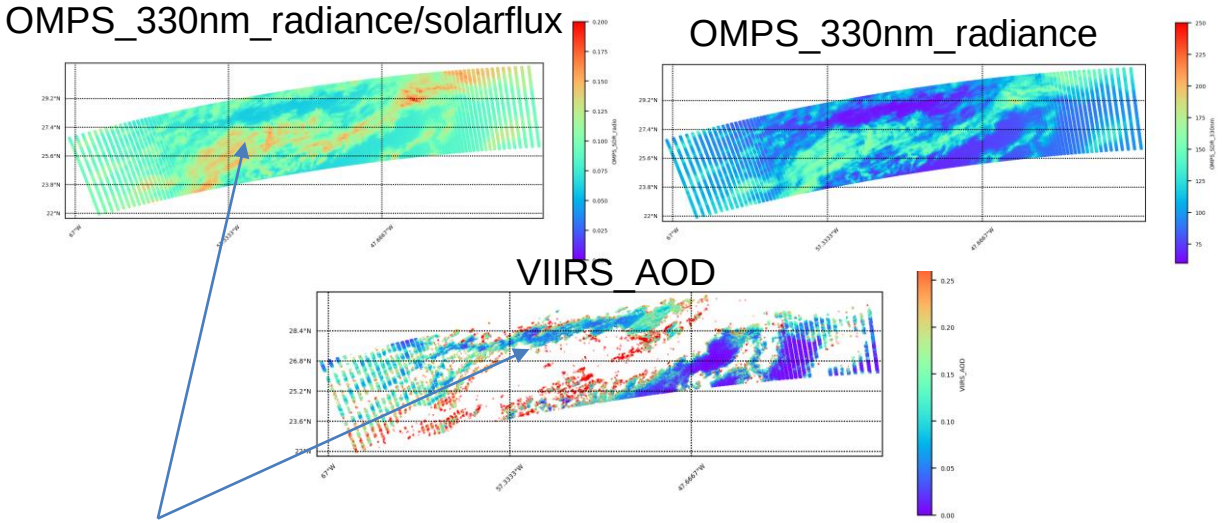
JPSS SDR and VIIRS Cloud EDR Reprocessing Project

Jan. 2025

– Discussed with the STAR OMPS SDR team about new SNPP/NOAA-20/NOAA-21 OMPS SDR reprocessing plan.

– Started to initialize a new ML-based assessment method through demonstrating values of the (reprocessed) high-resolution of NOAA-21 OMPS NM SDR data sets.

Here, the ML-based method is used to explore scientific value of OMPS NM SDR data especially high resolution of NOAA-21 OMPS SDR data sets in detecting large wild fire events. In the ML method, the VIIRS Aerosol Optical Depth (AOD) products are used a truth to train algorithm coefficients. The following figures show collocated OMPS 330nm radiance and normalized radiance between 330nm radiation and Sun Flux based on VIIRS coordinates.



A good correlation is observed between NOAA-21 OMPS NM normalized radiance (radiance/solar_flux) and AOP.

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		
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		
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 FY25 milestones have been updated to focus on SNPP (if necessary) and NOAA-20 SDR reprocessing and archival in CLASS, subject to changes due to a delta PMR review on Feb. 12th, 2025.

	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.*

FY25 VIIRS EDR Reprocessing Milestones/Deliverables

	Milestone	Start	Finish	Deliverable
1	Assess the quality and accuracy of one-year reprocessed cloud base height and cloud top height EDRs	Jun-24	Dec-24	One year of quality-assured SNPP VIIRS cloud base height and cloud top height EDR products; one manuscript draft about the work
2	Making plans for on-demand reprocessing based on GMU supercluster computer, including setting up server environments for testing, computation efficiency comparison for options, cost comparison, etc.	Dec-25	Mar-25	Optical reprocessing plan; well-setting up processing package
3	Assess the quality and accuracy of one-year reprocessed other cloud EDRs (e.g., Cloud layers, cloud phase, cloud optical depth)	Jan-25	Apr-25	One year of quality-assured SNPP VIIRS cloud layers, cloud phase, cloud optical depth EDR products
4	Continue to reprocess SNPP VIIRS EDRs (target: finish ~2.5 years of data), as long as the new on-demand reprocessing is well determined	Mar-25	Sep-25	New SNPP VIIRS cloud reprocessed products
5	Work out a plan for transferring reprocessed VIIRS cloud products to CLASS or a Cloud platform	Aug-25	Sep-25	A plan for transferring reprocessed VIIRS cloud products to CLASS or a Cloud platform
6	Technical analysis and reports per ad hoc request from JPSS and STAR management, including monthly report	Oct-24	Sep-25	Analysis reports

D	I	C	M	L
Development	Integration &Testing	Calibration & Validation	Maintenance	LTM & Anomaly Resolution

Surface Type

January 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 January of 2024 for the production of AST-2025.
- The surface type team has produced global monthly H_2O cover products for 2024:
  - Surface H_2O, including water, snow, and ice, play important roles in weather and climate processes.
  - Generated independently by different teams, existing water, snow, and ice products have many data quality issues (e.g., data gaps). They also conflict with one another over many places (e.g., fractional cover of snow, ice, and water over the same location could add up to more than 100%).
  - Using the best available data products as inputs, the surface team produced the monthly H_2O product suite using innovative methods designed to produce internally consistent results while addressing the limitations of the input data.
  - This work has been presented to the 2025 AMS conference held in New Orleans from 12th to 16th of January 2025 (see highlights).

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Monthly update of the 250m global water surface fraction product	Each M.	Each M.		
Complete global monthly composites for each of 2024 months	Feb-25	Feb-25		
Generate global annual classification metrics for 2024	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		

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			

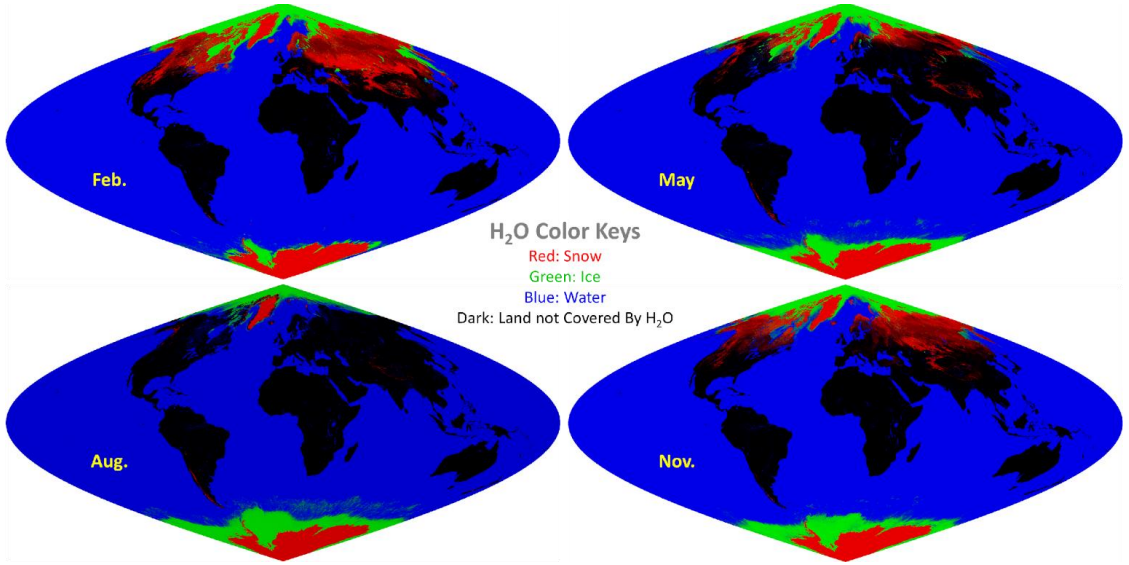
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Highlights:

Global Monthly H_2O Cover Products for 2024



This product suite was produced by synthesizing best available products that complemented one another in terms of data quality, coverage, and spatial, temporal, and thematic details. It provides internally consistent estimates of monthly snow, ice, and water probabilities for every 1km (or 30 arcsecond) grid cell across the globe, which revealed large seasonal changes of H2O cover in 2024 across the globe .

