NOAA JPSS Monthly Program Office

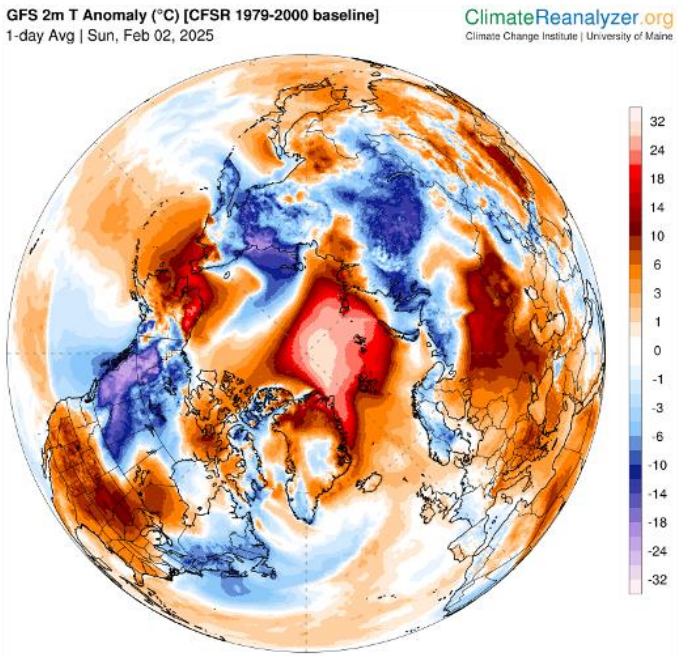
AMP/STAR FY25

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

March, 2025

Highlights from the Science Teams (February 2025)

JPSS Tandem Winds Product Observes Strong Jet Stream pushing into the Central Arctic



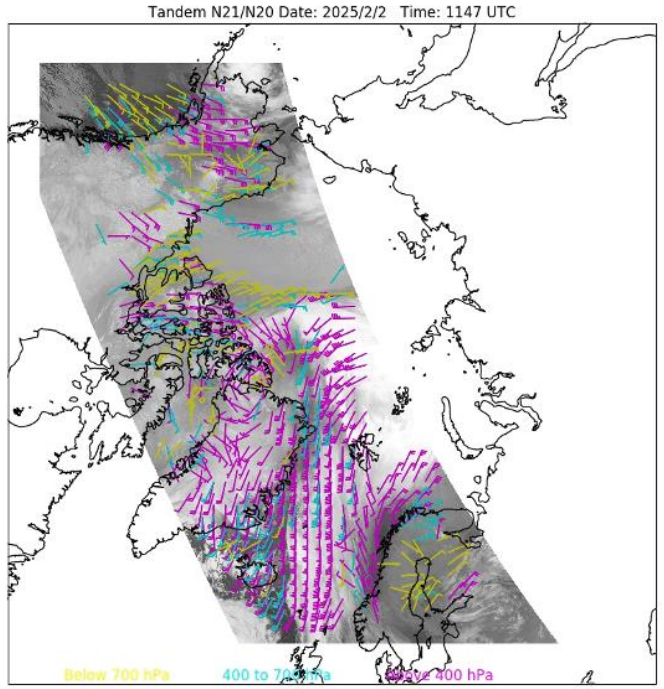


Figure. 2-meter surface temperature anomalies centered over the north pole from Climate Reanalyzer (https://climatereanalyzer.org/, right); JPSS Tandem winds product (NOAA 20/21) Atmospheric Motion Vectors (AMV) on 2 February 2025 at 12 UTC. Flag barbs are in units (m/s)

On 2 February 2025, an extreme warm anomaly was observed in the central Arctic, north of Svalbard and Greenland, that was measured to be 30° C above average (Figure 1) with surface temperatures reported to reach and exceed the melting point.

The experimental JPSS Tandem (NOAA 20/21) winds product (from UW-CIMSS) was able to observe the upper-level flow that was associated with this extreme event. Strong southerly flow was observed to be 50+ m/s or 100+ knots over the Greenland Sea with jet exit region associated upper-level divergence near the north pole. This jet stream and associated surface low surging into the Arctic resulted in the relatively warm surface temperatures being advected into the central Arctic. This blocking ridge of high pressure was key in forcing the warm air mass and associated storm system into the central Arctic.

Highlights from the Science Teams (February 2025)

Analysis of S-NPP ATMS Instrument and Science Data Quality After A Quick Safehold Switch

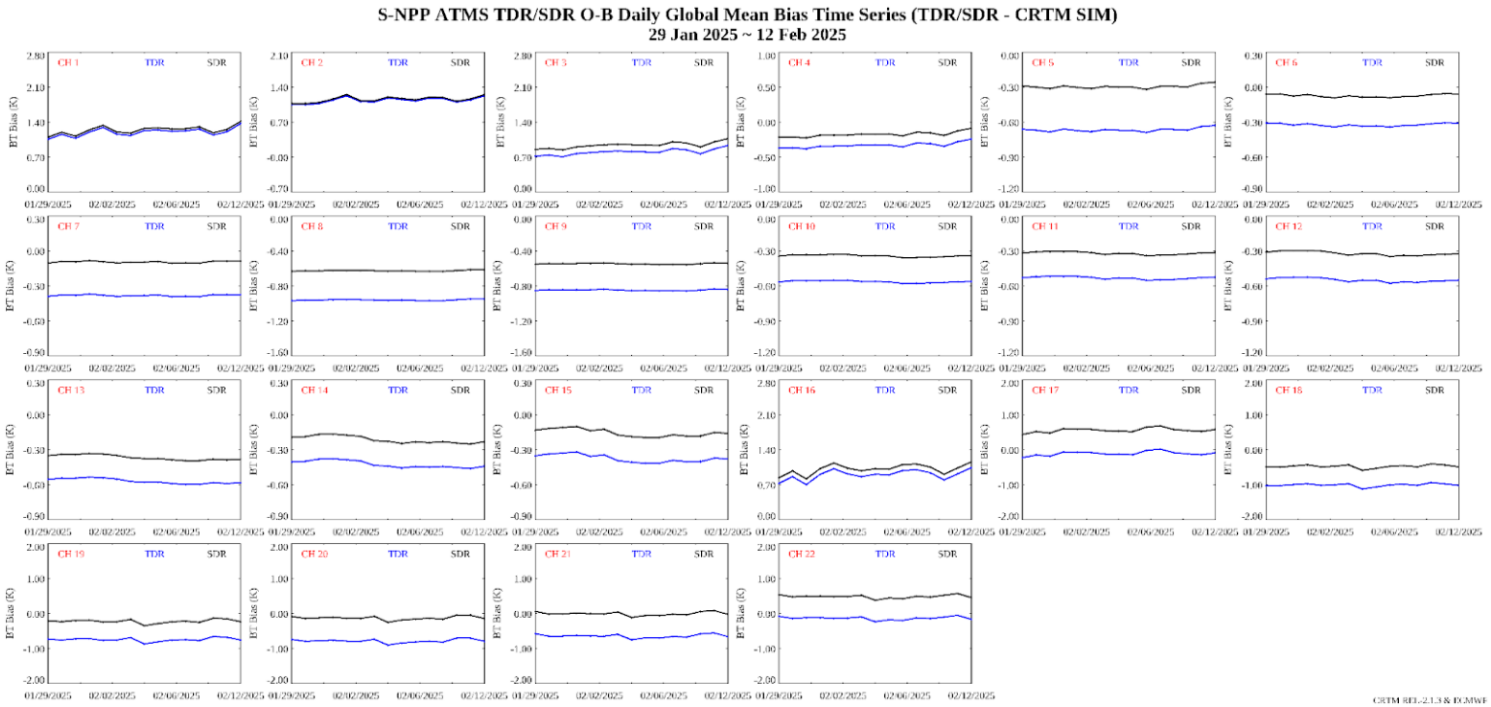


Figure. S-NPP ATMS TDR/SDR ECMWF profile CRTM simulation bias from January 29 to February 12, 2025

The ATMS SDR team continued to provide S-NPP ATMS instrument status and science data quality evaluation after a quick safehold switch due to the correction of comp motor command in DAS. The comp motor was unintentionally turned on around 20:12z on February 6, 2025. The increase of instrument temperatures are observed before the correction later on February 7, 2025. The calibration parameters returned to nominal level on February 8, 2025. During this event, the instrument NEdT keeps relatively stable and no significant systematic science data quality impact is observed. Illustrated in the figure is the S-NPP ATMS TDR ECMWF profile CRTM simulation bias daily global mean trending from January 29 – February 2.

Highlights from the Science Teams (February 2025)

Satellite Book Club Seminar

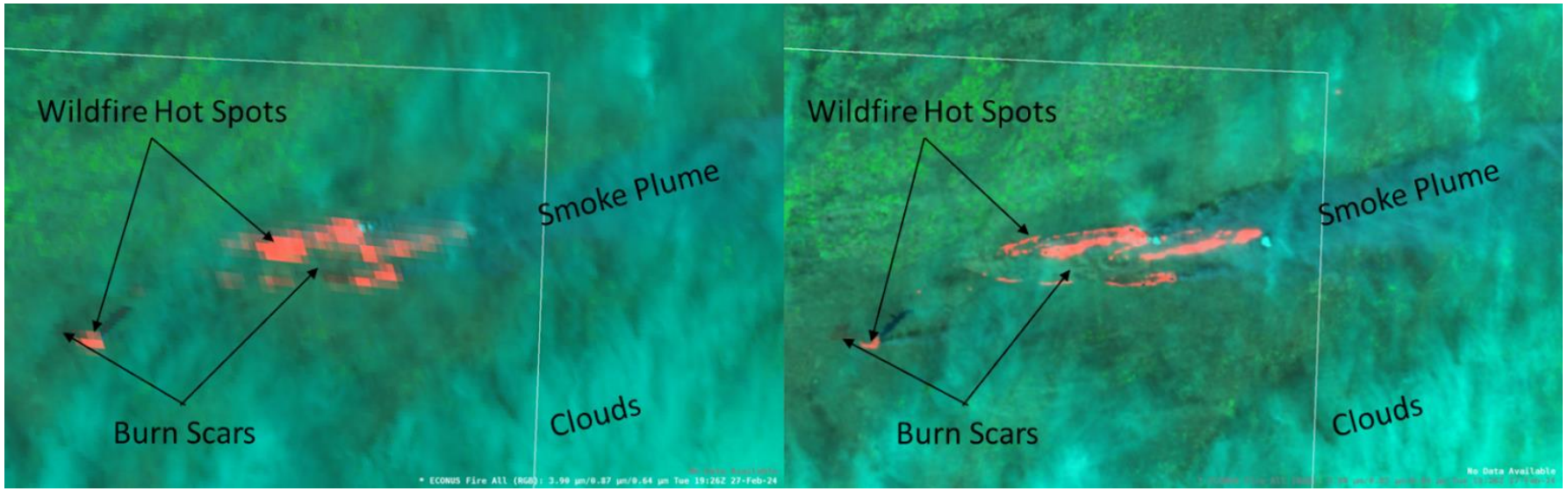


Figure. Figure: 27 February 2024 GOES-East ABI (left) and JPSS VIIRS (right) Day Fire RGB. While GOES imagery is available at superior temporal resolution, the VIIRS imagery has higher spatial resolution, providing more detail into important features.

Bill Line presented “Operational Applications of VIIRS Imagery for CONUS Offices” for this week’s Satellite Book Club Seminar Series. The presentation shared situations in which JPSS VIIRS Imagery adds value to operational decision-making when used along-side GOES Imagery. Its higher spatial resolution aids in the identification of small fire hot spots, narrow regions of low clouds at night, and small-scale plumes of blowing dust and blowing snow. Unique VIIRS products such as the Snowmelt RGB and Day/Night Band provide additional capabilities for assessing snow cover and for detecting nighttime smoke, dust, low clouds, fire hot spots, and for analyzing boundaries and storm-top features. A recording for the webinar can be found here.

Accomplishments

Delivery Date	Cloud Containerized Algorithm Packages (CCAPs) – Enterprise Products:	Recipient
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
02/13/2025	**OceanColor_v2:** This is a Final CCAP delivery to NCCF for OceanColor_v2 CCAP. The Ocean Color package is responsible for generating products across the entire Ocean Color product suite. This package consists of a total of test cases of the followings: GFS unit (same as before) 61day-merge for N20, N21 and SNPP (same as before), Daily Anomaly for N20, N21 and SNPP (same as before). This delivery expected to happen in January (1/27/25) was delivered on 2/13 to test and ensure fill value correctness.	NCCF
02/24/2025	**BlendedSST_v1:** This is a Final CCAP delivery to NCCF for BlendedSST_v1 CCAP. This blended sea surface temperature (SST) product combines data from all current geostationary and polar-orbiting satellites, including U.S. satellites and those of international partners such as Japan and Europe. This delivery expected to happen in January (1/21/25) was delivered on 2/24 to include additional test cases to meet minimum requirements.	NCCF
03/05/2025	**EN-DynAncil_v1:** This Enterprise Dynamic Ancillary (EDA) project contains multiple algorithms to produce the dynamic ancillary data for ABI, AHI, AVHRR, FCI, SEVIRI and VIIRS sensors.	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, 2/18/25, 2/26/25, 3/4/25**
NOAA-20	Weekly OMPS TC/NP Dark Table Updates	09/3/24, 09/10/24, 09/17/24, 09/24/24, 10/1/24, 10/8/24, 10/16/24, 10/22/24, 10/29/24, 11/12/24, 11/19/24, 11/26/24, 12/03/24, 12/10/24, 12/17/24, 12/30/24, 01/7/25, 1/13/25, 1/22/25, 1/28/25, **2/4/25, 2/10/25, 2/18/25, 2/26/25, 3/4/25**
NOAA-21	Weekly OMPS TC/NP Dark Table Updates	09/3/24, 09/10/24, 09/17/24, 09/24/24, 10/1/24, 10/8/24, 10/16/24, 10/22/24, 10/29/24, 11/12/24, 11/19/24, 11/26/24, 12/03/24, 12/10/24, 12/17/24, 12/30/24, 01/7/25, 1/13/25, 1/22/25, 1/28/25, **2/4/25, 2/10/25, 2/18/25, 2/26/25, 3/4/25**
S-NPP	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	09/10/24, 09/24/24**,** 10/8/24, 10/22/24, 11/5/24, 11/19/24**,** 12/3/24, 12/17/24, 12/31/24, 1/13/25, 1/28/25**, 2/11/25, 2/26/25,**
NOAA-20	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	09/03/24, 09/17/24, 10/1/24**,** 10/16/24, 10/29/24, 11/12/24, 11/26/24, , 12/10/24, 12/31/24, 1/8/25, 1/22/25, **2/4/25, 2/18/25, 3/4/25**
NOAA-21	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	09/03/24, 09/17/24, 10/1/24**,** 10/16/24, 10/29/24**,** 11/12/24, 11/26/24, 12/10/24, 12/31/24, 1/8/25, 1/22/25, **2/4/25, 2/18/25, 3/4/25**
S-NPP	Monthly VIIRS LUT Update of DNB Offsets and Gains	9/9/24, 10/9/24, 11/7/24, 12/6/24, 1/7/25, 2/4/25, **3/7/25**
NOAA-20	Monthly VIIRS LUT Update of DNB Offsets and Gains	9/9/24, 10/9/24, 11/7/24, 12/6/24, 1/7/25, 2/4/25, **3/7/25**
NOAA-21	Monthly VIIRS LUT Update of DNB Offsets and Gains	9/9/24, 10/9/24, 11/7/24, 12/6/24, 1/7/25, 2/4/25, **3/7/25**
NOAA-21	Monthly VIIRS DNB Straylight correction update	10/23/23, 11/21/23, 12/18/23, 01/22/24**,** 02/15/24, 03/18/24, 4/15/24**,** 5/14/24**,** 6/11/24, 7/16/24, 8/13/24 (Further updates reuse earlier correction LUTs based on the month)

FY25 STAR JPSS Milestones (1 of 3)

Milestones/Algorithm Updates	Original Date	Forecast Date	Actual Completion Date	Variance Explanation	Status
OMPS NP	Mar-25	Mar-25	ASSISTT to NCCF: Moved to March 11	Required LUT and ATBD updates necessitated a move of the CCAP delivery to March 11.	Being tracked as part of FY25
Multi-platform Tropical Cyclone Surface Winds Algorithm (MTCSWA) (Add NOAA-21 Capability)	Mar-25	Mar-25	ASSISTT to NCCF: Scheduled for March 11	N/A	
Vegetation Health	Feb-25	Mar-25	ASSISTT to NCCF patch delivery pushed from Feb 27 to March 31.	In accordance to PAL's request for testing.	Being tracked as part of FY25
VOLCAT (Phase 1) NCCF implementation	Dec-23	Mar-25	SCR: August 17, 2023 Target CCAP Moved from Jan 9 to Jan 30, then to Feb 26, 2025, and then moved to March 18.	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 and this necessitated a move to March 18.	Being tracked as part of FY25
NetCDF4 Reformatting Toolkit (N4RT)	Feb-25	Mar-25	On-track: ASSISTT to NCCF: March 17, 2025	Integrator's time adjustment to accommodate Quick Sounder as a priority caused a slight delay.	
Hurricane Intensity and Structure Algorithm (HISA) maintenance CCAP (uses MiRS from S-NPP/NOAA-20/21, MetOp-B/C	Mar-25	Apr-25	Science team delivered the code updates to ASSISTT on December 16, 2024.	Integrators working on metadata; Integrators working on editing ASSISTT Interface Module (AIM) to run with new science code.	Being tracked as part of FY25 Maintenance
TOAST update : LTOAST for the new OMPS LP inputs.	May-25	May-25	On-track	N/A	

FY25 STAR JPSS Milestones (2 of 3)

Milestones/Algorithm Updates	Original Date	Forecast Date	Actual Completion Date	Variance Explanation	Status
Cloud Mask J2 Validated; No code updates needed only maintenance CCAP (we can keep it as FY25 milestone). Tracked as FY25 maintenance releases	Feb-25	Jun-25	ASSISTT to NCCF target CCAP delivery moved from Feb 6 to March 18. Moved to June 25 for AO architecture.	Maintenance updates (separate unit for Ancillary files to be included) as well as solving for latency issues, and implementation on AO architecture, all culminated into moving different cloud products into June/July CBH, CCL, Cloud Height pushed to June 3, Cloud Phase and cloud type pushed July due to other priority and to account for AO architecture.	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	Jan-25	Jul-25	SCR set for March 13. Target CCAP (ASSISTT to NCCF) pushed one month from January to Feb 6, 2025, and now moved to July for AO architecture.		
Aerosol Detection Product (ADP) Updates	Jan-25	Jul-25	SCR moved from 1/27 to 3/6 to 4/23; Target CCAP (ASSISTT to NCCF) expected on July 9th since the CCAP will be implemented in Algorithm Orchestration (AO) architecture	Updates to use Volcanic ash input. Removes dependency on volcanic ash product. Implementation in AO architecture	Being tracked as part of FY25 Maintenance release
Enterprise AOD	Jan -25	Aug-25	Target CCAP pushed to February 10th earlier, and moved to August 8th since the CCAP will be implemented in Algorithm Orchestration (AO) architecture	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 algorithms to run on AO.	Being tracked as part of FY25 Maintenance release
AST-2024 (VIIRS Annual Surface Type)	Sep-25	Sep-25	On-track	N/A	Ongoing as part of FY25
Reprocessing and transfer of EDRs to CLASS	Sep-24	May-25	Continue as part of FY25 milestones	JSTAR Team submitted a request to CLASS to archive reprocessed AOD/ADP. CLASS is working on Engineering Assessment.	Ongoing as part of FY25

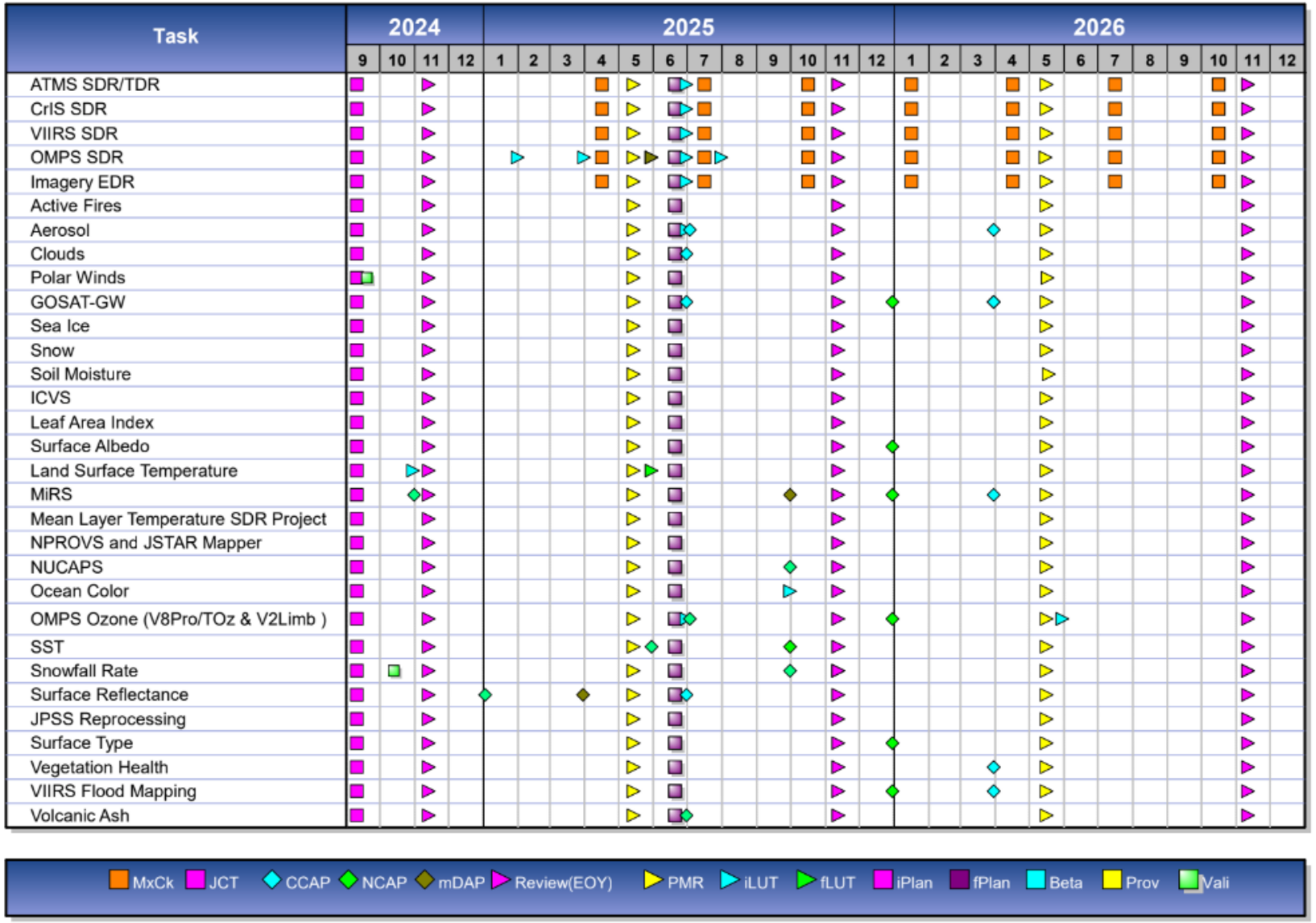
FY25 STAR JPSS Milestones (3 of 3)

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	ATMS and CrIS delivered.	Ongoing
SDR and VIIRS Imagery Look-Up Table Deliveries for J4: June 30, 2025	Jun-25	Jun-25	Ongoing	ATMS delivered the PCT.	Ongoing
JPSS-3/JPSS-4 pre-launch test data review/analysis and activity support (SDR teams);	Sep-25	Sep-25	Ongoing	FY24 milestones for J3 JCT1/JCT2, J3 Spacecraft TVAC, and J4 instrument TVAC completed as part of FY24 milestones. Science team efforts will continue in FY25.	Continuing as part of FY25 milestones
JPSS-3/JPSS-4 Pre-launch characterization reports for all SDRs: December 30, 2024	Dec-24	Mar-25	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**	GOSAT ANSR3 SW delivery to NOAA late March 2025. New test data sets will be provided by JAXA that would be more valuable to the science teams. The latest testing is expected to be in April, 2025. The test will flow GOSAT/AMSR3 data from the ground station to the operational string. CLASS is expected to save the data for the downstream users. 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

