NOAA JPSS Monthly Program Office

AMP/STAR
FY25

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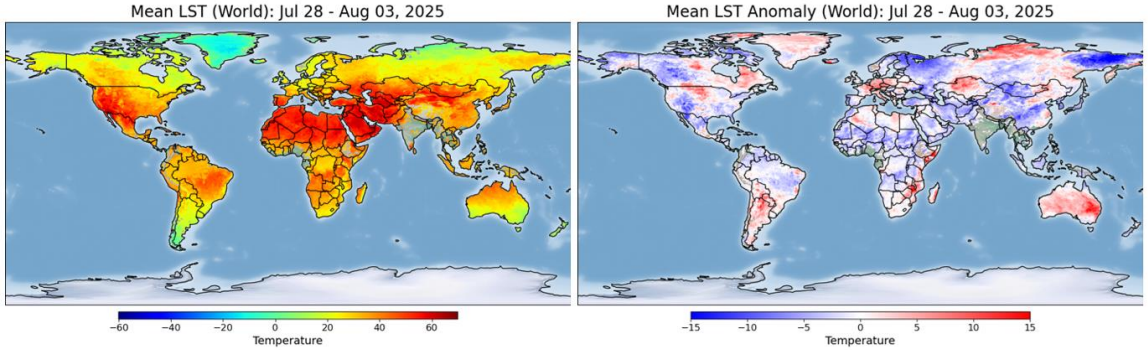
September, 2025

Highlights from the Science Teams (August)

Weekly Global LST Monitoring Now Available



To address the need for a faster cadance to meet user needs, the Land Product Team has developed an **experimental toolset**. This tool automatically processes the previous week's daily LST data, generates key statistics, compiles a summary of temperature anomalies across different countries and U.S. states, and provides real-time, objective, and up-to-date information. The report is updated every Monday on the team's website at https://www.star.nesdis.noaa.gov/smcd/emb/land/weekly.html.

Each week, the tool calculates three core statistics using a 10-year daily LST climatology:

- Weekly mean LST
- Weekly mean LST anomaly
- Number of hot days (defined as days with LST exceeding 45°C)

Highlights from the Science Teams (August)

Validation of VIIRS IST product with IceBridge KT-19 measurements

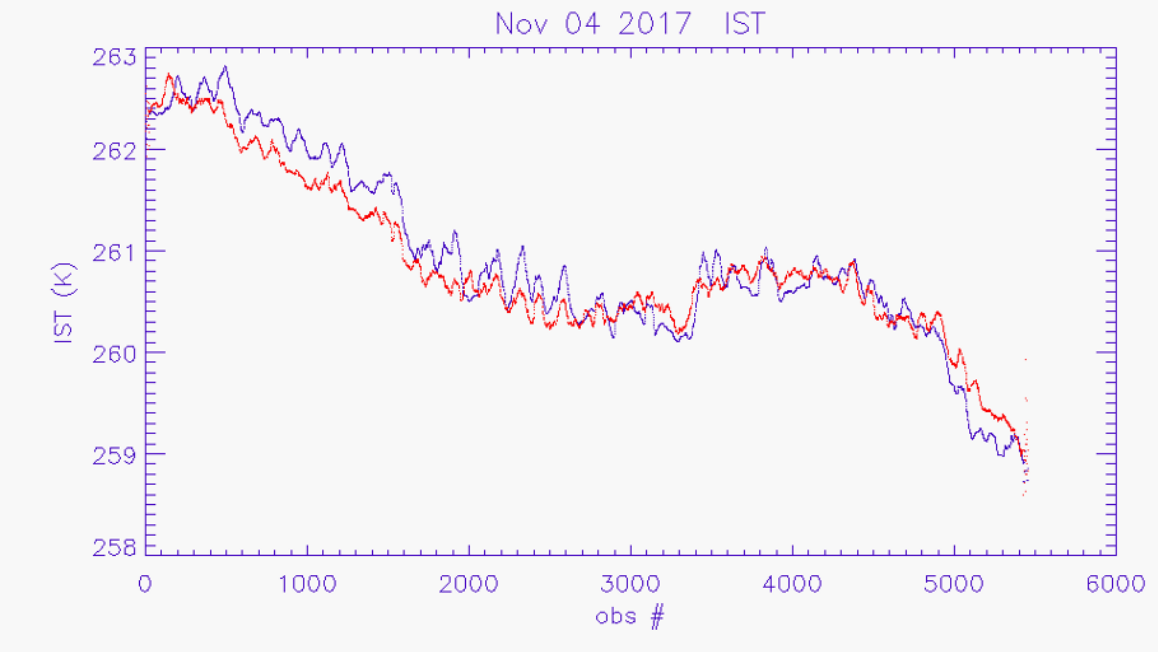


Figure. VIIRS IST product (purple) vs. IceBridge KT-19 IST measurements (red) along the November 4, 2017 Antarctic flight track.

To validate the VIIRS Ice Surface Temperature (IST) product, observations are compared with airborne KT-19 radiometer data from NASA's Operation IceBridge. The nadir-pointing KT-19, mounted on the IceBridge P-3 aircraft, provides improved footprint geolocation using post-processed differential GPS.

On 4 November 2017, the P-3 flew at 3000 ft. over Antarctic sea ice. At this altitude, the KT-19 spot size was ~100 m, and mostly clear skies allowed both sensors to view the surface. KT-19 data were collocated with VIIRS IST along the flight track, showing good agreement.

Highlights from the Science Teams (August)

New Satellite Liaison Blog Posts

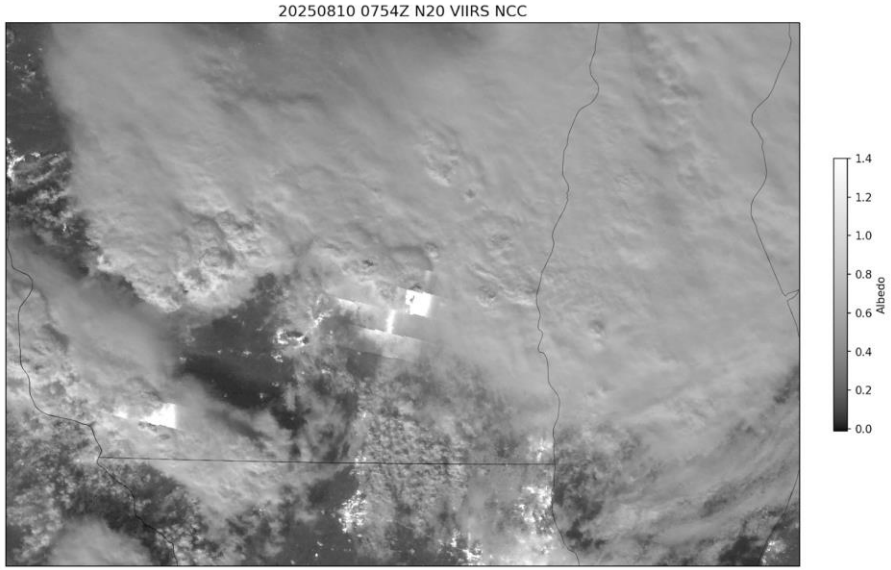


Figure. VIIRS Day Night Band Imagery from the pre-dawn hours of August 10 revealed active thunderstorms over southern Wisconsin.

Bill Line published a blog post titled "August 2025 Milwaukee Flooding". The post highlights applications of GOES and VIIRS imagery during a considerable flash flooding event in the Milwaukee area, including examples from NWS offices.

He also published another blog post titled "Hurricane Erin (2025) Rapid Intensification". The post includes numerous views of Hurricane Erin from a variety of satellite sensors during a period of rapid intensification. The post also shares examples of how satellite imagery was used by NWS/NHC.

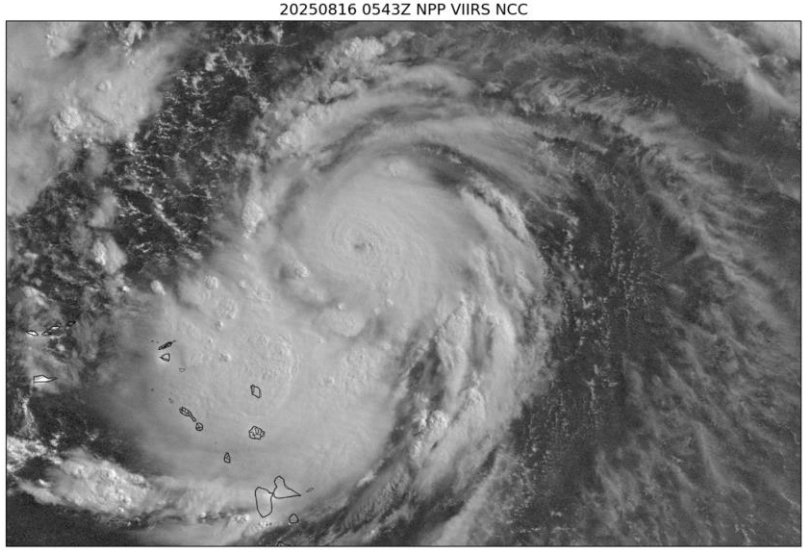


Figure. *S-NPP VIIRS DNB/NCC imagery of Hurricane Erin from pre-dawn on August 16, 2025.*

Highlights from the Science Teams (August)

GAASP AMSR2 Sea Ice Now for Individual Swaths

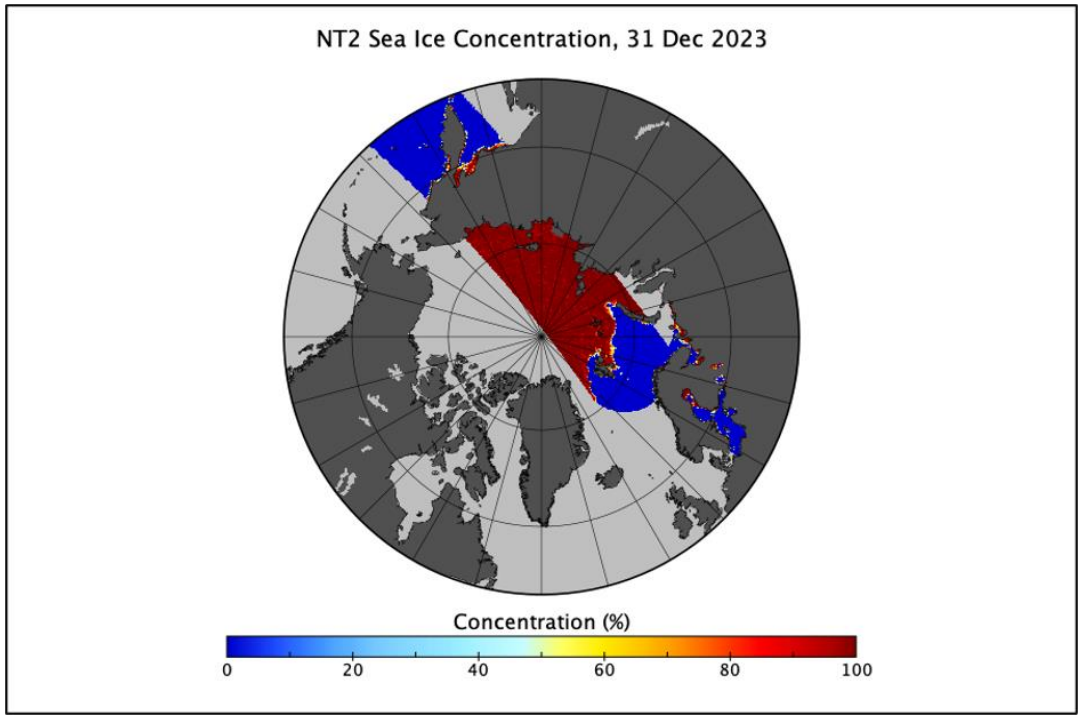


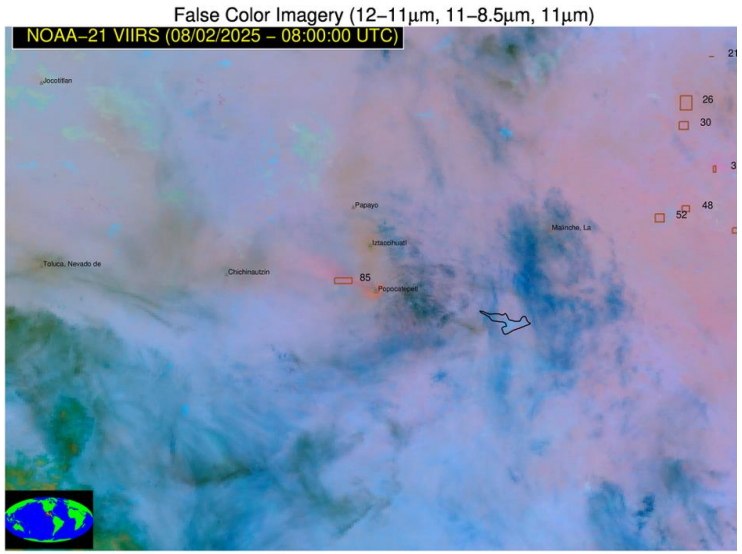
Figure. Arctic sea ice concentration for a single swath on 31 December 2023.

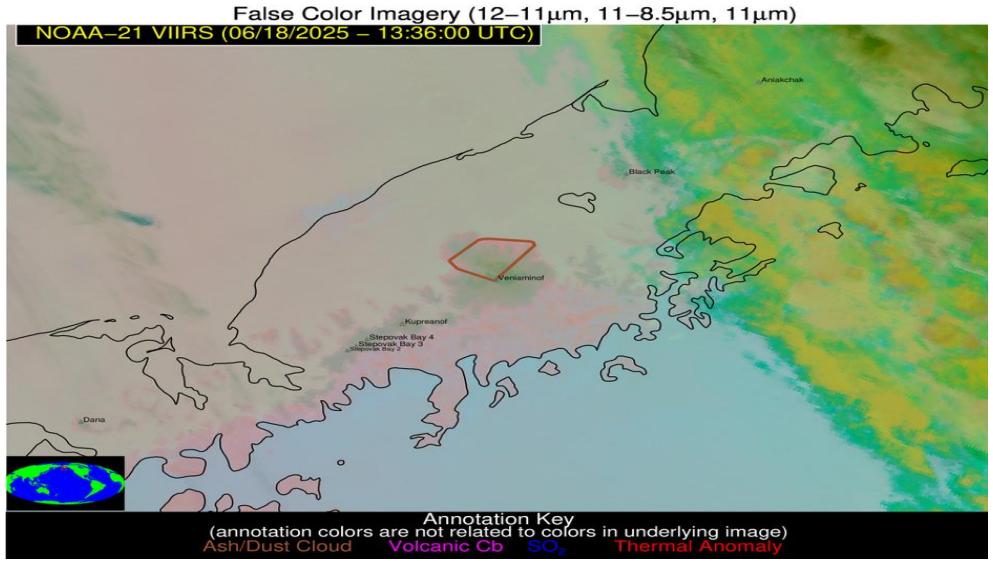
The NASA Team 2 sea ice concentration (SIC) algorithm, one of two used in the NOAA SIC product, has been adapted to run on L1R brightness temperatures (TBs) to generate Level-2 (L2) swath SIC estimates. This new approach produces SIC values for each sensor footprint within individual orbit swaths, rather than only in gridded composites.

Sample L1R “res23” data were used for testing. In addition to SIC estimates, the L2 product includes footprint latitude and longitude, land fraction, scan line time, and filter flags for land, valid-ice mask, and two brightness temperature gradient ratio weather filters.

Further testing with additional L1R TBs is planned.

Highlights from the Science Teams (August)





VOLCAT VIIRS volcanic ash plume detection has been enhanced using a random forest (RF) model, which outperforms the current methodology on validation data. Recent work tested additional spectral/spatial metrics (e.g., combined 3.9µm and 11µm) to improve detection skill. The updated RF was trained on the classified database and evaluated with 11 days of real-time results (May–August 2025).

Results show higher critical success index (CSI) scores for the RF with added metrics (0.39) compared to both the current method (0.16) and the initial RF (0.34), primarily due to fewer false alarms and slightly higher detection. Figures illustrate an RF-detected event missed by the current method and a false alarm removed in real-time processing.

Figure. The top figure shows a subtle volcanic ash emission from the Popocatepetl volcano in Mexico on Aug 2nd, 2025. The current VOLCAT methodology missed this emission, but latest random forest detected the emission. The bottom figure shows a false alarm from the current VOLCAT methodology over the Alaskan peninsula on June 18th, 2025. The latest random forest eliminated this false alarm.

Accomplishments

Delivery Date	Cloud Containerized Algorithm Packages (CCAPs) – Enterprise Products:	Recipient
7/28/2025	**OHC_v3-4:** Patch delivery of the OHC v3-4 CCAP package to NCCF. This patch addresses a crash that was traced to an edge-case bug in the bin-matching logic of fndbox.f, specifically in how it handled upper-bound values for latitude, longitude, and time. The OHC CCAP uses Sea Surface Height Anomaly (SSHA) files from multiple platforms over a period of 14 days, along with the Blended SST product from the previous day derived from a multitude of GEO and LEO satellite sensors.	NCCF
8/1/2025	**OceanColor_v2-1:** This is a Patch CCAP delivery to NCCF to update the filenames from GM to GU and a minor metadata fix for fill values from -99.0 to -999.0.	NCCF
8/1/2025	**SurfRefl_v1-1:** Redelivery of Surface Reflectance v1-1 with many updates to help issues that occurred. Discussion with CSPP helped to deliver this test system as a follow-on to future deliveries.	CSPP
8/21/2025	**NVPS-GVF_v2**: This is a preliminary delivery of NVPS (NOAA Vegetation Products System) - GVF (Green Vegetation Fraction) for software code review at OSPO.	OSPO Software Code Review
8/21/2025	**NVPS-VI_v2**: This is a preliminary delivery of NVPS (NOAA Vegetation Products System) - VI (Vegetation Index) for software code review at OSPO.	OSPO Software Code Review
8/21/2025	**EN-Winds_v1:** This is a preliminary delivery of Enterprise Derived Motion Winds for software code review at OSPO. The package produces derived motion winds products for the following instruments and satellites: ABI (GOES-16/17/18/19), AHI (Himawari-8/9), AVHRR (MetOp-B/C), and VIIRS (S-NPP/NOAA-20/NOAA-21).	OSPO Software Code Review