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Task 1: Improving and updating the surface type training and validation polygons				
Subtask 1.1: Update training polygons where the surface type label has changed	*Sept-25*			
Subtask 1.2: Add new training polygons where existing training data are not enough	*Sept-25*			
Subtask 1.1: Update validation polygons where the surface type label has changed	*Sept-25*			
Task 2: Processing VIIRS surface reflectance data acquired during this funding year for surface type mapping				
Subtask 2.1: Map VIIRS SR data from satellite swath to the global 1 km grid to create global daily mosaic	*Each day*			
Subtask 2.2: Create cloud free monthly composites from the daily mosaics	*Each month*			
Subtask 2.3: Generate annual classification metrics using the 12 monthly composites of 2024	*Apr-25*			
Task 3: Producing AST24				
Subtask 3.1: Develop the SVM model and use the model to classify the 2024 VIIRS annual metrics	*May-25*			
Subtask 3.2: Post-process the SVM classification to produce the final AST24 product	*Aug-25*			
Subtask 3.3: Validate AST24 to generate accuracy statistics	*Sept-25*			
Subtask 3.4: Deliver AST24, update ATBD and the surface type webpage	*Sept-25*			

Vegetation Health

January 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. Updated the cron job starter script to handle the year-end issue slightly differently for leap and non-leap years and ensured it works with flexible "delay days" in job scheduling.
- Continued the development of the new code for 500m NOAA-20/21 VIIRS VHPs production/operation and started VPH code refinement and database updates for potential transition of STAR VHP production to OSPO operation. Simplified the VHP by removing azimuth angle and M13, which were not used in the current 500m VHP. As a result, this optimization reduces space and CPU time usage by 25% to 30% for daily maps and weekly composites, without affecting ND, SM and VH files - the core VHP products.
- Engaged in VHP user support to address a user's inquiry about VHI chart generation and data methodology. Quickly identified the cause of a subtle mismatch between the chart and its corresponding data sheet. Resolved the issue by fixing a bug in the

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
NOAA-21 Vegetation Health Beta Maturity	Sep-23	Sep-23	Sept-23	
NOAA-21 Vegetation Health Provisional Maturity	Apr-24	Apr-24	Sept-23	Maturity reached before plan
NOAA-21 Vegetation Health Validated Maturity	Apr-24	Apr-24	Sept-23	All VIIRS EDRs declared Validated Maturity

Overall Status:

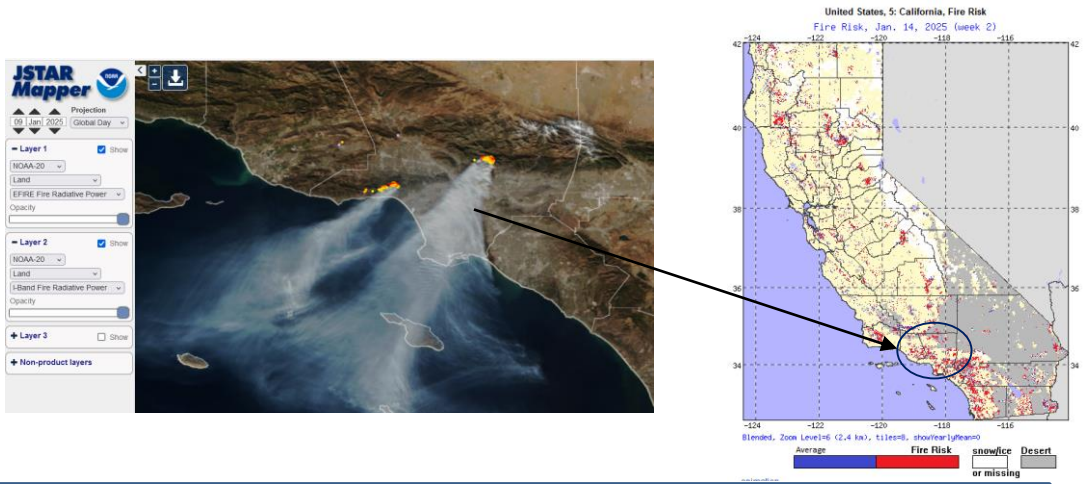
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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: Since mid-December 2024, fire risk maps on the VHP webpage have persistently warned of the potential for open fire in the Southern California, including Los Angeles area which recently suffered devastating wildfires in January 2025.



Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Task 1: Deliver CCAP for VIIRS 500m global Vegetation Health Products	*September 2025*			
Subtask 1.1: Hire staff member to lead work	*March 2025*			
Subtask 1.2: Reconfigure computer code for 500m products using NOAA-20/21 I-bands observations	*June 2025*			
Subtask 1.3: Create and validate CCAP and deliver to ASSISTT	*September 2025*			
Task 2: Develop CCAP for value-added and science-enhanced ASCII and Geotiff data files of regional Vegetation Health Products	*September 2025*			
Subtask 2.1: Confirm staff member to lead the task	*March 2025*			
Subtask 2.2: Restructure compute code/scripts and ancillary data base for the VHP tailored for major crop regions	*June 2025*			
Subtask 2.3: Create and validate CCAP and deliver to ASSIST	*September 2025*			

Vegetation Index and Green Vegetation Fraction

January 2025

Accomplishments / Events:

- Algorithm software package ready for blended NVPS production.
- Produced prototype SAI for NCEP/EMC model development.
- Completed the test run of using AWS for VI/GVF reprocessing.
- Consolidated the workflow of 20m VI/GVF downscaling algorithm.
- Conducted the local production for 1km global NVPS products for SNPP and N21 to aid the product integration at ASSIST.

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			

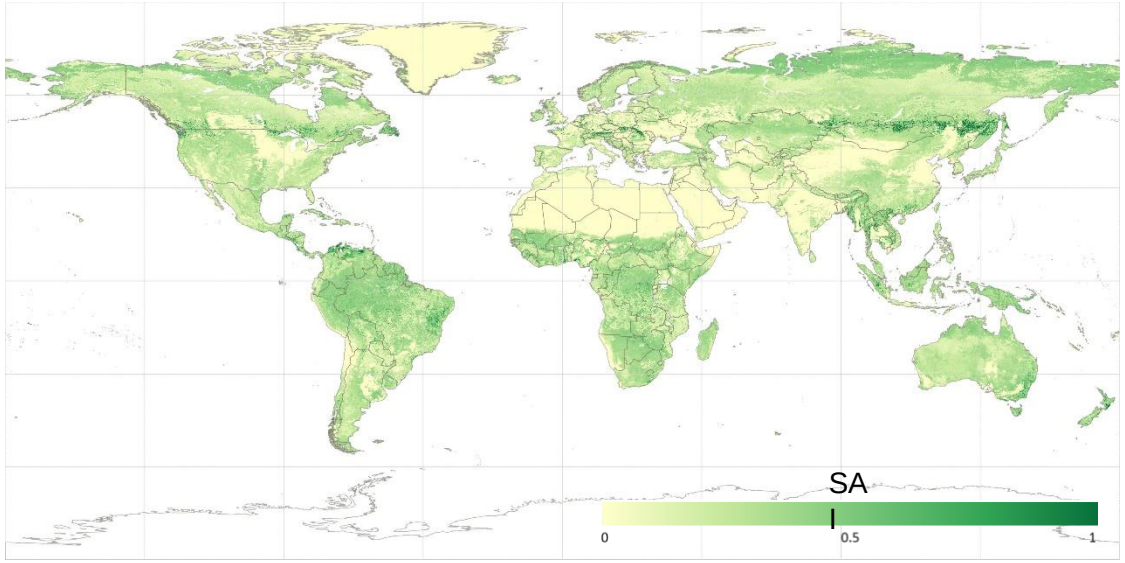
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

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	Jan-25	
High resolution satellite data collection including Landsat and Sentinel-2 to establish the training datasets	Feb-25	Feb-25		
Reprocessing of SNPP and NOAA-20 VI and GVF data records	May-25	May-25		
Calibration/ Validation update for NOAA20 and NOAA21 VI and GVF products,	Sep-25	Sep-25		

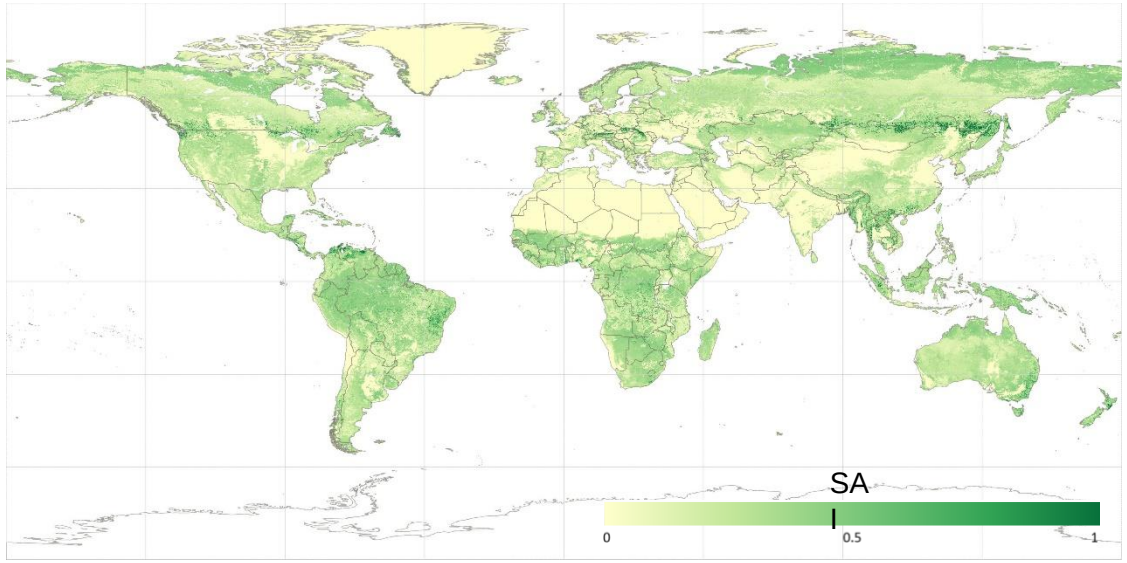
Highlights:



Prototyped climatology SAI in February

Prototype of SAI development for NCEP/EMC

- The detail request of **Stem-Area-Index (SAI)** was further confirmed through the meeting between STAR vegetation group and NCEP/EMC model group.
- NCEP/EMC group and STAR Vegetation group will collaborate on improving the UFS land model by taking real-time LAI and SAI data as model inputs.
- STAR vegetation group is prototyping climatology SAI, based on LAI, surface type, vegetation fraction from JPSS VIIRS data.