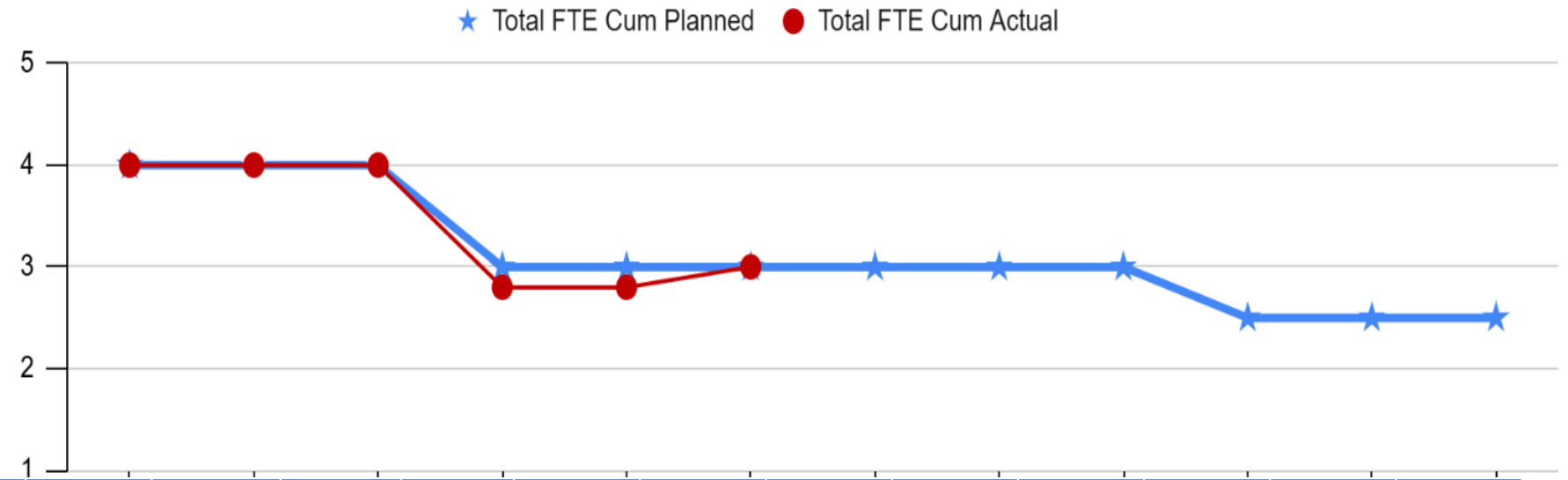
FY 25 IDPS Mx Build Review/Checkout

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 (VIIRS verified M13 changes) and final STAR Go/No-Go report is in preparation.	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

STAR JPSS Schedule: TTA Milestones



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	0.00	0.00	0.00
Cum Actual (CS)	0.00	0.00	0.00	0.0	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	3.00						
Total FTE Cum Planned	4.00	4.00	4.00	3.00	3.00	3.00	3.00	3.00	3.00	2.50	2.50	2.50
Total FTE Cum Actual	4.00	4.00	4.00	2.80	2.80	3.00						

CS: Vacant (prev. Alisa Young)

WYE: *Prasanjit Dash, Murty Divakarla, Tom Atkins, Jeffrey Weinrich, Wei W. Li , Tess Valenzuela*

Color code:

Green: **Completed Milestones**

Gray: **Ongoing FY25 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:

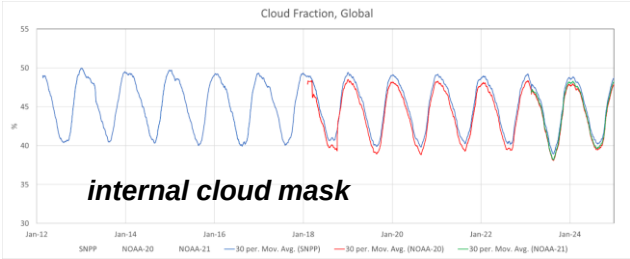
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

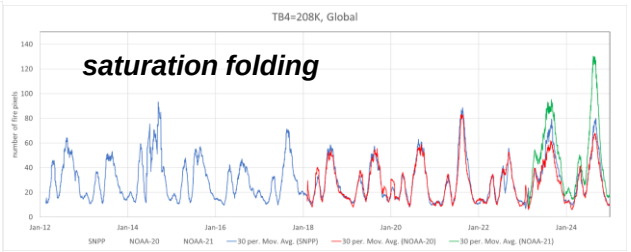
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

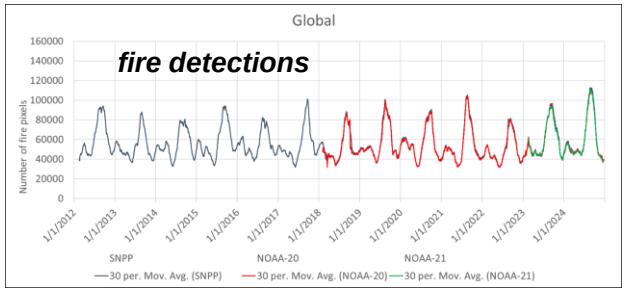
Issues/Risks:

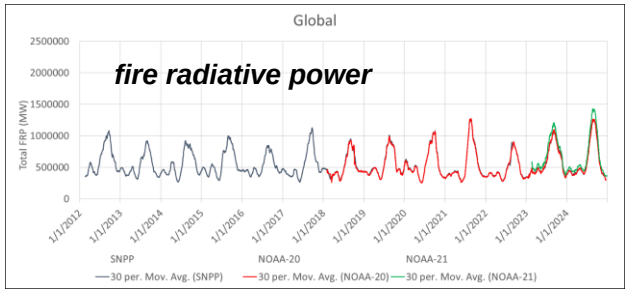
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
eFire cal/val	Sep-25	Sep-25		
eFire – NGFS cross-verification	Sep-25	Sep-25		
Direct Broadcast support	Sep-25	Sep-25		
Maintenance, LTM and anomaly resolution	Sep-25	Sep-25		

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*			

Aerosol

February 2025

Accomplishments / Events:

- Investigated quality of the VIIRS AOD retrieval during “saline” dust events.
- Cleaned up scripts used for reprocessing the SNPP/NOAA20 VIIRS SDRs and ECM/AOD/ADP retrievals, and prepared a document describing how to prepare inputs and reprocess SDR and AOD in the AWS cloud.
- Investigated dependence of the AOD retrieved with the AOD algorithm updated for bright surface on geometry and season.
- Reviewed JPSS VIIRS ADP FY25 project plan put together by OCM and updated it.
- Continuing the reprocessing of SNPP and NOAA-20 aerosol optical depth, aerosol detection, and cloud mask to extend the record beyond 2022 by adding 2023, 2024 data
- Analyzing the reprocessed fire emissions data from MODIS and VIIRS to understand carbon emissions from crop residue burning.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Subtask 2.1: *Identify source of high latitude false dust detections, especially clouds mis-identified as smoke*	*Mar 2025*	*Mar 2025*		
Subtask 2.2: *Work with Volcanic Ash team to import the ash detection into ADP*	*Jun 2025*	*Jun 2025*		
Subtask 2.3: *Make code updates to ADP algorithm to implement “smoke call back”*	*Sept 2025*	*Sept 2025*		
Subtask 2.4: *Adapt ADP algorithm to NOAA-21 OMPS*	*Dec 2025*	*Dec 2025*		
Subtask 2.5: *Begin the process to transition VIIRS PM2.5 algorithm to operations*	Mar 2026	Mar2026		
Adapt the VIIRS AOD algorithm to use PACE OCI data	Feb 2025	Feb 2025		
Develop new LUTs and PCTs for over bright-land retrieval June 2025	Jun 2025	Jun 2025		
Evaluate Metop-SG AOD retrievals using seasonal samples of VIIRS proxy data	Jul 2025	Jul 2025		
Complete design, coding and testing of simultaneous multi-spectral reflectance fitting forAOD retrieval	Aug 2925	Aug 2925		
Complete assessment of a multi-year VIIRS EPS SNPP, NOAA-	Aug	Aug		

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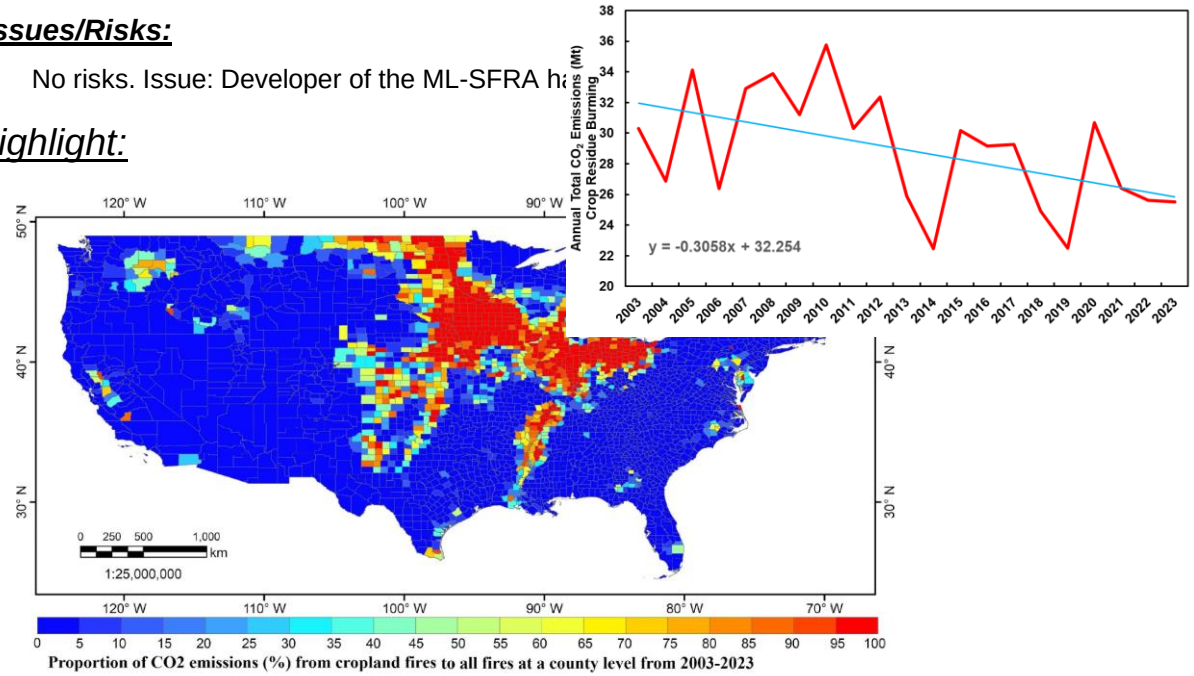
Issues/Risks:

No risks. Issue: Developer of the ML-SFRA ha

Highlight:



Map shows percentage of CO2 emissions from crop residue burning compared to contributions from all fires. The time series chart shows decreasing trend from crop residue burning due to an increase in residue recycling practices.

ATMS SDR

February 2025

Accomplishments / Events:

- Analyze S-NPP ATMS Instrument and Science Data Quality After Reactivation Add NPP ATMS beam pointing error analysis to the S-NPP ATMS post reactivation instrument performance and science data quality evaluation. It is found that the first few earth view FOVs have slightly increased beam pointing error after the reactivation with scan drive comp motor disabled **(Fig 1)**. The instrument temperature is slightly lower than the pre-anomaly level. For example, the current scan drive mechanism temperature after the reactivation is about 2 degree lower than the previous nominal level around 19 degree C. The calibration parameters, such as warm, spaceview count, and calibration gain, present systematic change after the reactivation at several channels. Further investigation is still ongoing.
- An ATMS Nonlinearity Contingency Plan to provide nonlinearity coefficients directly based on the vendor parameters by appropriately transforming the nonlinearity coefficients from the brightness temperature domain to the radiance domain. This method would be highly time saving, as it may be a simple transformation of data provided by the instrument vendor. computed the first steps based on this method, and succeeded in showing very good agreement between the two methods **(Fig 2)**, currently building a full implementation assessing the sensitivity..
- Completed the beta version of ATMS noise assessment tools for calculating on-orbit NEdT based on calibrated warm load antenna temperature and warm load physical temperature. The noise character of SNPP ATMS on February 1, 2025 shows that thermal noise dominates while 1/f noise contributes to total noise.
- Analysis of S-NPP ATMS Instrument and Science Data Quality After A Quick Safehold Switch was provided after a quick safehold switch due to the correction of comp motor command in DAS. The comp motor was unintentionally turned on around 20:12z on February 6, 2025. The increase of instrument temperatures are observed before the correction later on February 7, 2025. The calibration parameters returned to nominal level on February 8, 2025. During this event, the instrument NEdT keeps relatively stable and no significant systematic science data quality impact is observed. **Fig 3** is the NPP ATMS TDR ECMWF profile CRTM simulation bias daily global mean trending from 1/29/2025 to 2/12/2025. The ATMS geolocation software suite was successfully run for a data set spanning 5, 10, 25, 20, 25, and 30 days.
- Continued Development of ATMS-TROPICS Intercomparison tools (**Fig 4**) to include global tropics maps and scene temperature dependence.
- Continued progress on reducing the ATMS Geolocation Evaluation period. **Fig 5** shows preliminary geolocation accuracy assessment for 4 channels (1,2,3, and 16) when using 20 and 30 days where no significant differences were observed.

Overall Status:

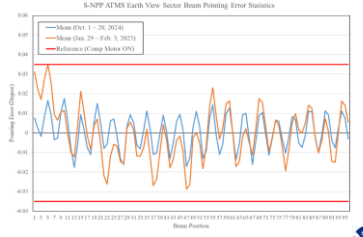
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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.*

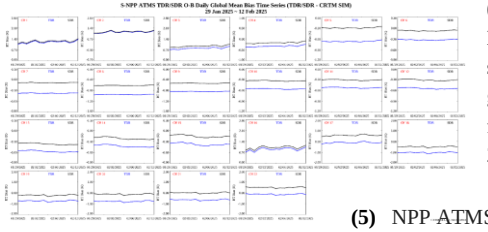
Issues/Risks:

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:

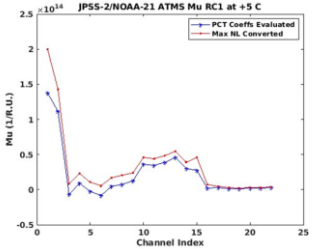


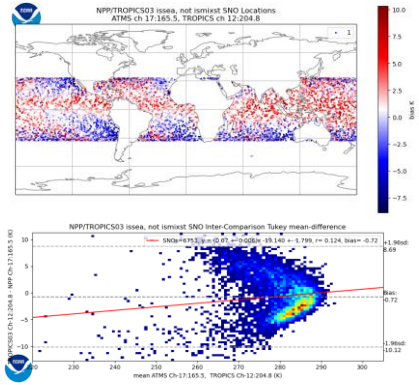
(1) S-NPP ATMS orbital mean beam pointing error comparison before the comp motor anomaly and after the reactivation.



(3) NPP ATMS TDR ECMWF profile CRTM simulation bias daily global mean trending from 1/29/2025 to 2/12/2025

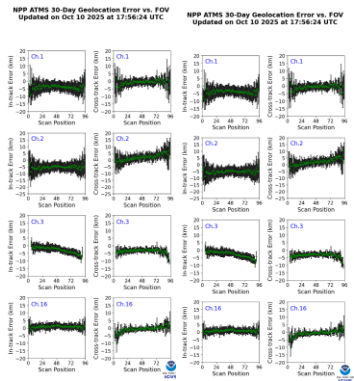
(2) Evaluation of Mu nonlinearity parameter using new contingency method compared to operational NOAA-21 Parameters as a function of channel





(4) SNPP ATMS-TROPICS-3 Global Intercomparison Bias maps and Scene-dependent Bias

(5) NPP ATMS TDR ECMWF profile CRTM simulation bias daily global mean trending from 1/29/2025 to 2/12/2025



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

February 2025

Accomplishments / Events:

- Continued evaluation of the replacement of the Cloud height optical depths and particle sizes as a replacement for the VIIRS Nighttime optical properties algorithm (NCOMP). This is needed as the algorithm developer has retired permanently.
- The CIRA team provided case study input and data quality check results to NESDIS ASSISTT for testing a new standalone version of the CBH algorithm code, and conducted CCL data analysis comparing JPSS VIIRS products (v2r0) collocated with ABI to aid the GOES-19 cloud product maturity review.
- C. White et al. (CIRA) completed a paper on the development of a U-Net machine learning model to emulate nighttime cloud optical properties using IR channels, along with a case evaluation using DNB, which can enhance CBH/CCL at night. (submitted to J. Geophys. Res.)

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:

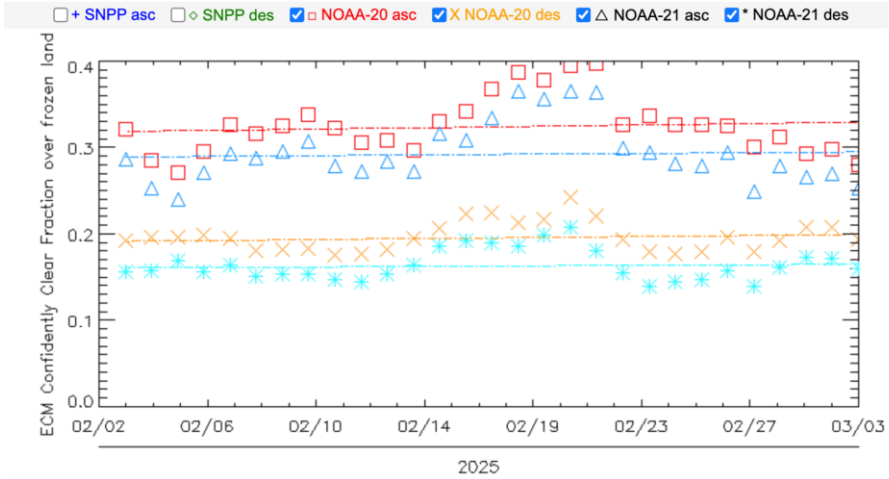


Figure 1.Long term monitoring of the ECM confidently clear fraction.

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

February 2025

Accomplishments / Events:

- Progress was made for the NOAA-21 CrIS elevated noise artifact mitigation effort. The artifact window detection was determined to have dependency on the band, FOV, and sweep directions. All ICT phase differences of the ICT minus its sliding window were extracted for all FOVs and sweep directions. For instance, Figure CrIS-A2 shows the phase difference for LWIR/FOV3 that shows the dependency on the sweep direction. (**Fig. 1**)
- Observed fluctuating NEdN for SWIR FOV2 on NOAA-20 CrIS. There is no cause for concern at this time. (**Fig. 2**)
- An updated survey of the calibration artifacts experienced when exiting eclipse was performed. The two figures below show results, now with two full years of data in place. The artifact is repeatable and predictable throughout the year and is high correlated with the solar zenith angle and solar azimuth angle with respect to spacecraft heading. (**Figs. 3, 4**)
- Presented a collection of observables in S-NPP CrIS correlating with a natural experiment of a 20 hour reactivation of the ATMS compensation motor starting on 2025-02-06 (**Figs. 5, 6**)

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:

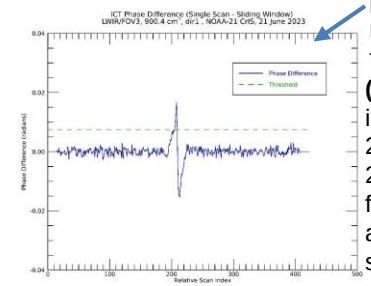
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X	X	X	See Issues/Risks
Schedule			X		See Issues/Risks

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.*

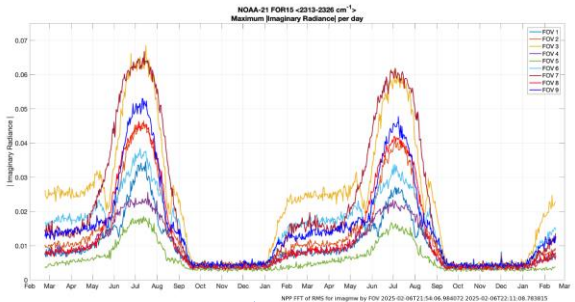
Issues/Risks:

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:

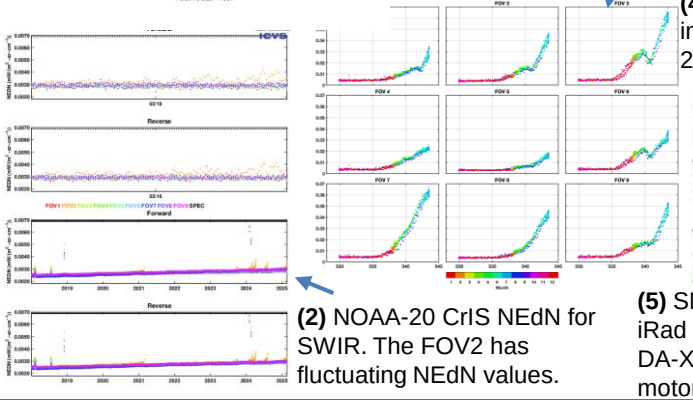


(1) NOAA-21 CrIS phase difference of ICT minus its sliding window for LWIR /FOV3

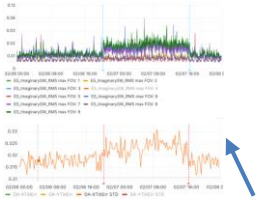


(3) NOAA-21 CrIS maximum imaginary part radiance at 2320 cm-1 per day from Feb 2023 to Feb 2024 as a function of (x-axis) solar azimuth with respect to spacecraft heading.

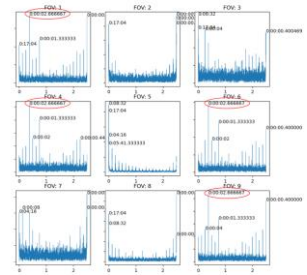
(4) NOAA-21 CrIS max imaginary radiance at 2320 cm-1 per day



(2) NOAA-20 CrIS NEdN for SWIR. The FOV2 has fluctuating NEdN values.



(5) SNPP CrIS max rms SWIR iRad and standard deviation DA-XTiltErr during ATMS comp motor reactivation



(6) SNPP CrIS FFT of rms iRad showing 8/3s signal associated with ATMS

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:

VIIRS Ice Surface Temperature and Thickness Products Detect a Very Large Sea Ice Lead in the Eastern Beaufort Sea: VIIRS sea ice products detected a particularly large lead (a fracture of the sea ice) over the eastern Beaufort Sea on 13 February 2025. This lead extended from near the southern coast of Banks Island northward into the central Arctic northwest of Prince Patrick Island. The lead is roughly 700+ km long and 10-15 km wide (Figure 1). Sea ice leads tend to be under one hundred km in length and under 1 km in width. Therefore, the size of this lead is unusual. Figure 1 shows the VIIRS Ice Surface Temperature (IST) and Ice Thickness (ITK) products over the eastern Beaufort Sea. In Figure 1a, numerous smaller leads are observed to the west of the main feature. The main lead is much warmer than the surrounding ice due to the thinner ice within it, showing temperatures of 255-265 K compared to 235-245 K for the surrounding ice. The ice in the lead is significantly thinner than the surrounding ice, with thicknesses less than 1 m in the lead and thickness of 2-2.5 m elsewhere (Figure 1b). This lead was observed to be at its largest on 13 February, after which it gradually closes over next couple weeks.

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:

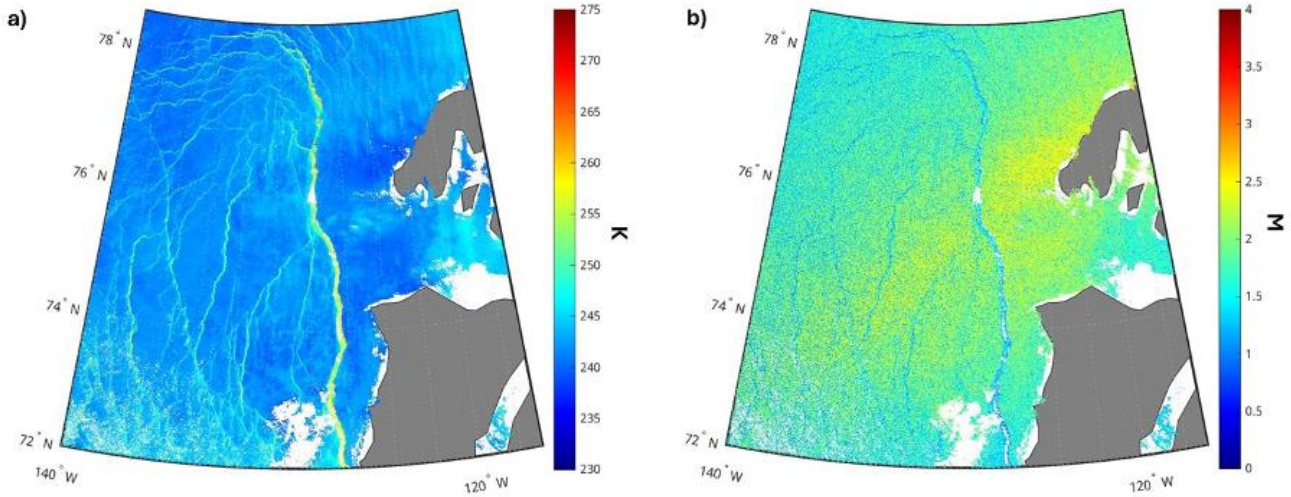


Figure 1: a) IST with 230 to 275 K and b) ITK with 0 to 4 meter range from 13 February 2025. Derived from NOAA-20 VIIRS Enterprise Algorithm.