Accomplishments – JPSS Cal Val Support

S-NPP	Weekly OMPS TC/NP Dark Table Updates	09/3/24, 09/10/24, 09/17/24, 09/24/24, 10/1/24, 10/8/24, 10/16/24, 10/22/24, 10/29/24, 11/5/24, 11/12/24, 11/19/24, 11/26/24, 12/03/24, 12/10/24, 12/17/24, 12/30/24, 01/7/25, 1/13/25, 1/22/25, 1/28/25, 2/4/25, 2/10/25, 2/18/25, 2/26/25, 3/4/25, 3/11/25, 3/18/25, 3/25/25, 4/1/25, 4/8/25, 4/15/25, 4/22/25, 4/29/25, 5/6/25, 5/13/25, 5/20/25, 5/28/25, 6/3/25, 6/10/25, 6/17/25, 6/24/25 7/1/25, 7/8/25, 7/15/25, 7/22/25, 7/29/25**, 8/5/25, 8/12/25,8/19/25, 8/26/25, 9/2/25**
NOAA-20	Weekly OMPS TC/NP Dark Table Updates	09/3/24, 09/10/24, 09/17/24, 09/24/24, 10/1/24, 10/8/24, 10/16/24, 10/22/24, 10/29/24, 11/12/24, 11/19/24, 11/26/24, 12/03/24, 12/10/24, 12/17/24, 12/30/24, 01/7/25, 1/13/25, 1/22/25, 1/28/25, 2/4/25, 2/10/25, 2/18/25, 2/26/25**,** 3/4/25, 3/11/25, 3/18/25, 3/25/25, 4/1/25, 4/8/25, 4/15/25, 4/22/25, 4/29/25, 5/6/25, 5/13/25, 5/20/25, 5/28/25, 6/3/25, 6/10/25, 6/17/25, 6/24/25, 7/1/25, 7/8/25, 7/15/25, 7/22/25, 7/29/25**, 8/5/25, 8/12/25,8/19/25, 8/26/25, 9/2/25**
NOAA-21	Weekly OMPS TC/NP Dark Table Updates	09/3/24, 09/10/24, 09/17/24, 09/24/24, 10/1/24, 10/8/24, 10/16/24, 10/22/24, 10/29/24, 11/12/24, 11/19/24, 11/26/24, 12/03/24, 12/10/24, 12/17/24, 12/30/24, 01/7/25, 1/13/25, 1/22/25, 1/28/25, 2/4/25, 2/10/25, 2/18/25, 2/26/25, 3/4/25, 3/11/25, 3/18/25, 3/25/25, 4/1/25, 4/8/25, 4/15/25, 4/22/25, 4/29/25, 5/6/25, 5/13/25, 5/20/25, 5/28/25, 6/3/25, 6/10/25, 6/17/25, 6/24/25 7/1/25, 7/8/25, 7/15/25, 7/22/25, 7/29/25**, 8/5/25, 8/12/25,8/19/25, 8/26/25, 9/2/25**
S-NPP	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	09/10/24, 09/24/24**,** 10/8/24, 10/22/24, 11/5/24, 11/19/24**,** 12/3/24, 12/17/24, 12/31/24, 1/13/25, 1/28/25**,** 2/11/25, 2/26/25, 3/11/25, 3/25/25, 4/8/25, 4/22/25, 5/6/25, 5/20/25**,** 6/3/25, 6/17/25, 7/1/25, 7/15/25, 7/29/25, **8/12/25, 8/26/25, 9/9/25**
NOAA-20	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	09/03/24, 09/17/24, 10/1/24**,** 10/16/24, 10/29/24, 11/12/24, 11/26/24, , 12/10/24, 12/31/24, 1/8/25, 1/22/25, 2/4/25, 2/18/25, 3/4/25, 3/18/25, 4/1/25, 4/8/25, 4/15/25, 4/29/25**,** 5/13/25, 5/28/25, 6/10/25, 6/24/25**,** 7/8/25, 7/24/25, **8/5/25, 8/19/25, 9/2/25**
NOAA-21	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	09/03/24, 09/17/24, 10/1/24**,** 10/16/24, 10/29/24**,** 11/12/24, 11/26/24, 12/10/24, 12/31/24, 1/8/25, 1/22/25, 2/4/25, 2/18/25, 3/4/25, 3/18/25, 4/1/25, 4/8/25, 4/15/25, 4/29/25**,** 5/13/25, 5/28/25, 6/10/25, 6/24/25**,** 7/8/25, 7/24/25, **8/5/25, 8/19/25, 9/2/25**
S-NPP	Monthly VIIRS LUT Update of DNB Offsets and Gains	9/9/24, 10/9/24, 11/7/24, 12/6/24, 1/7/25, 2/4/25, 3/7/25, 4/8/25, 5/6/25, 6/3/25, 7/8/25, **8/1/25, 9/2/25**
NOAA-20	Monthly VIIRS LUT Update of DNB Offsets and Gains	9/9/24, 10/9/24, 11/7/24, 12/6/24, 1/7/25, 2/4/25, 3/7/25, 4/8/25, 5/6/25, 6/3/25, 7/8/25, **8/1/25, 9/2/25**
NOAA-21	Monthly VIIRS LUT Update of DNB Offsets and Gains	9/9/24, 10/9/24, 11/7/24, 12/6/24, 1/7/25, 2/4/25, 3/7/25, 4/8/25**,** 5/6/25, 6/3/25, 7/8/25, **8/1/25, 9/2/25**

FY25 STAR JPSS Milestones (1 of 6)

Milestones/Algorithm Updates	Original Date	Forecast Date	Actual Completion Date	Variance Explanation	Status
VOLCAT_v1 (Phase 1) NCCF implementation	Dec-23	Apr-25	SCR: August 17, 2023 Target CCAP Moved many times and moved again from **Aug 6, 2025 to October 17.**	Waiting for feedback from the PG team (Tim H. and Eric) on latency concerns due to tarring of intermediate files, Production Rules, etc.; Vaishali K (OSPO POC) wants issues addressed in the first delivery to avoid a patch. A new delivery date is set (10/17/25).	Tracked as part of FY25 Maintenance
NetCDF4 Reformatting Toolkit (N4RT) to include Quick Sounder (Toolkit_v12)	Feb-25	Apr-25	ASSISTT to NCCF CCAP delivery moved many times to accommodate new sensors**.** Target CCAP moved **from Aug 27 to October 16.**	8/28/25: Integrator continuing to work on AIM 2.4 updates; QuickSounder BUFR encoding.	
Cloud Mask J2 Validated; No code updates needed only maintenance CCAP (EN-CloudMask_v1)	Feb-25	Jul-25	CCAP for SCR delivered on May 1st. Target CCAP delivery moved from **Aug 20 to Sept 26** for AO architecture.	Timeline impacted by AO-related issue involving output from EN-DA to the CMR.	Tracked as part of FY25 Maintenance release.
Cloud Base Height, Cloud Cover Layer maintenance CCAP (EN-CBH-CCL_v1)	Feb-25	Jul-25	Moved CCAP delivery from **Aug 20 to October 17.**	CBH, CCL, Cloud Height pushed to **October 17** due to other priorities and to account for AO architecture. Documentation related work on this project is progressing.	

FY25 STAR JPSS Milestones (2 of 6)

Milestones/Algorithm Updates	Original Date	Forecast Date	Actual Completion Date	Variance Explanation	Status
Surface Particulate Matter (PM2.5) **(new product:** Surface-PM2.5_v1)	Jun-25	Aug-25	Final CCAP delivery moved from **August 12 to Nov 14, 2025.**	New implementation following AO architecture. Integrators working on test runs, requirement and implementation on AIM. Ongoing efforts include completing and delivery of documentation for the application package.	New Product. Tracked as part of FY25
Derived Motion Winds (S-NPP, NOAA-20, NOAA-21, and GEO satellites	Jul -25	Aug-25	SCR documents delivered on 9/4 and final CCAP **moved to Jan 16, 2026.**	ASSISTT team requested extension to account for activating CI pipeline and adding additional python code to wrap AIM. SCR items are getting addressed.	Tracked as part of FY25 Maintenance release.
Aerosol Detection Product (ADP) Updates	Jul-25	Aug-25	Target CCAP (ASSISTT to NCCF) expected on **October 3** for implementation in AO architecture	This is a preliminary CCAP version with updates to use Volcanic ash and Implementation in AO architecture. The final CCAP will be significantly delayed due to VAOCAT inputs, since VOLCAT v2 will not be going to AO until June 2026.	
MiRS upgrade for Quick Sounder (MiRS_v6)	Aug-25	Aug-25	Science team delivered updates on March 31st. CCAP delivery moved from **Aug 29 to Sep 19.**	Implemented through AO plan. Schedule moved to get all data sets (Quick Sounder data available on CMR but waiting on MetOp-B/C data). Delivery documents are being reviewed.	
SFR upgrade (SFR_v3) to include GOSAT-GW AMSR3, MetOp-SG MWS, ocean coverage (the current SFR is land only). Also upgrades needed for Quick Sounder.	Aug-25	Aug-25	CCAP moved from **Aug 29 to October 3**	GFS 0.25 doesn't yet have forecast data in the CMR due to a CMR issue. ASSISTT team requested moving this to 10/3 , blocked by GFS 0.25 data in CMR.	

FY25 STAR JPSS Milestones (3 of 6)

Milestones/Algorithm Updates	Original Date	Forecast Date	Actual Completion Date	Variance Explanation	Status
ACSPO (ACSPO-PolarL2SST_v1) updating ACSPO v3.0 for VIIRS	Aug-25	Aug-25	Final CCAP moved to **Nov 25, 2025**	ASSISTT Integrators working on higher priority projects (ACSPO GeoSST and NHC AWIPS) that pushed the final CCP to November.	Ongoing as part of FY25
Green Vegetation Fraction: 1 Km GVF update for existing products. (NVPS-GVF_v2)	Sep-25	Sep-25	SCR happened Sep 3, followed by CCAP **on October 8, 2025.**	Ongoing efforts include review of production rule document; Compiling Lifecycle QA metadata report to suggest changes to science teams.	
Vegetation Index (VI): 1 Km update for existing products	Sep-25	Sep-25	SCR happened on Sep 3 and final CCAP set for **Oct 8, 2025.**	AIM development. Ongoing efforts include review of production rule document; Compiling Lifecycle QA metadata report to suggest changes to science teams.	
Bidirectional Reflectance Distribution Function (BRDF) (New Product) from S-NPP, NOAA-20/21	Sep-25	Sep-25	SCR set for Aug. 28 and final CCAP delivery **moved to Dec 18, 2025.**	New implementation through AO. Ongoing efforts include Algorithm support documentation and inspect code to account for upstream dependencies.	
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. STAR and CLASS members are working on modalities for transfer of data from NODD to CLASS.	Ongoing as part of FY25 milestone.

FY25 STAR JPSS TTA Milestones (4 of 6)

Milestones (Algorithm Cal/Val and LTM)	Original Date	Forecast Date	Actual Date of Completion	Variance Explanation	Status
NEON (Quick Sounder pre-launch and post-launch Cal/Val Plan)	Dec-24	Dec-24		Two CCRs already approved. Cal/Val Document released in MIS. 471-CCR-24-0069 471-CCR-24-0070	
FY26 Program Management Review (all teams)	Jun-25	Jun-25	Jun-25	Completed in time	Completed
JPSS-4 Pre-launch characterization reports for all SDRs:	Dec-24	Mar-25	Mar-25	J3 ATMS: Team delivered pre-launch report in Dec 2024 J3 CrIS: Team delivered J3 pre-launch report in June 2024. J4: CrIS team delivered pre-launch characterization report J4: ATMS team delivered in June 2024. J4: OMPS team delivered pre-launch characterization report (Jan) J4: VIIRS: Delivered pre-launch characterization report (March)	Completed
J4 Algorithm Readiness Reviews	Jun-25	Jun-25		ATMS not required. OMPS: Completed February 18, 2025. VIIRS: Competed January 21, 2025. CrIS not required.	Completed
SDR and VIIRS Imagery Cal/Val plans that include finalized J4 Schedules	Jun-25	Jun-25	Aug-25	Science teams delivered the Cal/Val plans and JSTAR team performed an initial review of the documents and asking for responses from the science teams to address comments. Will be completed September 30.	On-track for completion
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/FY26. Science teams have connectivity with the flight teams. No J3 JCT Activities. J4 JCT 1 (Jun. 11 – Aug 6, 2025) – No Science team Involvement. J4 JCT 2 (Jul. 14 – Sep 8, 2025) – No Science team involvement. J4 JCT 3B (Jun 2 – Jul 20, 2026) – With Science teams involvement J4 JCT 3A (TVAC) (July 2 – 9/4, 2026) – With Science team involvement.	Continuing as part of FY25/FY26 milestones

FY25 STAR JPSS TTA Milestones (5 of 6)

Milestones (Algorithm Cal/Val and LTM)	Original Date	Forecast Date	Actual Date of Completion	Variance Explanation	Status
SDR and VIIRS Imagery Look-Up Table Deliveries for J4	Jun-26	Jun-25	Ongoing	ATMS J4 PCTs were delivered to Peraton and were implemented in MX13. CrIS J4 PCTs delivered to ASSISTT and ASSISTT is working on delivering to IDPS AIT. OMPS and VIIRS teams have yet to deliver the J4 PCTs. These initial J4 VIIRS and OMPS PCTs are expected to be delivered in FY26 ahead of the Satellite TVAC and JCT-3. (VIIRS delivered J3 LUTs and is baselined in MX13)	Completed
JPSS-3 Pre-launch characterization reports for all SDRs:	Sep-25	Sep-25	Ongoing	J3 CrIS: Team delivered J3 pre-launch report in June 2024. J3 VIIRS: Team delivered pre-launch report in June 2024 J3 ATMS: Team delivered pre-launch report in Dec 2024 J3 OMPS: Team delivered pre-launch report in Jan 2025.	Completed
Maintain / Update ICVS enhancement (develop ICVS modules to support various activities: monitoring, inter-sensor comparison, …) for operational monitoring	Sep-25	Sep-25	Follow FY25 PMR schedules/milestones Completed Early	Quad charts provide the details of activities/tracking.	Ongoing
Maintain / Expand (to include JPSS-2 products) JSTAR Mapper, adapting to STEMS	Sep-25	Sep-25	Follow FY25 PMR schedules/milestones	Quad charts provide the details of activities/tracking.	Ongoing
Document processes for analyzing export control data	Jun-25	Aug-25	Oct -25	STAR, in collaboration with LEO Program will set up a STAR ITAR server. Initially, ITAR and export control data will be stored in a Google Drive with secured access set up by STAR IT adhering to ITAR/export control guidelines. The pathway to analyze export control data would be through Google Drive -> STAR Laptop -> STAR ITAR Server via SSH. Data is not to be stored on the STAR Laptop except for the transfer to the STAR ITAR Server. JSTAR science team leads who need to access/process export controlled data on the STAR ITAR Server need to fill out a request form for every STAR scientist that needs access to the server: https://forms.gle/2qqdDpkRM4K5DmAP8	Ongoing

FY25 STAR JPSS TTA Milestones (6 of 6)

Milestones (Algorithm Cal/Val and LTM)	Original Date	Forecast Date	Actual Date of Completion	Variance Explanation	Status
GOSAT-GW End to End testing and AMSR-3 L0 to L1 processing.	Aug-24	Jun-25	**End-to-End testing Completed on June 9-10, 2025**	Following the successful launch on June 28, 2025, and completion of end-to-end data flow testing from June 9-10, 2025, the JPSS Program and OSPO are currently collaborating with JAXA to establish protocols for data access, archival, and execution of JAXA's L0 to L1 processing code. Detailed schedules and milestones for Beta, Provisional, and Validated data maturities are presently being developed. JAXA initiated GOSAT-AMSR3 data collection on August 11. Routine observations are scheduled to commence after the nominal operational transition review in October. JAXA is actively working on their initial calibration for Level 1 Ver.0.1, which is anticipated for release to partner agencies at the end of October. This release will include the updated JAXA L0 to L1 processing code. JAXA will have additional updates to their L0 to L1 processing software scheduled for February 2026. Currently, STAR science teams should be able to ftp L1 data directly from JAXA as was done with AMSR2 in the early stages. The AMSR3 L0 data is flowing into NCCF Dev environment and the ASSISTT team has just now started working on the GRAC package (September 3, 2025) that prepares input for the JAXA L0 to L1 executable. ASSISTT team will install further updates from JAXA as and when received.	AMSR-3 L0 to L1 processing efforts are ongoing. Tracked as part of FY25/FY26 milestones.

IDPS Mx Build Status

Current: Block 2.3 Mx13

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

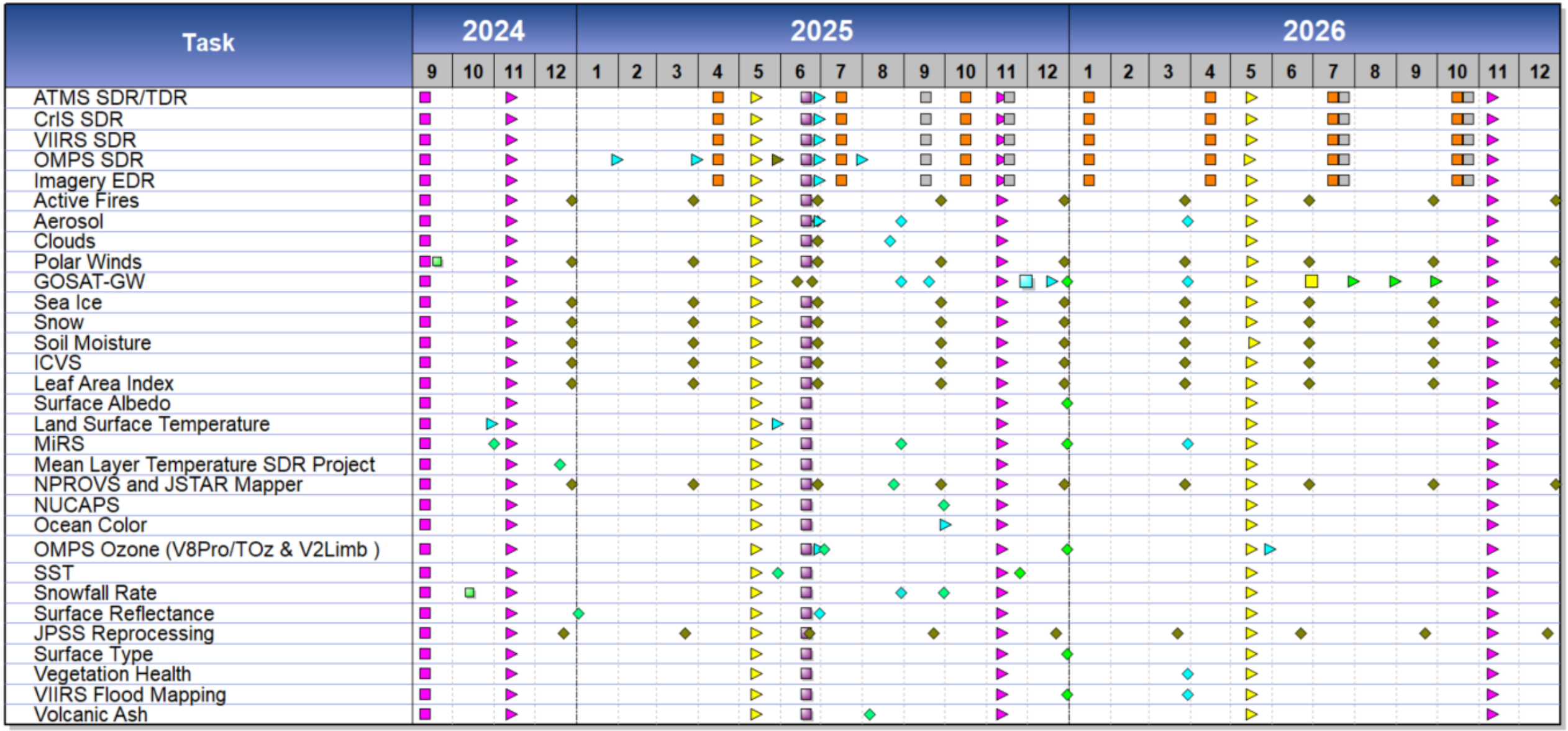
Mx14 RRR (Regression Readiness Review): 6/04/2025