Prototyped climatology SAI in February

Prototype of SAI development for NCEP/EMC

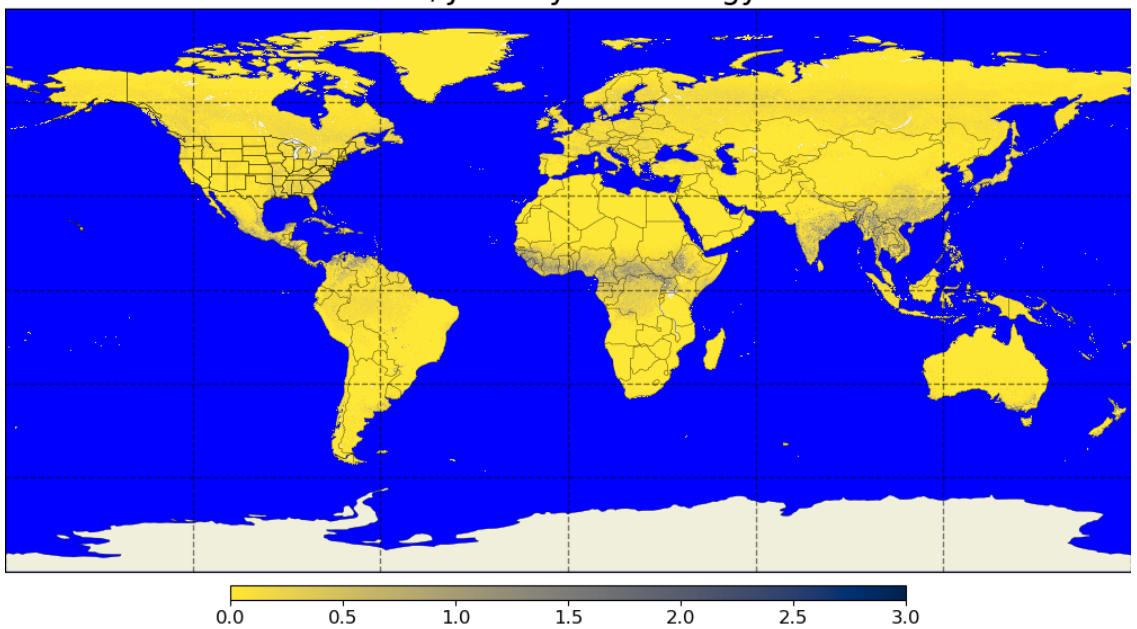
- Based on previous monthly SAI and changes in LAI from month to month

$$SAI_n = max\{[0.5 * SAI_{n-1} + max(LAI_{n-1} - LAI_n, 0)], SAI_{min}\}$$

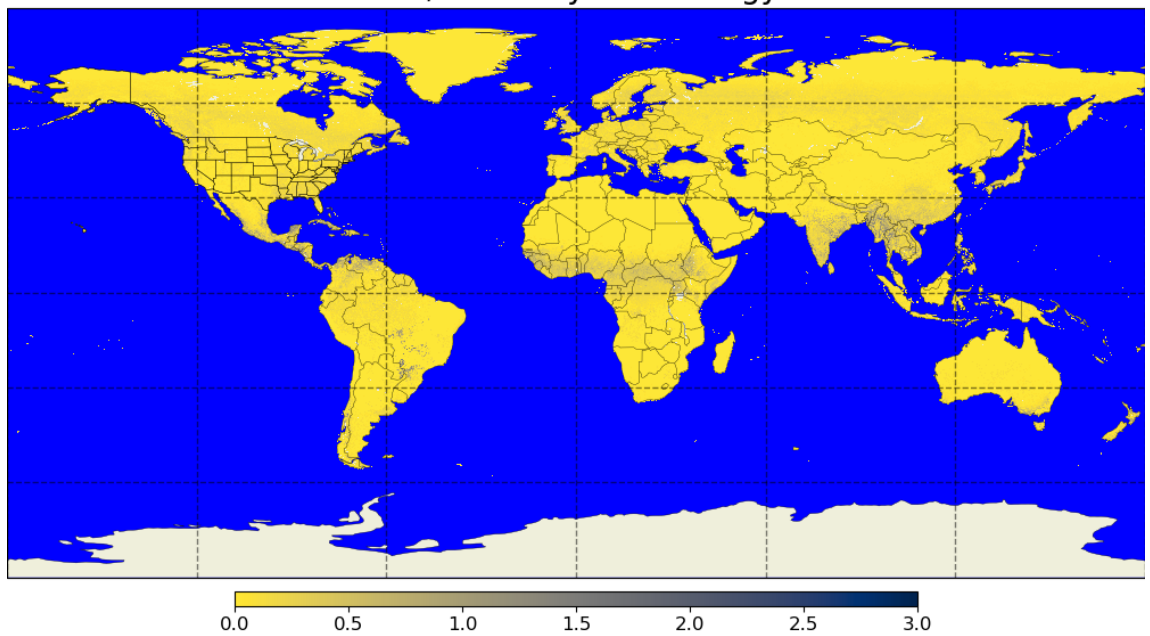
SAI_{min} is based on land cover type

- LAI monthly climatology and MODIS IGBP surface type (to define SAI_{min}) are taken as input
- Two iterations around the annual cycle were performed after initialization of SAI to SAI_{min}