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

Accomplishments / Events:

- **JPSS VIIRS Winds Quick Guide has been Submitted for NWS-WFO Alaska**: Recently, JPSS VIIRS winds from Direct Broadcast at Fairbanks became available to NWS forecasters at WFO in Alaska through AWIPS, with assist from the Geographic Information Network of Alaska (GINA) at the University of Alaska-Fairbanks. A quick guide tutorial has been submitted this week. This tutorial contains details about the product with examples included. This will be an important resource for forecasters and will assist in weather nearcasting over the Alaskan region.

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:

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

February 2025

Accomplishments / Events:

- The GPROF2017 version of AMSR2 Precipitation product started operational production in NCCF.
- Developed a prototype machine learning-based AMSR2 GPROF Precipitation algorithm
- Updated the NOAA Satellite Precipitation Validation System (NPreciSe) with the GPROF2017 AMSR2 Precipitation product
- Investigating the available radiative transfer models to determine which one to utilize for AMSR3 brightness temperature characterization and calibration

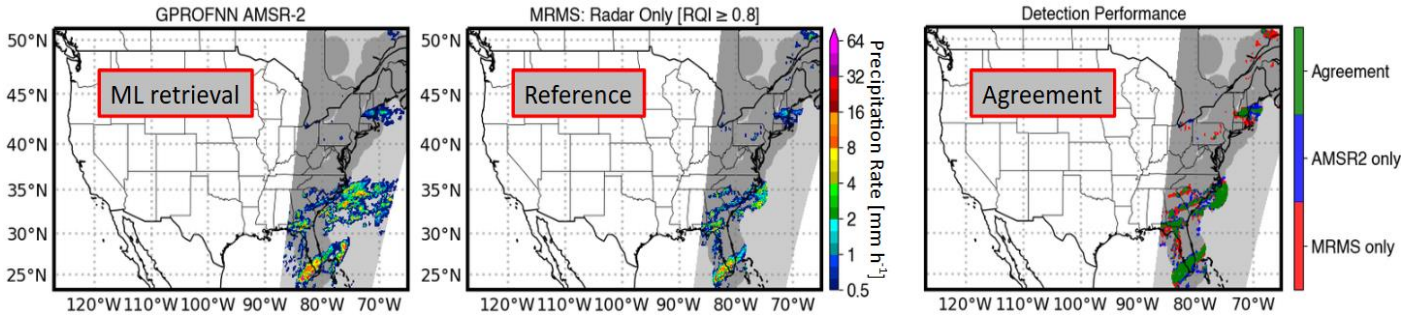
Overall Status:

	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:



Initial testing results of the AMSR-2 machine learning-based GPROF Precipitation algorithm. The validation reference is the MRMS radar rain rate.

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			

GCOM-W/AMSR2 & AMSR3 Sea ice

February 2025

Accomplishments / Events:

- Code for AMSR3 being finalized for initial delivery
- Continued validation and maintenance of operational algorithm
  - 24-hour field, updated with most recent swath
  - Total and multi-year concentration
- Algorithm enhancements in development
  - Software rewritten from C/Fortran into Python
  - Refactored to be more modular
- Validation data collected for further studies
  - Landsat
  - ICESat-2 concentration
  - Mooring data
- Preparation for AMSR3
  - Algorithm modifications for easier intercalibration with AMSR2
  - Testing on AMSR3 proxy data

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

Overall Status:

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

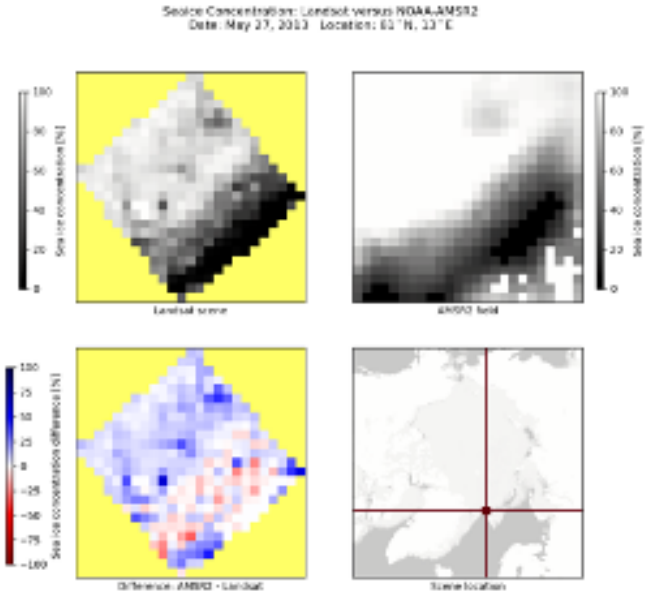
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

Highlights:

Comparisons with Landsat imagery show good agreement within the icepack.

Errors are higher near the ice edge, which is expected due to AMSR sensor resolution and ambiguities in the ice characteristics.



GCOM-W/AMSR2 & AMSR3 Snow

February 2025

Accomplishments / Events:

- **Completed**: Results of AMSR3-GFS study using AMSR2 data as proxies
- **Completed:** Collection of 10-km ECMWF ERA-LAND snow reanalysis dataset and code development to match it with satellite data

- **In-Progress:** Training a new snow depth algorithm using reanalysis snow data
- Testing of the new snow algorithms using in situ snow data
- Transitioning to ASSIST
- **2025-2026 plans:** New generation of SD/SWE algorithms based on a common development and evaluation strategy

Major Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Testing of AMSR2/3 SD and SWE upgrades	**5/2025**			
Incorporation into operational system	**6/2025**			
New generation of algorithms, fist testing	**9/2025**			
AMSR2/3 Deliveries and updates	**6/2025**			

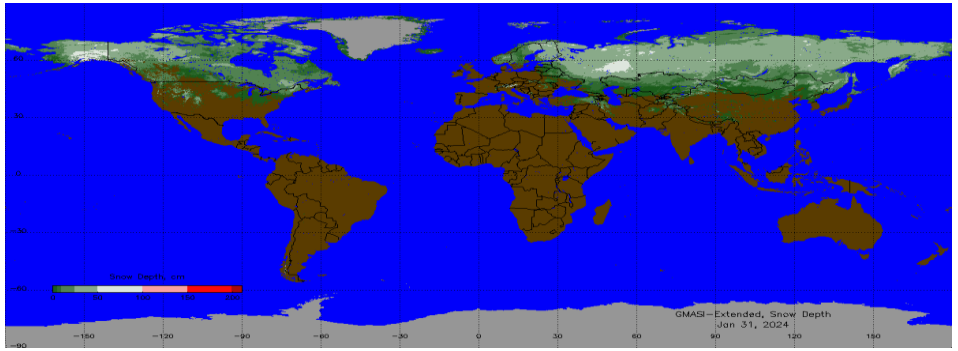
Overall Status:

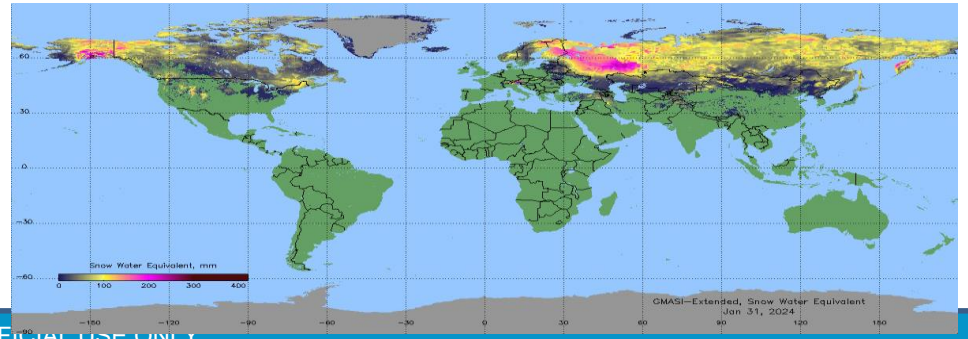
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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:

Highlights:





GCOM-W/AMSR2 & AMSR3 Soil Moisture

February 2025

Accomplishments / Events:

- Migration of GAASP AMSR2 Soil Moisture EDR algorithm software package to the NCCF production environment is in the final stage
  - Currently running in NCCF User Acceptance Testing (UAT) environment
  - Scheduled operational commencement in NCCF: March 26, 2025
  - Product will continue to be archived at NCEI/CLASS
  - Cut-off of NDE on-prem retirement and distribution is scheduled on April 4, 2025
- Development of AMSR2 SM EDR software package using ML algorithm
  - Worked on python modules to generate the output in NetCDF4 format
  - All current Metadata fields in current operational product are preserved
- Development of AMSR3 SM EDR software package using ML algorithm

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Migration of GAASP AMSR2 SM package to NCCF	**3/26/2025**			
NDE on-prem retirement and distribution cut-off	**4/4/2025**			
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**			

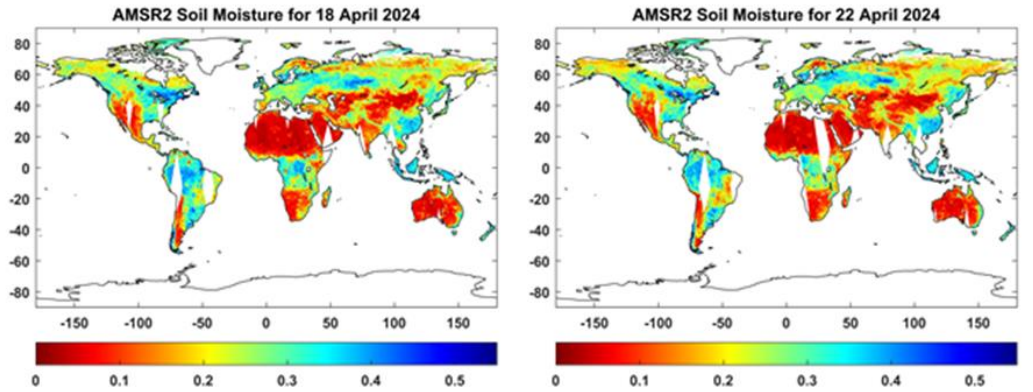
Overall Status:

	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:



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

GCOM-W/AMSR2 & AMSR3

February 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	1/2025	1/2025	
Build an evaluation package to support development of ML-based products; evaluate the need for constructing a new a priori database to support GPROF algorithm.	6/2025			
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	5/2025		
Adapt the AMSR2 sea ice algorithm for AMSR3 with the AMSR3 proxy data	6/2025	6/2025		
Continuing assessment of AMSR2 with in situ measurements and other satellite products	9/2025	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

February 2025

Accomplishments / Events:

- Continue to provide S-NPP ATMS data quality monitoring after a quick safehold switch due to the correction of spacecraft DAS error. Shown in Figure 1 is the NPP ATMS instrument health status quality flag indicating the unintentionally switching of the comp motor from Feb. 6 to 7, 2025. The comp motor req voltage QF is turned off due to the switch. No significant science data quality impact is observed.
- N21 CrIS solar contamination on each descending orbit just before dawn to the over the Southern Hemisphere is increasing. Its impact on spectral radiance is not big enough to see when compared with N20 CrIS. But it already caused the increasing trend of false lunar intrusion flags for the 3rd mission year (Fig. 2).
- Re-analyzed the SNPP OMPS NM DCC QC criteria and plotted DCC distribution for March and April 2021.Analysed the OMPS NM DCC reflectance vs solar zenith angles and relative azimuth angles.
- Worked with the new ICVS team member to take over ICVS VIIRS LTM modules. Fixed the broken interactive dynamic display products of N20/NPP and add NOAA-21 VIIRS dynamic display products.
- In coordination with the OMPS SDR team, started to investigate the feasibility of using OMPS SDR data to improve forecast performance of ozone products using one existing 1dvar algorithm.

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:

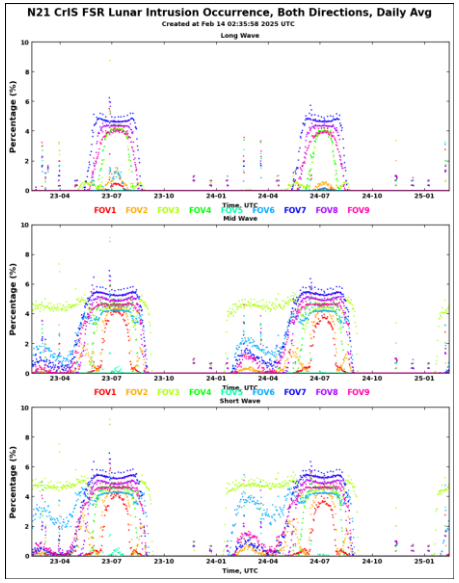
None

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		

Highlights:

Figure 1 NPP ATMS instrument health status QF-9 from Feb. 6 - 8, 2025

Figure 2 the daily averaged lunar intrusion flags of N21 CrIS. Note that most of the events are false flags triggered by the solar contamination at the dawn of each orbit.



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

February 2025

Accomplishments / Events:

- News stories on Iceberg A23A with CIRA VIIRS Imagery
  - BBC News, PBS Terra
- VIIRS Blowing Snow RGB Quick Guide Published
- Bill Line presented for the 2/20 Satellite Book Club - Link
  - Operational Applications of VIIRS Imagery for CONUS Offices
- Blog Posts with VIIRS Imagery
  - Blowing Dust on 11 Feb 2025
  - Hawaiian Winter Storm
- 27 VIIRS Imagery Posts on CIRA Social Media (X) this Month. A few posts:
  - VIIRS Snowmelt RGB Imagery of fresh snow across the northwest US (8.7K views)
  - VIIRS IR Imagery of cold air highlighting topography (7.9K views)
  - VIIRS Day Land Cloud RGB Imagery of Aral Sea reduction (2.9K 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

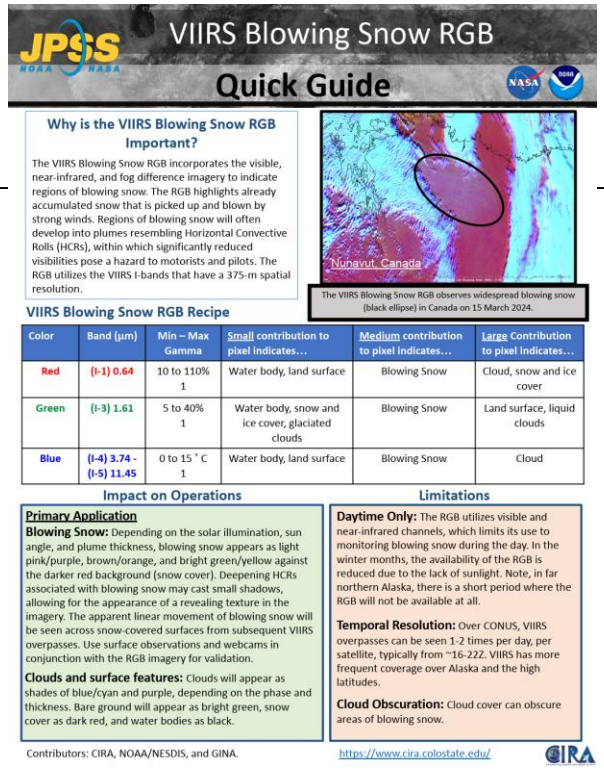


Figure: VIIRS Blowing Snow RGB Quick Guide (page 1/2). The quick guide provides a simple training resource for forecasters to quickly understand product background and best practices for use.

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

February 2025

Accomplishments / Events:

- Continue working on the LAI Operational Readiness, including reviewing key documents such as the ATBD and external user manual. Conduct more extensive verification and validation using operational test datasets.
- Perform an in-depth analysis of NEON site LAI ground measurements, including time series analysis and comparison with climatology. Evaluate site homogeneity using true-color imagery and high-resolution satellite data.
- Work on developing a screening and quality control method for ground data to refine the selection of measurements for improved validation.
- Development of LAI monitoring and validation tools, include routinely collecting and processing ground measurements, and performing spatial and temporal comparisons with climatology to detect anomalies.

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			

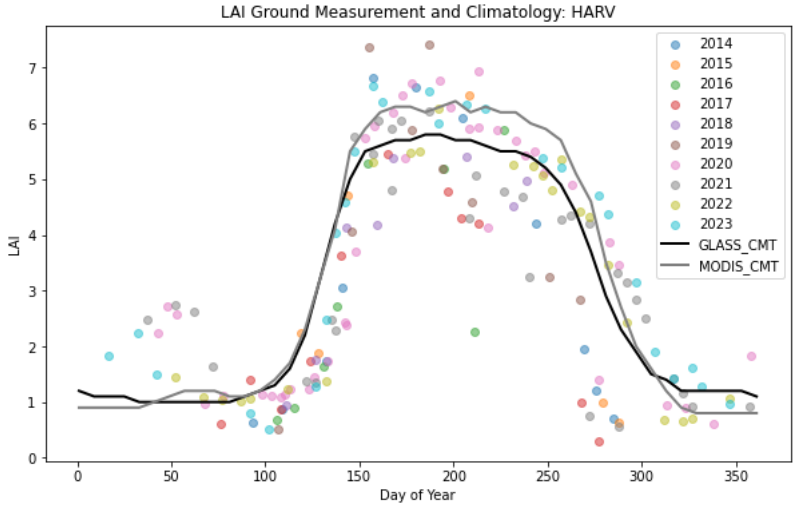
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

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		

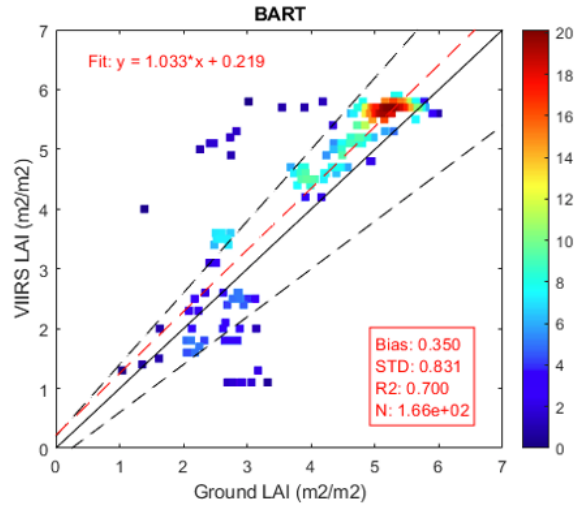
Highlights:

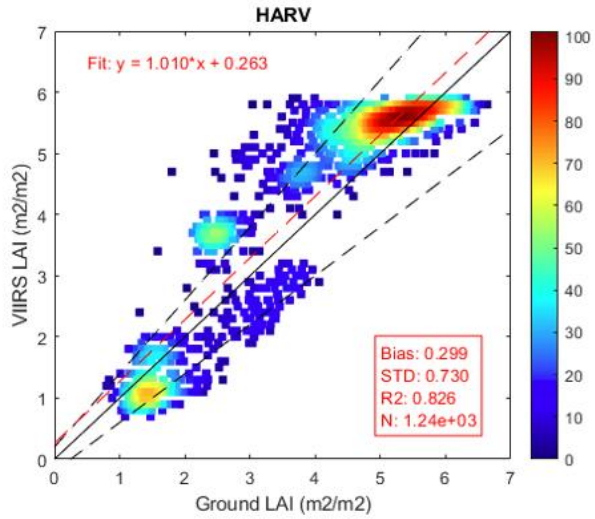


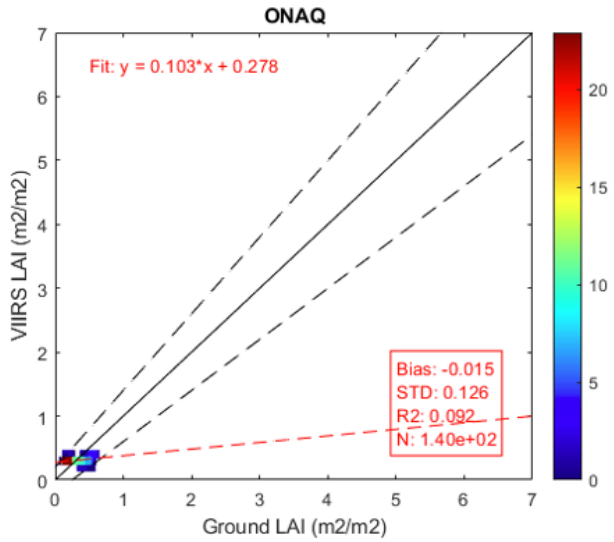
All the LAI ground measurements at Havard forest site since 2014, compared with two climatology data curve derived based GLASS and MODIS, respectively.

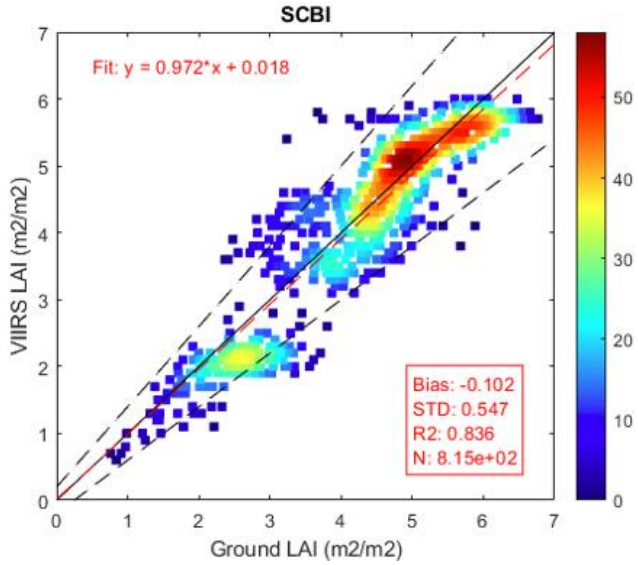
LAI validation for the Operation Readiness

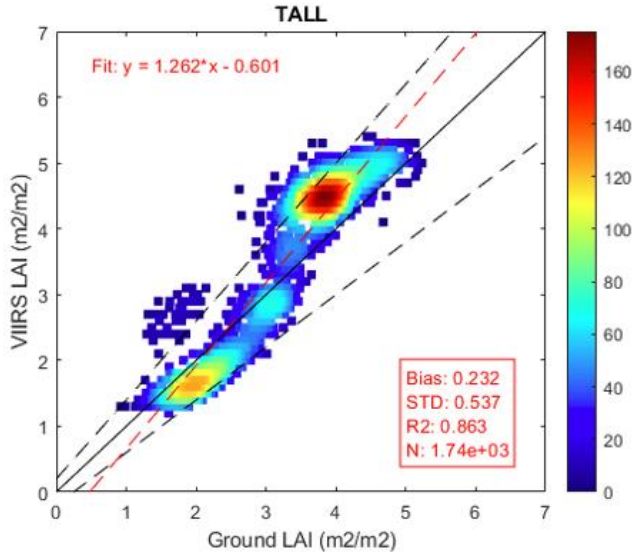
- LAI in-situ validation at some NEON sites. Site homogeneity evaluation and historical data investigation also performed.