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

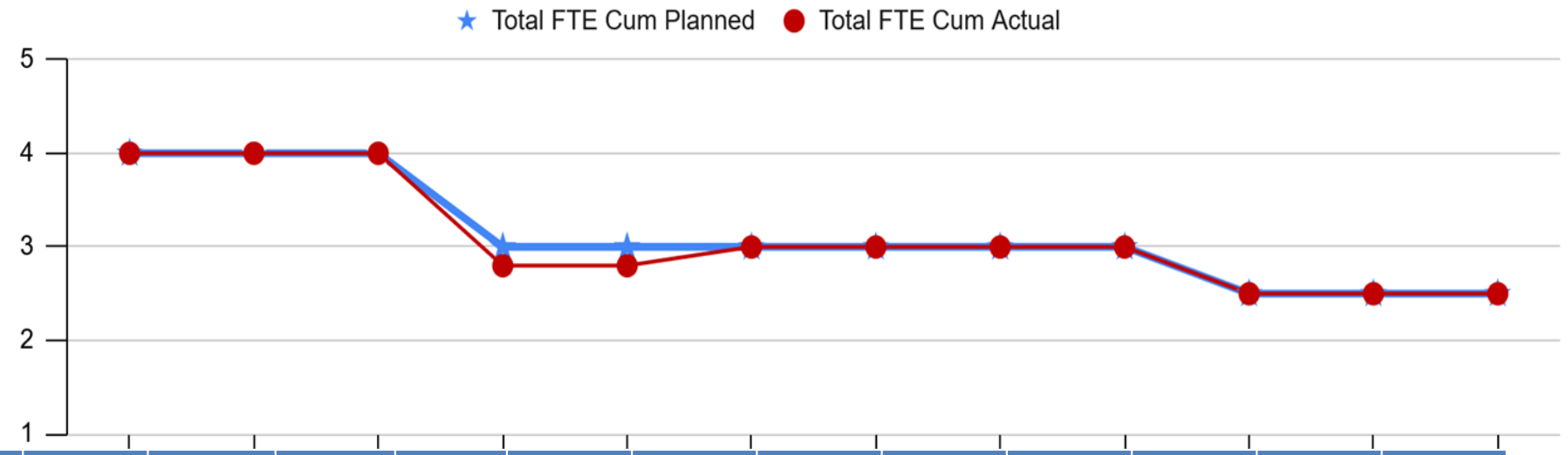
- Deploy to SOL: May. 19, 2025
- SOL Checkout: May. 28, 2025 (STAR report: 5/29/25)
- To OCCB: May. 29, 2025
- DP-TE deploy: Jun. 6, 2025 (STAR report: 6/9/2025)
- TTO: Jun. 17, 2025

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

STAR JPSS Schedule: TTA Milestones



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	0.0	0.0	0.0	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	3.00	3.00	3.00	2.50	2.50	2.50
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	3.00	3.00	3.00	2.50	2.50	2.50

CS: Vacant (prev. Alisa Young)
WYE: *Murty Divakarla, Tom Atkins, Jeffrey Weinrich, Tess Valenzuela*

Color code:

Green: **Completed Milestones**

Gray: **Ongoing FY25 Milestones**

August 2025

Active Fires

August 2025

Accomplishments / Events:

- NGFS VIIRS processing capability for EFIRE-NGFS intercomparison has now been implemented for historical data also
  - the developed retrospective processing capability enables production of data coincident with airborne reference data (e.g. FIREX-AQ MASTER FRP, NASA FireSense MASTER FRP)
- Continued work on updating EFIRE persistent anomaly database
  - added new detections of persistent anomalies
  - extended solar farm database to global

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Evaluate Suomi NPP and NOAA-20 reprocessed data record	Mar-25	Mar-25	Jan-25	Completed ahead of schedule
Generate cross-verification datasets, including opportunistic in-situ reference data	Dec-24	Jun-25	Jun-25	The available data turned out to be more limited than expected and there was additional work involved to derive fire radiative power data from the radiances.
Generate / update opportunistic in-situ reference data	Mar-25	Jun-25	Jun-25	Same as above
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		

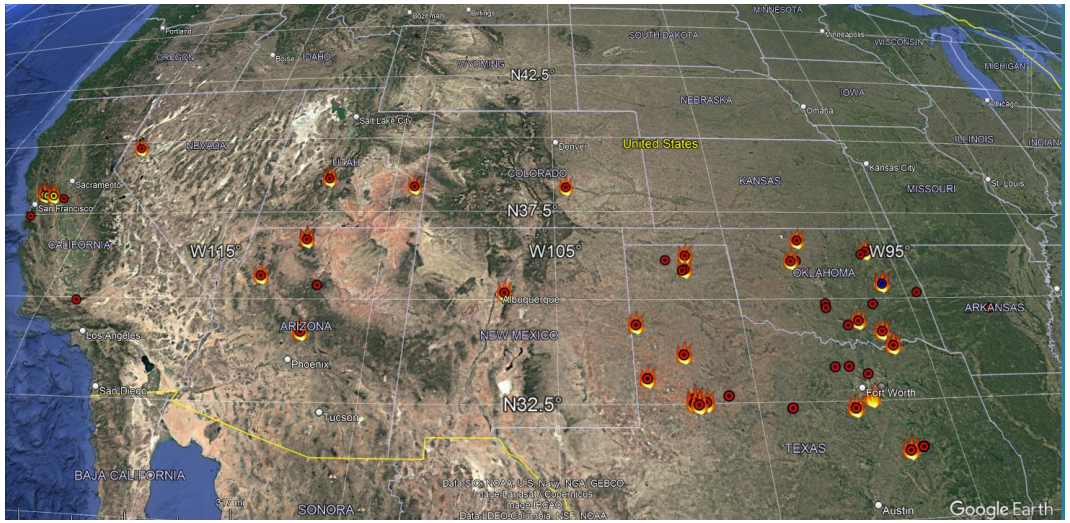
Overall Status:

	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:

Highlight: NGFS vs. EFIRE VIIRS detections



Next Generation Fire System (NGFS; rectangles) and operational Enterprise Fire (EFIRE; fire icons) NOAA-20 VIIRS I-band fire detections on July 23, 2019 at 08:58 UTC

Aerosol

Overall Status:

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

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

Issues/Risks:

No risks.

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*	July 2025	
Subtask 2.2: *Work with Volcanic Ash team to import the ash detection into ADP*	*Jun 2025*	*Jun 2025*	Jun 2025	
Subtask 2.3: *Make code updates to ADP algorithm to implement "smoke call back"*	*Sept 2025*	*Sept 2025*		
Subtask 2.4: *Adapt ADP algorithm to NOAA-21 OMPS*	*Dec 2025*	*Dec 2025*		
Subtask 2.5: *Begin the process to transition VIIRS PM2.5 algorithm to operations*	Mar 2026	Mar 2026		
Adapt the VIIRS AOD algorithm to use PACE OCI data	Feb 2025	Feb 2025	Feb 2025	
Develop new LUTs and PCTs for over bright-land retrieval June 2025	Jun 2025	Jun 2025	Jun 2025	
Evaluate Metop-SG AOD retrievals using seasonal samples of VIIRS proxy data	Jul 2025	Jul 2025		Delayed due to Metop-SG launch
Complete design, coding and testing of simultaneous multi-spectral reflectance fitting for AOD retrieval	Aug 2925	Aug 2925	Jul 2025	
Complete assessment of a multi-year VIIRS EPS SNPP, NOAA-20 and NOAA-21 AOD	Aug 2025	Aug 2025		
Deliver updated bright-land AOD algorithm to ASSISTT	Sep 2025	Sep 2025		

Baltimore Air Quality and Marcellus Survey (BAQMS) Campaign. A month-long NESDIS/ Oceanic and Atmospheric Research (OAR) joint campaign to survey air pollutants from Marcellus shale and the urban corridors of Baltimore and Washington, DC concluded on 4 August 2025. The STAR Aerosols and Atmospheric Composition team conducted daily flight forecasts to help define flight path for the following day. NOAA near real time satellite imagery and National Weather Service numerical model guidance helped frame the flight forecasts. Based on the forecasts, a decision was made to (a) fly or not fly, (b) which of the three regions to cover, and (c) what type of measurements to make. The regions targeted for surveys included Baltimore and Washington, DC urban areas, southwest Marcellus (intersection of Ohio, Pennsylvania, and West Virginia) shale oil and gas exploration basin, and northeast Marcellus (Pennsylvania) basin. The figure below shows the three regions covered by the flights. The STAR team will use the data collected over Baltimore and Washington, DC to evaluate Tropospheric Emissions: Monitoring of Pollution (TEMPO) based estimates of nitrogen dioxide emissions. Additional validation activities will involve assessing the accuracy of TEMPO's aerosol layer height retrievals, and fine particle concentrations derived using aerosol optical depth measurements. This is especially important for

Aerosol

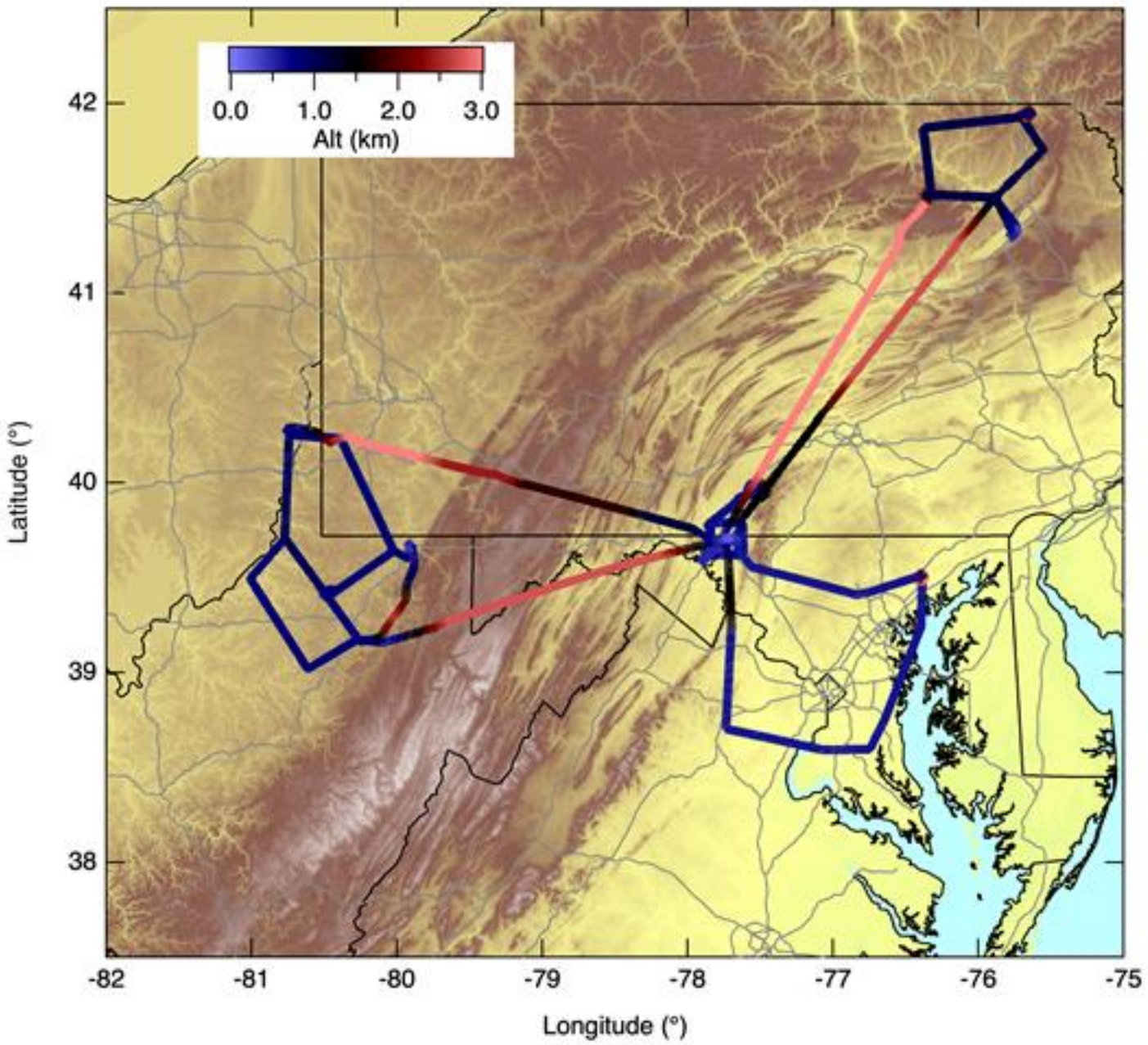


Figure. The three regions covered by the flights in the BAQMS campaign.

ATMS SDR

August 2025

Accomplishments / Events:

- Submitted ADR 11366 S-NPP ATMS PCT update for new comp motor requested voltage quality flag upper/lower limits. After the disable of S-NPP ATMS compensator motor from January 28, 2025, the comp motor requested voltage got stabilized at a low level, which is lower than the health status quality flag check lower limit when the comp motor is enabled. Therefore, the SDR data quality flag 9 is constantly activated since January 28, 2025. The activated QF may prevent the utilization of S-NPP ATMS SDR data if the general data users use the QF to determine if the data is to be used or not. The PCT update validation experiment indicates the S-NPP ATMS comp motor req voltage QF is deactivated with the new quality check threshold. OSPO, STAR, and NG reach the consensus to transition the updated PCT to operations.The process has reached to the final stage for IDPS pre-operational validation.Shown in Figure 1 is the S-NPP ATMS comp motor req volt and old/new quality check thresholds.
- Updated the ATMS passive geolocation accuracy monitoring package to increase the target domain from 24 to 31 to increase the daily qualified sample size. With the increased daily sample size, the reliable geolocation accuracy monitoring delay days can be reduced from 30 days to 20 days without losing the quality.
- Conducted NPP/N20/N21 ATMS reflector emissivity generation experiment to minimize the impact of reflector emissivity contamination in TDR/SDR data. Preliminary results indicate a reasonable agreement between the empirical emissivity calculation and operational PCT emissivities at K/Ka/W/G band channels. Relatively pool agreement at V-band channels. The initial derivative from pitch maneuver data does not take into account other error sources yet. Additional improvement based on MIT/LL ATMS team empirical emissivity estimation algorithm also provides reasonable results. However, some discrepancies still exist and need to be addressed in additional studies.

Overall Status:

	Green1 (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	Category	Original Date	Actual Date	Variance Explanation
JPSS-3 SN306 ATMS Pre-launch Characterization Report	Sustain	Dec-24	Dec-24	
Update ATMS ATBD	Maintain	Mar-25	Mar-25	
ATMS beam alignment error correction evaluation	Sustain	May-25	Jun-25	
GRAVITE ATMS TVac data archiving	Maintain	Jun-25	Jun-25	
Final Version of the JPSS-4 SN305 ATMS Cal/Val Plan	Sustain	Jun-25	Jun-25	
Deliver JPSS ATMS geolocation rotation matrix correction code to IDPS for Mx15 release to improve the QS ATMS geolocation accuracy	Maintain	Jul-25	Jul-25	
Deliver S-NPP ATMS PCT update to deactivate comp motor req volt quality flag	Maintain	Aug-25	Aug-25	
Evaluate the ATMS Geolocation accuracy assessment tool and determine if the current sliding window can be reduced from 30-day period to a shorter period	Sustain	Aug-25	Aug-25	
Support JPSS-4/JPSS-3 JCT and Test events (J3 Pre-Storage TVAC, IDPS JPSS-3/JPSS-4 Test data Flow, etc.)	Sustain	Sep-25		
Radiometric inter-comparison of S-NPP, NOAA-20 and NOAA-21 ATMS SDR data against other LEO/GEO Microwave observations and GNSS-RO.	Sustain	Sep-25		
NOAA-21 ATMS Spectral Response Function (SRF) analysis/report to allow replacement of simulated NOAA-21 ATMS SRFs with measured values	Sustain	Sep-25		
Enhance the ATMS Calibration Website with new capabilities for rapid anomaly and SDR data evaluation response	Maintain	Sep-25		
Review/Checkout of IDPS Mx Builds SOL and I&T Deploy Regression data	Maintain	Sep-25	Mx12 I&T, Jan 2025, Mx13 I&T, Apr 2025 Mx14 I&T, Jul 2025	

Highlights

Figure 1 S-NPP ATMS compensator motor requested voltage from February 6 - 7, 2025 with old (red) and new (green) quality check ranges

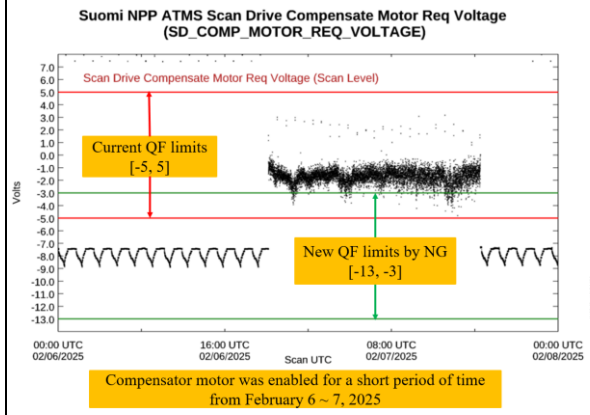
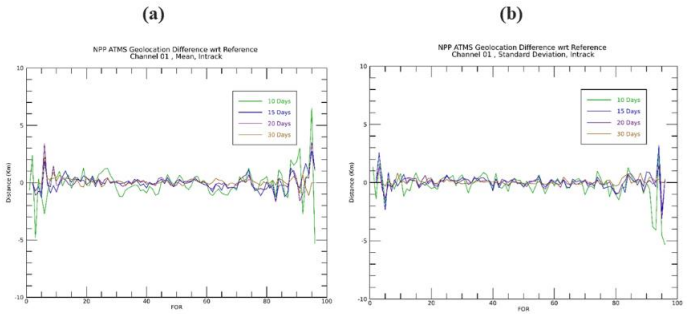


Figure 2 ATMs geolocation error difference of channel 1 between the reference case (24 domains/30 days) and the cases of 31 domains at 10, 15, 20, and 30 days for S-NPP in-track mean (a), and in-track standard deviation (b)



Clouds

August 2025

Accomplishments / Events:

- Work continues on the investigation of the 986mb level issue within the cloud height algorithm
- Testing with the AMSR-2 snow mask, which is a viable replacement for the SSMI snow mask, continues.

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:

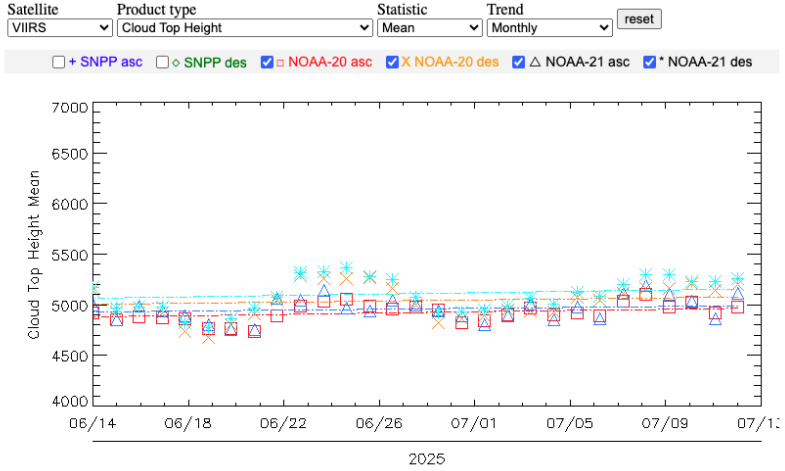
None

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

Highlights:

Figure 1

The trend for the cloud top height for NOAA-20/21 over the last month is shown on the right. As is seen, and expected, both satellites are close to each other, although variations occur due to the half orbit difference between the two satellites.



CrIS SDR

August 2025

Accomplishments / Events:

- Several granules data gaps for NOAA-20 CrIS on 8/4/2025. Reprocessing was done within one day (**Fig. 1**). Other minor data gaps due to processing delay occurred in August 2025. A noise increase event was observed on NOAA-20 SWIR/FOV2 on 8/24/2025 (**Fig. 2**).
- NOAA-21 calibration artifact at the eclipse-exit mitigation effort continues. The UW PC package was received and exercised (**Fig. 3**). It was uncovered that the LWIR band uses 874 data points in the operational IDPS processing. The UW PC package has 876 data points.
- Development of the CrIS versue VIIRS BT intercomparison tool is progressing. The CrIS versus VIIRS BT residuals and histograms are presented for M13 band. The comparison shows 2 populations (**Fig. 4**).
- The Mx14 I&T check out was successful. For example, the absolute spectral calibration is presented (**Fig. 5**). Other check out items included the O-B, noise, and geolocation among others.
- Transition to the Cloud is progressing. The “docker” was installed. Installation of ADL is in progress. CrIS imagery on the cloud was exercised (**Fig. 6**).
- Manuscripts write up are processing(NOAA-21 performance, Neon lamp misfiring).