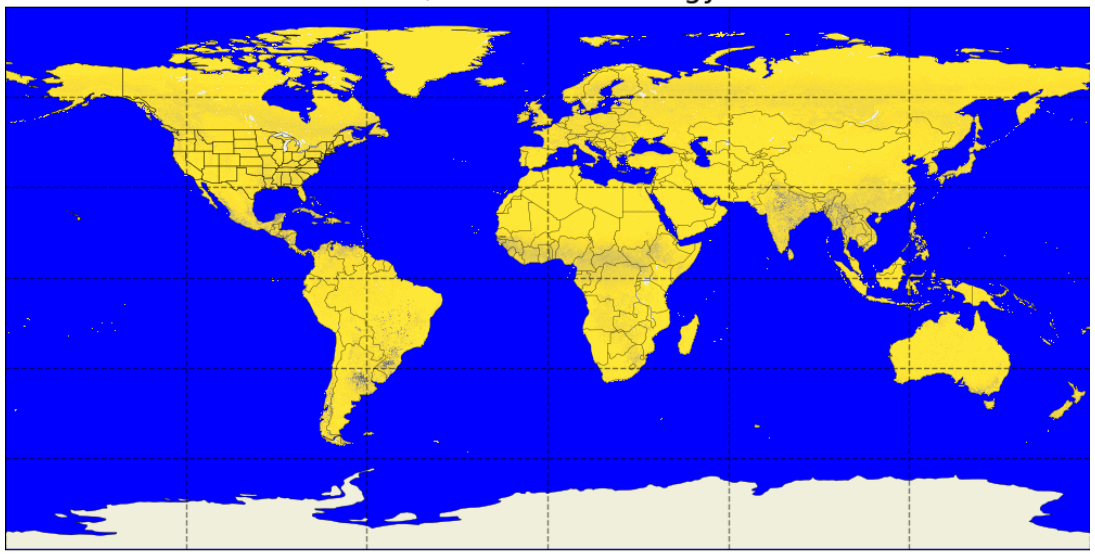
SAI, January climatology



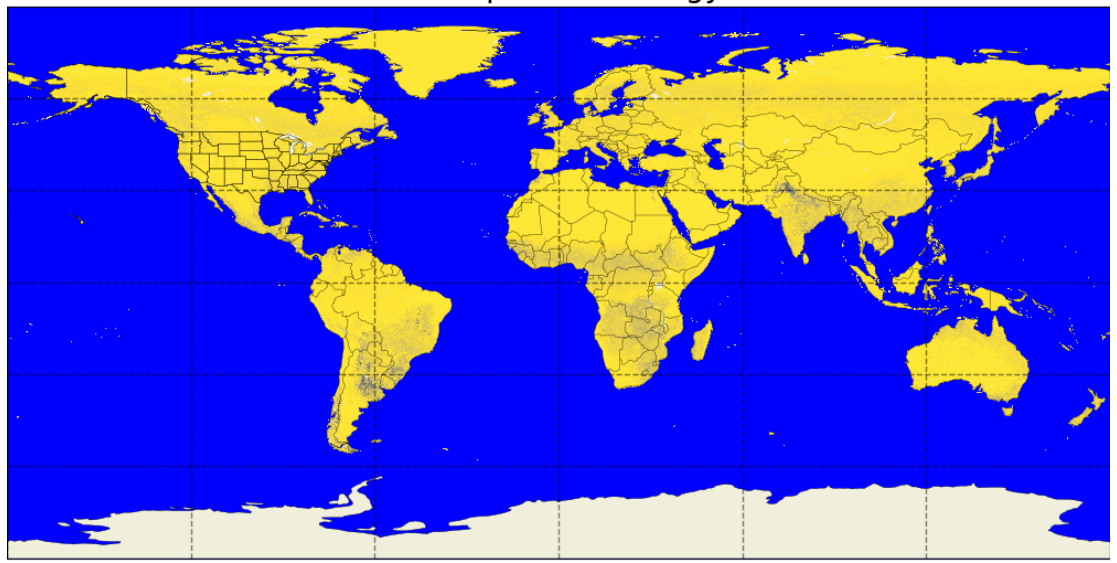
SAI, February climatology



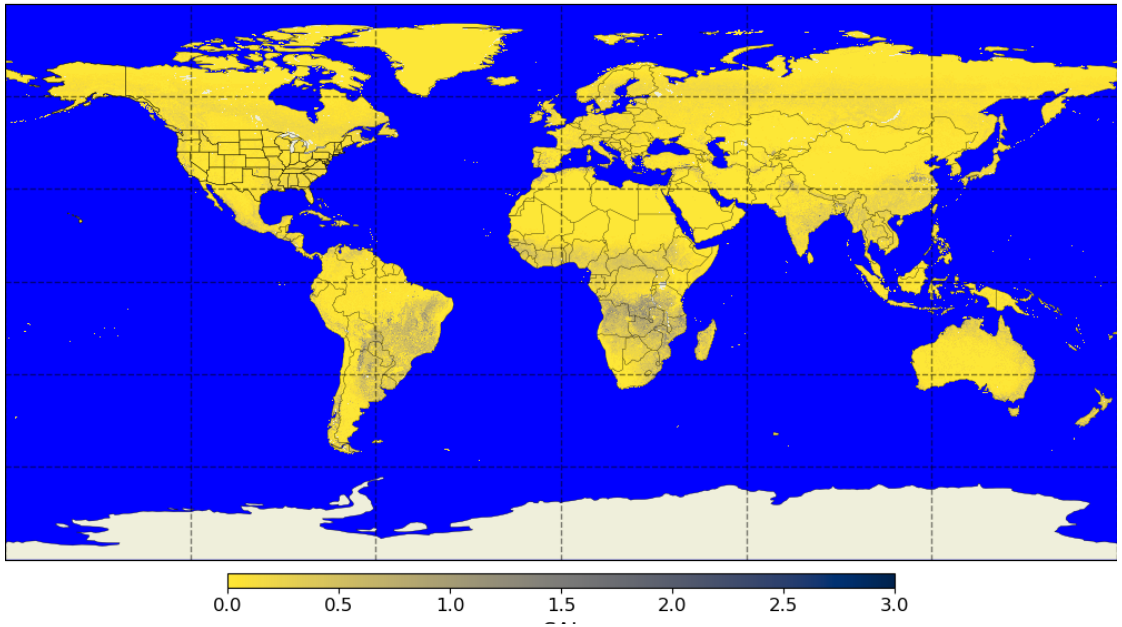
SAI, March climatology



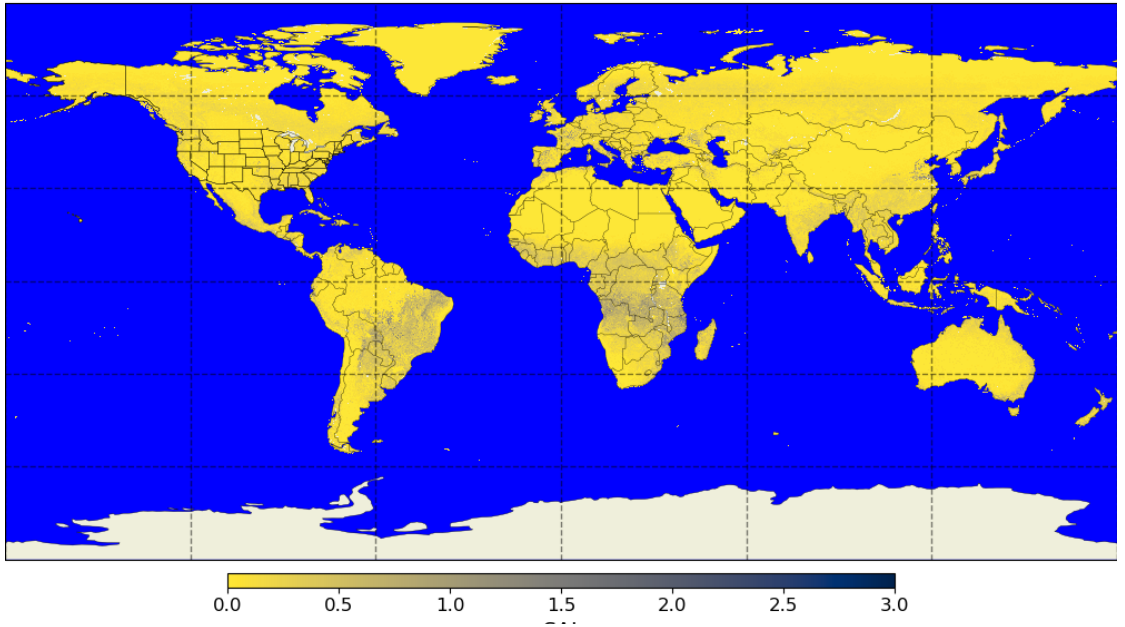
SAI, April climatology



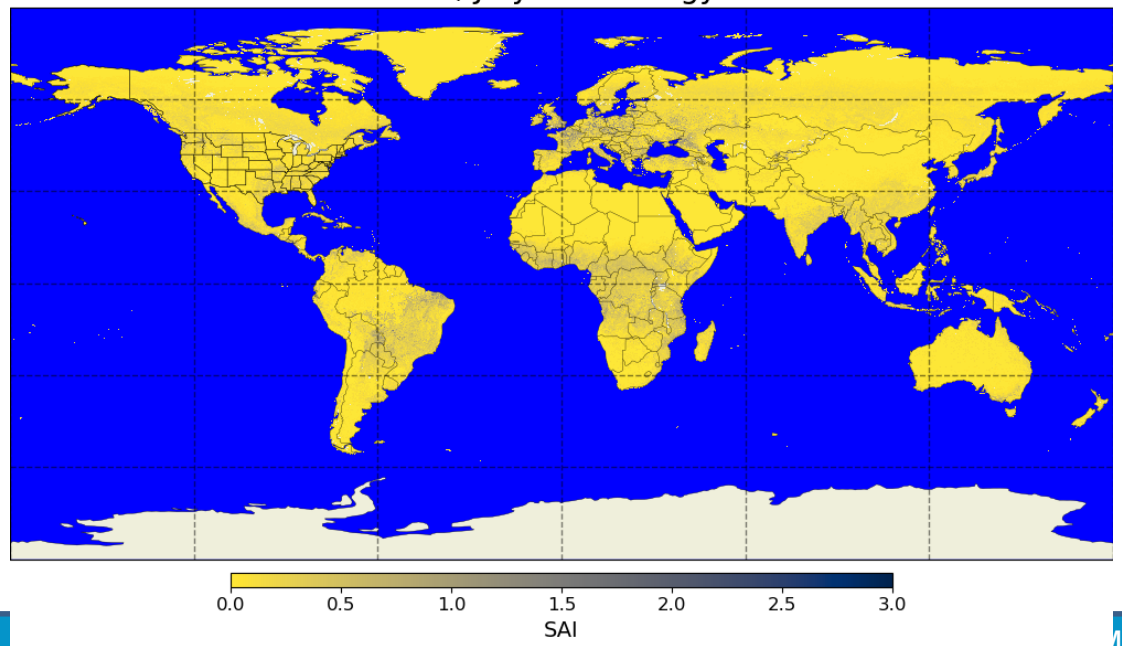
SAI, May climatology



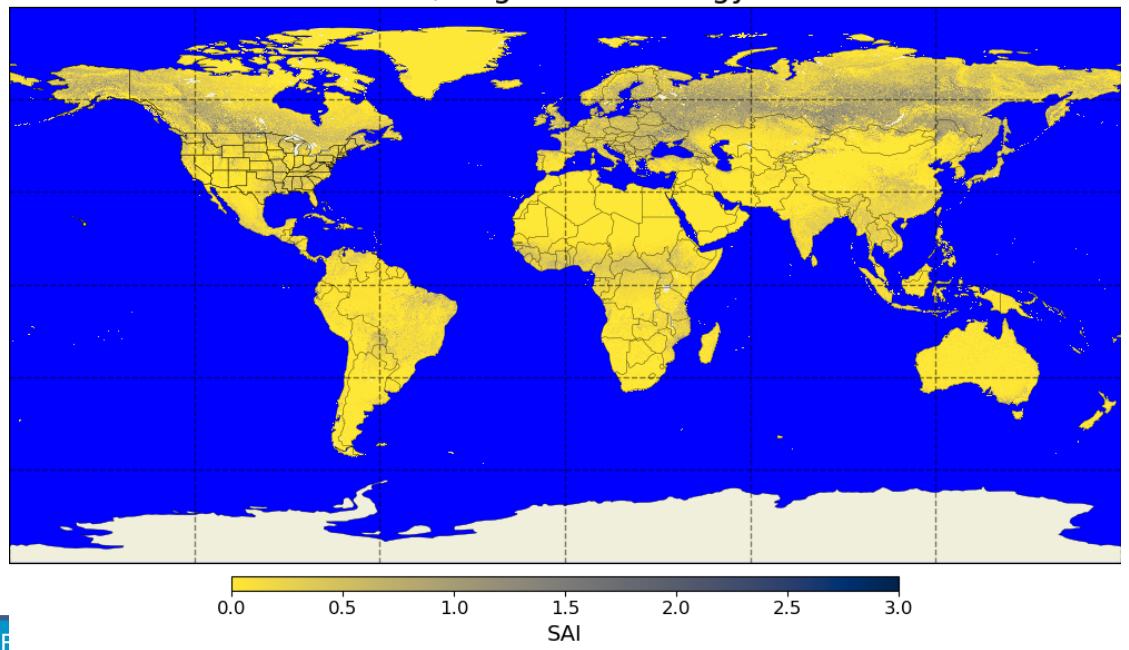
SAI, June climatology



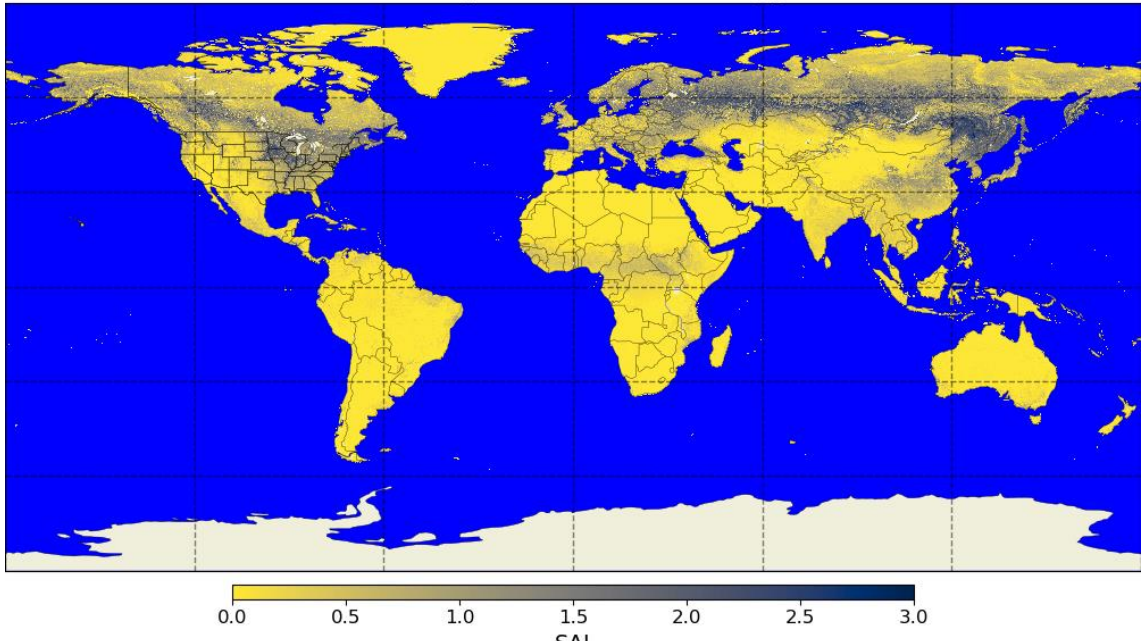
SAI, July climatology



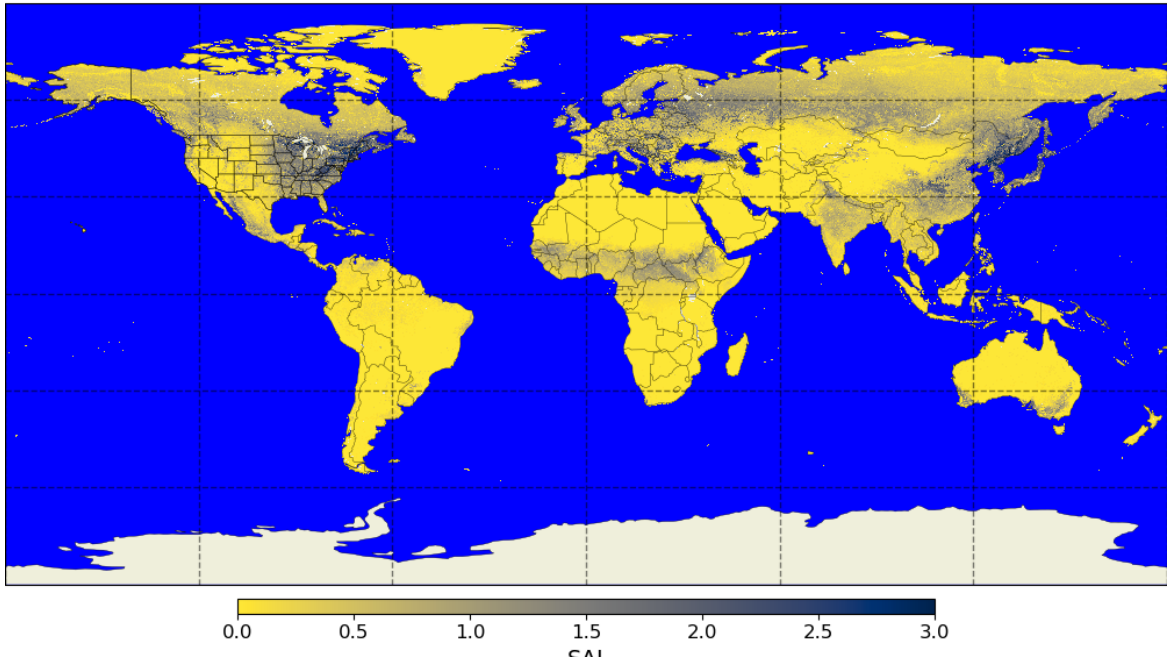
SAI, August climatology



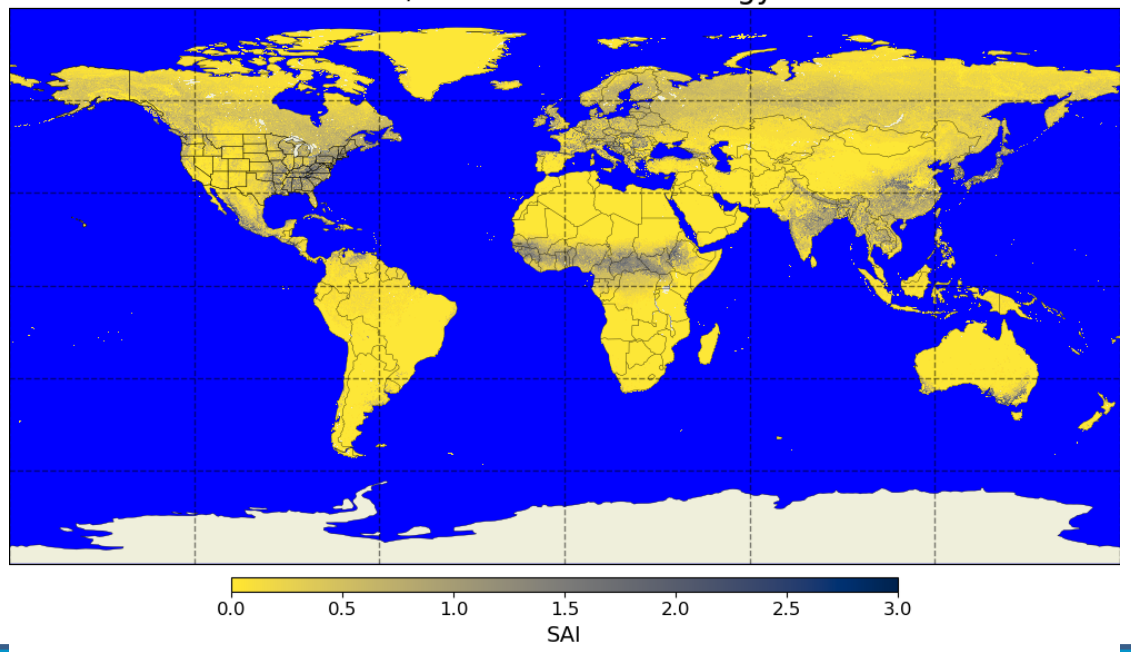
SAI, September climatology



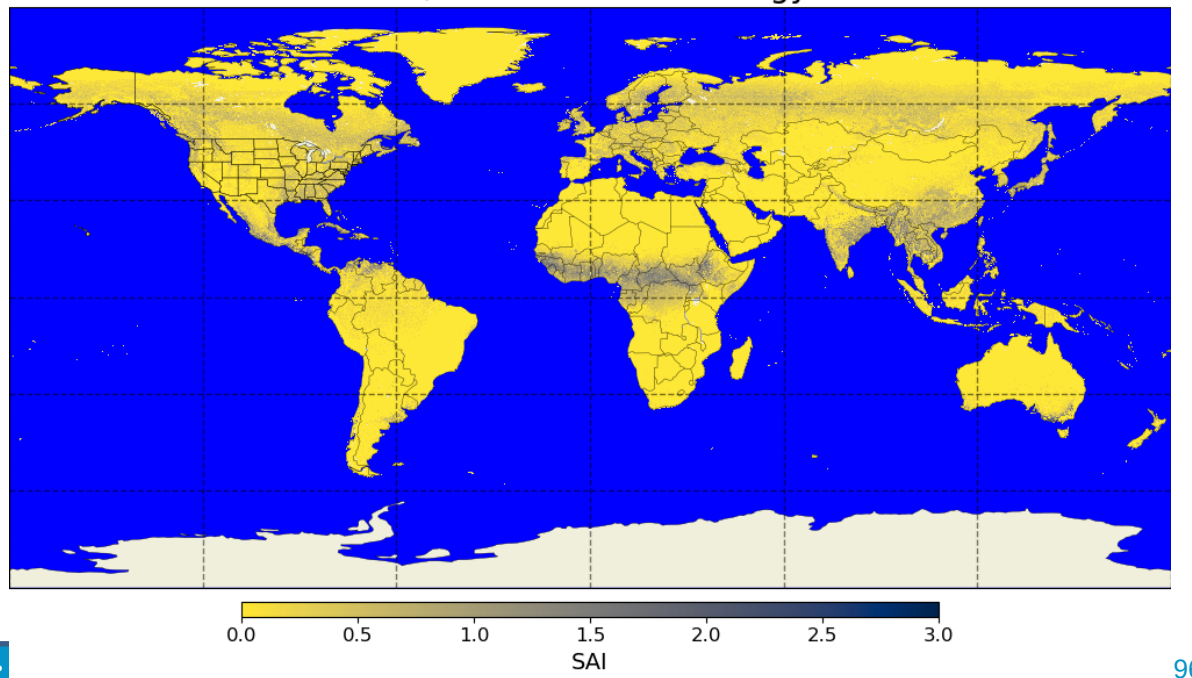
SAI, October climatology



SAI, November climatology



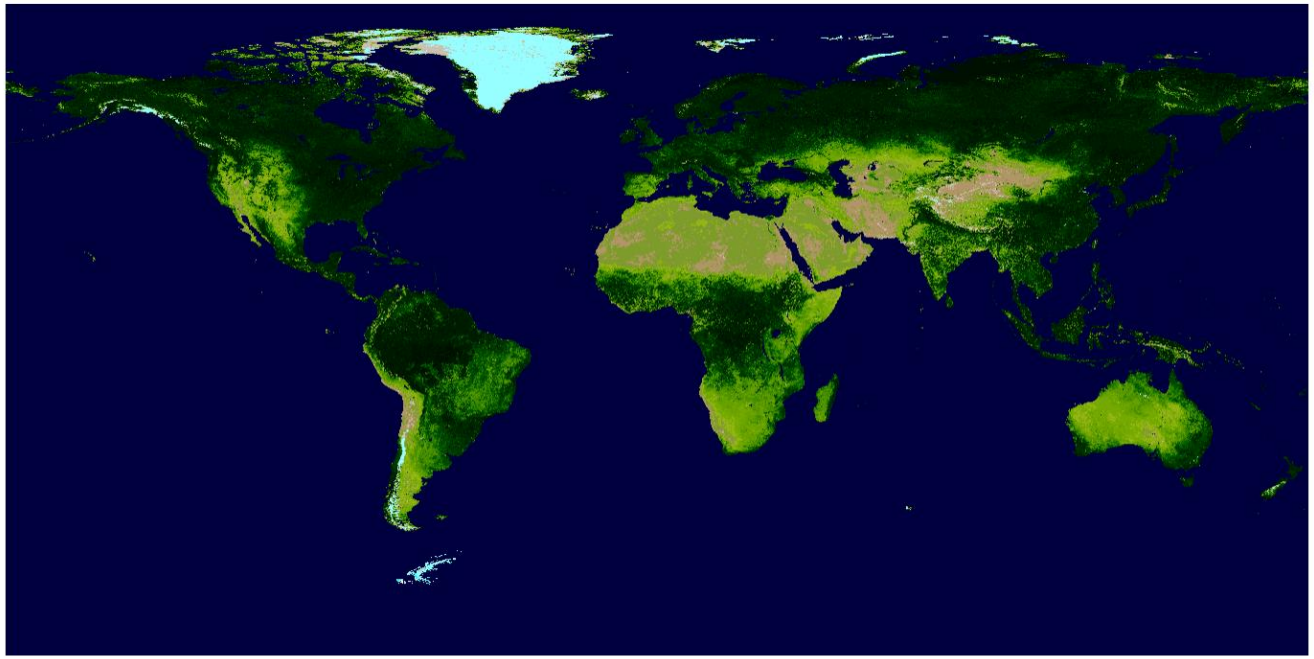
SAI, December climatology



Using AWS for VI/GVF reprocessing

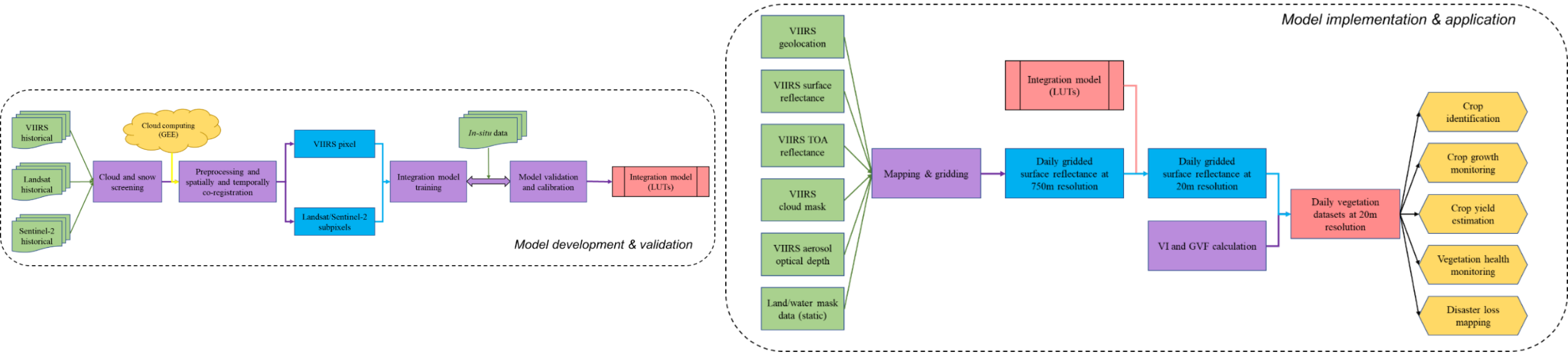
- Reprocessing is underway to enhance the accuracy, consistency, and usability of the VI/GVF product generated over time.
- Since the recent transition of NOAA production to AWS, we're exploring the way to utilize AWS data and computation resources for the reprocessing task.
- A test has been done to demonstrate the effectiveness of algorithm deployment and the data processing pipeline.
- Further investigation is underway.