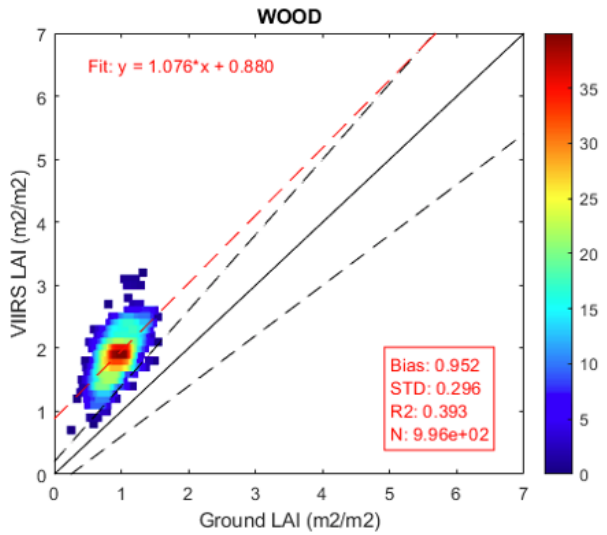






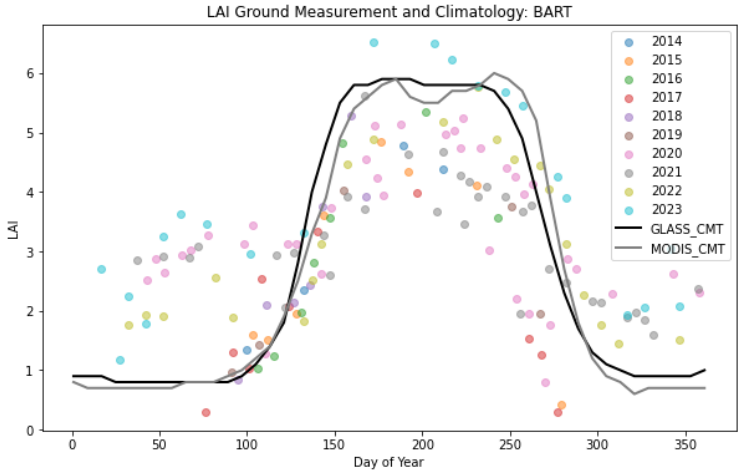


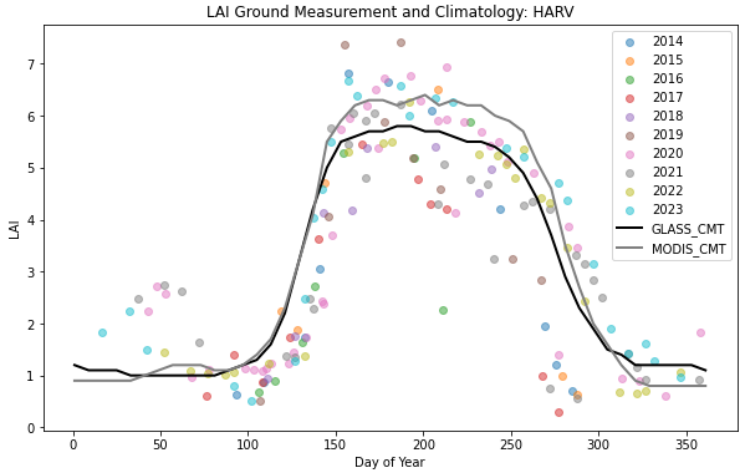


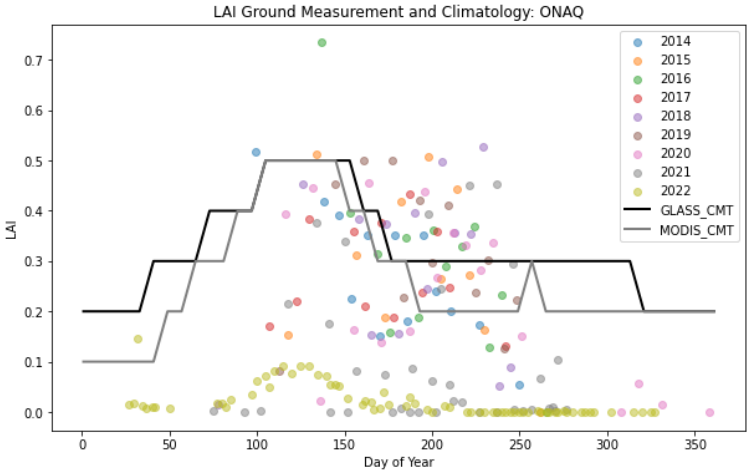


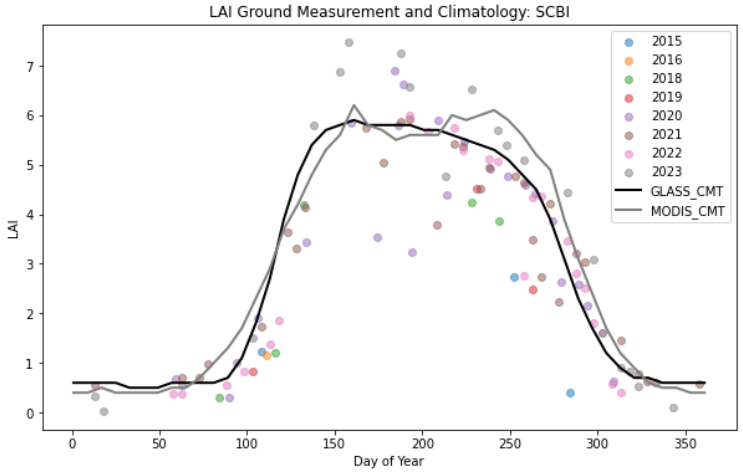
LAI Ground measurements Analysis

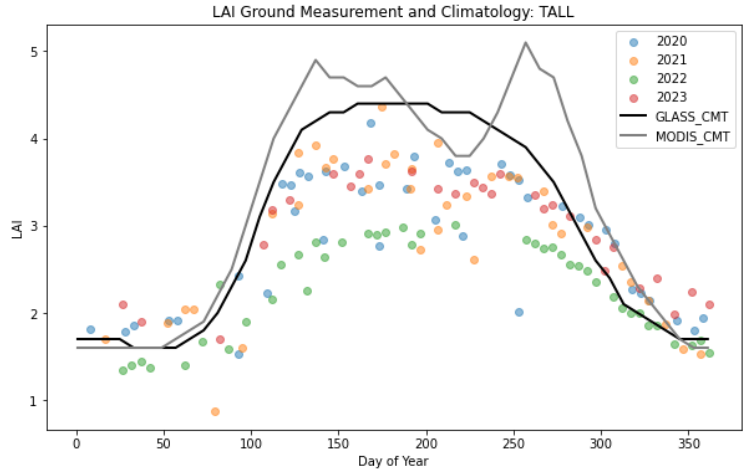
- Historical ground LAI are each NEON site are present along with two climatology datasets.

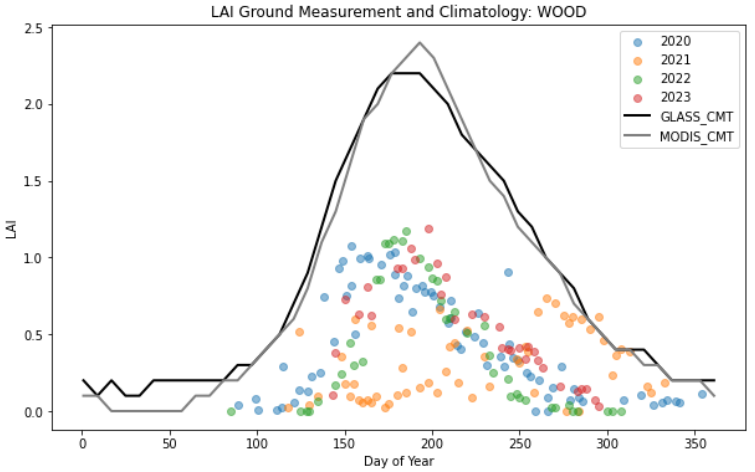












- For the forest sites (BART, HARV, SCBI, TALL), the overall seasonal variation is consistent and long time series data could be used for outlier identification.
- however, satellite data show a positive bias in summer and a negative bias in winter.
- For short vegetation, including shrubland (ONAQ) and grassland (WOOD), satellite-derived LAI is generally higher, requiring further investigation.

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

February 2025

Accomplishments / Events:

- Updated the albedo monitoring images in LTM
  - Change from 5km composite image to L3 product to improve the visualizing continuity in high-latitude regions
- Submitted the FY25 proposal for VIIRS LSA and BRDF in CISESS.
- Kick-off meeting of VIIRS BRDF
  - Revisited the delivered VIIRS BRDF package
  - Attending weekly meeting with ASSISTT
- Research in high-resolution data development techniques

Overall Status:

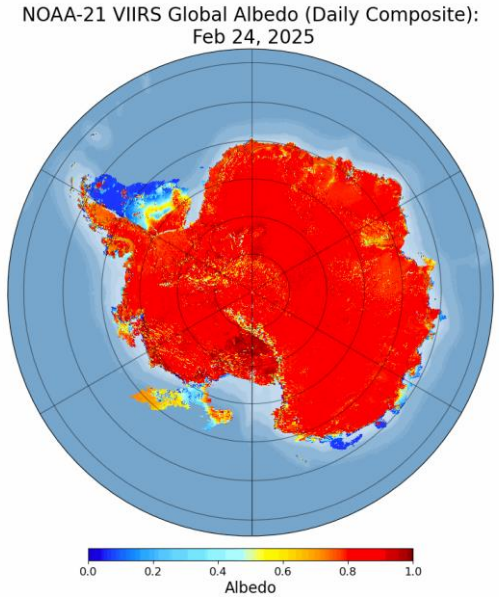
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		x			
Technical / Programmatic		x			
Schedule		x			

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:

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		

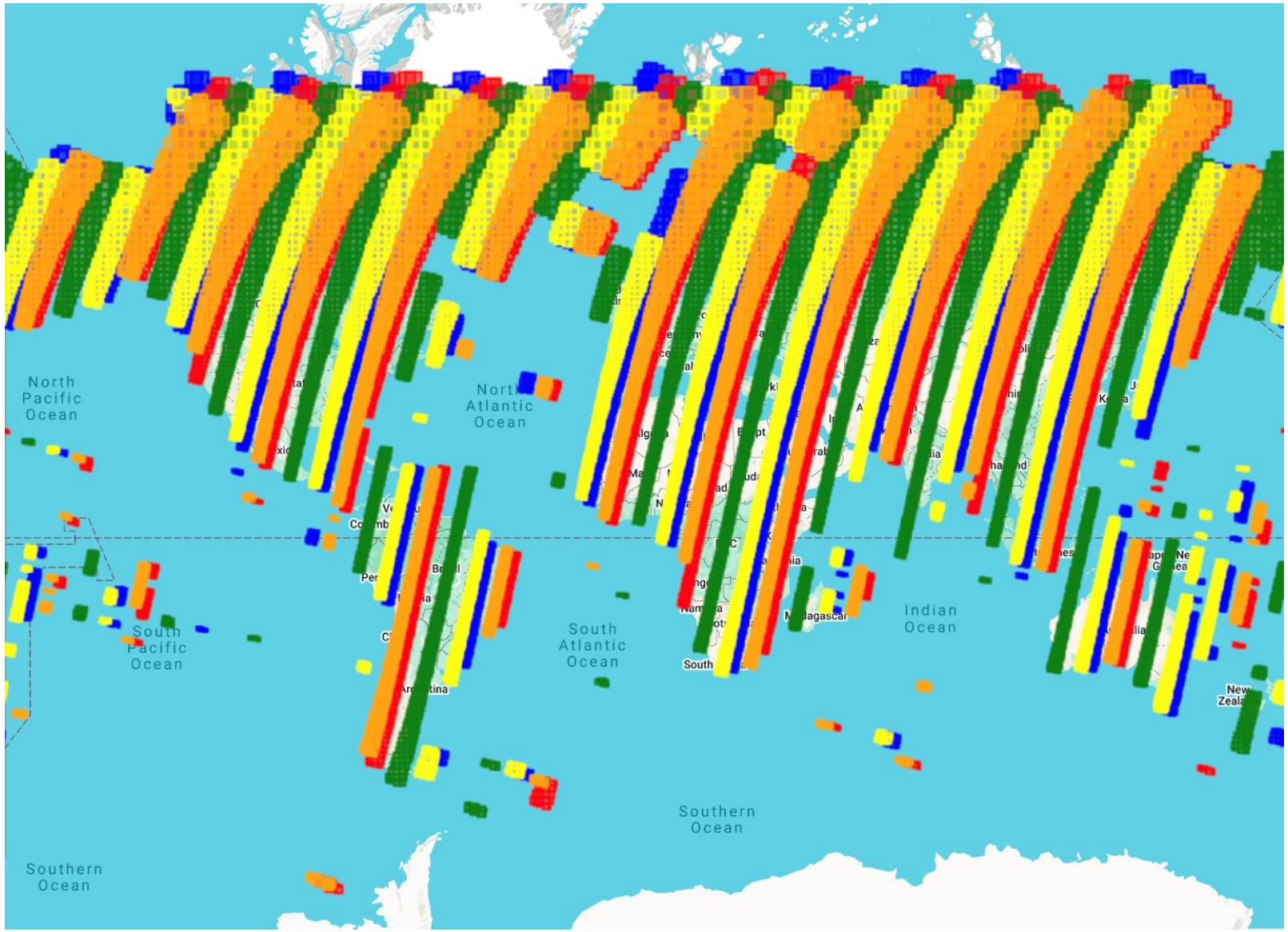
Highlights: Updated albedo monitoring in LTM



The previous version VIIRS LSA visualization was based on 5km composited data in equal lat/lon projection -> significant discontinuity in polar regions

The current version VIIRS LSA visualization is based on 1km L3 in sinusoidal projection -> much better continuity in polar regions

Sentinel-2A Image Coverage over Globe



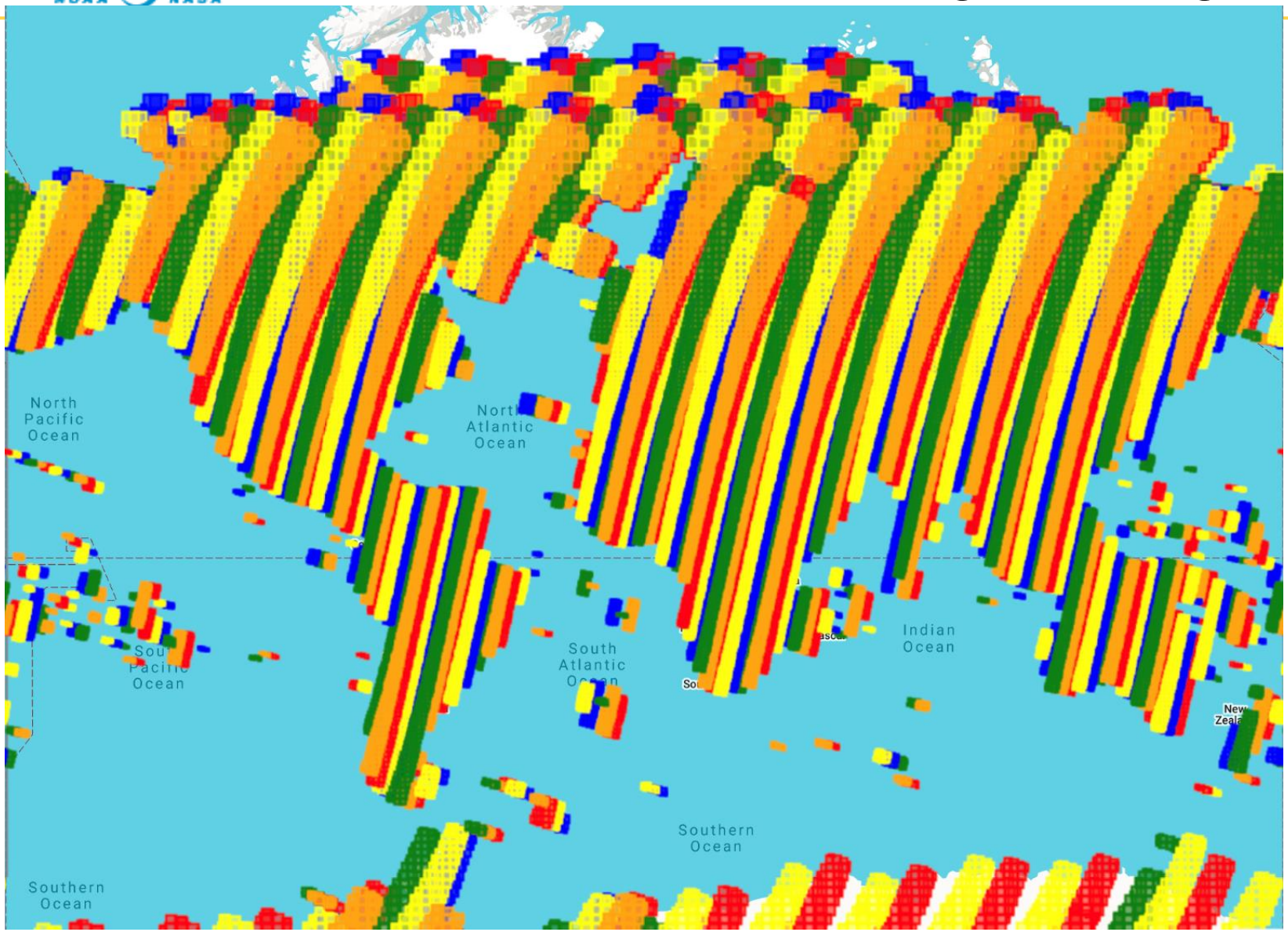
We are exploring ways to enhance product resolution by integrating high-resolution data and investigating land surface disaster detection using such data. This map illustrates Sentinel-2A coverage over a 5-day period, with different colors representing observation on different days:

- Blue (Day 1)
- Red (Day 2)
- Green (Day 3)
- Yellow (Day 4)
- Orange (Day 5)

Sentinel-2A's imagery appears in strip patterns due to its orbital characteristics. With a 5-day revisit cycle, most regions in high northern latitudes are observed at least once within this period.

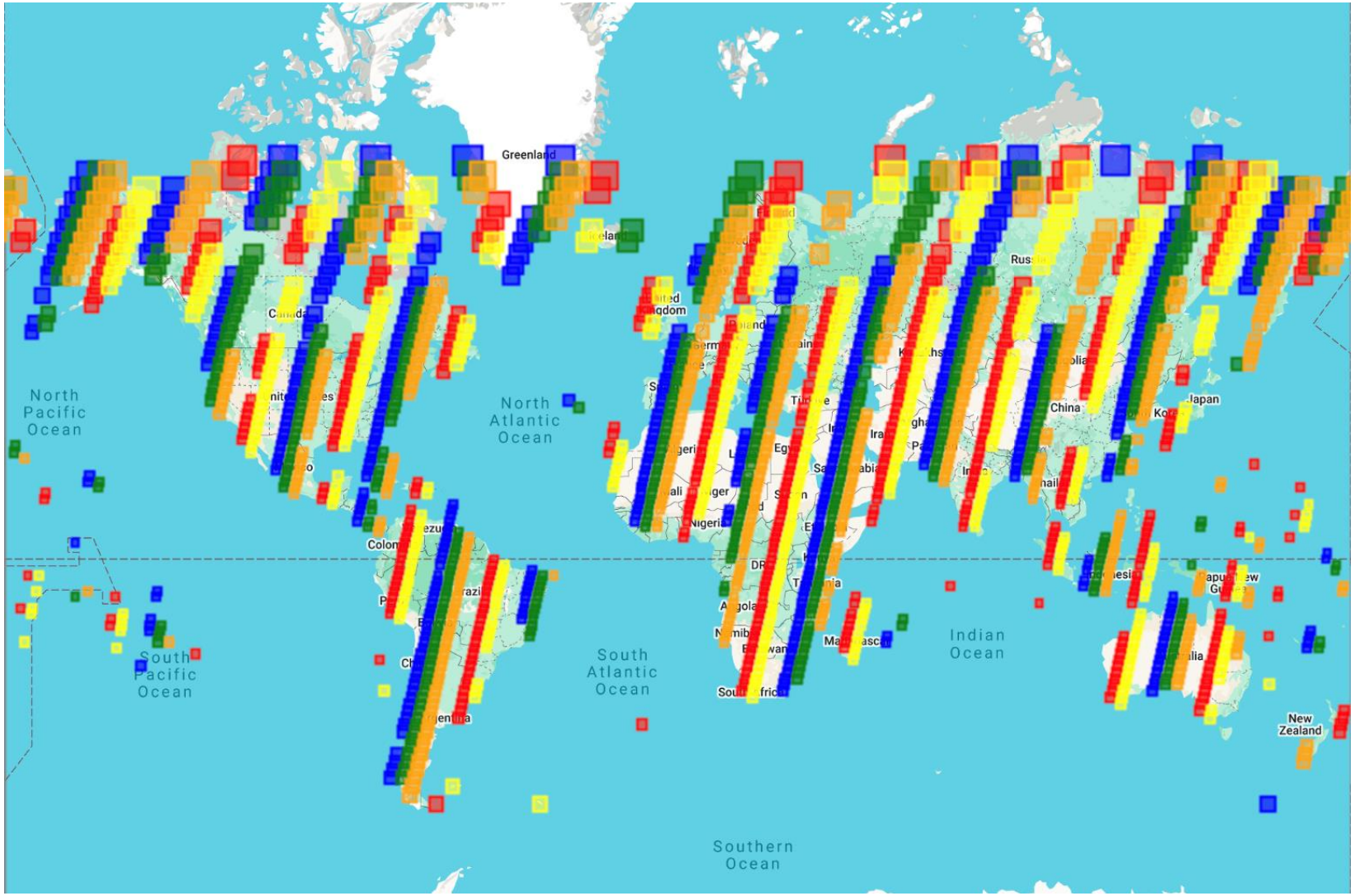
But low-latitude areas still have some gaps, similar to Sentinel-2B. For a single Sentinel satellite, at least 10 days are required for full global coverage.

Sentinel-2A + Sentinel-2B Image Coverage over Globe



This map illustrates the combined coverage overlap of Sentinel-2A and Sentinel-2B over a 5-day period. By integrating data from both satellites, full coverage can also be achieved in low-latitude regions. This information helps guide the arrangement of high-resolution images.

Landsat-9 Image 5-day Coverage over Globe



This map illustrates Landsat-9 coverage over a 5-day period, with different colors representing observation on different days:

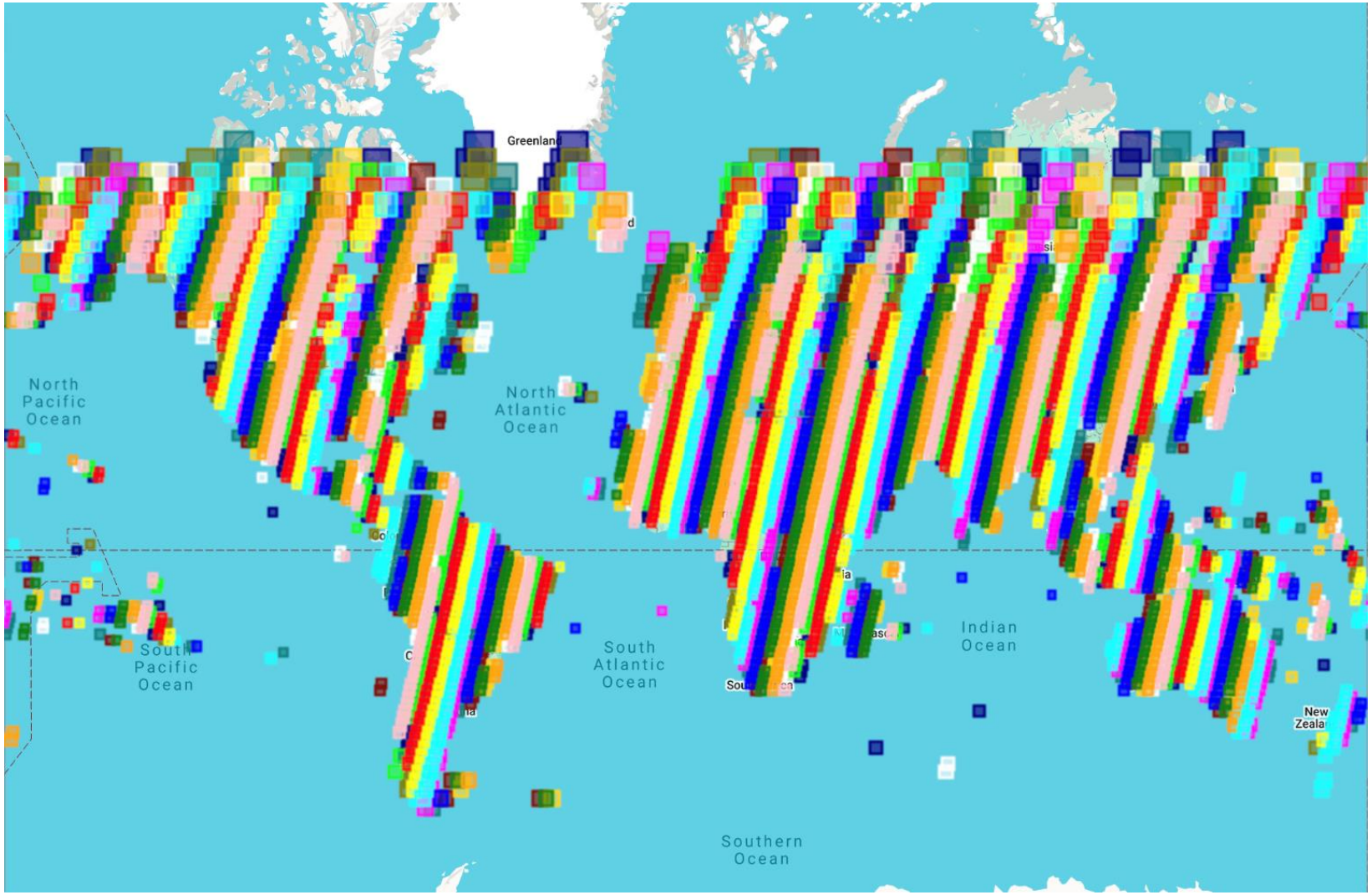
- Blue (Day 1)
- Red (Day 2)
- Green (Day 3)
- Yellow (Day 4)
- Orange (Day 5)

Landsat-8's imagery appears in strip patterns due to its orbital characteristics.

The same situation as Landsat-8.