Milestones	Category	Original Date	Actual Completion Date	Variance Explanation
Delivery of the JPSS-4 CrIS PreLaunch Characterization Report	Sustain	Dec-24	Jan-25	Needed NASA’s Feedback
Implement and Test NOAA-21 Algorithm/PCT Calibration Updates to Mitigate the Impact of Neon Lamp Misfiring	Sustain	Apr-25	Apr-25	
Offline calculation of laser wavelength based on spectral correlation method	Sustain	Apr-25	Apr-25	
Delivery of the Final JPSS-4 CrIS Cal/Val Plan	Sustain	Jun-25	Jun-25	
Delivery of the JPSS-4 CrIS Initial PCT LUT	Sustain	Jun-25	Jun-25	
IDPS Mx14 I&T Checkout	Maintain	Aug-25	Aug-25	
Implement and Test Solutions of Calibration Error Reduction for JPSS-4 Launch Risk Mitigation	Sustain	Sep-25		
Delivery of the JPSS-4 CrIS Engineering Packet with New PRT Coefficients	Sustain	Sep-25		
Provide support to Metop-SG Joint Cal/Val Activities	Sustain	Sep-25		
Radiometric Intercomparison of the Operational CrIS SDR data against other LEO/GEO IR observations and GNSS-RO	Sustain	Sep-25		
Review/Checkout of IDPS Mx Builds SOL and I&T Deploy Regression data	Maintain	Sep-25	Block 2.3 Mx12 I&T, Jan 2025, Mx13 I&T, Apr 2025	
Perform the transition of Cal/Val activities to the Cloud environment	Maintain	Sep-25	In Progress	
Conduct maintenance including investigation and anomaly resolution of on-orbit CrIS sensors	Maintain	Sep-25	NOAA-21 Neon lamp,, March 3	

Overall Status:

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

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

Issues/Risks:

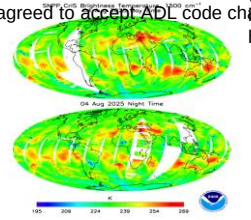
Red: It has been announced that JPSS-4 TVAC data and documents are now ITAR. STAR IT does not have a secured environment to host or process ITAR data.

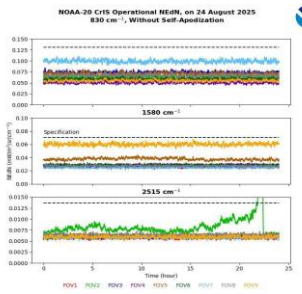
Yellow: The CrIS Team is still in need of hardware resources. Presently, there is only two servers dedicated to 5 CrIS Team members. Access to additional servers is still desirable. There is a risk for the CrIS SDR Team to continue on such a dual-server environment for the operational CrIS Cal/Val activities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

Blue: ASSIST Team has agreed to accept ADL code change tested on CentOS9.

Highlights:

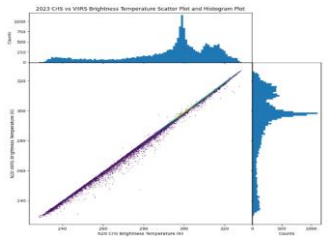
(1) S-NPP 3 orbits data gaps on 4 July 2025



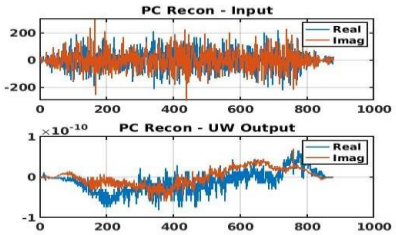


(2) NOAA-2 SEIR/FOV 2 noise increase event on 24 August 2025

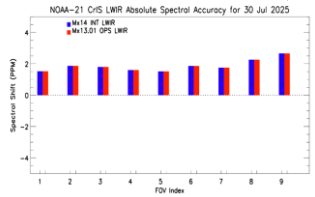
(4) NOAA-20 CrIS vs VIIRS M13 BT intercomparison of residuals and histogram.



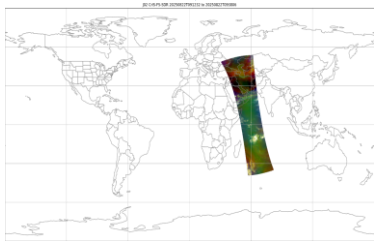
(3) NOAA-21 PC modeling of the ICT/DS. UW package was exercised and the reconstruction is shown below.



(5) MA 14 I&T checkout is completed. Plot below shows the NOAA-21 absolute calibration.



(6) NOAA-21 CrIS imagery generated on the Cloud.



Accomplishments / Events:

Validation of VIIRS IST product with IceBridge KT-19 measurements

To validate the operational VIIRS ice surface temperature (IST) product, the VIIRS IST is compared to airborne KT-19 observations during NASA's Operation IceBridge. The KT-19 is a nadir-pointing radiometer flown on the bottom of the NASA IceBridge aircraft. NASA's KT19 Version 2 data provide an improvement of the geolocation of the KT-19 footprints, due to replacing the coarse real-time GPS positions with post-processed differential GPS positions.

In this comparison, the IceBridge P-3 aircraft flew at an altitude of 3000 ft. over sea ice off the Antarctic coast on November 4, 2017 (Figure 1). At this altitude, the KT-19 spot size is ~100m.

Flight reports indicated mostly clear skies during this flight, allowing both the KT-19 and VIIRS to "see" the surface with their respective thermal signature.

Cryosphere

Accomplishments / Events:

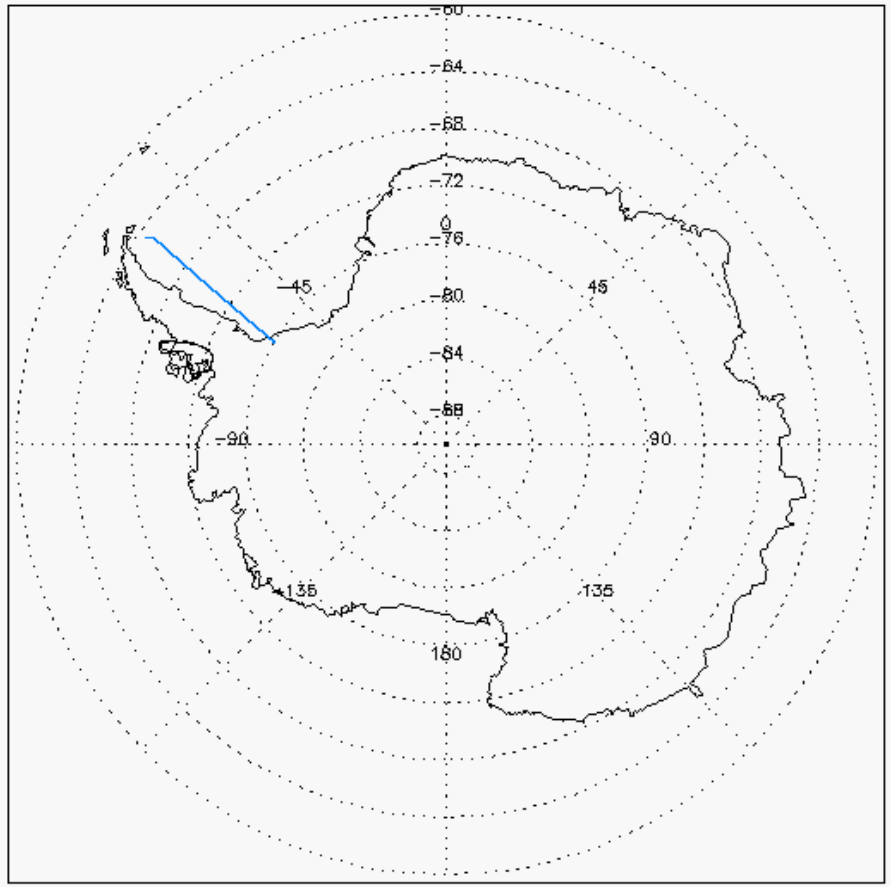


Figure 1. IceBridge P-3 aircraft flight track (in blue) in the western Weddell Sea on November 4, 2017. General direction of flight is to the NW.

Accomplishments / Events:

The KT-19 observations along this track are compared to collocated VIIRS IST data during this flight segment, which was under mostly clear skies. The VIIRS IST Product shows good agreement with the KT-19 data along the flight track (Figure 2). Statistics are shown in Table 1.

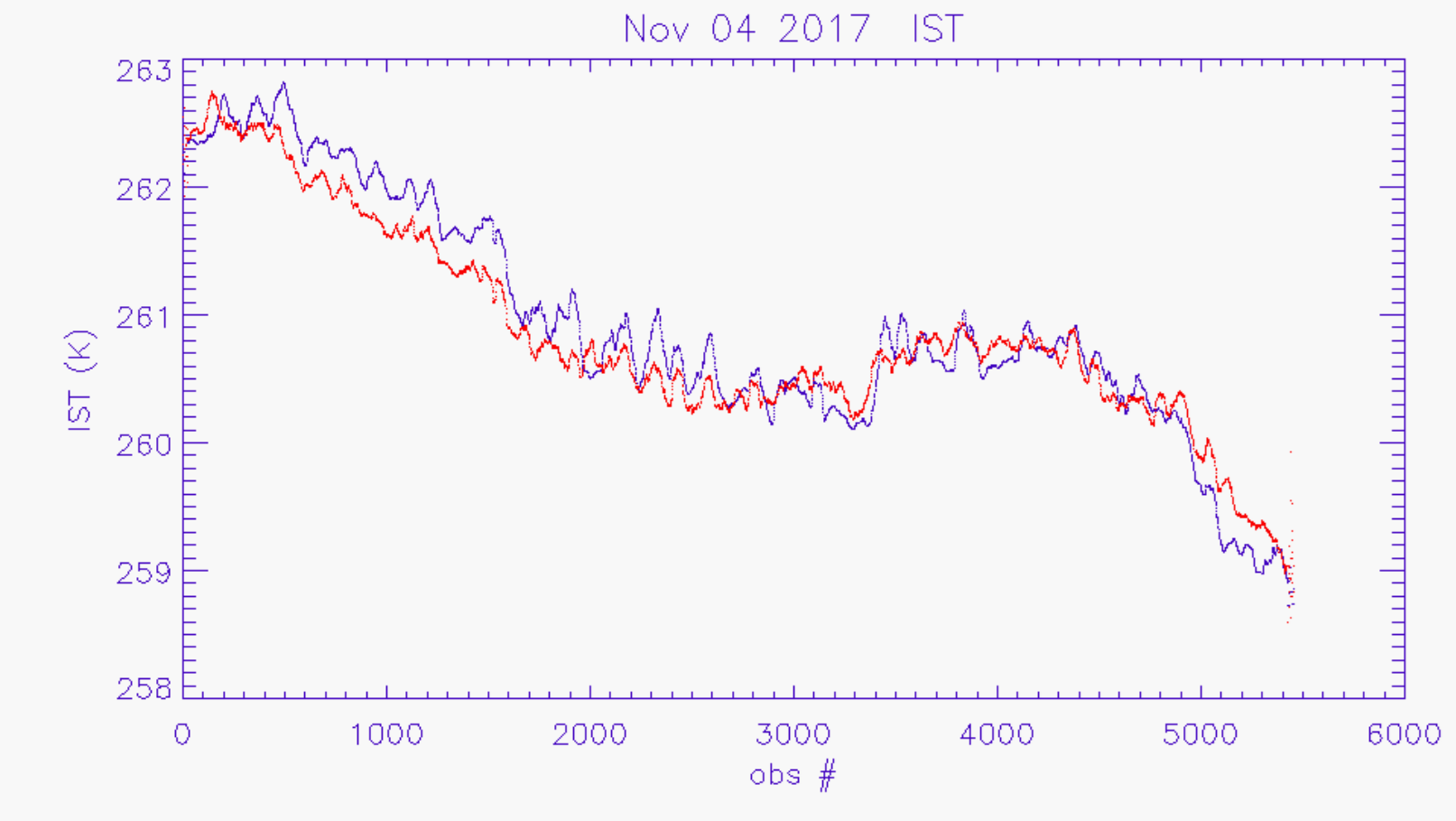


Figure 2. VIIRS IST product (purple) vs. IceBridge KT-19 IST measurements (red) along the November 4, 2017 Antarctic flight track.

Accomplishments / Events:

The comparison was rerun using IST regression coefficients typically applied for Arctic ISTs (Figure 3). Table 1 summarizes the results for the Antarctic (the operational VIIRS IST) and the Arctic coefficients. For this comparison, the Antarctic regression coefficients, which are used in the operational VIIRS IST product, performed more accurately than the IST product that used the Arctic coefficients.

IST coeffs	KT-19 Mean (K)	VIIRS IST Mean (K)	KT-19 Std. Dev. (K)	VIIRS IST Std. Dev. (K)
Antarctic	260.88	261.00	0.912	0.985
Arctic	260.88	261.38	0.912	0.947

Table 1. IST results for VIIRS IST and OIB KT-19 products for November 4, 2017.

Cryosphere FY25 Milestones/Deliverables (in general)

April 2025

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

Cryosphere FY25 Milestones/Deliverables (in general)

April 2025

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

GCOM-W/AMSR2 & AMSR3 Precipitation

August 2025

Accomplishments / Events:

- Initial preparation for setting the GCOM AMSR2 algorithm package for WSF-M MWI are completed
- Development and testing of a prototype machine learning-based AMSR2 GPROF Precipitation algorithm continued
- A full month of global precipitation rate estimates is produced
- Successfully tested GPU computational resources for batch processing
- Results have been compared to those of the current GAASP AMSR2 Precip product and NASA PPS AMSR2 precipitation rate, confirming high potential of the ML-approach to successfully deliver the product.

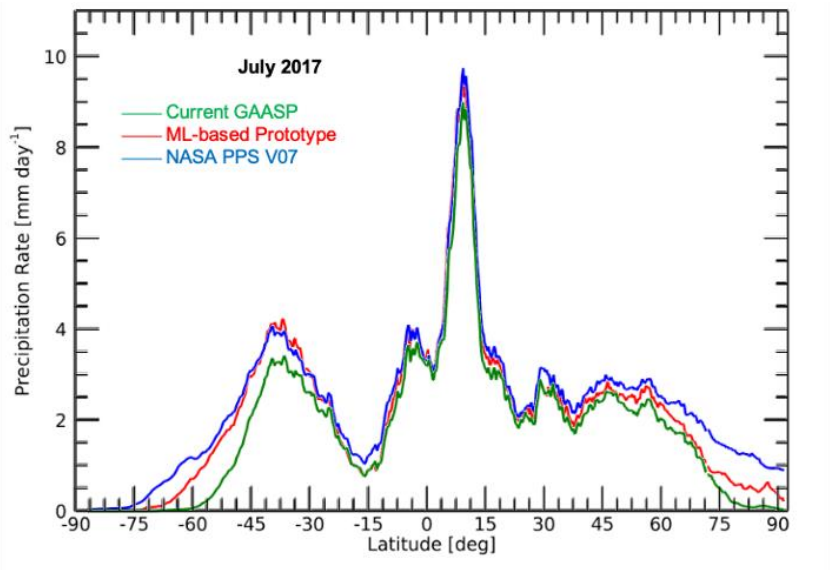
Overall Status:

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

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

Issues/Risks:

Highlights:



AMSR2 Global Zonal Mean precipitation rate for July 2017; at 0.25° resolution; note: the PPS (blue) and ML-based (red) products do not screen for snow, at this time.

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

GCOM-W/AMSR2 & AMSR3 Sea ice

August 2025

Accomplishments / Events:

- Delivered initial version of algorithm code for an L2 sea ice concentration product rather than the current swath-updated L3 gridded product
  - Using NASA Team 2 algorithm as it is most easily adaptable to swath data
  - Bootstrap will be investigate further in the future
- Continued validation and maintenance of operational algorithm
  - 24-hour field, updated with most recent swath
  - Total and multi-year concentration
- Helped investigate source of error in AMSR2 processing leading to bad sea ice retrievals
- Validation data being prepared for further comparisons: Landsat, ICESat-2 concentration, mooring data
- Preparation for AMSR3 – algorithm modifications, for intercalibration with AMSR2

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Continuing assessment of AMSR2	12/2024		Ongoing	
Recoding/refactoring software	9/2024		9/2024	
Initial software delivery for AMSR3	12/2024	2/2025	3/2025	
Delivery of further algorithm updates	5/2025	11/2025		

Overall Status:

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

AMSR2 sea ice products began showing erroneous sea ice. This was investigated and found to be due to missing quality flags for the L1R input data.

A fix is being implemented by NOAA to screen out bad swaths.

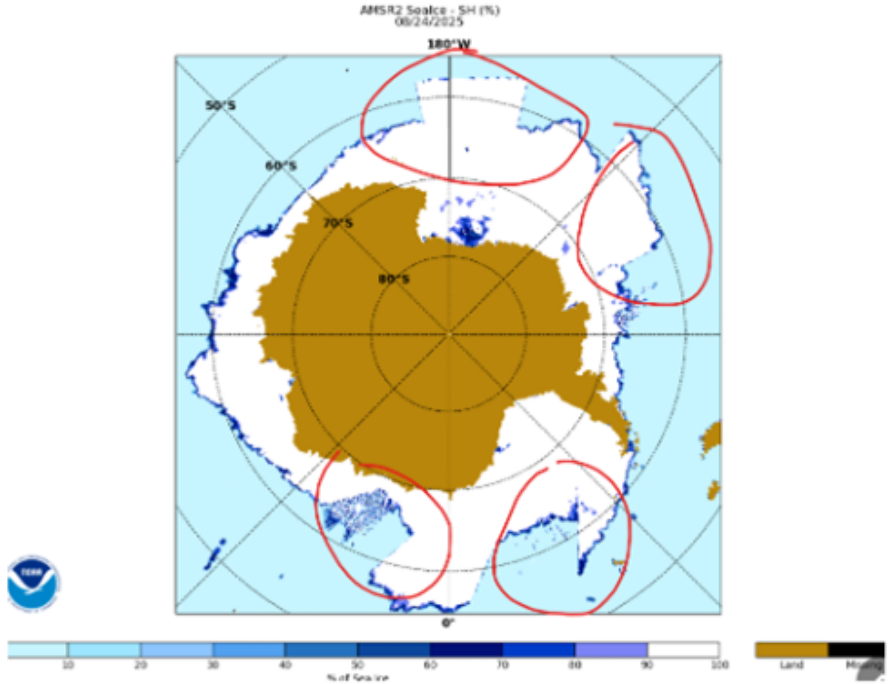


Image from Aiwu Li, NOAA, showing bad swaths with sea ice.

GCOM-W/AMSR2 & AMSR3 Soil Moisture

August 2025

Accomplishments / Events:

- Reprocessed historical orbital data using the new ML algorithm for 2020 and 2021.
- Reprocessed SMOPS with all AMSR2 SM input.
- Checked the quality and calculated the 5-year mean of AMSR2 SM. All looks good (lower right panel).
- Worked on the very first version of AMSR3 SM package based on AMSR2 package with ML model.