AWS generated Biweekly NDVI_TOC from N20
20240730-20240814



20m resolution VI/GVF downscaling

- With further assessment and evaluation, the 20m resolution VI/GVF downscaling algorithms were refined and consolidated including improved handling of the spatial response function, improved consideration of land cover change in the LUT establishment, and incorporation of vegetation phenology, etc.
- The latest algorithm has been deployed locally to produce timeseries products for further validation and evaluation.
- The general workflow of the algorithm are shown below.



FY25 Milestones/Deliverables

	Milestone	Start	Finish	Deliverable	Requirement (Dev Only)
1	Final report of blended VI and GVF products; for suitability of operational production	Oct-24	Jan-25	Code and test data	
2	Reprocessing readiness of SNPP and NOAA-20 VI and GVF data records	Jan-25	May-25	Software readiness	
3	Evaluation of methods for handling data gaps in GVF 15 weeks of historical data	Oct-24	Jan-25		GVF requirements
4	Further development of 20m VI downscaling	Jan-25	Jun-25	Code and examples	VI requirements
5	AI/ML based algorithm development for the vegetation product derivation and validation	Feb-25	Aug-25	Experimental code and test data	GVF requirements
6	Experimental version of VI and GVF production combined with Vegetation Health	Apr-25	Sep-25	Experimental code and test data	VI and GVF requirements

D	I	C	M	L
Development	Integration &Testing	Calibration & Validation	Maintenance	LTM & Anomaly Resolution

VIIRS SDR

January 2025

Accomplishments / Events:

- Completed checkout of the IDPS Block 2.3 Release Mx12 software deployed on DP-TE: confirmed removal of VIIRS SDR ellipsoid geolocation products (GIMGO and GMODO) from subscriptions
- Created and tested an updated NOAA-21 VIIRS SDR F-PREDICTED LUT that mitigates the degradation of the SWIR band radiometric response after MMOG-2: reviewed radiance changes and striping reductions in images of Saharan desert and deep convective clouds
- Assisted in scheduling and analyzed data from NOAA-21, NOAA-20, and Suomi NPP VIIRS lunar calibration on 1/9/2025: data aligns well with long-term trends and exhibits consistency
- Generated 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 1/29/2025
- A peer-reviewed journal paper entitled “A Study of NOAA-20 VIIRS Band M1 (0.41 µm) Striping over Clear-Sky Ocean“ was published in *Remote Sensing* (https://www.mdpi.com/2072-4292/17/1/74)
- Made four VIIRS presentations at the 105th AMS Annual Meeting on Jan. 12-16, 2025 and one presentation to GSICS VIS/NIR Subgroup Meeting on Jan. 23, 2025