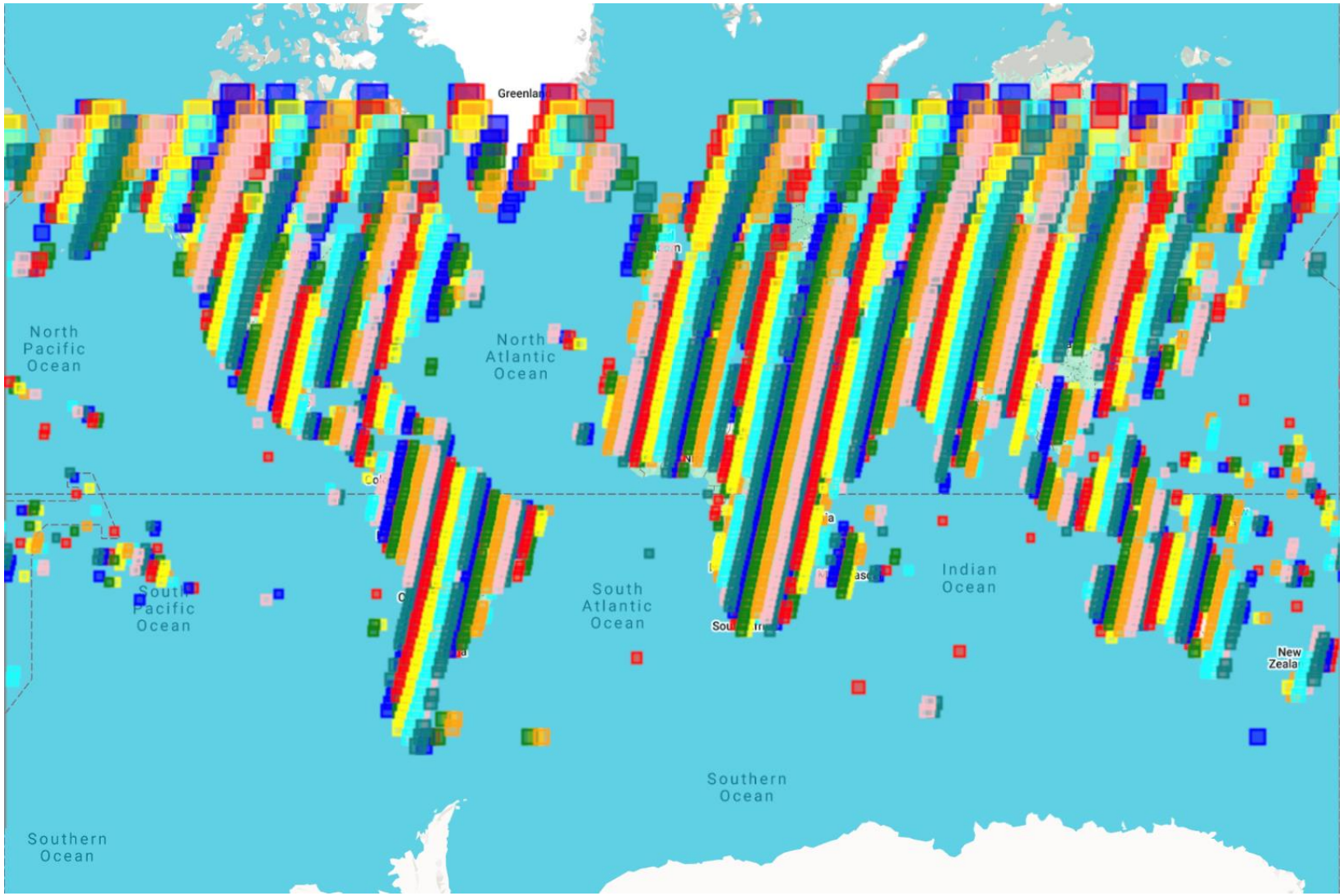
When using Landsat, a longer period is required for global coverage compared to Sentinel.

Landsat-9 Image 16-day Coverage over Globe



- This map illustrates **Landsat-9** coverage over its **16-day revisit period**, with different colors representing observations on different days. Most land surfaces achieve full coverage within this period.

Landsat-8 + Landsat-9 Image Coverage over Globe



This map illustrates the combined coverage overlap of Landsat-8 and Landsat-9 over a 5-day period. Even with data from both satellites, full global coverage is not achieved.

A 5-day period is insufficient for comprehensive Landsat coverage. Rather, a 8-day period is at least for global coverage with combined Landsat-8 and Landsat-9.

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

February 2025

Accomplishments / Events:

- For the all weather LST, we expanded the training database by including twos days of data per month. The training data collection is complete and temporally consistent across the dataset. We have also completed the daily MIRS LST composition as a preprocessing step prior to training. Additionally, the spatial data resampling has been finalized and the training database has been saved in NetCDF format. (Highlights & slide 2-3)
- The L3 VIIRS LST long term monitoring has been updated: conversion of software code from IDL to python; automatic daily L3 LST data collection; ground validation; generation of L3 LST in a regular latlon projection for both global and CONUS domains; and creation of images for global and CONUS L3 LST. Metadata and variable attributes have been added to the regular lat/lon output. The NOAA-21 data has been incorporated into this capability. Furthermore, the software code for sinusoidal L3 LST plot and CONUS LST plot has been updated. (slide 4)
- The software issue in I-band subset data generation has been fixed, and data processing for TPW and I-band LST, impacted by the smcd8 disk issue, has resumed.
- User engagement with soil moisture team and the all weather LST test data and images have been shared.
- Started the VIIRS LST downscaling studies using Landsat data. Learned Machine-to-Machine (M2M) for Landsat data search, filtering and access.
- Completed the CISESS proposal narrative for “JPSS LST Products Cal/Val and All-weather LST development T2O” and “MetOp-SG development, calibration and validation”, as well as “JPSS VIIRS LST maintenance”.

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				

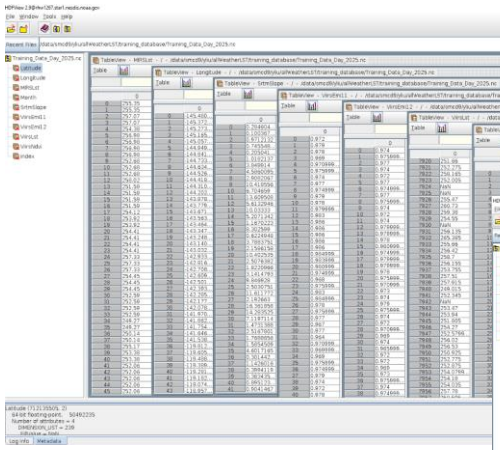
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

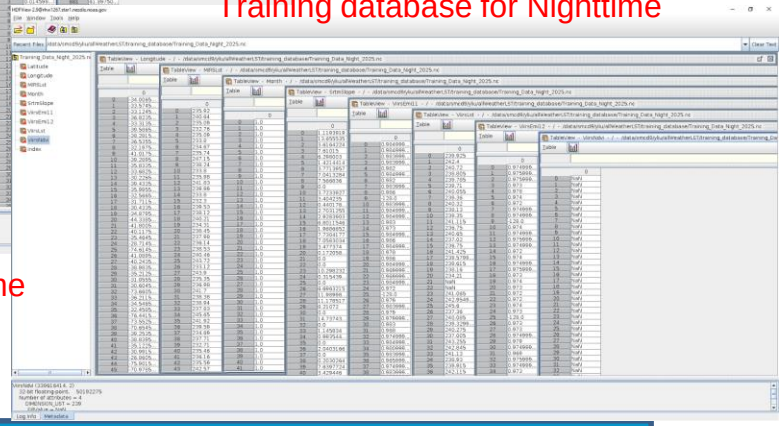
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
N-21 LST data monitoring, consistency and performance evaluation	**Oct-24**	**Dec-24**	**Dec-24**	
L2 & L3 SNPP, NOAA-20 annual validation practice	**Dec-24**	**Jan-25**	**Jan-25**	
Initial Delivery - All weather LST	**Sep-24**	**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 Training Database: Expansion

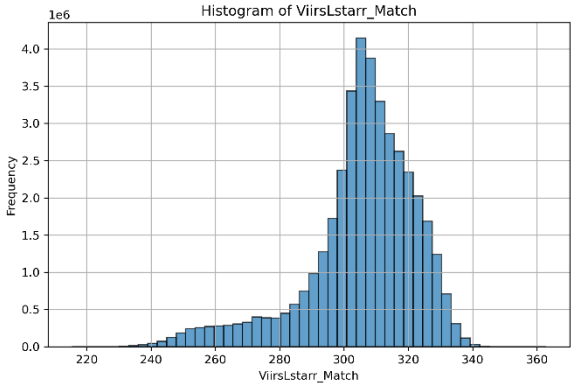


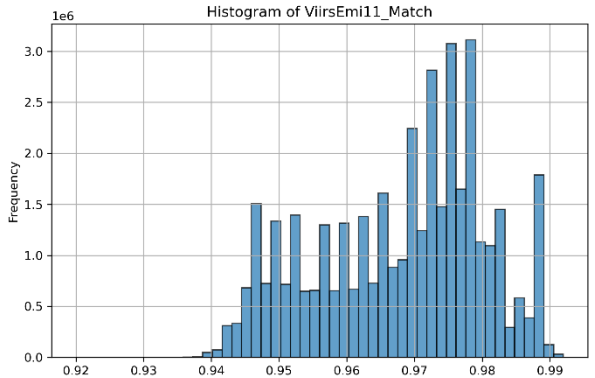
Training database for Daytime

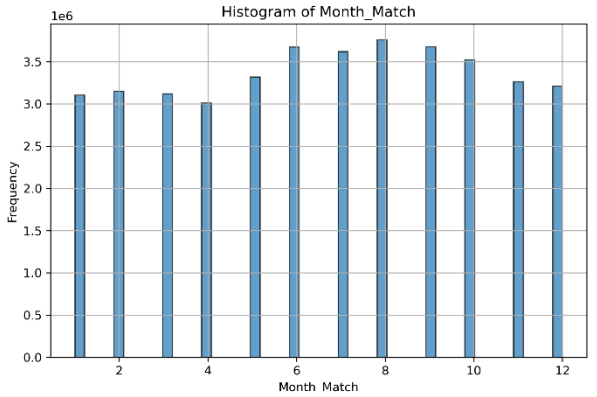
Training database for Nighttime

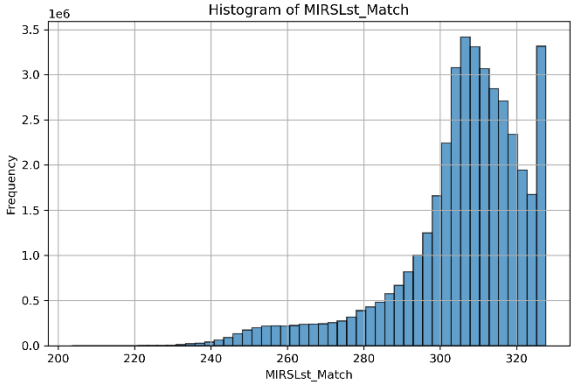


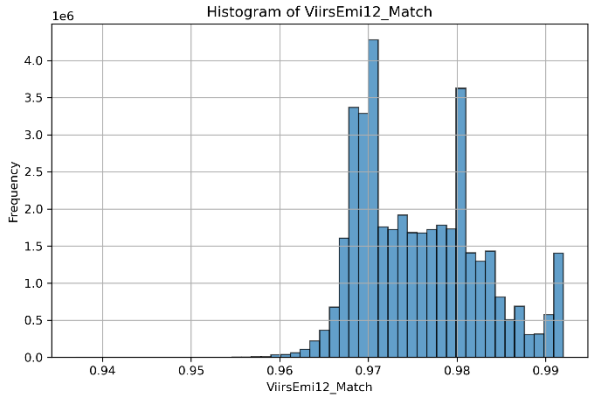
All-weather LST Training Data Expansion-Daytime

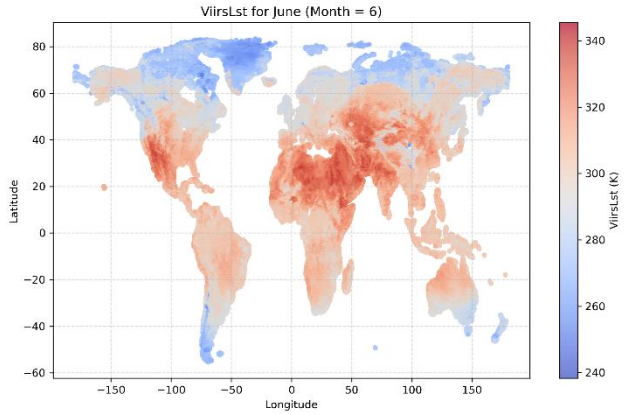


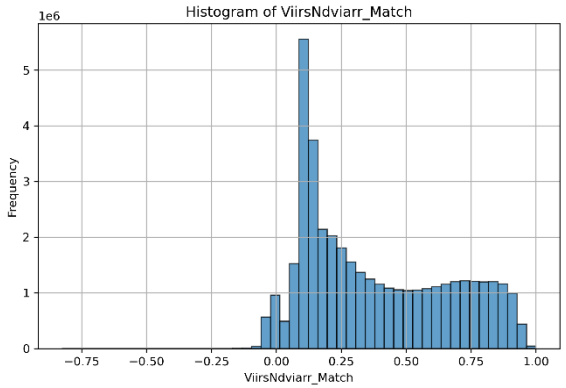


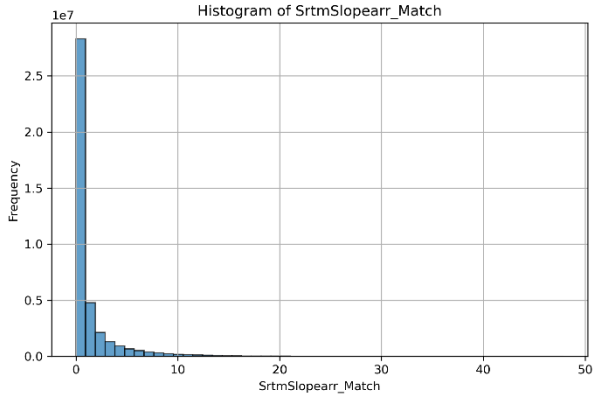








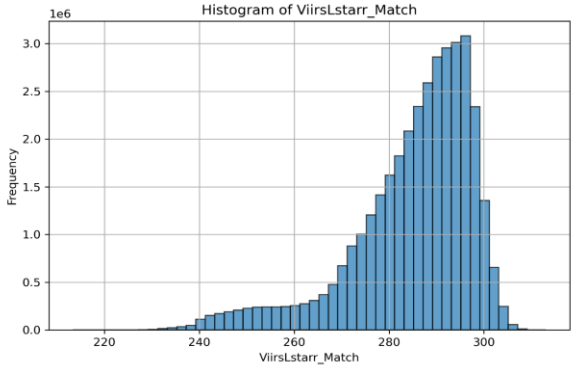


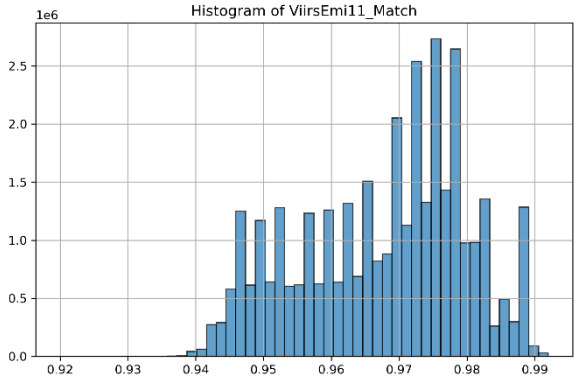


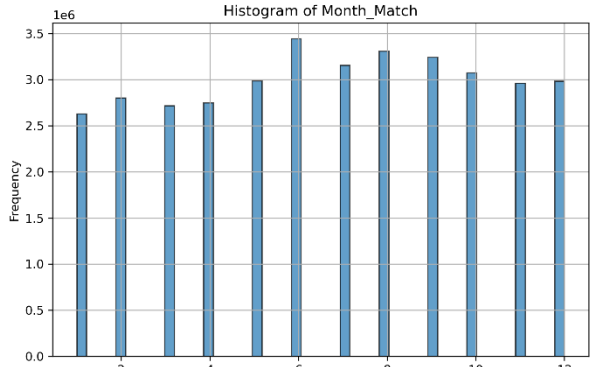
- The training data for all-weather LST development is expanded by selecting twos day per month, ensuring spatial and temporal alignment across the dataset.
- The histogram presents the variable distribution and value range, showing that they fall within a reasonable range except for MIRS LST which has a upper limit of 327.7 K. The issue has been reported to the MIRS team. The LST map distribution also demonstrates a reasonable spatial pattern.

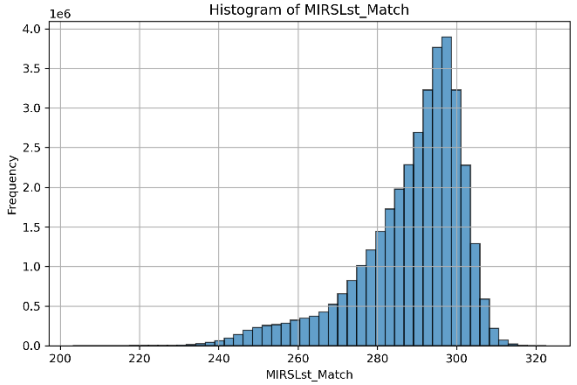
This slide presents daytime data training. The total sample is approximately 5000,0000. The variables include VIIRS LST(top left), MIRS LST(middle left), NDVI(bottom left), Emissivity at 11 micron (top middle), Emissivity at 12 micron(middle), slope(bottom middle), month(top right) and the VIIRS LST map for June (bottom right)

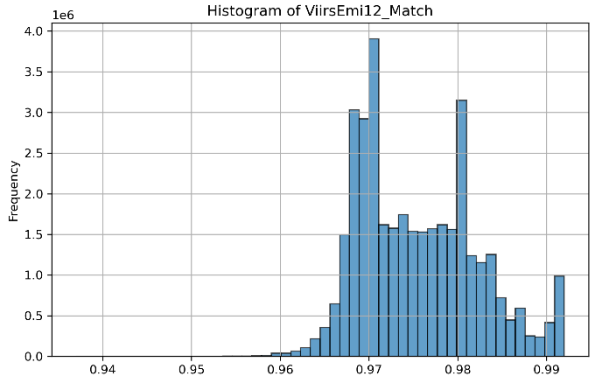
All-weather LST Training Data Expansion-Nighttime

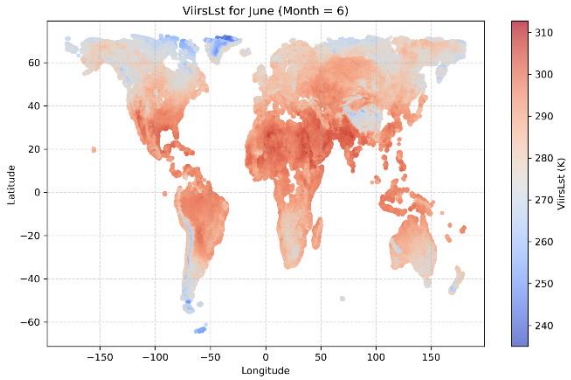


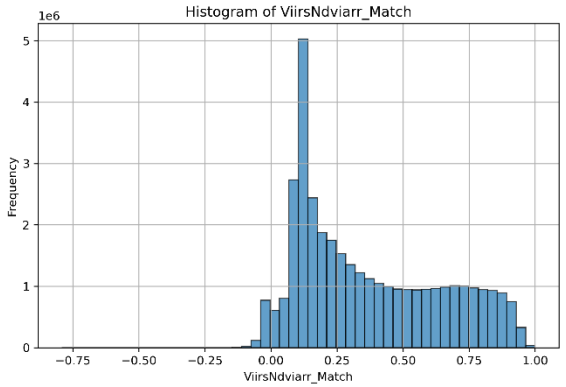


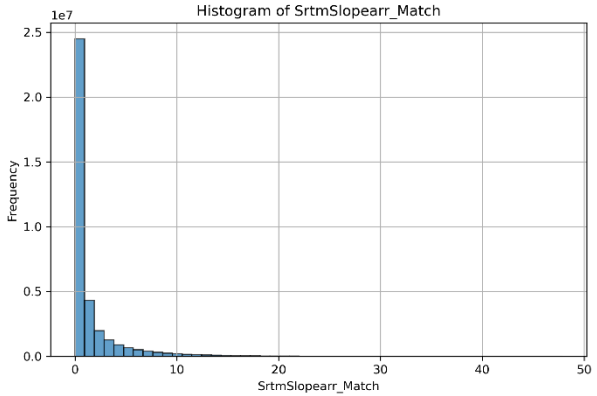








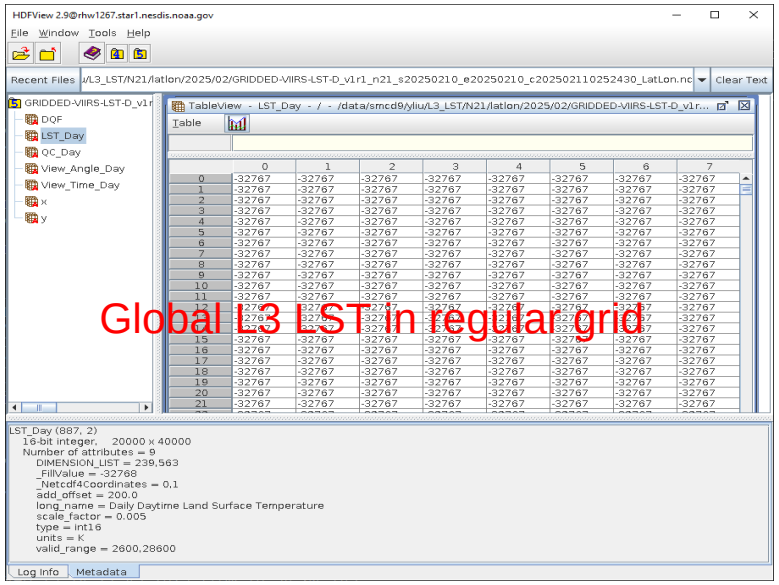




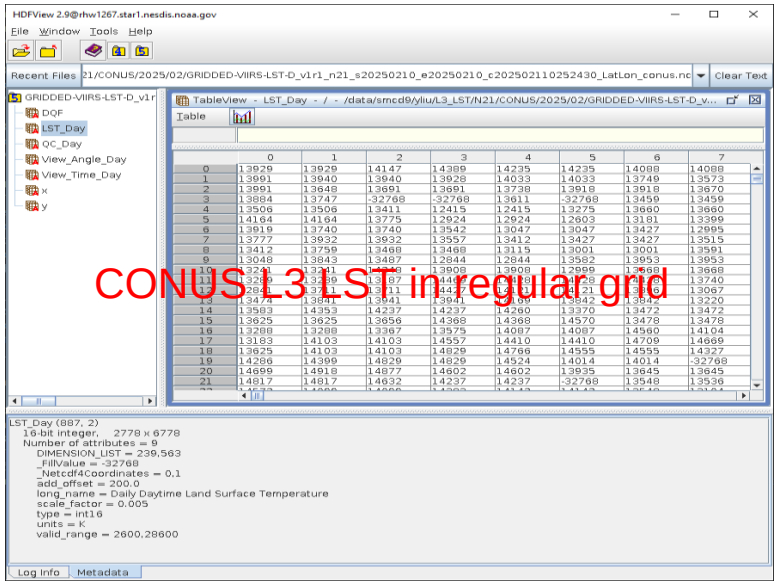
- The training data for all-weather LST development is expanded by selecting twos day per month, ensuring spatial and temporal alignment across the dataset.
- The histogram presents the variable distribution and value range, showing that they fall within a reasonable range. The LST map distribution also demonstrates a reasonable spatial pattern.