Major Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
NDE on-prem retirement and distribution cut-off	4/4/2025	4/4/2025	On Time	
AMSR2 SM EDR software package using ML algorithm	8/2025	8/2025	Canceled by OSPO	OCS stopped AMSR2 software updates & starts preparation for AMSR3
Reprocessing of L2 SM EDR's and its validations using in-situ soil moisture measurements	5/12/2025	8/2025	Completed	BAMS paper published
Evaluation of AMSR3 brightness temperature data – if available, and check the its consistency with AMSR2 brightness temperature data	2026			
Implementation of AMSR2 SM EDR algorithm using AMSR3 TB inputs	2026			

Overall Status:

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

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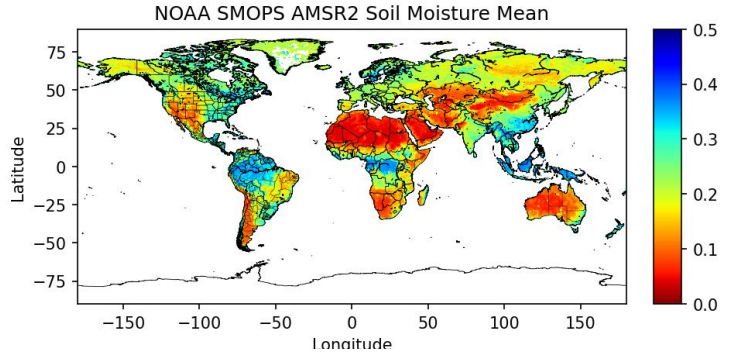
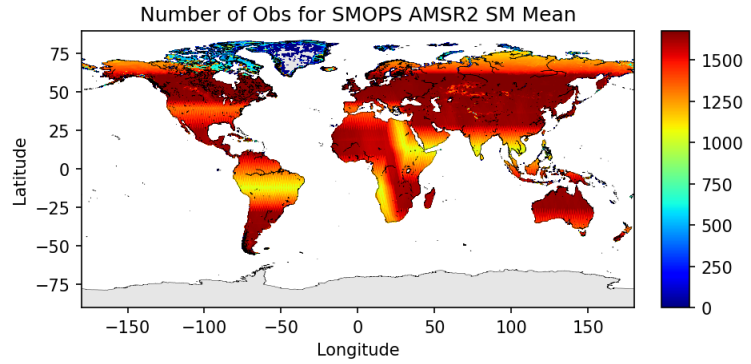
Issues/Risks:

Highlights:

5-year Mean



# of Obs Used



GCOM-W/AMSR2 & AMSR3 Oceans and Imagery

August 2025

Accomplishments / Events:

- All-weather SST development and validation work ongoing
- Finalizing CRTM setup in preparation for double difference analysis of AMSR3 brightness temperatures
- Preparing for collection of additional ancillary data such as GMI brightness temperature to use for the higher frequency channels on AMSR3

Overall Status:

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

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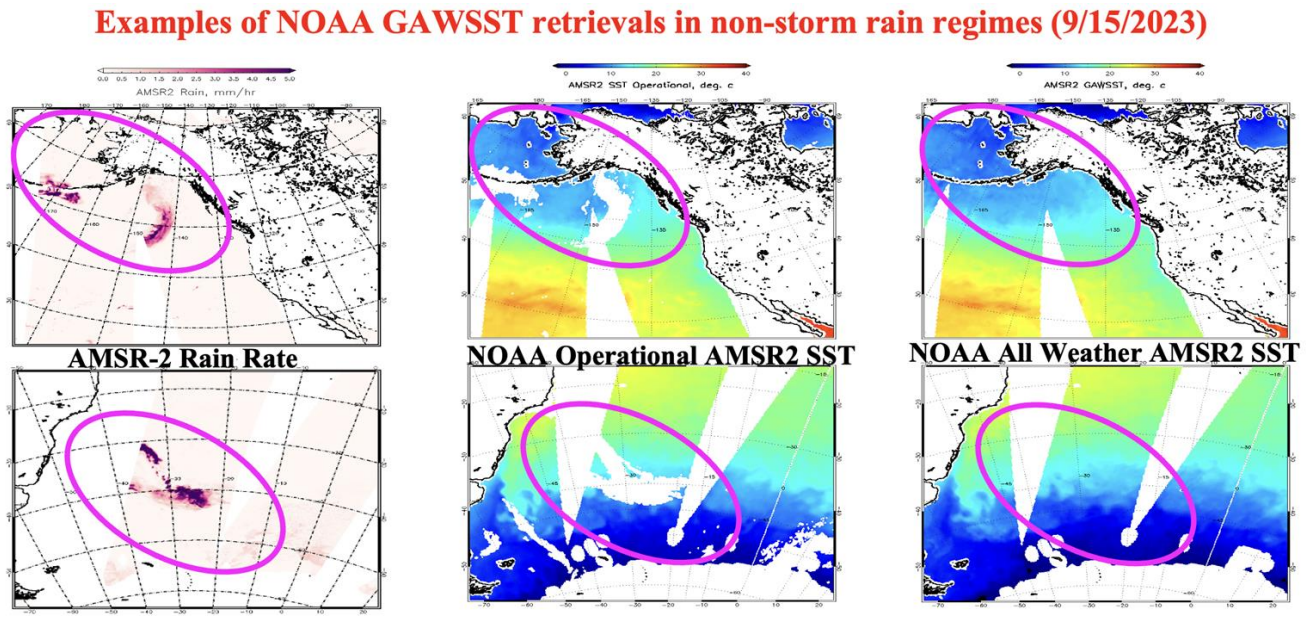
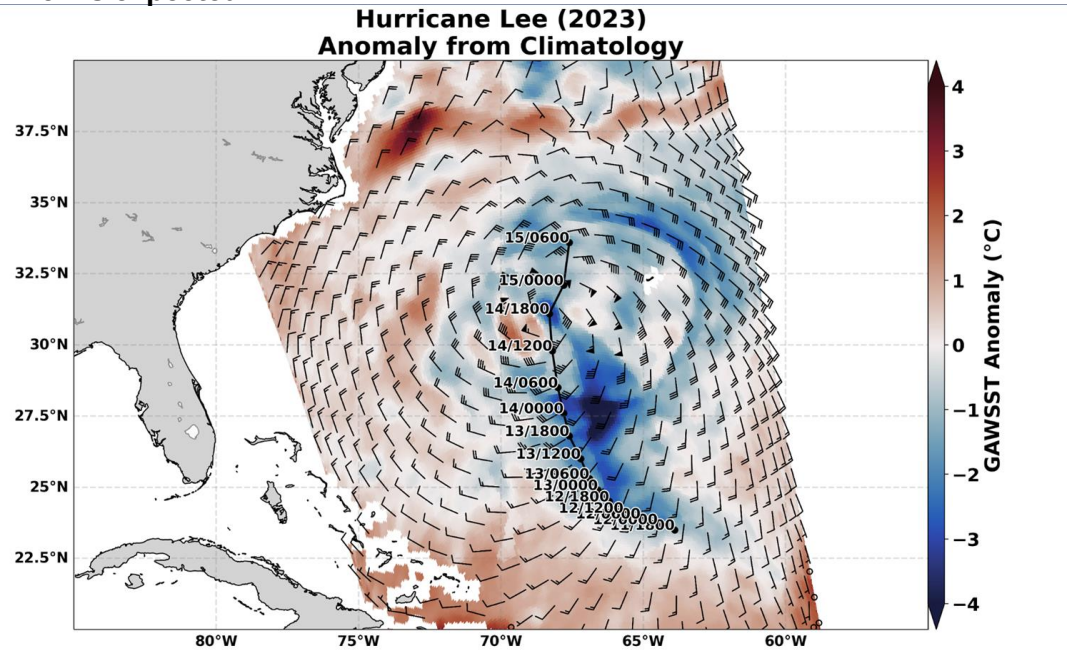
Issues/Risks:

Highlights:

Examples illustrating the new AMSR2 all-weather SST (under development) versus the current operational AMSR2 SST Product



SST anomaly plot using the new AMSR2 all-weather SST showiing clear cooling associated with Hurricane Lee. The cooling is predominately to the right of the track which is expected.



GCOM-W/AMSR2 & AMSR3 Snow Products

August 2025

Accomplishments / Events:

- Continued progress towards determining spatially variable regression coefficients for an Enterprise Snow Depth Retrieval Algorithm to replace the current ones.
- Improved the satellite-reanalysis training dataset and code by incorporating filters to remove false snow cover microwave signatures due to rain and other potential confounders.
- Developed code for the processing of in situ snow data to generate daily validation statistics and monitoring of snow cover, snow depth and Snow Water Equivalent
- Upgraded codes for AMSR2 and AMSR3.

Overall Status:

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

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Issues/Risks:

Highlights:

Major Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Initial training and validation statistics for the new snow depth retrieval algorithm	**9/2025**	**On-time**		
Complete training of the new snow depth algorithm	**11/2025**		**On-going**	
Complete testing of the new suite of Snow Cover, Snow Depth and Snow Water Equivalent algorithms	**03/2026**		**On-going**	
Expansion of daily monitoring and software upgrades before transitioning to operations	**04/2026**		**On-Going**	
Snow package delivery to ASSIST	**05/2026**		**On-Going**	

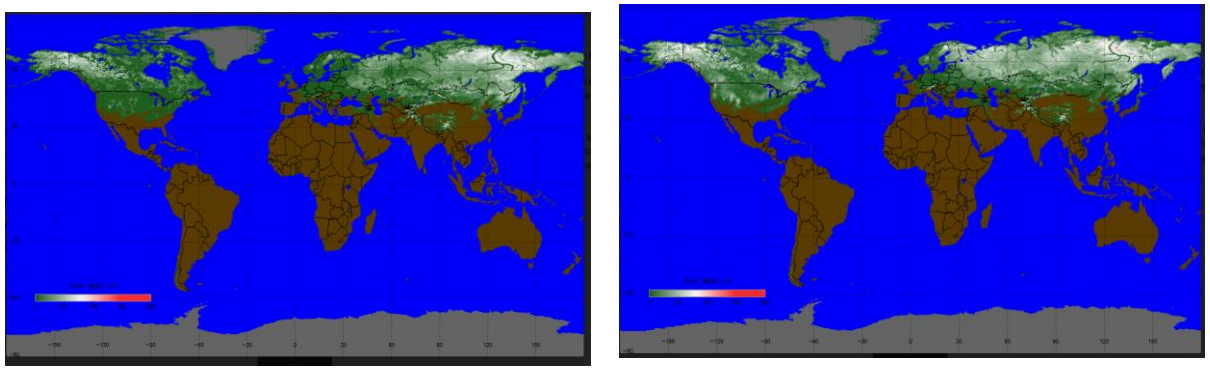


Figure 1. Snow Depth on January 18, 2024 from operational AMSR2 (left) and an experimental 4-km blended GMASI in--situ snow depth algorithm (right).

GOSAT-GW Schedule

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

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

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

ICVS

August 2025

Accomplishments / Events:

- Developed TLE based JPSS on-orbit satellite nadir geolocation calculation tool. Use the geographical distance between TLE and Ops GPS based geolocation data to monitor the near real time geolocation accuracy change. Use S-NPP ATMS and OMPS NM data as example to demonstrate the orbital variation of the geolocation bias between two sets of geolocation data. Also introduce the AI based anomaly detection algorithm (XGBoost) to identify the unusual geolocation shift. Shown in Figure 1 is the S-NPP GPS invalid event from November 1 to 10 with Latitude and Longitude error based on AI anomaly detection algorithm. Figure 2 shows the ATMS daily and orbital mean TLE vs GPS geolocation distance from July 5 to 18, 2025. The distance shows relatively bigger level from July 10 ~ 12, when a significant GPS invalid event was issued.
- Finished the development of NOAA-21 VIIRS dynamic display product generation and bug fix for NOAA-20/S-NPP VIIRS dynamic display products. Several display defects are fixed by the adjustment of data quality control thresholds.The new products is under testing in ICVS beta website and migrated to ICVS public website after getting confirmation from VIIRS SDR team. Shown in Fig 3 is N21 VIIRS RSB H factor life time orbital mean dynamic display trending
- Generated one year of GDAS/GFS 0.25 high resolution data to support OMPS CRTM simulation emulator development activity. Performed NOAA-21 ATMS CRTM emulator experiments using ICVS CRTM simulation data and ECMWF match up profiles. Preliminary results indicate that the AI/ML based CRTM simulation can well capture the major features of O-B global distributions.

Overall Status:

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

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

Issues/Risks:

None

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

Figure 1 S-NPP OMPS AI based TLE vs. GPS geolocation bias anomaly detected from November 1 ~ 11, 2024

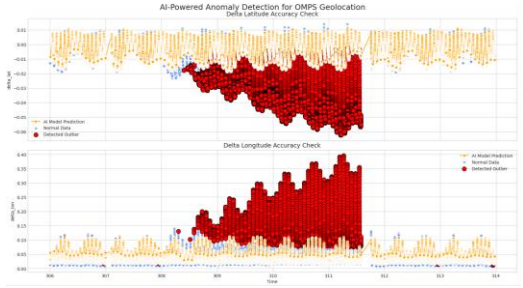


Figure 2 S-NPP ATMS K band TLE vs GPS daily mean (upper) and orbital mean (lower)geolocation distance from July 5-18,

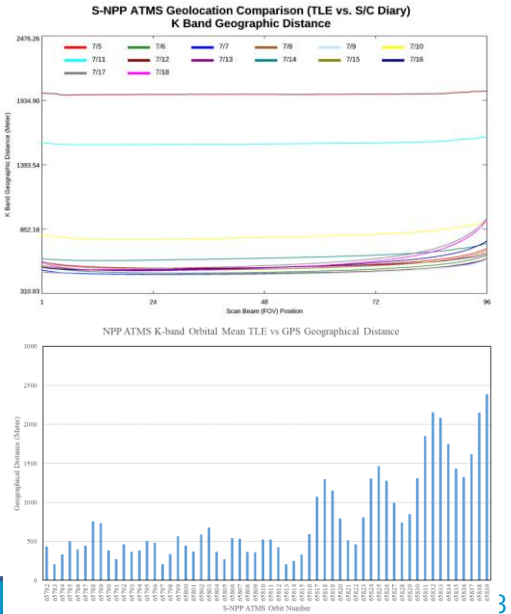
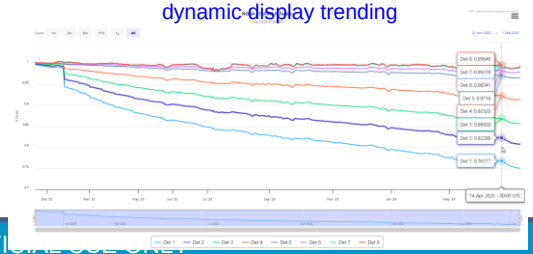


Figure 3 NOAA-21 VIIRS RSB H-factor lift time orbital mean dynamic display trending



ICVS QuickSounder

August 2025

Accomplishments / Events:

- Reviewed the QuickSounder spacecraft and ATMS proxy data generated based on NOAA-20 on-orbit data and provided by NASA QuickSounder program. Plot sample data figures to verify the proxy data format and contents. Shown in Figure 1 is the QuickSounder ATMS calibration gain produced by version 2 HDF2 format proxy data. The HDF5 format data is in CCSDS format with reasonable range.
- Attended the initial discussion with OCS NCCF data dissemination team to understand the QuickSounder operational data dissemination working flow. Introduced the ICVS team data requirements for near real time spacecraft status, instrument performance, and science data quality monitoring.

Overall Status:

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

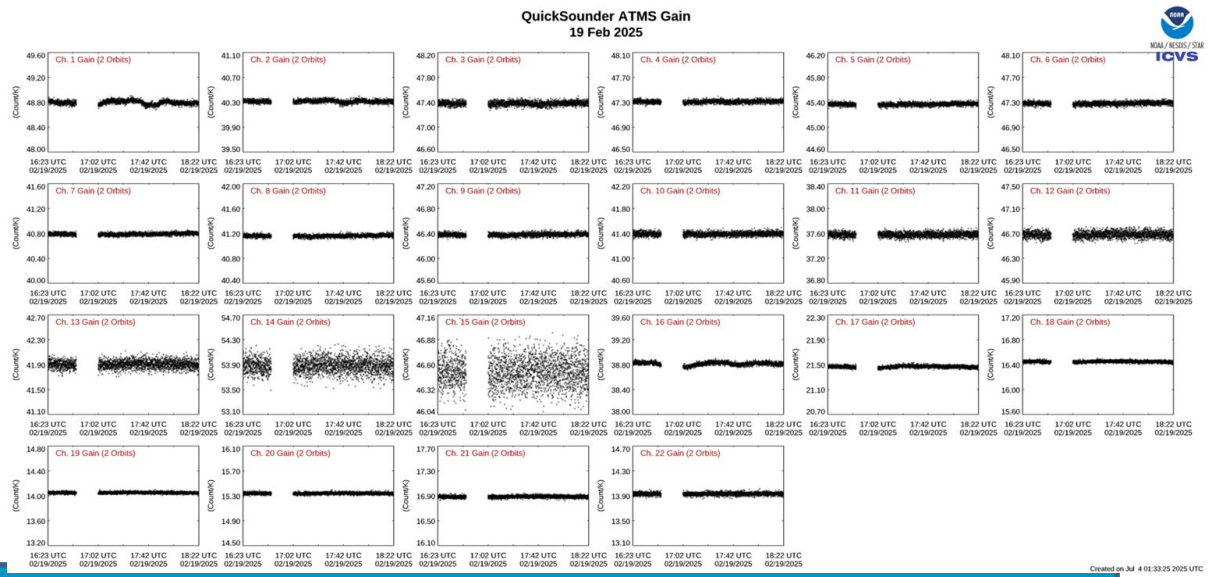
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Task/Milestone Description	Original Date	Completion Date	Variance Explanation
QuickSounder proxy data initial check out	Aug-25	Aug-25	
Work with OCS NCCF team to verify the QS operational data types to be transferred to STAR	Oct-25		
Develop a prototype about QS ICVS monitoring baseline functions	Mar-26		
Generate QS ICVS monitoring sample products using QS spacecraft and ATMS proxy data and demonstrate the maturity of ICVS QS web pages	Apr-25		
Add user name/password protection function in ICVS QS monitoring web site to support the external user access by NASA team and spacecraft/instrument vendors during the post-launch early orbit checkout and intensive cal/val stages.	May-25		

Figure 1 QuickSounder ATMS calibration gain from version 2 HDF5 format proxy data on February 19, 2025



LEO QuickSounder ATMS SDR

Accomplishments / Events:

- ATMS geolocation assessment improvement tool was delivered and placed on GitLab. The technical report was reviewed and the final version was included as part of the distribution package. This task was completed on time and meets the milestone delivery schedule.
- Continued to make progress writing the ATMS PCA NEdT paper. Figure 1 shows singular PCA values for each currently operating ATMS sensor and will be included in the paper.
- Completed derivation of band correction coefficients for QS ATMS. Presented this work at the QuickSounder technical exchange meeting.
- Continued the development of a full antenna pattern efficiency calculation tool in 2D spherical coordinates. Figure 2 shows a sample 2D antenna pattern with additional refinements including improved interpolation resolution and other fixes.
- Applied and examined a preliminary ATMS reflector emissivity calculation correction for potential spacecraft and Earth interference. Emissivities calculated after applying this correction are shown in Figure 3 in addition to the original emissivity calculation and the operational PCT emissivities for NOAA-20 ATMS.
- Continued development of a tool to monitor NOAA-20 and NOAA-21 ATMS white/flicker noise.