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			
JPSS-3/-4 VIIRS granule size change verification	Mar-25			
VIIRS cross-calibration with hyperspectral measurements	Jun-25			
Suomi NPP and NOAA-20 VIIRS intermediate recalibration	Jun-25			
“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			

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:

Regional V&V Sites webpage (https://ncc.nesdis.noaa.gov/regional) displaying California Palisades wildfire observations in the NOAA-21 VIIRS SDR image from January 7, 2025 (bands I1-I2-I3 shown as RGB)

FY25 Milestones/Deliverables (in general)

Task Category	Task/Description	Start	Finish	Deliverable
Maintenance	• Monthly lunar calibration (precision prediction delivered to flight operations; analysis on acquired lunar data)	10/2024	7/2025	• Lunar roll prediction monthly for lunar (to OSPO)
	• Monthly delivery of VIIRS DNB calibration LUTs;	10/2024	9/2025	• Monthly LUT updates (to OSPO)
	• Delivery of VIIRS RSB and TEB calibration LUTs to mitigate degradation;			• LUT delivery as needed
	• Delivery of VIIRS DNB straylight LUTs;			• LUT delivery as needed
	• Maintain the performance trending at vicarious sites	10/2024	5/2025	• Sustained validation website for the G20+ vicarious sites
	• Geolocation monitoring using CPM (Applicable to SNPP, NOAA-20 and NOAA-21)			• CPM geolocation monitoring (report)
LTM & Anomaly Resolution (L)	• Instrument parameter performance trending	10/2024	09/2025	• Report on instrument parameter performance trending (in collaboration with ICVS)
	• Participate in anomaly investigations	10/2024	09/2025	• Anomaly report

Please document requirements for developmental work.

VIIRS Flood Mapping

September 2024

Accomplishments / Events:

- JPSS Flood monitoring has captured multiple events this month. One example is the downscaled 30 meter resolution VIIRS flood depth estimates on Sept 17th, 2024 after historic rainfall occurred across the Cape Fear Region of southeastern North Carolina from Potential Tropical Cyclone Eight. Gauges and automated radar estimates showed that 12 to 20 inches of rain fell in only two days.
- NOAA Satellites posted the results from the JPSS downscaled flood depth (https://x.com/NOAASatellites/status/1836474846496330162).
- The downscaled product is currently still in development, but pre-operational estimates can be found at the JPSS Flood Proving Ground (http://floods.ssec.wisc.edu/?products=VIIRS-3Dflood).

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:

Volcanic Ash

January, 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 is long-term plan.
- VOLCAT VIIRS volcanic ash plume identification and extraction work is an enhancement to the VOLCAT methodology. The science team completed identifying and classifying scientifically interesting cases (e.g., volcanic clouds, VOLCAT false alarms, etc.) for one year (2020) of data. The figure included shows the distributions for YES (ash cases) and NO (not ash cases) for the VOLCAT metric known as 'Robust Area Level 1' and represents spatial area of pixels containing a robust spectral signature consistent with volcanic ash. The right panel is zoomed in to the left-most portion of the distribution show the separation between the non-ash (black outline) and ash (filled cyan) populations. Given the qualities of the distributions (small sample size and non-normally distributed), the science team is evaluating various statistical tests, including the Kolmogorov-Smirnov test (KS-test) to gauge uniqueness of the two distributions, which will be used to select metrics for developing and testing a random forest model to improve VOLCAT detection. For this metric, the KS-test yielded a D statistic of 0.556 with a p-value of < 0.0001, suggesting that this metric would be a good discriminator between ash and non-ash clouds in a random forest model. Additional work will include classifying more data to increase sample size and identify other statistical metrics that can be used to help identify the best metrics to include in random forest model design and testing.

Overall Status:

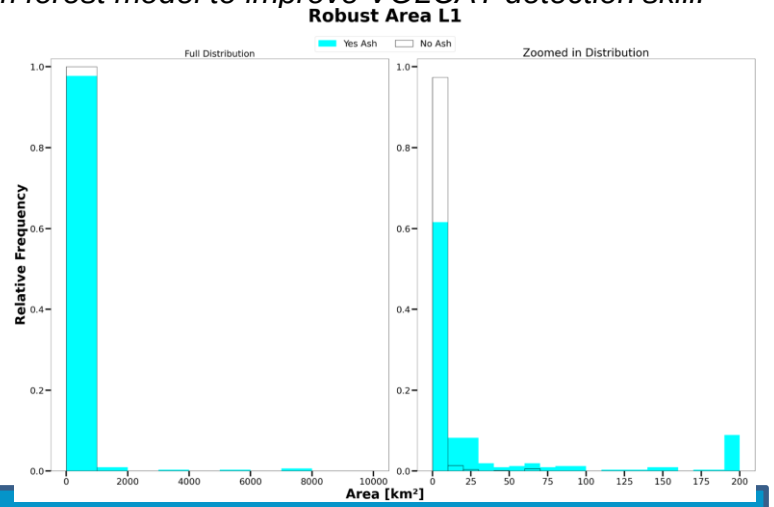
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		x			

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		
Improve VIIRS volcanic ash plume identification and extraction	Mar-25	Mar-25		
Integration of VIIRS I-bands in VOLCAT workflow	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: Preliminary distributions (only 2020 data) for ash and non-ash data using the VOLCAT metric 'Robust Area Level 1' (left panel is full distribution and right panel is zoomed on the lower portion of the data range). The plots and KS-tests (text) suggest this metric will be a useful discriminator in a random forest model to improve VOLCAT detection skill.



Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Task 1: VOLCAT enhancements	*September 2025*			
Subtask 1.1: Fully integrate VIIRS I-band into VOLCAT workflow	*May 2025*			
Subtask 1.2: Assess impact of I-band enhancements	*Sept 2025*			
Subtask 1.3: Implement and test improvements to gridded composites of volcanic cloud properties	*September 2025*			
Task 2: Preparation for JPSS-3/4	*March 2025*			
Subtask 2.1: Initial development for JPSS-3 cal/val plan	*March 2025*			

Aerosol

February 2024

Accomplishments / Events:

- Work done by STAR aerosol team is featured in NESDIS Impacts Briefings in the article entitled “Pollution”. Team members Hai Zhang, Michael Cheeseman, and Pubu Ciren contributed to the work that is part of this article
- NOAA Greenhouse Gas (GHG) Team co-lead Kondragunta wrote the Impact Briefings article on GHGs. JPSS Program Scientist Kalluri and JSTAR manager Zhou and Jeff Privette (also NOAA GHG team co-lead) also contributed to the article on GHGs
- Team member Cheeseman has done a lot of analyses using reprocessed aerosol optical depth data to understand the Environmental Justice aspect of fine particle pollution. This work is informing that despite meeting the health standard, fine particle pollution disproportionately impacts racially and economically disadvantaged communities
- Team member Huff contributed to the writing of QuickGuide for VIIRS aerosol optical depth product. She also provided half-a-day training in Singapore on the use of JPSS fire and smoke products. JPSS Program Scientist Kalluri and AAC team lead Kondragunta also provided lectures on air quality products and their applications for Association of Southeast Nations (ASEAN).
- Team member Limbacher is developing a new aerosol optical depth algorithm that includes new aerosol models and numerical methods that is expected to speed up the enterprise algorithm and hopefully provide better retrievals as well.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation

Overall Status:

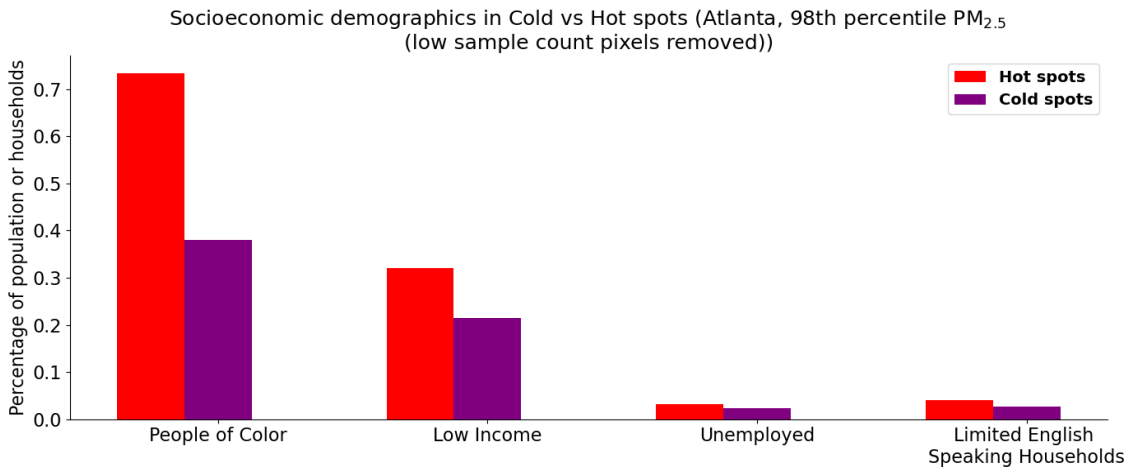
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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:

No risks. Issue: Developer of the ML-SFRA has left the team; date of milestone is TBD.