This slide presents nighttime data training. The total sample is approximately 5000,0000. The variables include VIIRS LST(top left), MIRS LST(middle left), NDVI(bottom left), Emissivity at 11 micron (top middle), Emissivity at 12 micron(middle), slope(bottom middle), month(top right) and the VIIRS LST map for June (bottom right)

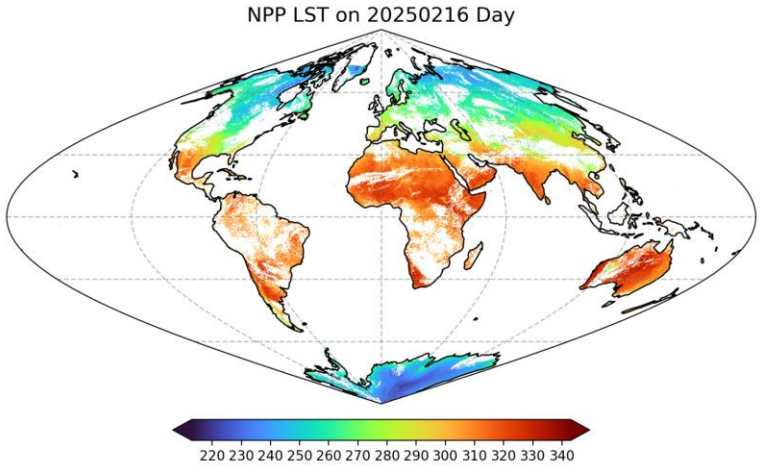
Update of L3 VIIRS LST Long Term Monitoring



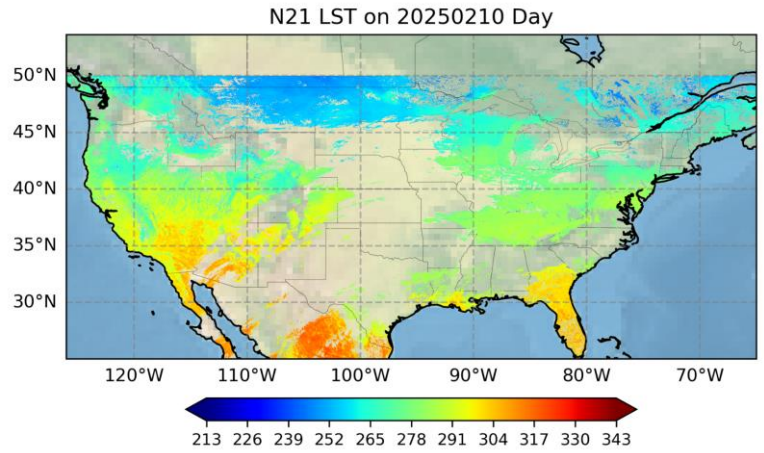
Global L3 LST in regular grid



CONUS L3 LST in regular grid



Global L3 LST Image



CONUS L3 LST Image

Global L3 LST Ground Validation

/data/data329/pub/yliu/GriddedLST/groundVal/N21_VIIRS/SURFRAD/

Name	Size	Changed
..		7/11/2023 10:54:28 AM
output		2/7/2025 9:56:03 AM
N21_VIIRS_L3_val_ground_SURFRAD_TBL.dat	28 KB	2/12/2025 11:00:21 AM
log_2025.txt	12 KB	2/12/2025 11:00:21 AM
N21_VIIRS_L3_val_ground_SURFRAD_PSU.dat	17 KB	2/11/2025 11:09:23 AM
N21_VIIRS_L3_val_ground_SURFRAD_BON.dat	22 KB	2/11/2025 11:09:22 AM
N21_VIIRS_L3_val_ground_SURFRAD_DRA.dat	38 KB	2/11/2025 11:09:21 AM
N21_VIIRS_L3_val_ground_SURFRAD_SXF.dat	25 KB	2/11/2025 11:09:19 AM
N21_VIIRS_L3_val_ground_SURFRAD_FPK.dat	22 KB	2/11/2025 11:09:19 AM

- The L3 VIIRS LST LTM has been updated, and NOAA-21 LST has been included in this capacity. The tool runs on a daily basis.
- The software code is switched from IDL to Python.
- The L3 LST in a regular lat/lon projection is generated for both global and CONUS domains, with metadata and variable attributes added.
- Daily global and CONUS L3 LST images has been generated using an improved plotting function.
- Ground validation with SURFRAD, ARM and BSRN is automatically conducted.

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

February 2025

Accomplishments / Events:

- The MiRS team continues 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. Most recent work has focused on evaluating the utility of including surface pressure (Psfc) as an input feature to the U-Net. The highlight figures show results for instantaneous precipitation on 03 October 2021, and compare the EURADCLIM reference, original U-Net prediction, and U-Net prediction when Psfc is added as an input feature. It can be seen that the U-Net estimates when Psfc is included more closely match the ground reference data. This significant improvement means that further research will include Psfc as an option to determine if this improvement is generally seen in other cases and other regions.

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				

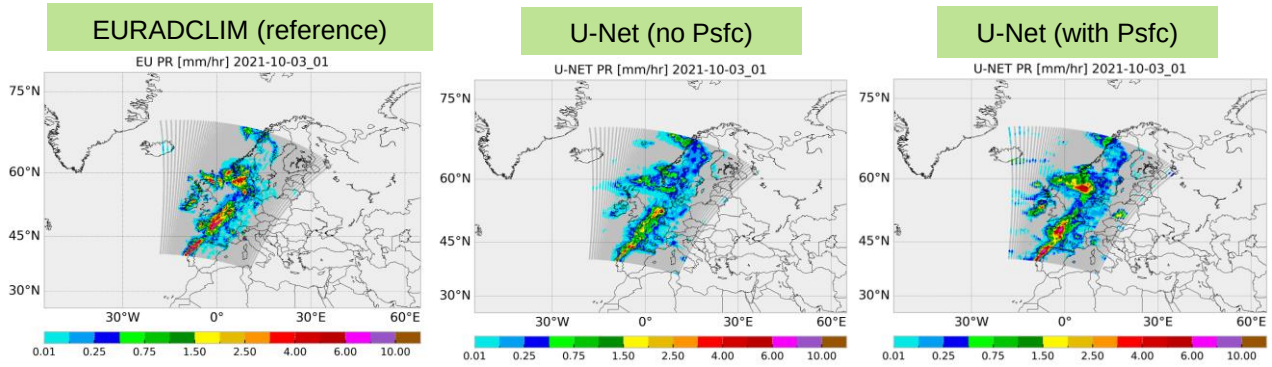
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

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 (left) with U-Net machine learning model estimate without Psfc (center) and U-Net model estimate with Psfc as an input feature (right). U-Net retrievals are from SNPP ATMS. Data are valid on 2021-10-03.

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

Feb. 2025

Accomplishments / Events:

- Completed February monthly updates and delivery of MLT-SDR Products to NCEI
- Continued working on the ATBD and code to integrate the S-NPP and N20 ATMS measurements into the FSDR data products.
- Continued working on Sudden stratospheric warming (SSW) study and kept monitoring recent SSW event using reprocessed ATMS/AMSU-A FSDR data products. Figure 1 shows anomaly time series of daily mean brightness temperature of S-NPP ATMS channel 13 and Aqua AMSU-A channel 12 from July 2024 to present, showing the ongoing stratosphere warming in 2025.

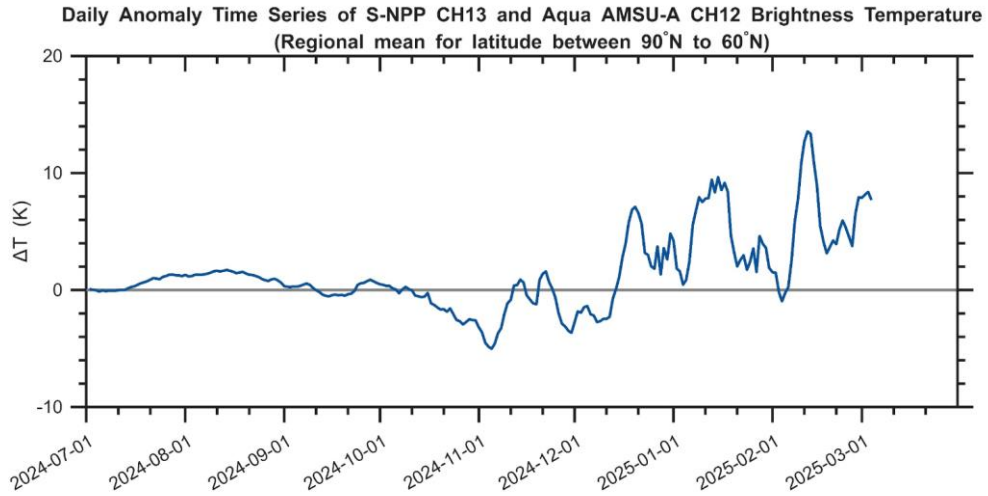


Figure 1. Anomaly time series of daily mean brightness temperature of S-NPP ATMS channel 13 and Aqua AMSU-A channel 12, showing the ongoing stratosphere warming in 2025.

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 reprocessed SDR 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

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

February 2025

Accomplishments / Events:

- JSTAR Mapper/STEMS staff achieved significant improvements in the harmonization of the sounding image (temperature and h20 vapor) tiles for MiRS and NUCAPS and are currently under final review in preparation for input into the operational JSTAR Mapper and work continues with the Ozone (OMPS) team to improve the presentation of NOAA-21 products which have more noise due to their higher resolution

- Work was initiated with the NOAA Financial Management Branch to procure and transfer FY25 funding for the JPSS Dedicated Radiosonde Program to the Department of Energy (DOE) Atmospheric Radiance Monitoring (ARM) Program as stipulated under the existing Memorandum of Understanding (MOU)

- NPROVS staff resolved inconsistencies in vertical assessment of (Satellite – Radiosonde) H20 Vapor Mixing Ratio (WVMR) bias using the Profile Display (PDISP) versus NPROVS Archive Summary (NARCS) graphical applications which were rooted in the use of WVMR values (non-linear) instead of Dewpoint Temperature (Tdew, linear) when interpolating radiosonde data to the standard satellite levels in NARCS; PDISP interpolates Tdew. **(HIGHLIGHT)**

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			

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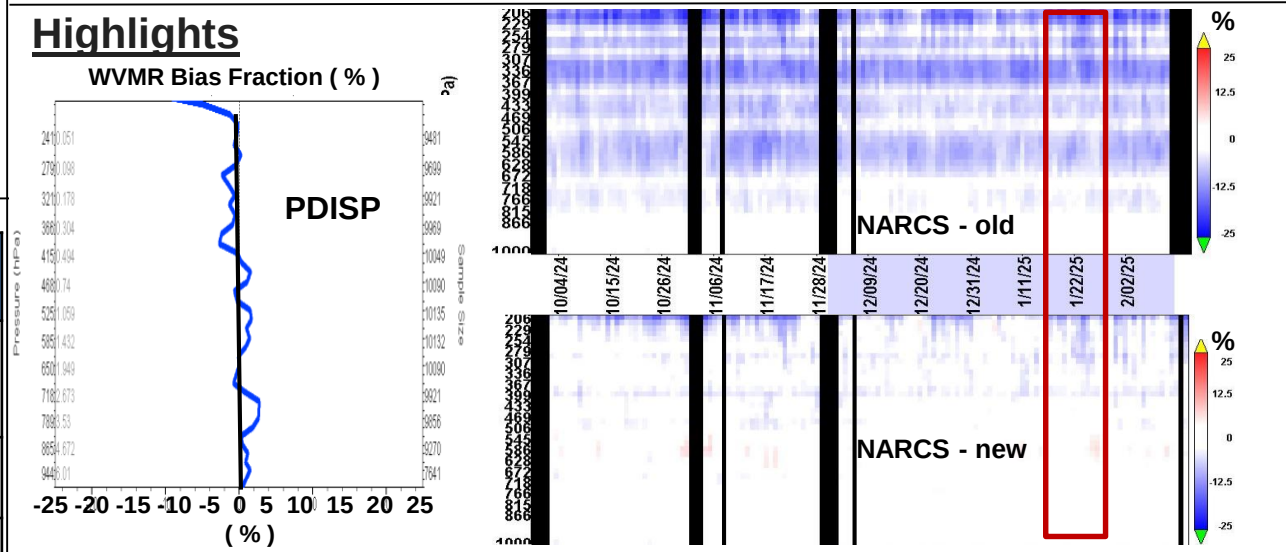
Issues/Risks: None

Highlights



The NPROVS team resolved an inconsistency between ECMWF-Radiosonde statistical assessments of H20 vapor mixing ratio (WVMR) Bias Fraction (%) provided by the **NPROVS Profile Display (PDISP, left)** versus the **Archive Summary System (NARCS, right)** graphical assessment applications. As can be seen, the left panel shows vertical statistics of WVMR fraction (%) bias of approximately 0 (x-axis) from the surface to 200 hPa (y-axis); the time period is 12/17-25/2024. The right panels show NARCS WVMR fraction time series from October 2024 through early February 2025; the boxed period corresponds to the PDISP period. As can be seen, lower right panel (NARCS, new) and PDISP agree, the upper right panel (NARCS, old) shows regions of dry bias (blue). The NARCS colors scales and the x-axis for PDISP are identical (+/- 25%) as are the vertical y-axis (surface to 200 hPa). The new approach was implemented into NPROVS. *See Accomplishment Section for the root cause*.

NUCAPS Products

February, 2025

Accomplishments / Events

- Continued validation and sustainment activities for the NUCAPS EDR products. These include generating VALAR datasets and processing GRUAN RAOBs (AVTP, AVMP), trace gases (CO, CO_2, and CH_4) validations with TCCON measurements, and collection and processing of validation datasets for O_3 and OLR.
- Helped to resolve issues of JSTAR Mapper depictions of NUCAPS EDR products. Suggested necessary fixes to the JSTAR mapper team. Supported the verification of JSTAR Mapper product maps with the offline product depictions. Implementation of the suggested fixes resulted in proper depiction of AVTP, AVMP maps on the JSTAR website.
- Continued the AWS trial of cloud-based NUCAPS product reprocessing. Verified AWS generated NOAA-20 and NOAA-21 focus day products with the offline runs to ensure product integrity. Updated the AWS reprocessing python script to generate SNPP NUCAPS products. Updated S-NPP namelists for the S-NPP AWS runs and verified sample focus day runs to ensure product integrity. Currently setting up SDRs and GFS files required to produce a large set of NUCAPS products for a pilot study on the AWS cloud environment.
- Continued NUCAPS preprocessor and the retrieval system augmentation and testing with the EUMETSAT synthetic data for EPS-SG, IASI-NG/MWS.
- Submitted two abstracts for the EUMETSAT-2025 conference.

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	April, 2025	Testing of the preprocessor updates and the MWS retrieval are ongoing
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 progress

Overall Status:

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

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

NOAA-20/21 NUCAPS CO, CH_4, and CO_2 product validations with TCCON measurements.

Figure 1. Scatterplots of trace gas concentrations of NOAA-20 NUCAPS_V3.2 retrievals with TCCON measurements; the correlation coefficients for the 3 gases are: R_{CO} = 0.87, R_{CH4} = 0.71, and R_{CO2} = 0.83.

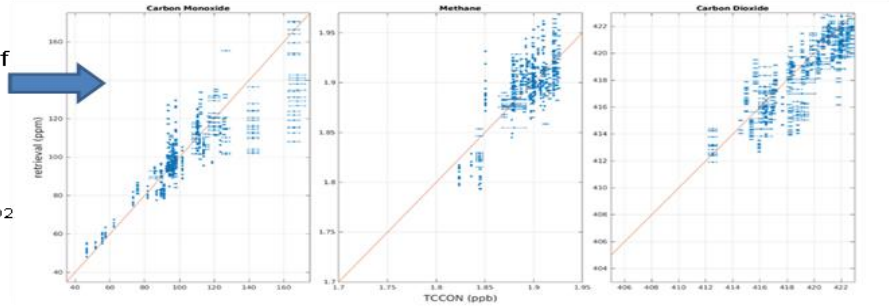
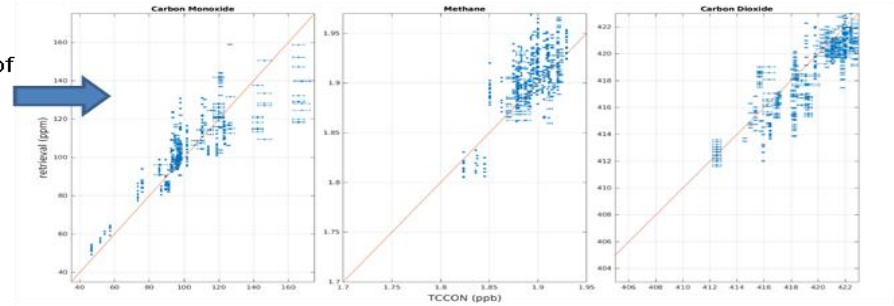


Figure 2. Scatterplots of trace gas concentrations of NOAA-21/NUCAPS_V3.2 retrievals with TCCON measurements; the correlation coefficients for the 3 gases are: RCO = 0.85, RCH4 = 0.61, and RCO2 = 0.84.



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

Accomplishments / Events:

- Published a paper (VIIRS data are significantly improved): Mikelsons, K. and M. Wang, "Characterization and removal of striping artifacts in VIIRS-derived ocean color products," *Opt. Express*, 33, 5382–5395, 2025. https://doi.org/10.1364/OE.542177.
- Continue working on VIIRS-SNPP 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 Ozone (V8Pro, V2Limb & V8TOz)

February 2025

Major Accomplishments / Last Month:

- Experimented with V2Limb processing – improving ancillary temperature file selection and verified single granule processing mode for NOAA-21.
- Provided weekly Limb Table deliveries for Orbital Definition, Wavelength Monitoring and Dark Current tables for NPP and N21.
- Provided sample V2Limb input and ancillary data for LTOAST testing.
- Provided monthly updates of overpass comparisons with ground-based assets.
- Created new soft calibration adjustments for V8Pro with the reprocessed NPP OMPS SDRs using 2012 overlap with the NOAA-19 SBUV/2 record.
- Provided feedback to and consultation with ASSISTT on V8Pro EDR content and code for final move to NCCF operations..
- Provided updates to the FY24 V8Pro, V2Limb and V8TOz/V8TOS project plans to OCS. Provided RDE Entries to STAR for FY25 project plans.
- Prepared “Lessons Learned” talk with OMPS examples for GeoXO Summit.

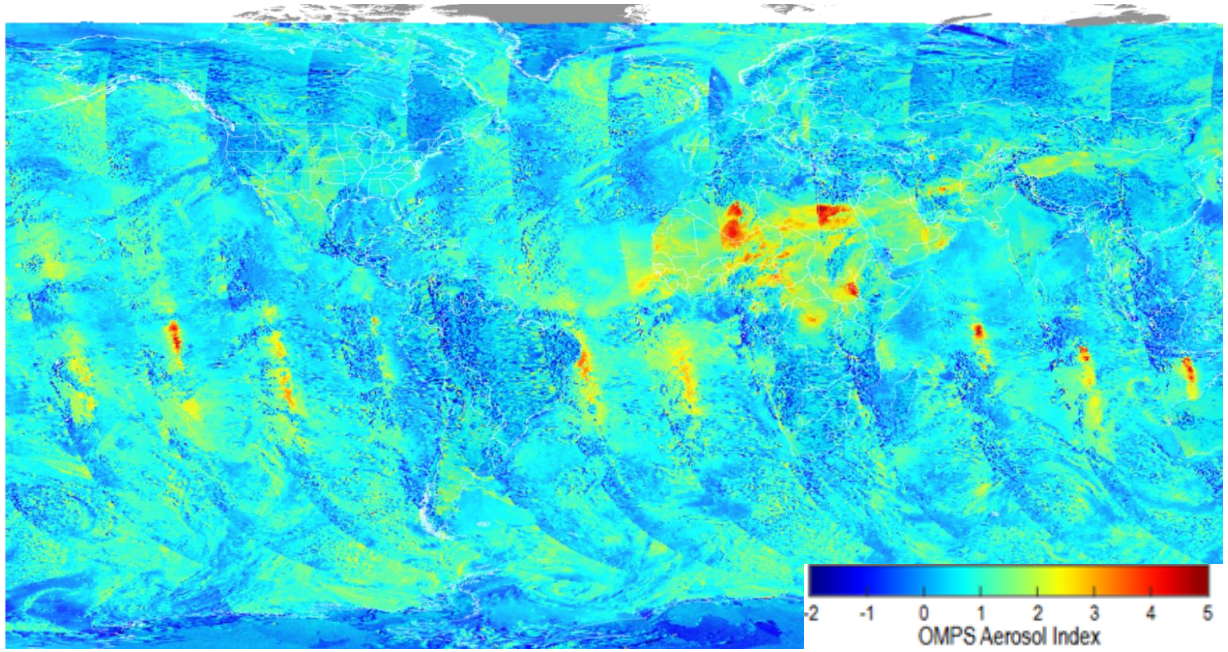
Milestones on the next two slides.

Overall Status:

	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule			X		ProTech Follow-on, SDR 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: ASTA 2.0 is just spinning up. Three incumbents have moved over to STC. A fourth contractor is in the badging queue.



JSTAR Mapper with full-swath coverage of NOAA-21 V8TOz Aerosol Index for February 23, 2025.

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

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

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

OMPS SDR

February 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 presented the delta review for J4 OMPS NM SDR algorithm.
- Started to work on the stray light table and new solar table for high resolution (135CT) of NOAA-20 OMPS NM SDR data.
- Continued to compare JPSS-04 OMPS Bandpass, Channel Band Center, and Synthetic Solar data with values from SNPP, NOAA-20, and NOAA-21 (see Fig. 1).
- Work is currently ongoing to further update and refine the OMPS NM CRTM package to generate OMPS NM O – B to support the feasibility analysis of assimilating OMPS NM SDR data to improve NWP ozone forecast.
- Started to initialize a validation algorithm to explore feasibility of assimilating OMPS NM SDR 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:

	Milestone	Finish	Deliverable
1	Complete the JPSS-4 OMPS SDR calibration plan	Oct-24	JPSS-4 OMPS SDR calibration plan
2	Complete the solar activity adjustment analysis for SNPP, NOAA-20 and NOAA-21 OMPS NP (part of DR10832)	Dec-24	Software; new OSL tables; reprocessed OMPS NP SDR test data sets;
3	Complete beta version of JPSS-04 OMPS nadir sensor pre-launch analysis report	Jan-25	JPSS-04 OMPS analysis report
4	Complete delta review for J4 OMPS NM SDR algorithm	Feb-25	J4 OMPS NM SDR algorithm report
5	Derive new wavelength and stray light LUTs for NOAA-20 medium resolution SDR data, including verification and validation of the LUTs	Apr-25	New LUTs to generate NOAA-20 NM SDR high resolution of test data sets
6	Complete test and verification of 139CT-NOAA-20 OMPS NM SDR data sets using new NOAA-20 OMPS SDR LUTs (e.g., WV and SL LUTs)	May-25	139CT-NOAA-20 OMPS NM SDR test data sets
7	Validate 139CT-NOAA-20 OMPS NM SDR data towards validated maturity review	Jun-25	A delta validated maturity review
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

Comparisons of Bandpass Full-Width Half-Max values among 4 OMPS NMs

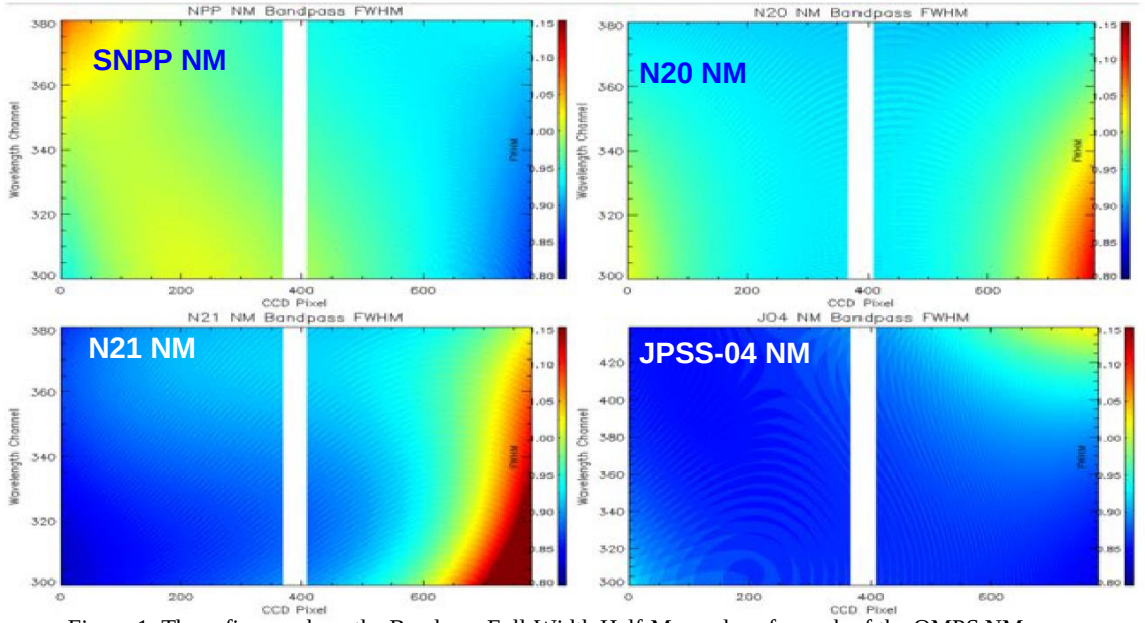


Figure 1: These figures show the Bandpass Full-Width Half-Max values for each of the OMPS NM sensors.

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

February 2025

Accomplishments / Events:

- We worked on updates to ACSPO to support reading and processing aerosol information from NCEP GFS data. We had already performed this task using MERRA-2 as a data source, but MERRA-2 is only available with a delay of 1-2 months, so GFS support needs to be added for near-real-time processing.
- We reprocessed 2 years of NPP VIIRS SST data to investigate how atmospheric aerosols affect ACSPO VIIRS SST products. We found that moderate cold biases are present in ACSPO SST in regions affected by dust aerosols from the Sahara Desert. The cold SST biases due to aerosol contamination are demonstrated in the figure in the lower right.
- Using a simple aerosol correction model that is linear in slant dust aerosol optical thickness (AOT), we were able to significantly reduce SST biases due to dust aerosols (see right panel in figure). The next step is to investigate if we can improve the dust bias correction using a more elaborate model based on radiative transfer simulations.