Milestones	Original Date	Actual Date	Variance Explanation
Provide QuickSounder Algorithm Updates assessment summary	Jun-24	Jun-24	
QS Algorithm Package Delivery #1 to LEO Ground (post Instrument-Level TVAC assessment)	Nov-24	Nov-24	
QS Pre/Post-launch Cal/Val Plan	Jan-25	Jan-25	
Identify updates to the web-based Integrated Calibration and Validation System (ICVS) and provide scheduled to perform the updates	Apr-25	Apr-25	
QS Algorithm Package Delivery #2 to LEO Ground (post Observatory Environmental Testing assessment)	Jul-25	TBD	Obs. TVAC test delayed
Deliver QS ATMS geolocation rotation matrix correction code to IDPS for Mx15 release to improve the QS ATMS geolocation accuracy	Jul-25	Jul-25	
Instrument-Level TVAC assessment to process the TVAC data, generate the calibration parameters, and develop and test	Sep-25		

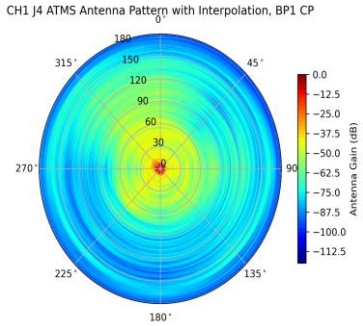
Overall Status:

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

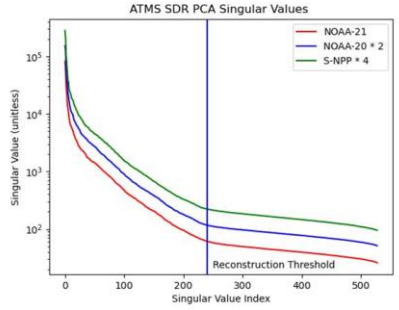
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks: **A computer environment that can handle CUI information has been successfully set up to assist STAR in supporting QS pre-flight activities. However, further testing and software installation is needed.**

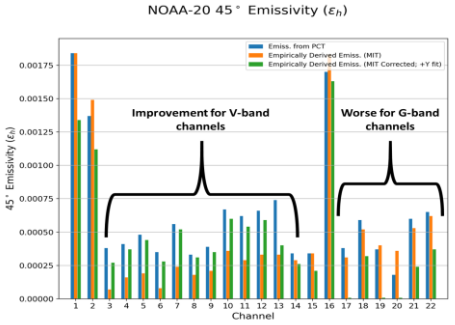
Highlights



(2) sample 2D antenna pattern with additional refinements including improved interpolation resolution and other fixes



(1; left) Singular values from PCA NEdT calculations for all 3 currently operational ATMS instruments



(3; right) NOAA-20 ATMS reflector emissivities for each channel (1-22) from the operational PCT (blue), calculated without a correction (orange), and calculated using a preliminary correction (green). Correction provides improvement at V-band channels

Leaf Area Index

August 2025

Accomplishments / Events:

- Generating two years (2023–2024) of LAI test data for NOAA/OAR users, including completion of missing daily surface reflectance and LAI, and reprocessing of weekly LAI. Final datasets will be verified before delivery to users.
- Continued development of the new temporal smoothing and gap-filling algorithm, with emphasis on areas of high uncertainty and improving computational efficiency due to the time-consuming nature of the process.
- Investigated phenology in regions where the LAI model underperforms, analyzing sources of uncertainty and potential improvement methods.
- Summarized the work of the summer internship, including updates to the training datasets for model retrieval and development of machine learning models for FCOVER and LAI.

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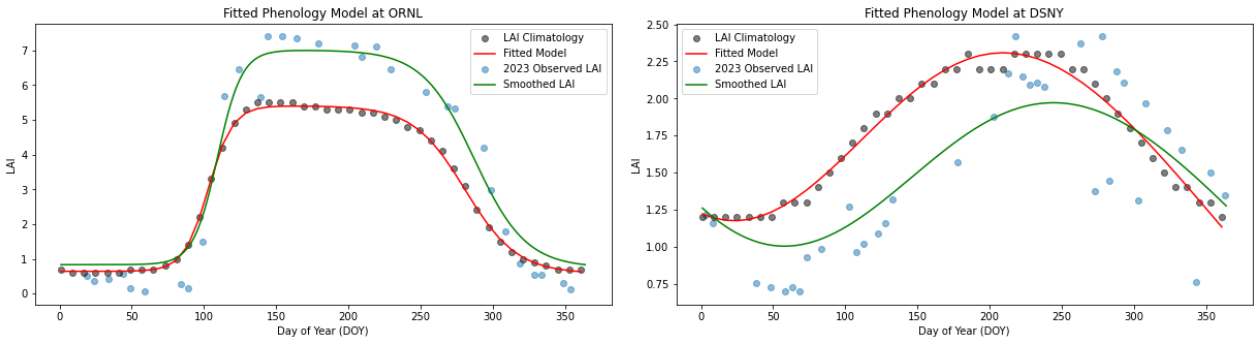
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

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	Mar 11, 2025	
LAI product in-situ validation & inter-comparison with other products	Jun-25	Jun-25	June 27, 2025	
Incorporate the LAI test data into the LSM model to evaluate the performance in the model	Jun-25	Aug-25	Aug 29, 2025	Test data is ready
Algorithm & product improvement according to the validation and model test.	Sep-25	Sep-25		

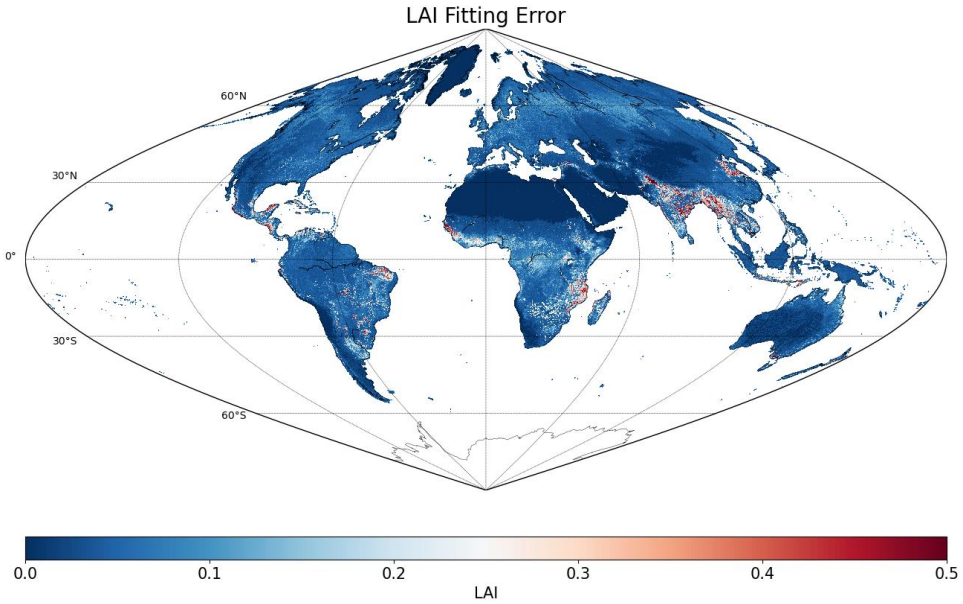
Highlights:

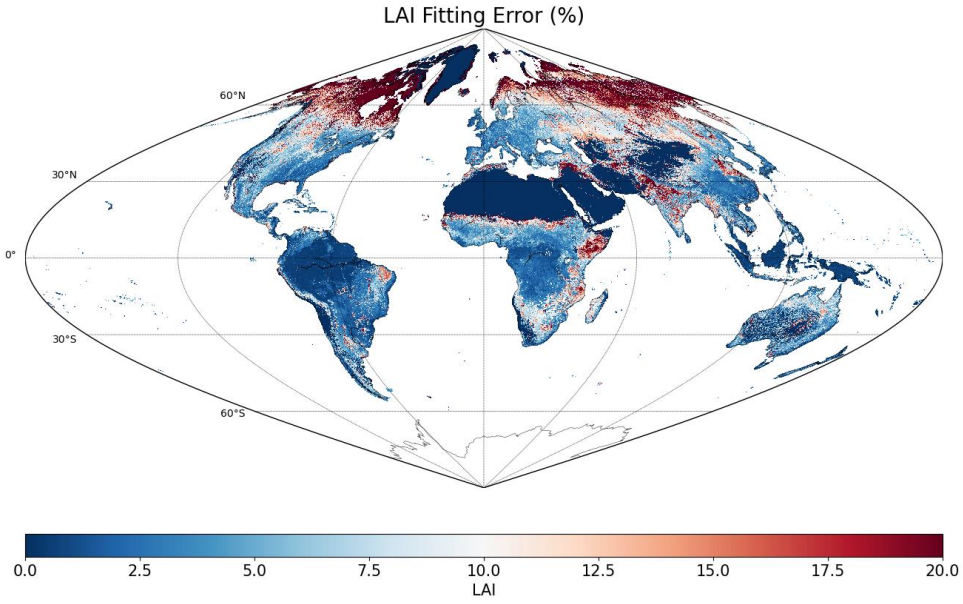


New temporal smoothing and gap-filling algorithm results. The red curve represents the climatology-fitted phenology model, which is used for real-time data adjustment in both scaling and offset. The left panel shows a typical deciduous forest site with very good results, while the right panel shows a grassland site, which is more challenging. However, the adjustment preserves the curve shape and maintains good agreement with the retrieval data.

New Temporal Smoothing Method Error

- **Methodology**
  - The new temporal smoothing algorithm rely on the phenology model derived based on LAI climatology, which will be adjusted (scaling and offset) to match the product time series with least residuals. The adjusted climatology will work as the smoothed LAI time series and fill the missing data as well.
- **Challenges**
  - The predefined phenology model (double logistic) does not work on every grid, some area with large fitting error, where the phenology is much complex (as the bottom figures show).
  - The real time data are different from the climatology, not only the absolute value but also the shape.
- **Solutions**
  - Use climatology instead of model for the failed fitting. (for example, relative error > 20%)
  - Mark the grid with large adjustment error in the quality flag.

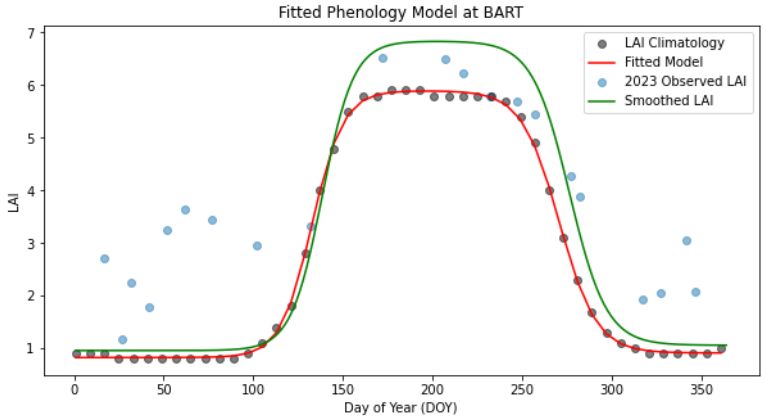


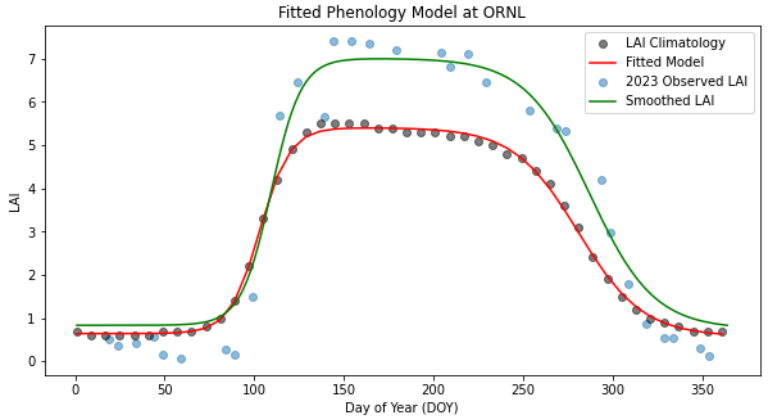


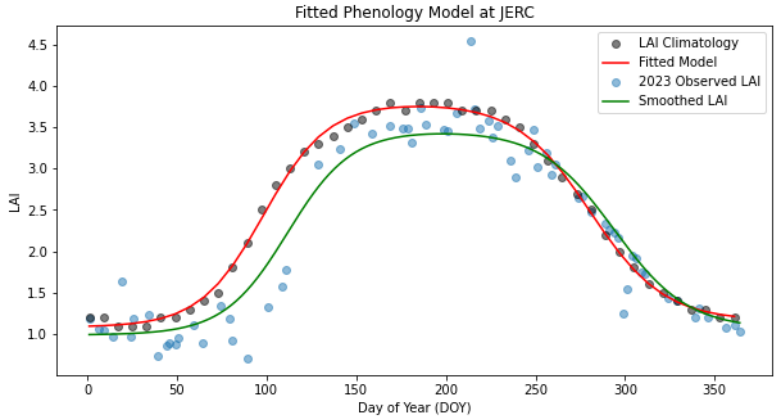
New Temporal Smoothing Algorithm Test Results

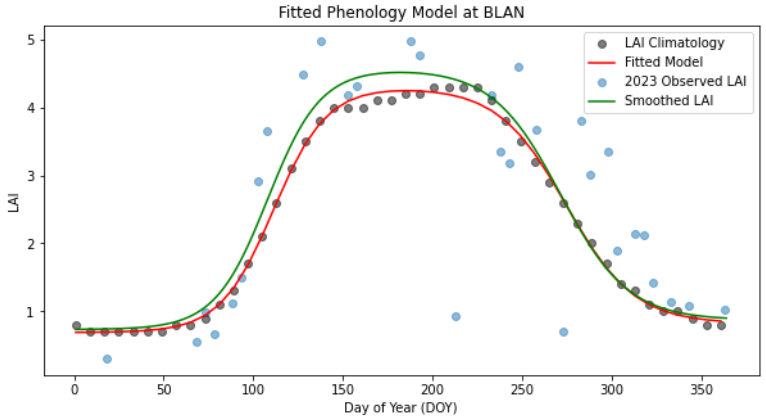
August 2025

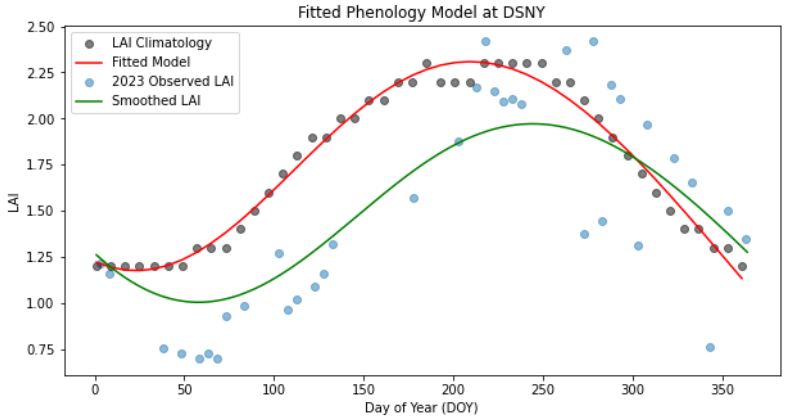
- Algorithm Test at NEON sites, the new result have good agreement for mid-latitude sites, particular for the forest with obvious seasonal variation, the adjusted LAI at some higher latitude area (site BART) in winter be lower than retrieved value.
- For some sites (DSNY, OSBS) where real time product value have larger difference compared with the climatology, the new method works well to keep the time series shape and close to the retrieved value.

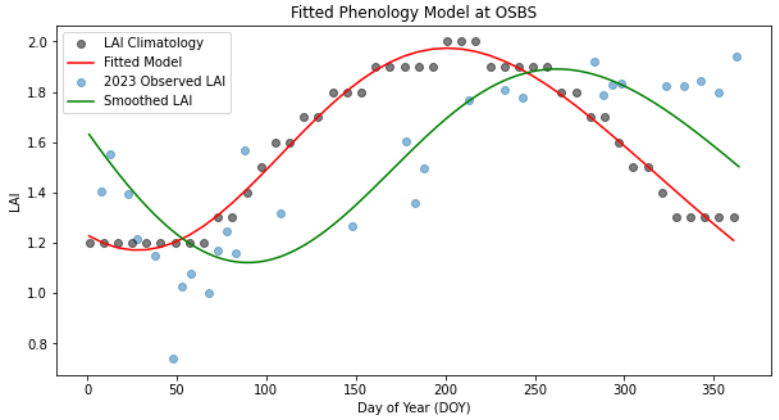












Land Surface Temperature

August 2025

Accomplishments / Events:

- Completed the development of the Version 2 All-Weather LST model, including testing various loss functions to control model bias and analyzing model convergence behavior across epochs.
- Successfully configured the Colab testing environment and resolved issues related to the all-weather LST training code. Tested multiple loss functions and parameter settings using the GPU runtime type, and reproduced consistent training results.
- Incorporated one and a half years of test data into the Version 2 All-Weather LST model for validation purposes.
- Conducted a quality assessment of the All-Weather LST product through comparisons with ground observations from the SURFRAD, ARM, and BSRN networks (slides 2–4). Reexamined the validation procedure for ground LST validation under all weather conditions.
- Reviewed and edited the LST brief and prepared the FY26 LST proposal.
- The manuscript for the All-Weather LST is currently in preparation.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
N-21 LST data monitoring, consistency and performance evaluation	Dec-24		Dec-24	
L2 & L3 SNPP, NOAA-20 annual validation practice	Jan-25		Jan-25	
Initial Delivery - All weather LST	Jan-25		Jan-25	
Support to JPSS-4 Data System Test Event	Apr-25			Upon the availability of J-4 proxy data
I-band LST validation and applications	May-25		May-25	
All weather LST validation and improvement	Aug-25		Aug-25	
Monitoring and Anomaly watch, analysis and report	Sep-25			

Overall Status:

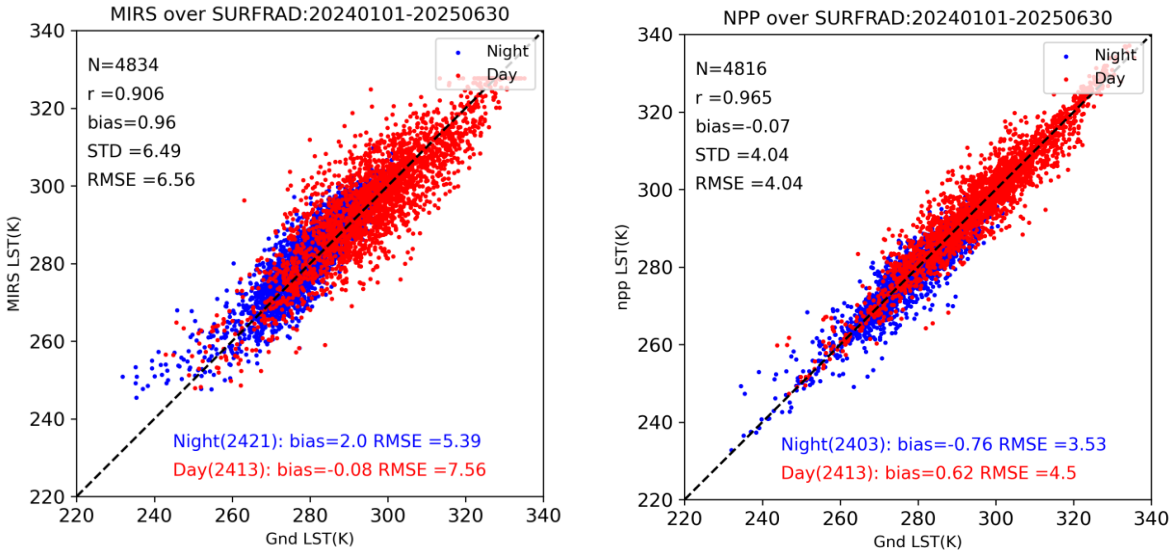
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic					
Schedule	X				

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:

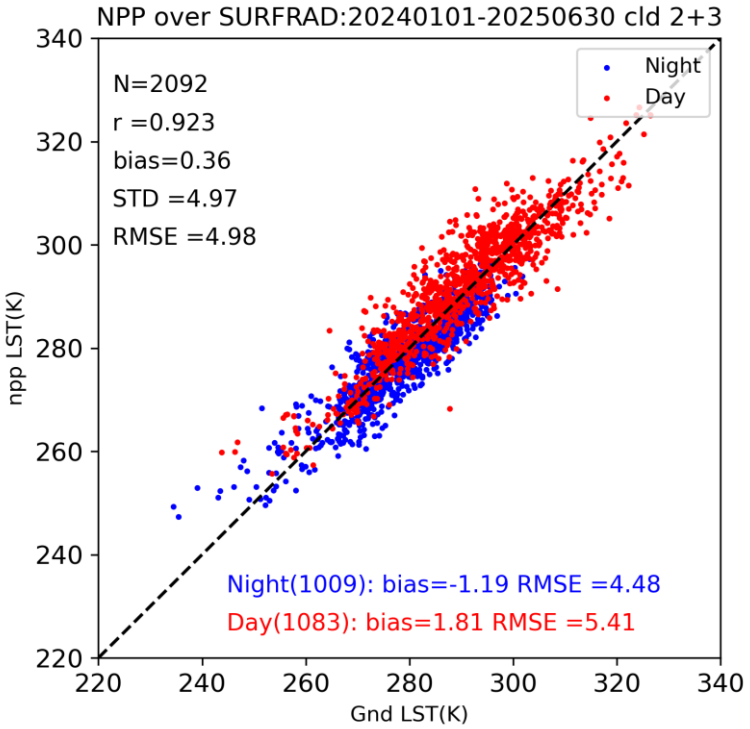
None

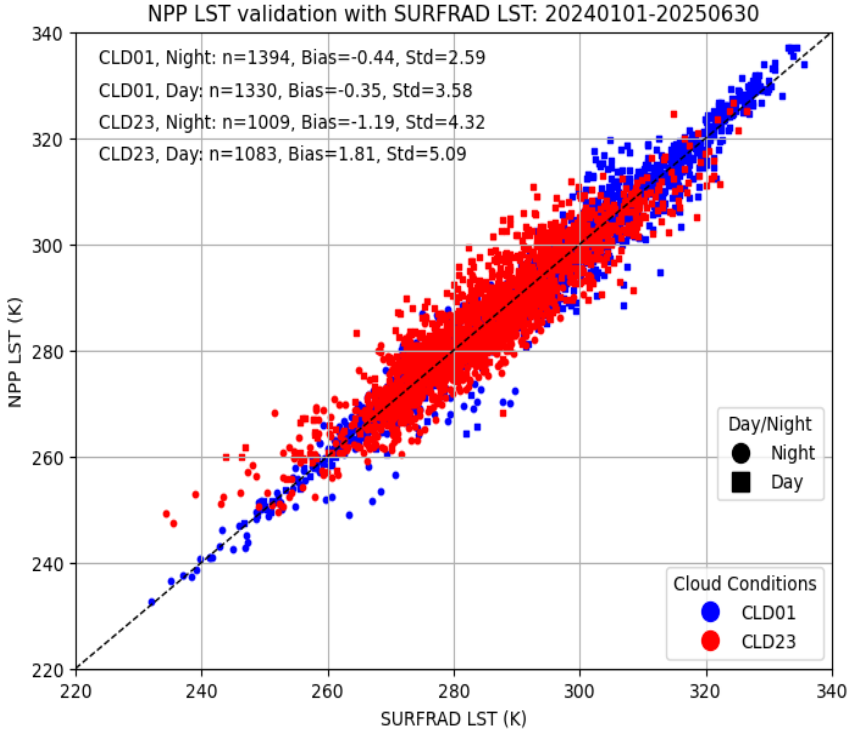
Highlights:

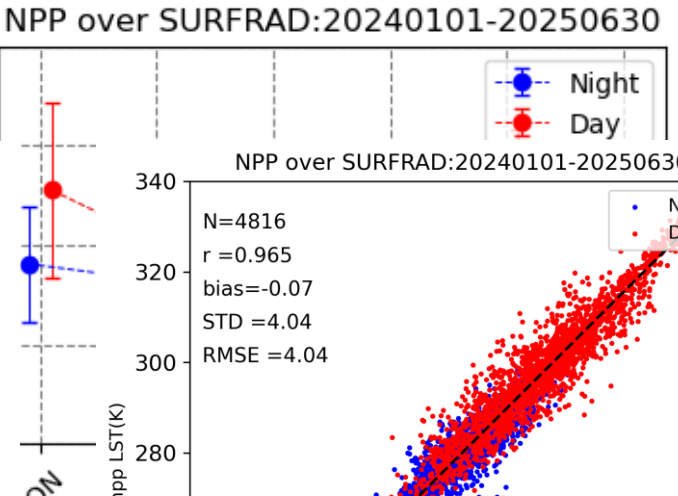


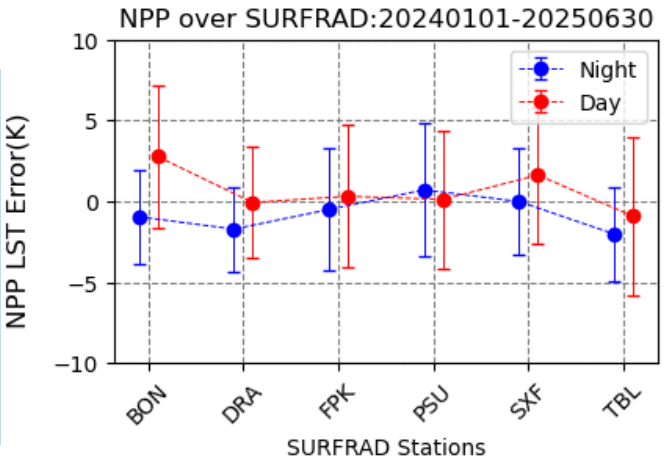
Overall All weather MIRS LST (left) and VIIRS LST (right) Validation Against SURFRAD

All weather LST Evaluation --SURFRAD (January 1, 2024- Ju



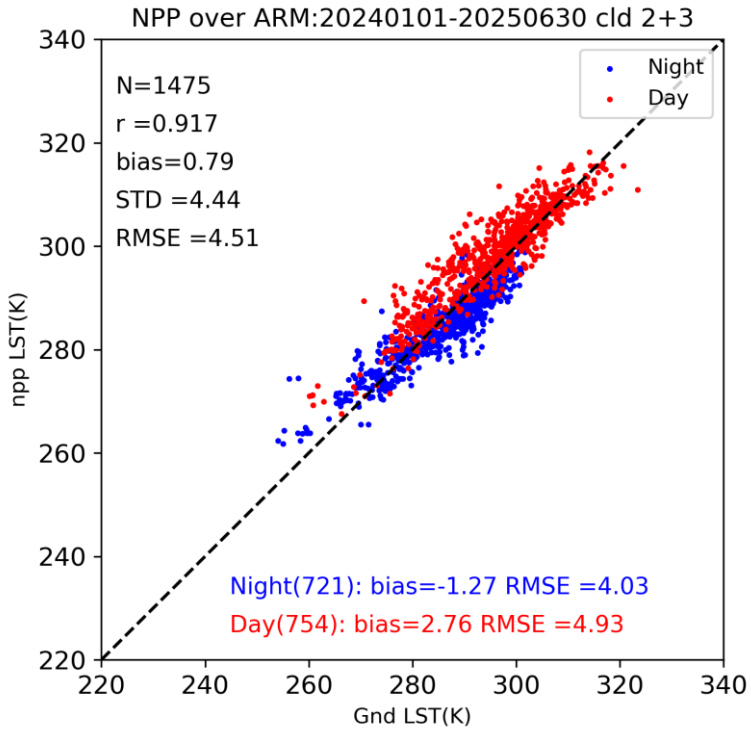


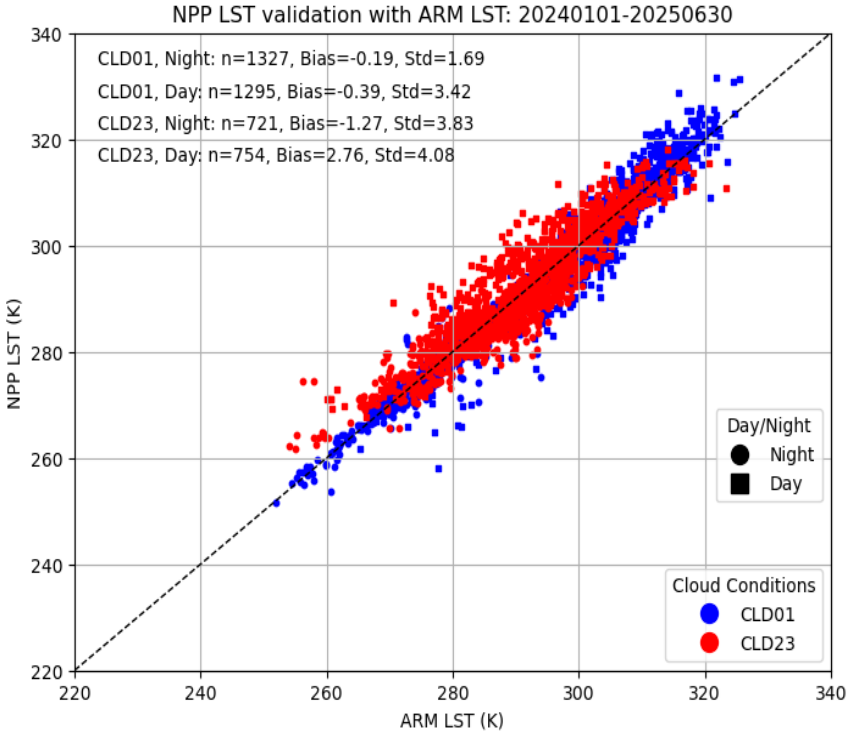


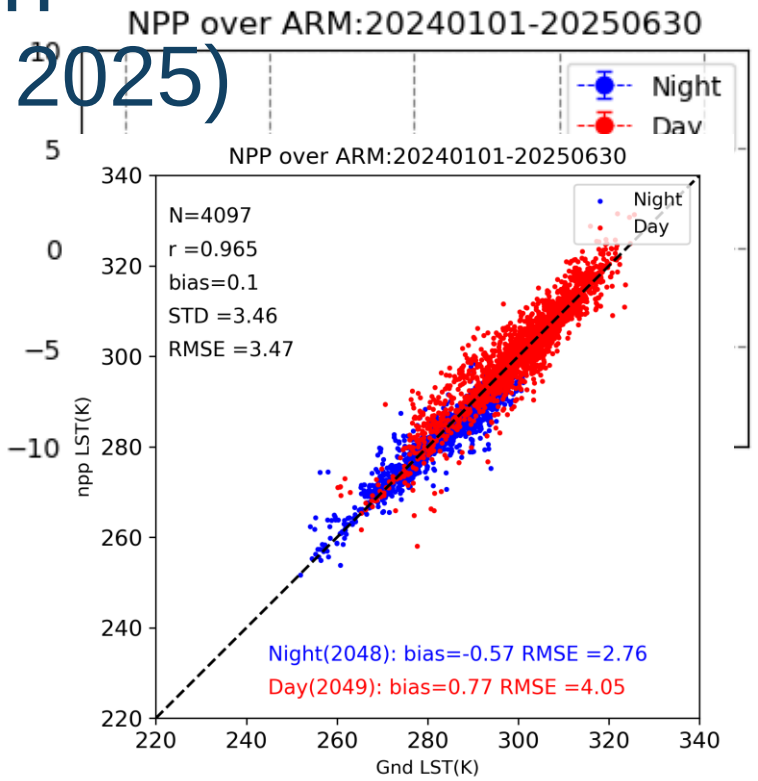


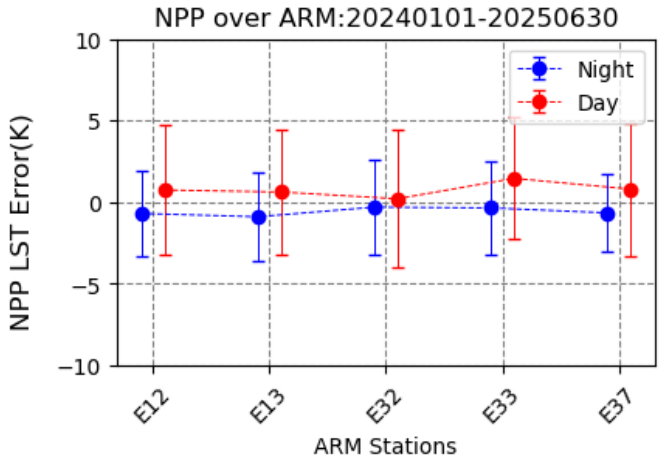
- The performance of an all-weather Land Surface Temperature (LST) product was evaluated against ground observations from six stations in the SURFRAD network, using data from January 1, 2024, to June 30, 2025.
- Top left figure: The evaluation results for the LST data filled by the algorithm under cloudy conditions (cld 2+3) show a distinct diurnal pattern. A negative bias of -1.2 K is observed at night, while a positive bias of 1.8 K is observed during the day.
- Middle figure: The analysis grouped by cloud conditions contrasts the original clear-sky LST retrievals (CLD01) with the filled data from cloudy scenes (CLD23). This comparison indicate a higher error for the filled data, with its Standard Deviation (Std) increasing to 4.3 K at night and 5.09 K during the day.
- Top right figure: The overall validation results for all weather conditions combined demonstrate a high correlation of 0.965 with a low overall bias.
- Bottom right figure: The site specific validation results illustrate that the performance is consistent across six SURFRAD stations.

All weather LST Evaluation --ARM(January 1, 2024- June 30, 2025)



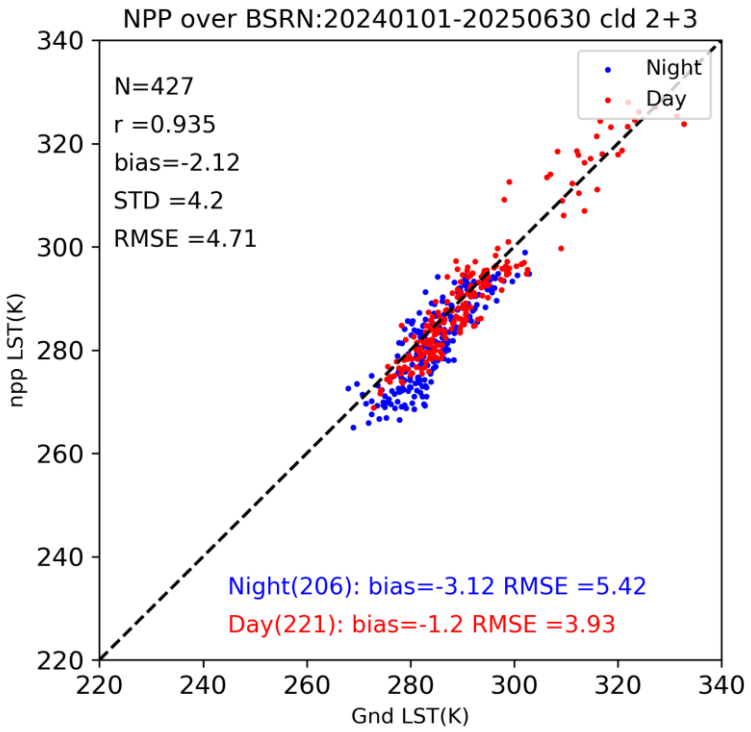


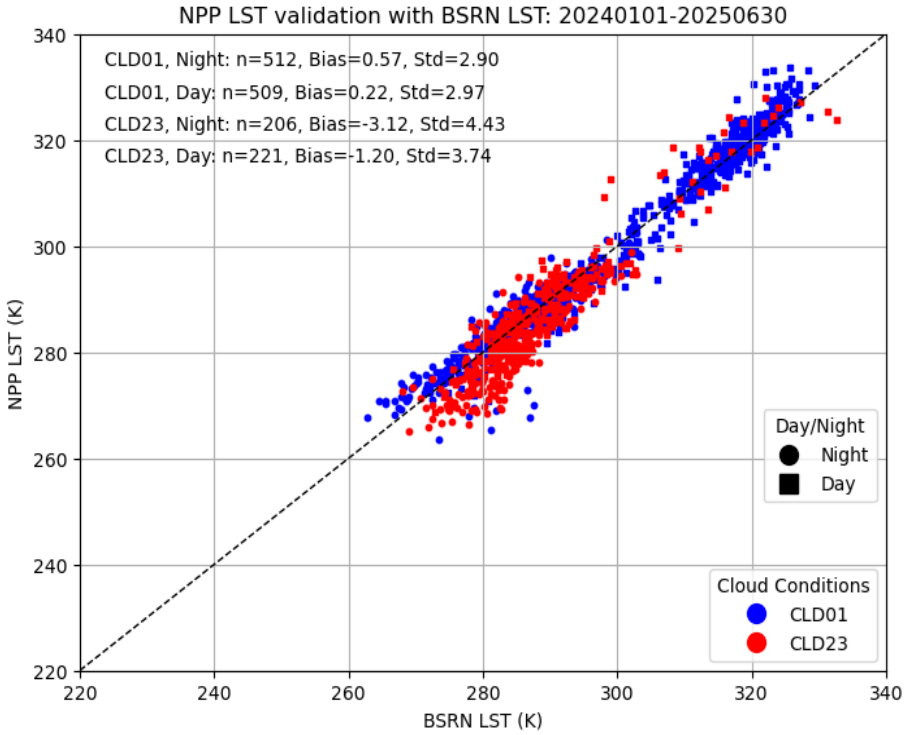


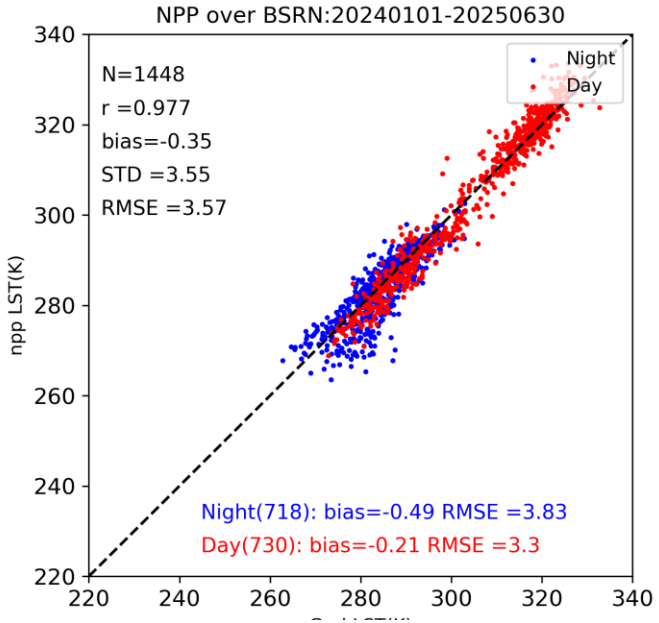


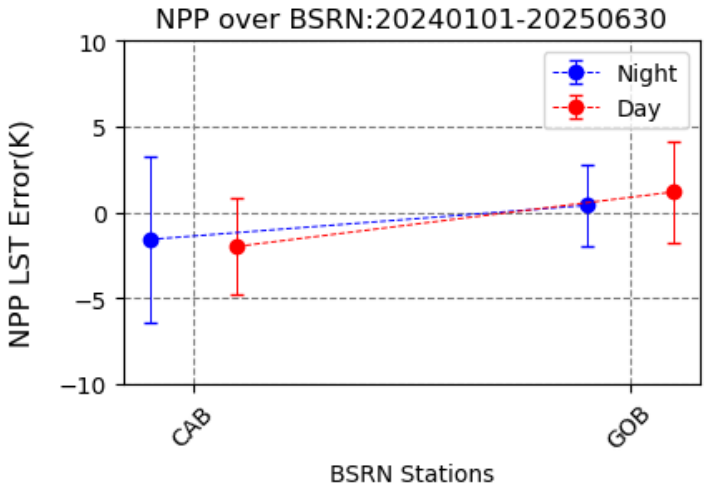
- The performance of an all-weather Land Surface Temperature (LST) product was evaluated against ground observations from five stations in the ARM network, using data from January 1, 2024, to June 30, 2025.
- Top left figure: The evaluation results for the LST data filled by the algorithm under cloudy conditions (cld 2+3) show a distinct diurnal pattern. A negative bias of -1.3 K is observed at night, while a positive bias of 2.76 K is observed during the day.
- Middle figure: The analysis grouped by cloud conditions contrasts the original clear-sky LST retrievals (CLD01) with the filled data from cloudy scenes (CLD23). This comparison indicate a higher error for the filled data, with its Standard Deviation (Std) increasing to 3.8 k at night and 4.1 K during the day.
- Top right figure: The overall validation results for all weather conditions combined demonstrate a high correlation of 0.965 with a low overall bias.
- Bottom right figure: The site specific validation results illustrate that the performance is consistent across five ARM stations.