Highlight:



Statistics in the figure show analysis for Atlanta where hot spots and cold spots are those areas with high and low fine particle pollution respectively based on Moran’s I analysis

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Task 1: Deliver updated bright-land Enterprise AOD algorithm	*September 2025*			
Subtask 1.1: Generate special dataset of satellite reflectances and reference surface AOD over bright land	*January 2025*			
Subtask 1.2: Develop new LUTs and PCTs for over bright-land retrieval	*June 2025*			
Subtask 1.3: Test updated algorithm over bright land and quantify improvement	*August 2025*			
Subtask 1.4: Deliver updated bright-land AOD algorithm to ASSISTT	*September 2025*			
Task 2: Develop an alternative method to AOD retrieval with simultaneous spectral fitting	*September 2025*			
Subtask 2.1: Complete theoretical design of using simultaneous multi-spectral reflectance fitting for AOD retrieval	*April 2025*			
Subtask 2.2: Complete coding and testing of new AOD algorithm	*August 2025*			
Subtask 2.3: Deliver new AOD algorithm to ASSISTT if its performance is superior to the current algorithm	*September 2025*			
Task 3: Deliver evaluation of all enterprise AOD products	*September 2025*			
Subtask 3.1: Complete assessment of a multi-year VIIRS EPS SNPP, NOAA-20 and NOAA-21 AOD	*August 2025*			
Subtask 3.2: Complete evaluation of an extended record of merged/gridded VIIRS global AOD products	*September 2025*			
Task 4: Evaluate merits of TEMPO/PACE aerosol data for improving VIIRS AOD retrievals	*September 2025*			
Subtask 4.1: Understand available TEMPO/PACE aerosol data	*December 2024*			
Subtask 4.2: Develop theoretical framework for using TEMPO/PACE aerosol information	*June 2025*			
Subtask 4.3: Implement, test and evaluate concept	*August 2025*			
Subtask 4.4: Submit assessment report to team lead	*September 2025*			

OMPS Ozone (V8Pro, V2Limb & V8TOz)

December 2024

Major Accomplishments / Events over the past year:

- The OMPS Ozone Team has provided EDR performance analysis and evaluation and review presentations and deliveries of codes and tables to bring the NOAA-21 V8Pro, V8TOz, V8TOS and V2Limb EDRs to validated Maturity. This included transitioning new versions of both the Level 1 (SDR) and Level 2 (EDR) Limb Profile codes from NASA to STAR to NCCF.
- We have provide updates to the soft calibration for the NPP and N20 V8Pro in response to improvements to the OMPS NP SDR dark corrections, and are working on further changes as the SDR Team moves to include solar activity and instrument degradation in their bi-weekly table deliveries. The first of these deliveries will require coordination of IDPS and NCCF table updates.
- We supported the rapid return to operations following multiple spacecraft shut downs. The on-going EDR monitoring and validation activities have allowed us to provide validation of the products following restarts and confidence in recommending their return to normal operations.
- The Team provides weekly updates to three tables for the new V2.7Limb codes for both NPP and N21. Team members also generate overpass updates and comparative and statistical monitoring plots.
- The Team provided multiple updates to the operational NTOAST and LTOAST codes for transition to NCCF version. We are working on a further update for LTOAST to use the new V2.7Limb EDRs input. The ARR/ORR is in preparation.
- The Team reprocessed the NPP V8Pro EDR for 2023. We are preparing for a full reprocessing of the NPP and N20 records once the SDR Team generates records for the full mission data using the new dark correction tables.
- We have submitted a draft J-04 Cal/Val Plan including the Limb products and trace gases besides Ozone.
- We provided updates to the Metop-B and -C GOME-2 soft calibration tables and assisted with the transfer of the EV8TOz to NCCF and provided validation results.
- We have provide V8TOS SO2 maps for significant eruptions and are working with OSPO to improve the N21 product use in the alert system given its smaller noisier FOVs.

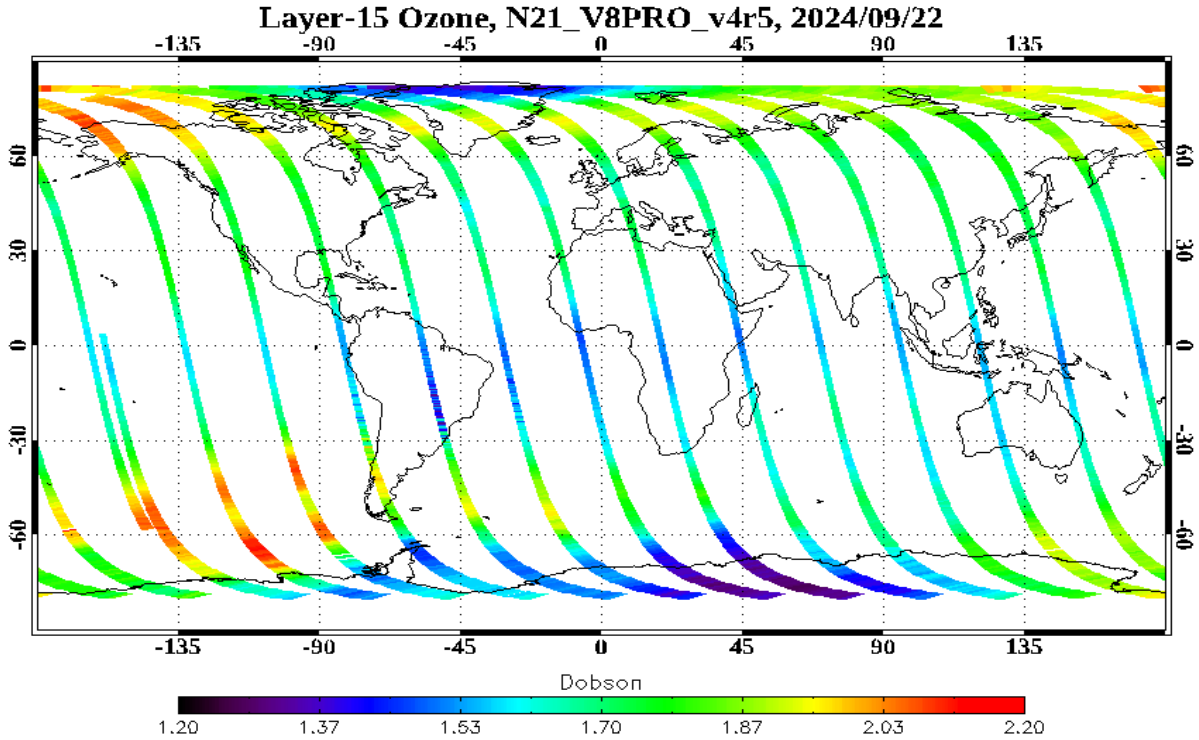
Milestones on the next slide.

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 instability, Limb Development

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: IMSG ProTech Contract follow-on Is still not in place.



False Color Layer 15 (~1 hPa) Ozone. Orbital Tracks: N21 is on the Right, N20 is on the Left, NPP is in the Middle

Milestones	Original Date	Forecast Date	Actual Completion Date	Notes
Task 1: ***Construct, improve and deliver tables and codes, and perform validation studies. Provide presentation of results to achieve and demonstrate Ozone EDR Maturity.***			V8TOz/V8TOS 9/19/24 V2Limb SDR/EDR 9/19/24 V8Pro 11/19/24	Dates of Fully Validated N21 Product Briefings
Task 2: ***Monitor and validate products by using ground-based assets and time series analysis and comparisons,***			Ongoing support of STAR and OAR websites & analysis. Used in reviews.	
Task 3: ***Maintain, monitor, trouble-shoot all NOAA Nadir Ozone and SO_2 products.***			Multiple consultations with OSPO, ASSISTT and NCCF leading to patches. Responded to spacecraft problems, dates □	N20 2/3/24 N21 6/22/24 NPP 7/9/24 NPP 9/24/24 NPP 11/2/24
Task N: ***Update Limb validation, codes, monitoring and tables as needed.***			Multiple deliveries for NPP & N21 for SDR and EDR.	
Subtask 4.1: ***Provide delta-DAPs as NASA improves Level 1 corrections or makes other tables, corrections or code modifications.***			Multiple deliveries as NASA N21 processing progressed. More to come.	
Subtask 4.2: ***Provide weekly tables deliveries for Darks, Wavelengths and Orbital Definition files***			Provided. Will continue.	
Subtask 4.3: ***Complete NOAA-21 V2Limb validation and move to operations – Support ORR***	*December 2024*		STAR Deliveries are completed as of 12/24.	
Subtask 4.4: ***Support J3/J4 progress and prepare Limb Cal/Val Plans.***			New draft provided 9/25/24.	

STAR JPSS Schedule: TTA Milestones