Overall Status:

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

1. *Project has completed.*
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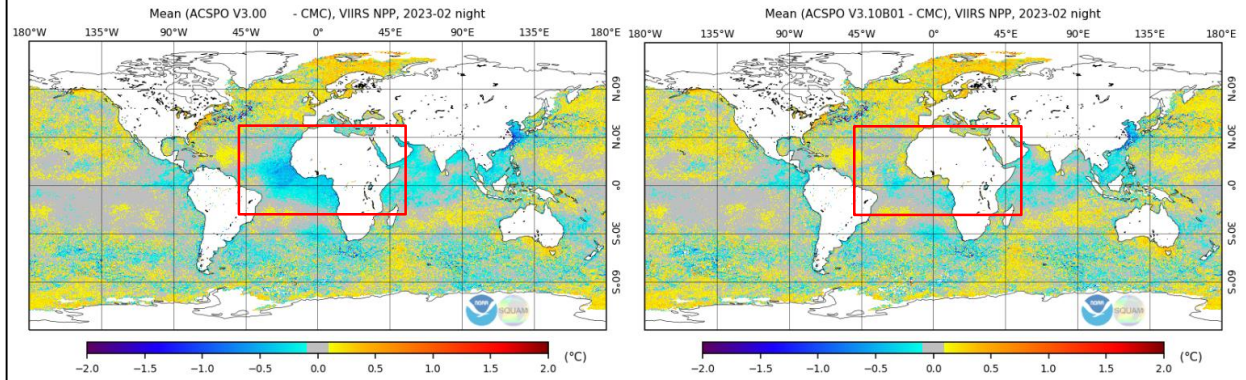
Issues/Risks:

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	Jun-25		
Reprocess historical iQuam SST data using iQuam v2.3	Sep-25	Sep-25		
Update CRTM library from v2.3 to 3.0 (needed for inclusion of aerosols in radiance simulations).	Mar-25	Mar-25		
Investigate how inclusion of aerosol information in simulated radiances can be used to improve ACSPO SST and clear-sky mask algorithms.	Aug-25	Aug-25		
Reprocess VIIRS SST using ACSPO V3.00	Dec-25	Dec-25		

***Highlights*: Dust Aerosol SST bias correction in ACSPO V3.10B01**



Global map of monthly aggregated bias between ACSPO NPP VIIRS SST and a L4 SST product from the Canadian Meteorological Centre (CMC). Left panel shows results for current ACSPO V3.00 and the right panel shows results obtained using a development version of ACSPO (V3.10B01) which includes a simple dust bias correction term in the SST retrieval equations. Red rectangle highlights region affected by Saharan dust 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

February 2025

Accomplishments / Events:

- In collaboration with the Juneau, Alaska Weather Forecast Office, Scott Lindsdrom from CIMSS wrote a blog post about SFR performance during a snowstorm over the southeastern Alaska: Microwave Snowfall Rate over southeast Alaska — CIMSS Satellite Blog, CIMSS
- Based on user feedback, a false alarm issue has been identified in recent snow events under deep freeze conditions. New snowfall detection ML models are being trained with modified data, and additional filters will be developed to further mitigate the issue.
- An SFR v3r1 package was delivered to ASSISTT. The new addition is QuickSounder. The proxy QuickSounder SFR is a replica (except satellite ID) of the S-NPP SFR and was integrated at the request of OCS to support an end-to-end QuickSounder test scheduled for 2025.
- Collaborate with SPoRT to change DB-based SFR processing and distribution to NWS. Once completed, the new procedure will streamline data flow and improve data latency.

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:

AFDLWX
Area Forecast Discussion
National Weather Service Baltimore MD/Washington DC
914 PM EST Thu Feb 20 2025

.SYNOPSIS...
An area of low pressure shifts away from the area through tonight with snow showers in northern Maryland through this evening. High pressure returns late in the week. A frontal system may approach the area by early next week.

.NEAR TERM /THROUGH FRIDAY/...
Latest satellite SFR product shows continued snow across the Alleghenies in the form of upslope snow which is almost all below the radar beams from PBZ RLX CTP and LWX. Cameras show snow covered roads. Previous forecast remains on track and previous discussion follows...

The Baltimore MD/Washington DC Weather Forecast Office (LWX) continues to use the SFR product in their operation. This is a LWX Area Forecast Discussion from February 20.

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

February 2025

Accomplishments / Events:

- Collect the long term in-situ measurements from the RadCalNet sites and performed the data selection and matched with VIIRS data for the in-situ validation and consistency evaluation.
- Continue working on the VIIRS recalibration, focusing on the analysis of the existing recalibration coefficients and evaluating performance using ground measurements at the RadCalNet sites.
- Analyze the aerosol models used in surface reflectance retrieval and validation. Assess the mitigation algorithm that replaces the dust aerosol model with other general models.
- Maintain long-term monitoring and routine validation efforts. proposed a plan for product maintenance work for the next year.

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			

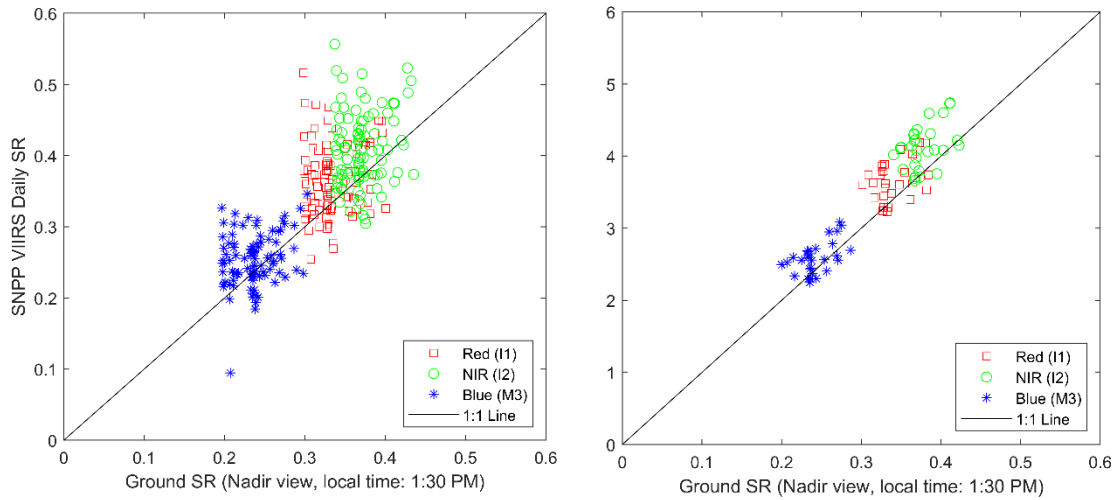
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

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		

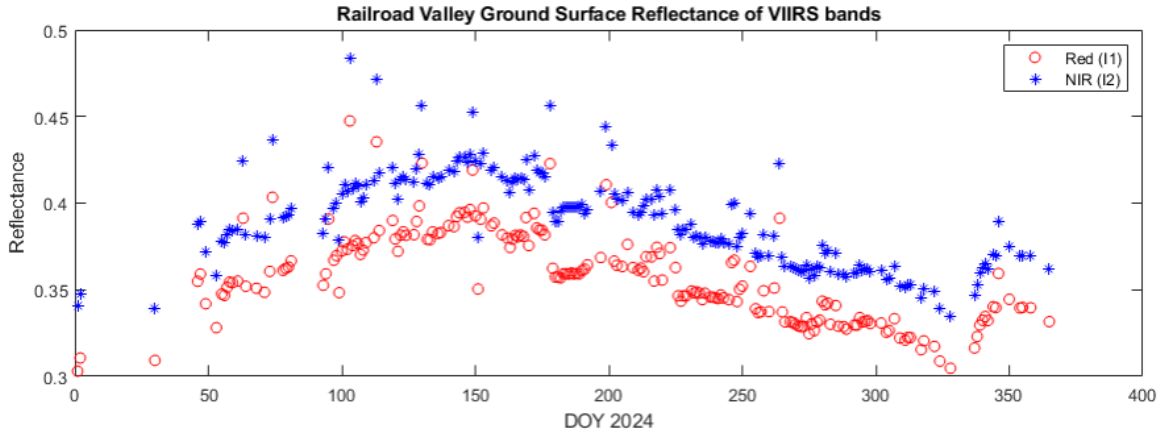
Highlights:



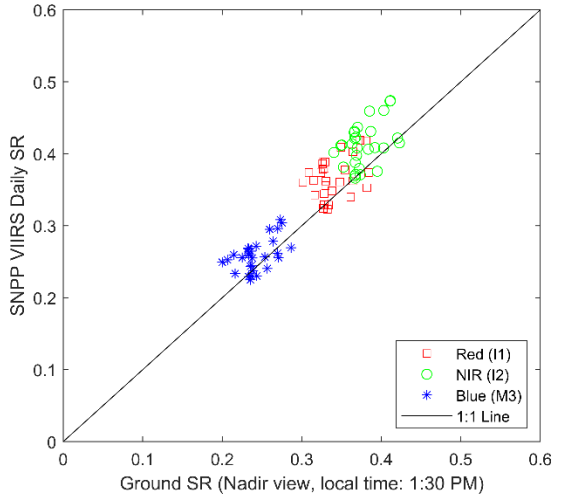
The in-situ validation preliminary results at Railroad Valley site (RadCalNet), the left one is all matched data, the right one is after data quality control and limite zenith angle within 30 degree.

In-situ Validation Datasets Collect and Process

- Background:
  - AERONET validation could not reflect the bias issue from top of atmosphere reflectance, so the inconsistency evaluation need independent validation data, such as ground measurements.
  - In-situ validation, as the most straightforward method, would be a great complement to the current surface reflectance validation.
- Recent progress
  - Process the up-to-date ground surface reflectance measurement data.
  - Characterize the site BRDF based on the ground data with different solar zenith/azimuth angle.
  - Preliminary validation test by add quality control and zenith angle limitation



Time series of Surface reflectance at railroad valley, 2024. seasonal variation is observed, BRDF effect (varying solar position) play an important role.



SNPP VIIRS SR preliminary validation

Aerosol model updated in SR Retrieval

- Aerosol models in SR retrieval

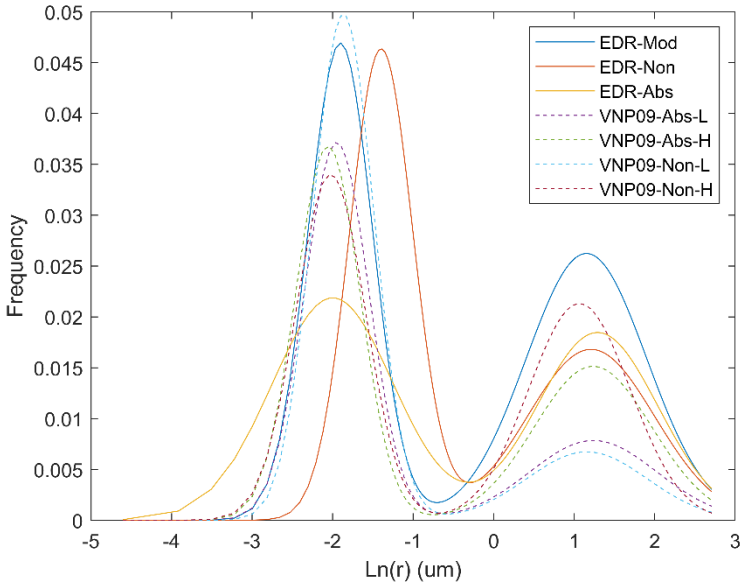
Table 3-10. Microphysical properties of land aerosols

Aerosol Model	Mode	Volume median radius r_V	Standard Deviation σ	Volume Concentration C_V ($\mu m^3/\mu m^2$)	Complex Refractive Index
Generic	Fine	0.145+ 0.0203 $\tau^{\&}$	0.3738+ 0.1365 τ	0.1642 $\tau^{0.7747}$	1.43 - (0.008-0.002τ)i#
	Coarse	3.1007+ 0.3364 τ	0.7292+ 0.098 τ	0.1482 $\tau^{0.6846}$	
Urban	Fine	0.1604+ 0.0434 τ	0.3642+ 0.1529 τ	0.1718 $\tau^{0.8213}$	1.42 - (0.007-0.0015τ)i
	Coarse	3.3252+ 0.1411 τ	0.7595+ 0.1638 τ	0.0934 $\tau^{0.6394}$	
Smoke	Fine	0.1335+ 0.0096 τ	0.3834+ 0.0794 τ	0.1748 $\tau^{0.8914}$	1.51 - 0.02i
	Coarse	3.4479+ 0.9489 τ	0.7433+ 0.0409 τ	0.1043 $\tau^{0.6824}$	
Dust	Fine	0.1416 $\tau^{-0.0519}$	0.7561 $\tau^{0.148}$	0.087 $\tau^{1.026}$	$(1.48\tau^{-0.021}) - (0.0025\ \tau^{0.132})$i at 0.47μm* $(1.48\tau^{-0.021}) - 0.002$i at 0.55μm $(1.48\tau^{-0.021}) - (0.0018\ \tau^{-0.08})$i at 0.66μm $(1.46\tau^{-0.040}) - (0.0018\ \tau^{-0.30})$i at 2.12μm
	Coarse	2.20	0.554 $\tau^{-0.0519}$	0.6786 $\tau^{1.0569}$	

& Aerosol optical depth (τ) is the spectral value at 0.55μm. The properties (r_v, σ and refractive index) of smoke and generic aerosol model are defined for τ<2.0, and τ=2.0 is used in calculation when τ>2.0. Likewise, parameters of urban and dust aerosol are defined for τ<1.0, and τ=1.0 is applied for higher τ.

* Refractive index at other shortwave wavelength is estimated by spectral interpolation. No extrapolation is performed if wavelength is shorter than 0.47 μm or longer than 2.12 μm.

For NOAA-20, the imaginary part of the refractive index of the generic model was changed to -(0.008+0.002τ) based on the personal communication with MODIS dark-target aerosol team.

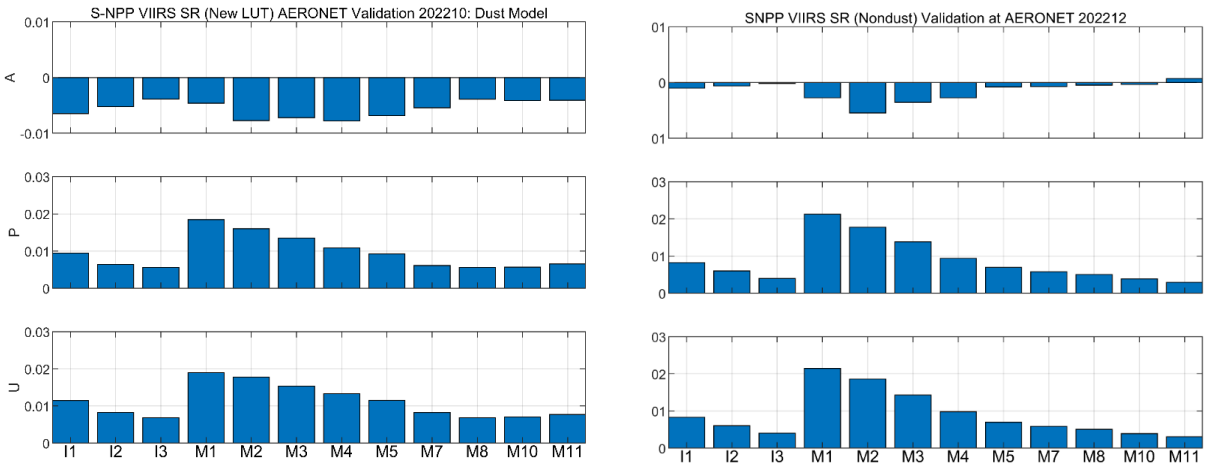


New three aerosol models Particle size distribution compared with MODIS SR models.

Here, the EDR-Mod is Generic, while EDR-Non is Urban model, EDR-Abs is Smoke model. While MODIS use four models with absorption ones and non-absorption ones (high & low)

Mitigation algorithm background and results.

- The original aerosol model is four models as Table 3-10 shows (from VIIRS AOD ATBD).
- According to the validation, dust aerosol model bring the negative bias in SR (as right figure shows).
- The mitigation algorithm will replace the dust aerosol model using the rest of three models with minimum residuals and get much better results in term of bias.
- The final three models compared with MODIS SR used models as the figure shows.



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

Feb. 2025

- Revised a manuscript about reprocessed VIIRS cloud product quality assessment based on Remote Sensing reviewers' comments.
- Initialized a forecast model to visually detect radiometric features of large wildfires (e.g. aerosol optical depth or AOP) using OMPS UV channels above 330 nm (reprocessed and operational SDRs). The results are used to validate the quality of mission-long reprocessed OMPS NM SDRs. Figure 1 is an initial comparison between the VIIRS AOP products and the OMPS-retrieved AOPs.

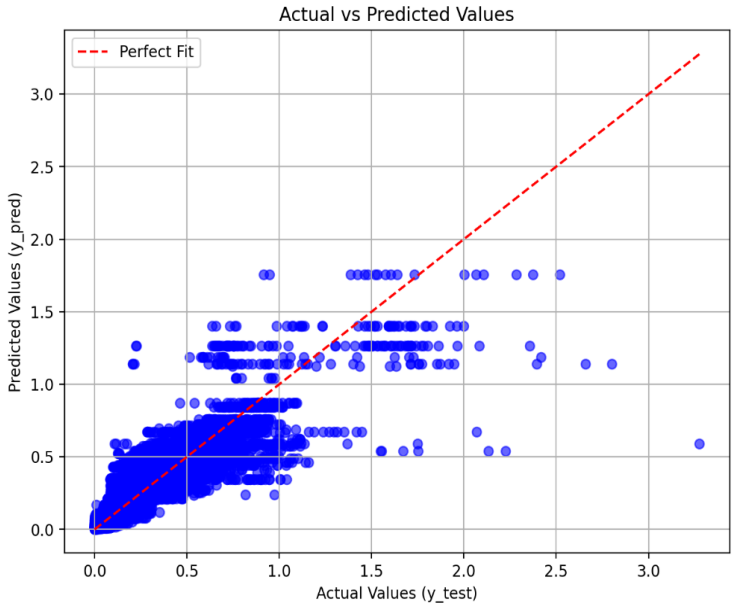


Figure 1 A scattering plot of VIIRS-retrieved and OMPS-retrieved AOPs in the event of LA wildfires on January 9th, 2025. Here, VIIRS-retrieved AOPs are the VIIRS AOP operational products, while OMPS-retrieved AOPs are obtained using the newly developed forecast model.

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

February 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 February of 2025 for the production of AST-2025.
- The surface type team has completed one of the most time consuming tasks towards the development of AST24 – the generation of all 12 monthly composites for 2024:
  - Monthly compositing is a key step in the VIIRS surface type algorithm. It removes most of the bad observations that are contaminated by cloud/shadow or have other data quality problems.
  - This step is extremely demanding computationally:
    - A total of more than 630,000 surface reflectance NetCDF files needed to be downloaded and processed to produce global daily mosaics
    - The daily mosaics were then composited to produce monthly composites (see highlights).
    - The total data volume processed through this step exceeded 800TB

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

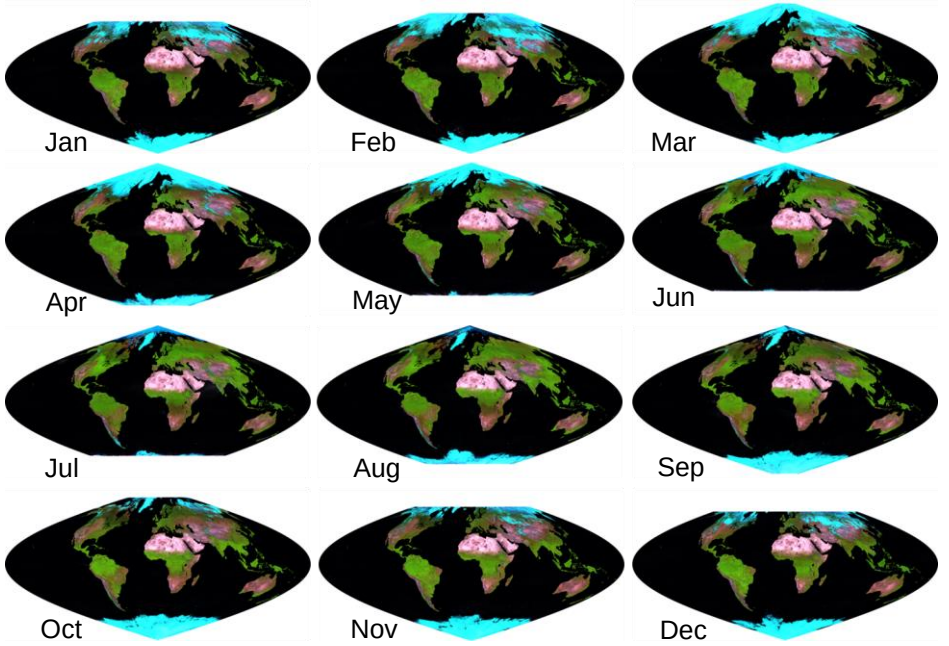
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Monthly update of the 250m global water surface fraction product	Each M.	Each M.	Each M.	
Complete global monthly composites for each of 2024 months	Feb-25	Feb-25	Feb-25	
Generate global annual classification metrics for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

Highlights:

Monthly compositing is a major step in the VIIRS surface type algorithm designed to remove bad observations that are contaminated by cloud/shadow or have other data quality issues. These images show VIIRS M10, M7, and M5 bands in RGB. Vegetation, water, and snow/ice have green, black, and cyan color tones, respectively, while other colors indicate sparsely or non-vegetated land areas.

Huge seasonal changes in snow/ice cover in high latitude regions in both the northern and southern hemispheres are apparent in this composites. Unfortunately, large portions of those regions have no valid observations due to extremely low sun angles during the winter months of each hemisphere.

Cloud-Free Monthly Composites Derived from All VIIRS Surface Reflectance Data Acquired in 2024



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

February 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.
- Explored compute code revision strategy for transitioning STAR production of the science value-added ASCII data files tailored for USDA crop forecast operations.
- Contract team members were in transition from previous Pro-tech to current ASTA2.0

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	Provisionary Maturity reached before plan
NOAA-21 Vegetation Health Validated Maturity	Apr-24	Apr-24	Sept-23	Declared Validated Maturity before plan

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: *STAR has been generating and providing the ascii files of VIIRS vegetation health products to USDA Office of Chief Economist for years. Thousands ASCII files containing data from 1982 to current week for 2895 regions and 44 crops around the world are generated every week. The following is an example..*

Mean data for UKR Province= 6: Donets'k, from 1982 to 2025, weekly
for area with 'WHEA'
year,week, SMN,SMT,VCI,TCI, VHI

```
1982, 1, 0.039,253.58, 46.85, 64.85, 55.85,
1982, 2, 0.036,254.73, 44.96, 58.78, 51.87,
1982, 3, 0.035,255.86, 42.10, 53.58, 47.84,
1982, 4, 0.033,258.09, 39.26, 46.76, 43.01
2024,52, 0.050,265.55, 51.60, 12.58, 32.09,
2025, 1, 0.051,265.74, 65.91,  8.49, 37.20,
2025, 2, 0.052,265.69, 69.61,  7.56, 38.59,
2025, 3, 0.053,265.64, 70.96,  8.57, 39.76,
2025, 4, 0.055,266.21, 70.11,  9.95, 40.03,
2025, 5, 0.057,267.45, 66.96, 11.43, 39.19,
2025, 6, 0.059,269.01, 61.21, 14.93, 38.07,
2025, 7, 0.064,270.07, 55.40, 20.66, 38.03,
2025, 8, 0.067,270.10, 50.33, 29.31, 39.82,
```

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

February 2025

Accomplishments / Events:

- Conducted further evaluations on the blended VI products (intercomparison with MODIS).
- Collected Sentinel-2 data and built the training datasets for GVF algorithm upgrade.
- Further refinement of the processing pipeline for VI/GVF reprocessing on AWS.
- Continued the SAI development, and collaborate with EMC for proposal submission.

Overall Status:

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

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

Issues/Risks:

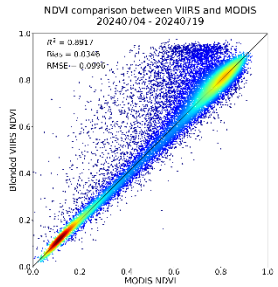
None

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

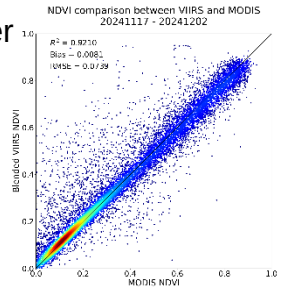
Highlights:

Inter-comparisons between blended VIIRS NDVI and MODIS NDVI

July



December

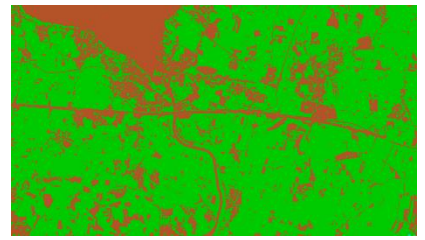


Sentinel-2 data collection and processing for GVF AI algorithm training

S2 RGB

S2 NIR-R-G

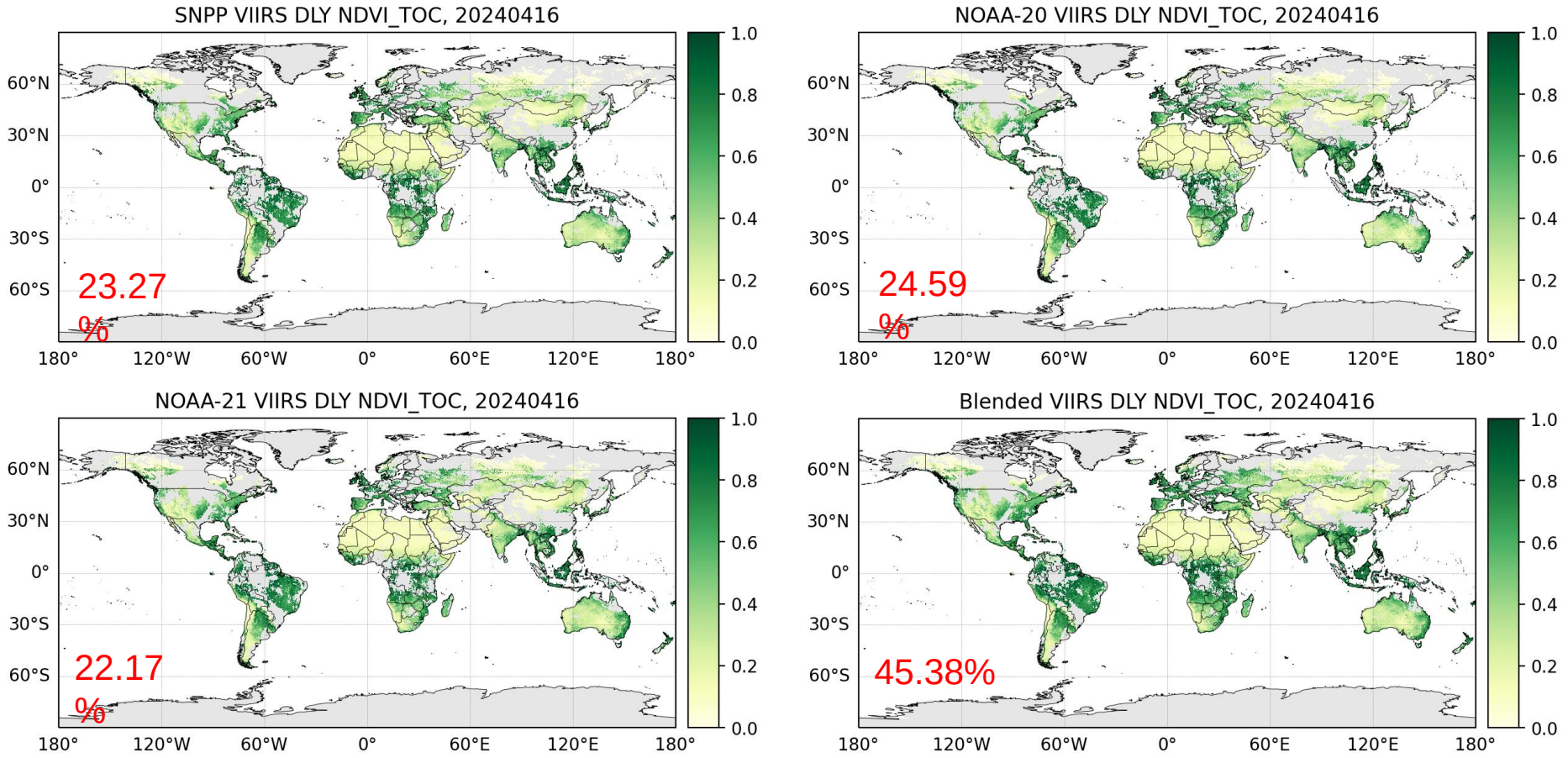
S2 Veg Identification



Inter-comparison between blended VIIRS and MODIS NDVI

- The software package for the blended VIIRS NVPS product had been ready in January.
- Further refinements and evaluations on the blended data was conducted this month.
- With the refined pixel selection scheme during the blending, the percentage of valid pixels in the blended daily NDVI maps has been increased to 45.38%, as shown below.

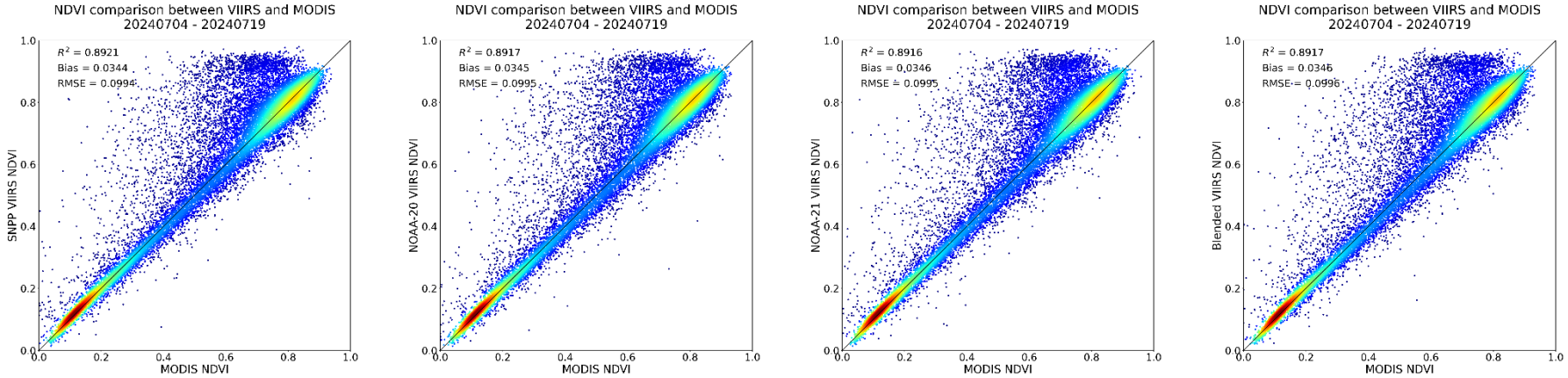
Fig. An example to show the advantage of the blended product regarding the percentage of valid pixels (marked as red) on the daily NDVI map.



Inter-comparison between blended VIIRS and MODIS NDVI

- The software package for the blended VIIRS NVPS product had been ready in January.
- Further refinements and evaluations on the blended data was conducted this month.
- The inter-comparison results between the blended data and MODIS NDVI product ensure the data quality, as shown below.

July



December

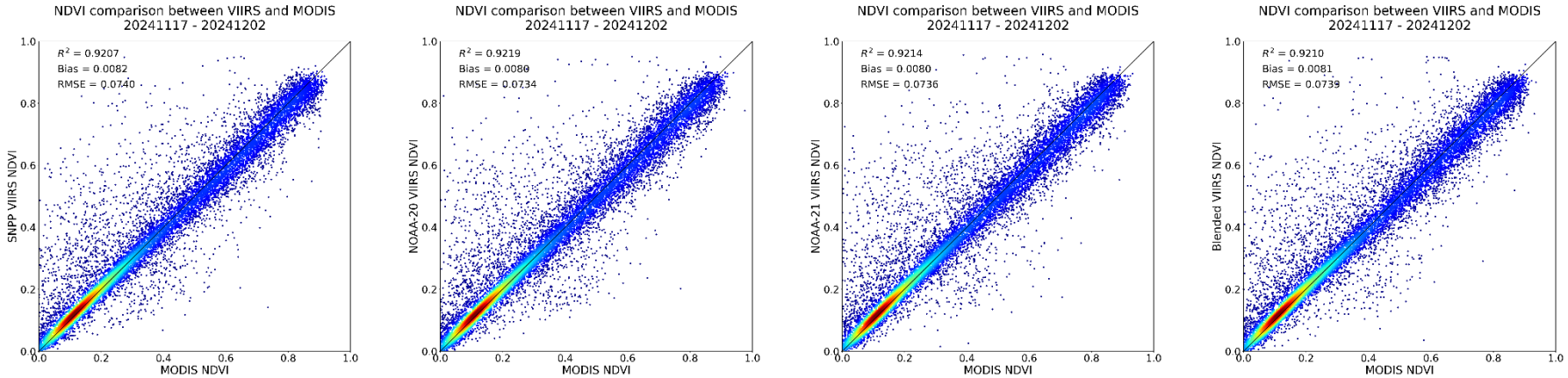
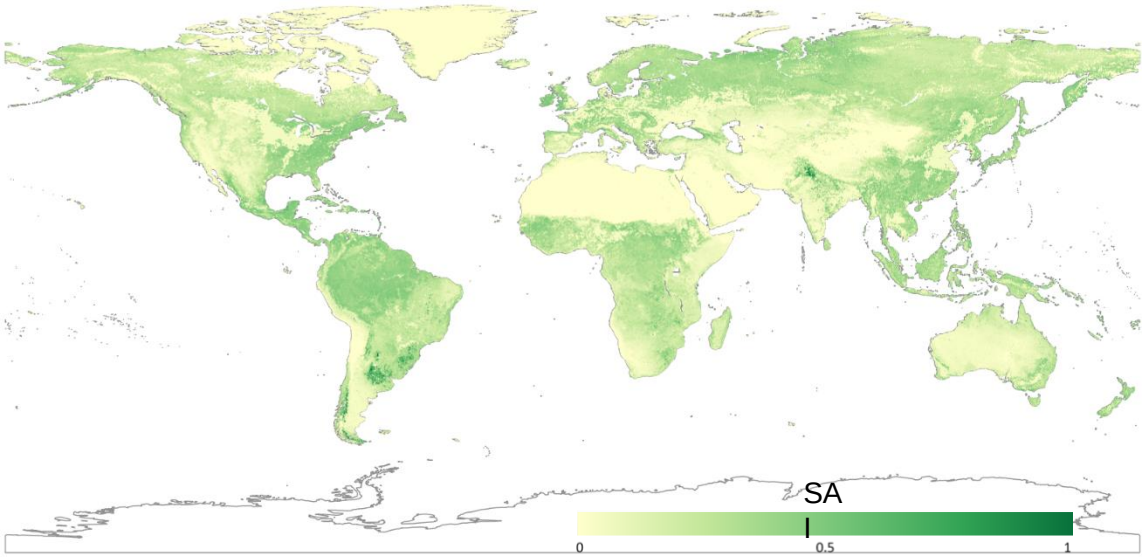


Fig. Inter-comparisons in NDVI between MODIS and VIIRS data from the three individual satellite and the blended data, respectively

Prototype of SAI development for NCEP/EMC

- Collaborate with NCEP/EMC group on new proposal submission of improving the UFS land model by taking real-time LAI and SAI data as model inputs.
- STAR vegetation group is iterating the SAI prototype, involving vegetation fraction from JPSS VIIRS data into the algorithm.
- SAI climatology in April has been produced and shown below.



Prototyped climatology SAI in April

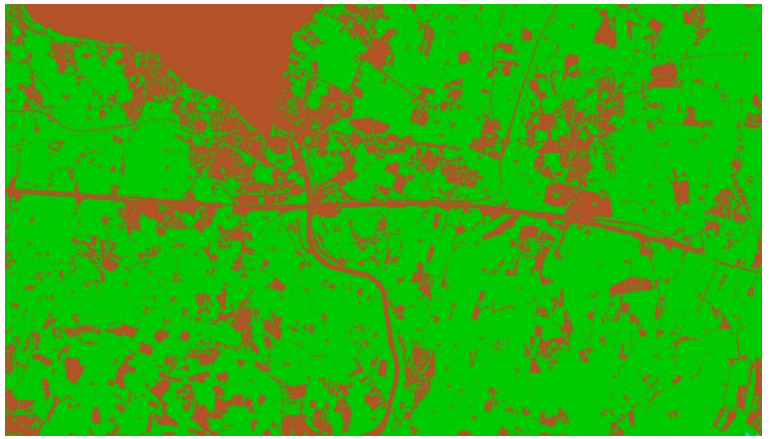
GVF validation and algorithm upgrade

- Previous GVF validation work has been done using Google Earth imagery.
- Google Earth imagery was obtained over single VIIRS GVF pixels and an empirical greenness threshold was determined to separate vegetated from non-vegetated pixels. The fraction of pixels flagged as vegetated was compared to the VIIRS GVF.
- The correspondence between Google Earth and VIIRS GVF was usually good, but the method had limitations
  - Google Earth imagery is RGB
  - Uncertainty in greenness index threshold
  - Uncertainty in geolocation of VIIRS pixels
- Use QGIS (open source GIS software) to perform the classification of vegetated vs. non-vegetated pixels
- Initial approach is supervised classification, where vegetated and non-vegetated pixels are selected manually, then the rest of the image is classified based on the selected pixels/ areas.
- High-resolution pixels will be compared to 2x2 or 3x3 groupings of VIIRS pixels to reduce impact of geolocation uncertainty
- Sample Sentinel-2 images and classifications are shown below.

S2 RGB

S2 NIR-R-G

S2 Veg Identification



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

February 2025

Accomplishments / Events:

- Completed checkout of the IDPS Block 2.3 Release Mx13 software deployed on DP-FE (SOL): confirmed deployment of the initial pre-launch JPSS-3 VIIRS SDR LUTs and the required granule size change for JPSS-3/-4 VIIRS
- Completed testing and submitted for deployment in the IDPS operations the updated NOAA-21 VIIRS SDR F-PREDICTED LUT (#11) that reduces SWIR-band striping and small radiometric biases accumulated since MMOG-2 due to the renewed response degradation
- After the updated LUTs deployment on 2/6/2025, discovered and assisted in quick correction of the accidental use of the previous NOAA-21, NOAA-20, and Suomi NPP LUTs after the IDPS Mx12 transition to operations on 2/24/2025
- Generated, tested and delivered for deployment in the IDPS operations the updated NOAA-21, NOAA-20, and Suomi NPP VIIRS SDR DNB DN0 and GAIN-RATIOS LUTs that were created based on data acquired during the new moon on 2/28/2025
- Assisted in scheduling and analyzed data from NOAA-21, NOAA-20, and Suomi NPP VIIRS lunar calibration on 2/7/2025: data aligns well with long-term trends and exhibits consistency

Overall Status:

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

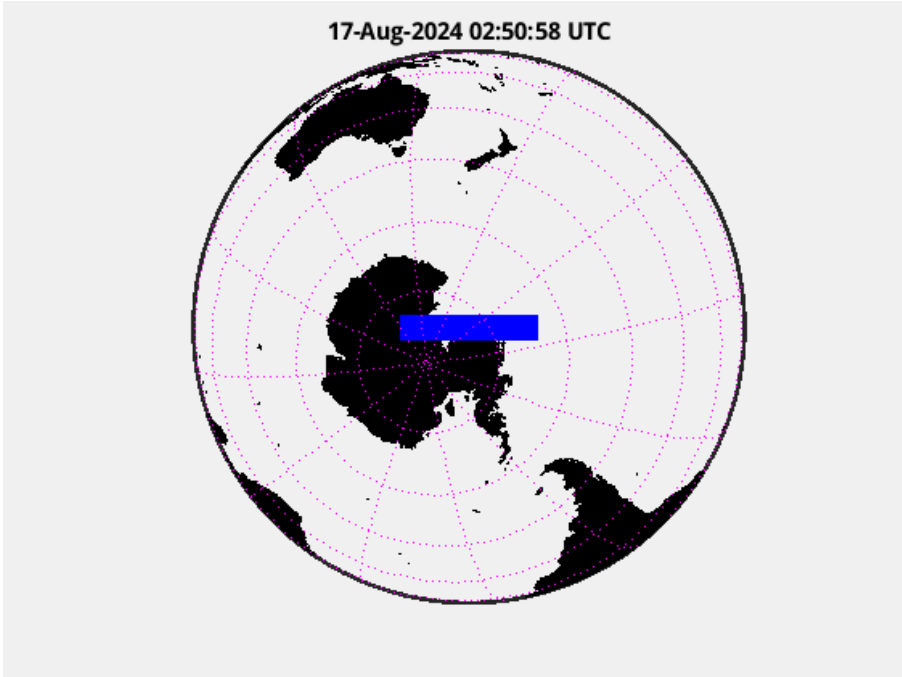
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
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		2/27/2025	Mx13 SOL
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			

Highlights:

Animation of the VIIRS SDR pixel locations (blue dots) simulated by IDPS Mx13 on DP-FE (SOL) for the JPSS-3 spacecraft during the satellite TVAC testing



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

February, 2025

Accomplishments / Events:

- Quality/Oversight Continued to ensure high quality Volcanic Ash retrievals from EDR algorithms and VOLCAT. Routine validation of existing JPSS volcanic ash EDRs from current sensors will continue as needed, including support for ASSISTT/NDE evaluations. VOLCAT will replace volcanic ash EDRs upon successful completion of VOLCAT transition to operations within NCCF.
- 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 over three years of data (2020-2023, early 2024)). The figure included shows the distributions for YES (ash cases) and NO (not ash cases) for the VOLCAT metric known as 'BTD 12-11µm Mean' and represents the VOLCAT object mean BTD 12-11µm values for YES and NO classes. 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 0.2344 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. This distribution is consistent with physics-based assumptions (the YES class skewed toward negative BTD and NO class skewed to positive BTD for ash and non-ash cases, respectively). The research focus will now shift to determining which VOLCAT metrics will be used in developing a random forest model.

Overall Status:

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

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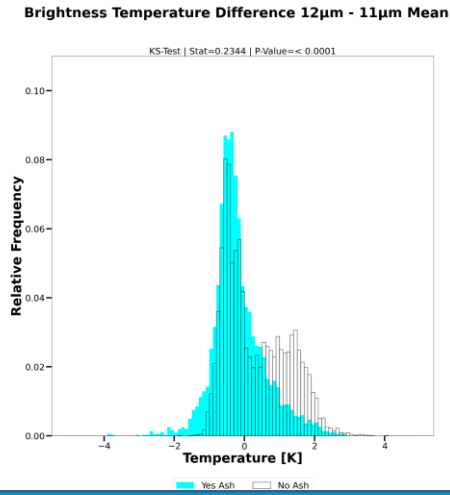
Issues/Risks:

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
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: Distribution for ash and non-ash data using the VOLCAT metric 'Object Brightness Temperature Mean 12-11µm Difference'. 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*			

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:

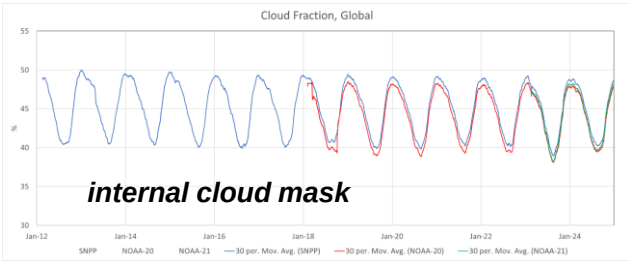
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

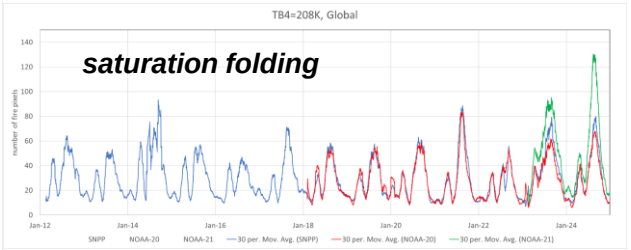
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

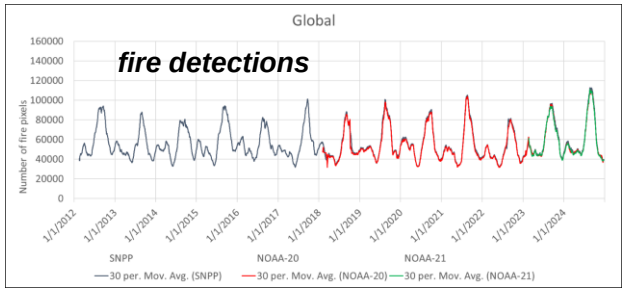
Issues/Risks:

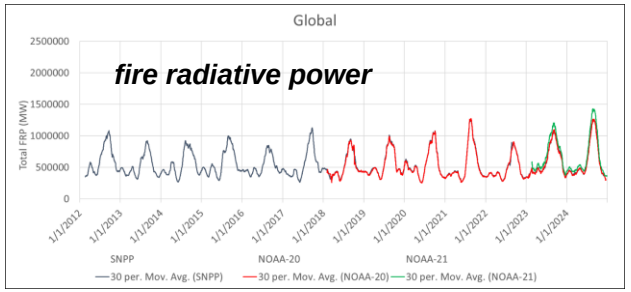
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
eFire cal/val	Sep-25	Sep-25		
eFire – NGFS cross-verification	Sep-25	Sep-25		
Direct Broadcast support	Sep-25	Sep-25		
Maintenance, LTM and anomaly resolution	Sep-25	Sep-25		

Highlight: reprocessed VIIRS EFIRE data record







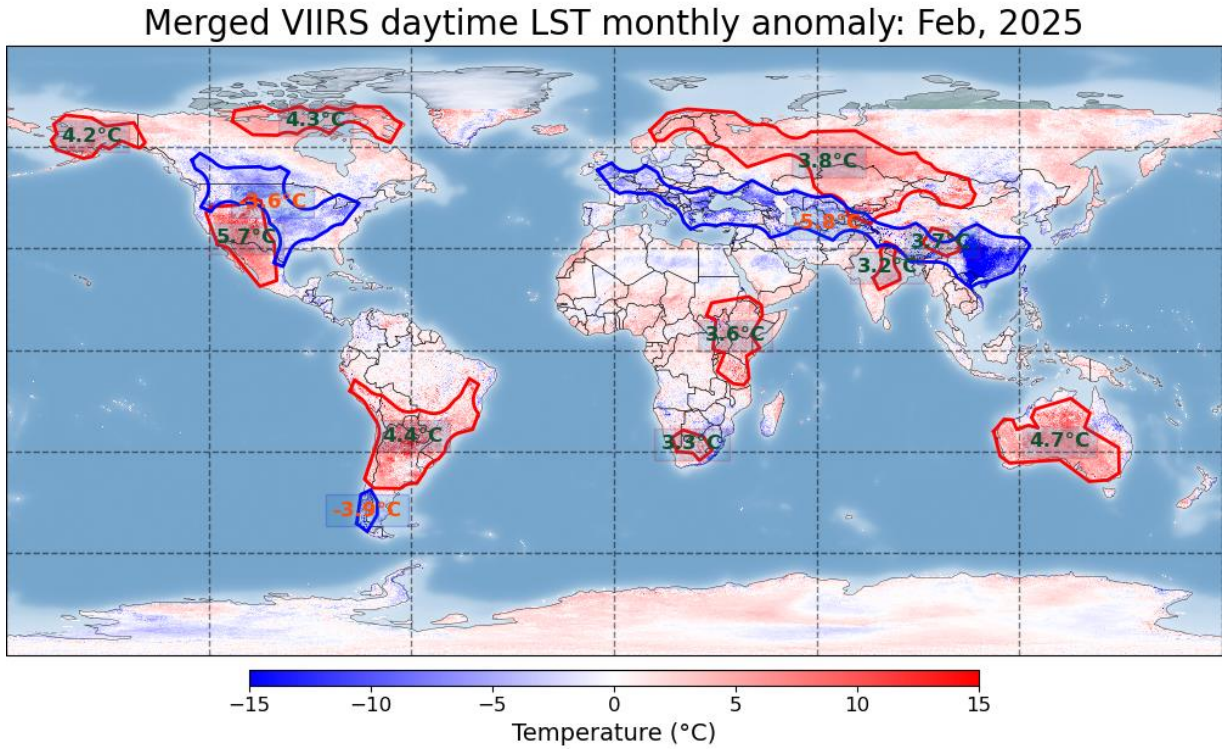


Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Task 1: eFire cal/val	*September 2025*			
Subtask 1.1: Evaluate Suomi NPP and NOAA-20 reprocessed data record	*March 2025*			
Subtask 1.2: Identify environmental and observing conditions with inferior algorithm performance	*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*			

Highlights from the Science Teams (February 2025)

Global Land Surface Temperature Anomalies report for February

Figure. The daytime global LST monthly anomaly for February 2025.



The monthly global LST anomaly report for February is released. Major events include:

- North America experienced significant warming in the Southwest, but a severe winter storm impacted the region from Western Canada to the majority of the US.
- South America saw strong warming in Brazil and Argentina, with temperatures 4.4°C higher than average, contrasting with colder-than-normal conditions in the southern tip of Chile and Argentina.
- Eurasia had a strong cold anomaly of 3.7°C. The maximum anomaly was located in Southeast China and northern Vietnam, stretching over the Tibetan Plateau and Central Asia, and into Western Europe, contrasting with warmer-than-average conditions in Northern Europe and Russia.

STAR JPSS Schedule: TTA Milestones