All weather LST Evaluation --BSRN (January 1, 2024- June 30, 2025)









- The performance of an all-weather Land Surface Temperature (LST) product was evaluated against ground observations from two stations in the BSRN network, using data from January 1, 2024, to June 30, 2025.
- Top left figure: The evaluation results for the LST data filled by the algorithm under cloudy conditions (cld 2+3) show a distinct diurnal pattern. A negative bias of -3 K is observed at night, while a positive bias of 1.2 K is observed during the day.
- Middle figure: The analysis grouped by cloud conditions contrasts the original clear-sky LST retrievals (CLD01) with the filled data from cloudy scenes (CLD23). This comparison indicate a higher error for the filled data, with its Standard Deviation (Std) increasing to 4.4 k at night and 3.7 K during the day.
- Top right figure: The overall validation results for all weather conditions combined demonstrate a high correlation of 0.977 with a low overall bias of -0.35 K.
- Bottom right figure: The site specific validation results illustrate that the performance is consistent across two BSRN stations.

MiRS Products

August 2025

Accomplishments / Events:

- MiRS-TC is updated from V11R8 to V11R10. The algorithm was developed based on MiRS in 2019, results indicating that MiRS-TC has noticeable improvement for TC warm core structure. Retrieval data for N21, N20, and SNPP are provided to HISA for their tests.
- Evaluated ATMS 51.76 GHz (channel 4) effect on MiRS-TC retrievals with focus on TC vertical structure, especially warm core.
- Sensitivity tests were performed with the channel on and off on Hurricane Helene for September 26, 2024, using retrieval data based on both N21 and N20. During the pass, N21 is at limb and N20 is at nadir.
- With Channel 4 off, N21 warm core center shifted southward, water vapor amount is significantly reduced.
- N20 at nadir results did not show as significant effect as N21 at limb retrievals.

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				

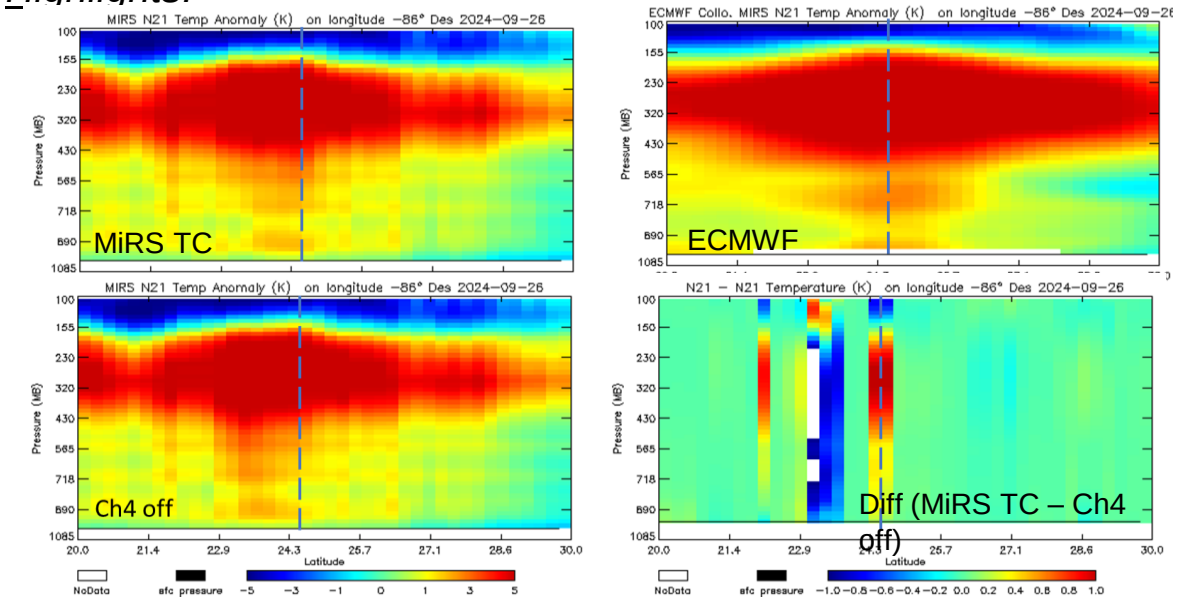
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

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

Highlights:



TC warm core depiction is worse with Chan 4 off (core center shifted southward)

MiRS QuickSounder

August 2025

Accomplishments / Events:

- The team has evaluated the MiRS QuickSounder retrieval performance with QuickSounder proxy data against ECMWF analysis. Specifically, the tasks implemented are as follows:
  - QuickSounder was integrated into the MiRS system, including script extension and parameterization, by March 2025.
  - This study focuses on evaluating the QuickSounder retrieval products.
  - QuickSounder one-day proxy orbital data, including brightness temperature simulated by CRTM, was produced.
  - MiRS was applied to the proxy data to produce retrieval products.
  - Retrieval products were collocated with ECMWF data, and their performance was assessed.
  - The primary geophysical variables that need to be assessed are atmospheric temperature and humidity.
  - Results show that QuickSounder retrieval is consistent with ECMWF and comparable to ATMS

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				

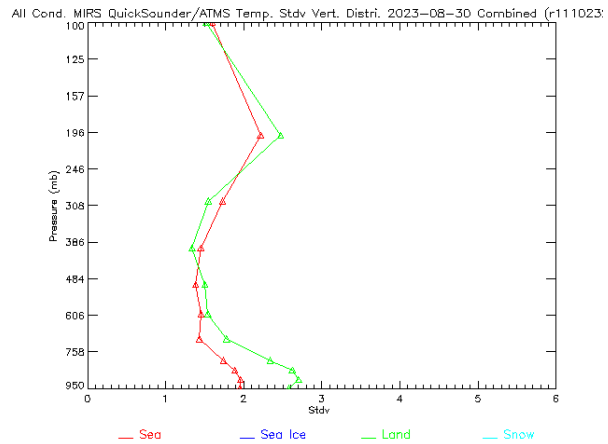
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

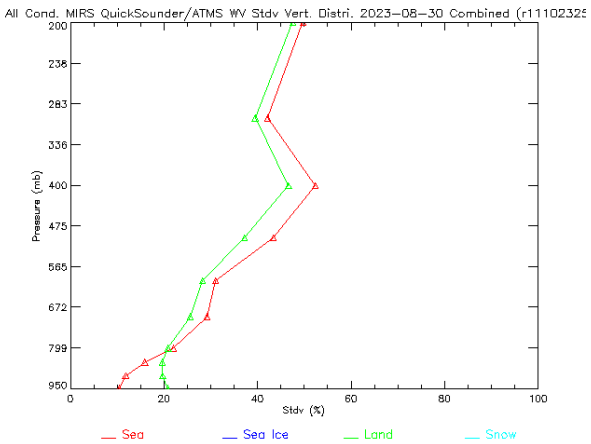
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Integrating QuickSounder into the MiRS system	Apr-25	Apr-25	Mar-25	
Evaluating the performance of MiRS QuickSounder retrieval with QuickSounder proxy orbital data. Retrieval products are compared with the ECMWF analysis. The results indicate that QuickSounder retrieval is consistent with ECMWF and comparable to ATMS	Jul-25	Jul-25	Jul-25	
MiRS with QuickSounder capability has been delivered to ASSIST and under testing for the operation use.	Aug-25	Aug-25	Aug-25	

Highlights:





The MiRS QuickSounder atmospheric temperature (left) and humidity (right) retrievals were evaluated against ECMWF data in terms of the RMSE. The red and green colors represent areas over the ocean and land, respectively. The retrieval performance is comparable to that of the in-orbit ATMS. The bias, though not shown due to space limitations, is also consistent with ATMS.

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

August 2025

Accomplishments / Events:

- The NPROVS team fixed an issue with displaying wind data for Beltsville (where wind barbs were not displaying at all) and DOE ARM (where wind barbs were displaying incorrectly) site profiles.

- The Mapper team continued work on developing Python code to display VIIRS True Color imagery on JSTAR Mapper/STEMS in conjunction with the Imagery team. Further refinements will occur before the product is moved to production.

- The STEMS team completed a refactoring of the STEMS web code in order to modularize the code. The team also added several overlay/background layers for the Arctic/Antarctic views.

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

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

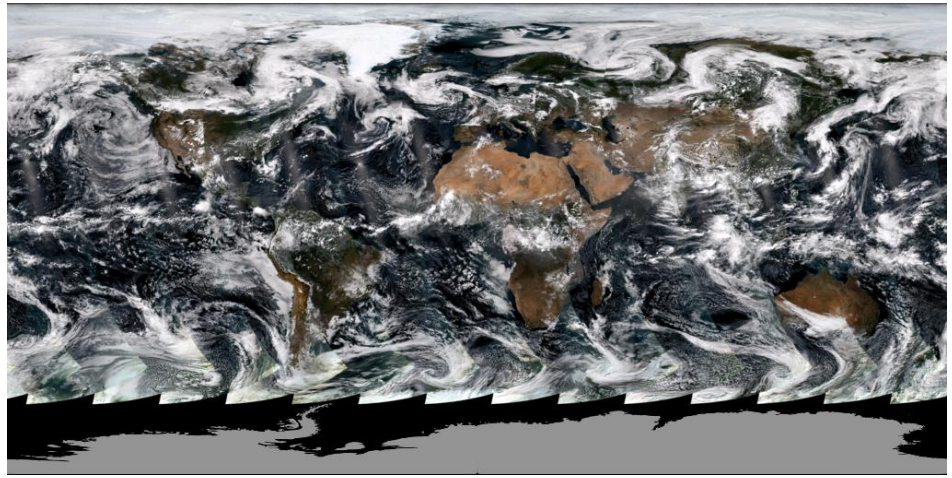


Figure. A sample of the new VIIRS True Color imagery (using NOAA-20 data from July 14, 2025. This effort is in response to critiques of the existing True Color product produced by the ocean color team, which highlights differences in the ocean, but oversaturates cloud cover. It will also provide a more reliable production line for this product.

NUCAPS Products

August, 2025

Accomplishments / Events

- Continued NUCAPS product reprocessing on AWS, with two years of NOAA-20 and one year of NOAA-21 products finished. Validation data is being collected, and a pilot study has begun to validate AWS-generated NUCAPS products for S-NPP, NOAA-20, and NOAA-21.
- NUCAPS and NOAA CSL teams collaborated with a meeting and presented an evaluation of AWS-generated global grids and data extraction at NOAA-CSL's locations of interest. NUCAPS team provided GrADS control and script files to NOAA-CSL to try out global grid data on their side. They also discussed using IDL/Python scripts for NUCAPS netCDF datasets as an alternative for reprocessed data.
- Continued intensive validation activities for all NUCAPS products (AVTP, AVMP, O3, CO, CO2, CH4, and OLR) using a hierarchy of validation datasets. OLR products for NOAA-20/21 and MetOp-C have been validated over multiple years using collocated data from NOAA-20 CERES and Terra CERES, respectively. Thirteen months of NUCAPS v3.2 retrievals for VALAR data matches at the Lindenberg site have been completed, with data processing for other VALAR stations ongoing.
- Continued NUCAPS preprocessor and the retrieval system augmentation and testing with the EUMETSAT synthetic data for EPS-SG. IASI-NG/MWS. Progressed on science code changes and retrieval code performance using cloudy and clear regression LUTs generated using MWS synthetic data. Continued working on the conversion of IASI-NG synthetic data into the internal level-1b binary format needed for the retrieval 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

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Continued validation and sustainment activities for all the NUCAPS EDR products: AVTP, AVMP, O3; OLR, and Trace gases (CO, CO2, and CH4).	Sep-25	Sep-25		
Cross-Functional support for CrIS/ATMS SDR teams providing downstream user support required for operations (DRAT) and JSTAR Mapper Visualizations	Sep-25	Sep-25		
NUCAPS Product Applications and Case Studies of Environmental Events	Sep-25	Sep-25		
Algorithm Improvements and CCAP deliveries; Hyperspectral Enterprise Algorithm Package: Upgrade for MetOp-SG Science team Delivery	Jan-25	Jul-25	TBD FY26	Work suspension due to FY25 funding lapse (per PPM)
Abstracts, Presentations and Publications; NUCAPS cal/val plan updates	Sep-25	Sep-25		
Mission-long reprocessing of NOAA-21 NUCAPS products: Reprocessing version and evaluation of reprocessed products	Jun-24	Oct-24	Sep-25	Reprocessed many years of NOAA-20/21 on AWS. S-NPP CrIS/ATMS SDRs are to be downloaded from CLASS causing delays in S-NPP product reprocessing.

Evaluation of AWS Generated NUCAPS Global Grids for NOAA-CSL Collaborations

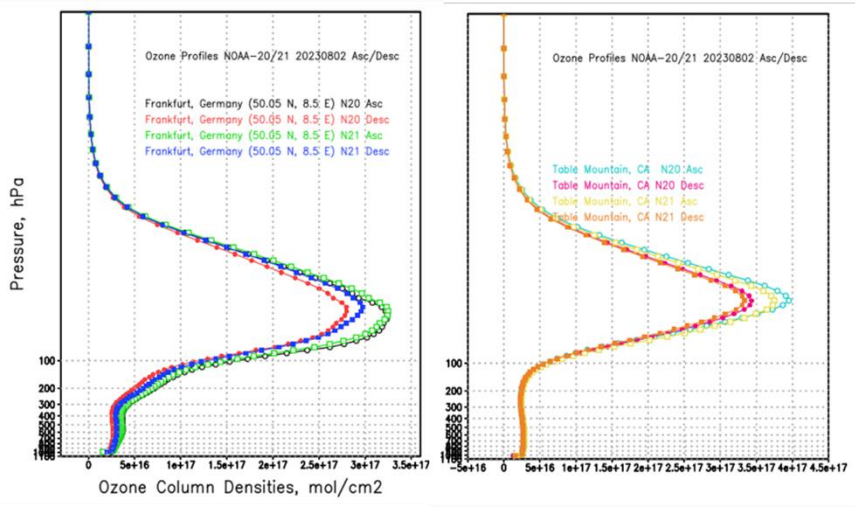


Figure: Evaluation of NOAA-20/21 NUCAPS global-grid ozone product over Frankfurt, Germany(50.05 N, 8.5 E) and Table Mountain, California (34.4 N, 117.7 W). The NUCAPS team provided data extraction scripts to NOAA-CSL as part of a collaborative effort.

Ocean Color

August 2025

Accomplishments / Events:

- Published a paper:
  Wei, J., M. Wang, L. Jiang, Z. Lee, R. Kirby, K. Mikelsons, and G. Lin, "Satellite observations of water transparency from VIIRS in global aquatic ecosystems," Remote Sens. Environ., 330, 114981, 2025. https://doi.org/10.1016/j.rse.2025.114981
- The new global water transparency product (i.e., Secchi depth), as described in the above paper, is being routinely produced from three VIIRS sensors, providing important and useful water quality measurements globally.
- Continue working on mission-long OC data reprocessing for three VIIRS sensors (SNPP, NOAA-20, and NOAA-21).
- Routinely producing global daily VIIRS (SNPP, NOAA-20, and NOAA-21) true color/false color images in OCView.
- Routinely Producing global daily 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 daily gap-free ocean color products, i.e., Chl-a, K_d(490), and SPM.

Issues/Risks:

- Xiaolong Wang in CIRA has to be terminated (last day was Aug. 29) due to the short funding issue. We are short of funding in support of JPSS OC tasks, including no OC Cal/Val supports from STAR and external teams (from 2011 to 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.*

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	

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

OMPS SDR

August 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 the DR11195 (N20 OMPS NM wavelength spacing problem).
- Explored the feasibility to estimate wavelength shift of OMPS from ground to orbit using Earth radiance data (to accelerate OMPS Cal. Process).
- Completed the validation of NOAA-20 139CT reprocessed OMPS NM SDR data quality and user engagement with OMPS EDR team. Six new tables are to be delivered to the ASSISTT to operationally generate 139CT resolution of N21 NM SDR data.
- Achieved the milestone about an off-line ADL code change to meet the requirement about a new JPSS-4 OMPS NM new wavelength range from 380 to 439nm (see next slide)
- Continued developing OMPS SDR-based machine-learning algorithms in support of user engagement with EMC DA team, including radiance bias feature analyses.
- Learned the NASA solar calibration code (L1A, L1B, Rawflux) to support J4

	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~~ Aug-25	A delta validated maturity review is delayed to August to figure out an optimal approach for implementation
8	Develop proxy calibration coefficient LUTs to support JPSS-4 OMPS NM SDR processing with a new wavelength range from 380 to 439nm	Jul-25	Various proxy calibration coefficient LUTs for JPSS-04 OMPS NMs
9	Complete the degradation analysis for SNPP, NOAA-20 OMPS NP (part of DR10832) and NM (a new DR is needed)	Jul-25	The analyses are basically done for the period prior to 2023, while the performance of the analysis results after 2023 was affected by inconsistent calibration performance in the NASA raw solar datasets.
10	New (3rd) reprocessing of SNPP OMPS NP SDR data, by implementing new dark correction, solar activity adjustment, and degradation correction	Aug-25	This task will be postponed due to its low priority and the scope change of the reprocessing project.
11	Establish an off-line OMPS SDR processing package in order to meet new requirements in future JPSS-03 and JPSS-04 missions (NM wavelength range is changed)	Aug-25	
12	Continuous radiometric data quality stability validation analysis across SNPP/NOAA-20/NOAA-21 OMPS NM and NP instruments: e.g., SL correction model	Sep-25	New/improved calibration methods;

Overall Status:

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

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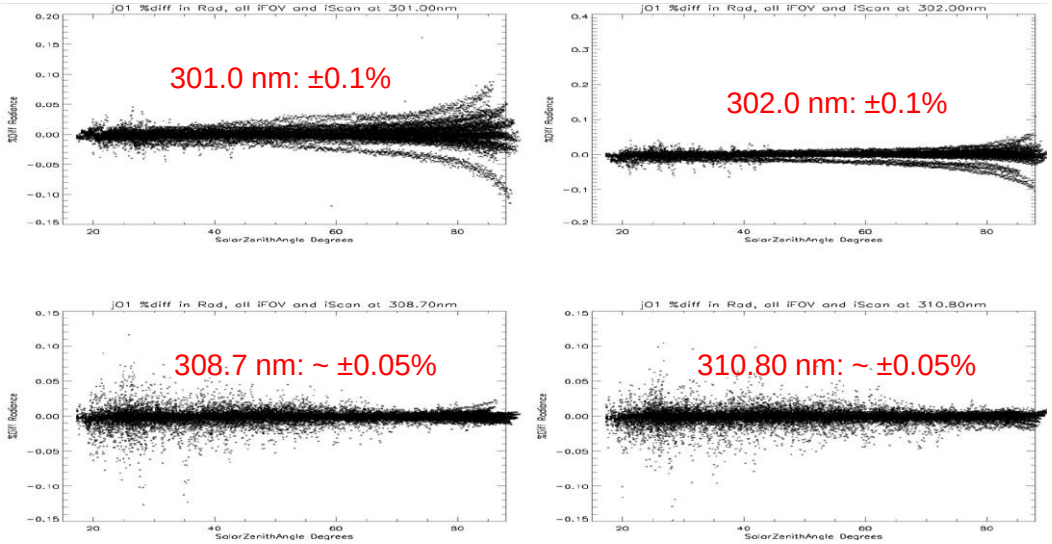
Issues/Risks:

Radiance Difference (%) between 35CT (Operational) and 139CT (New) N20 OMPS NM Data (SL correction is off)



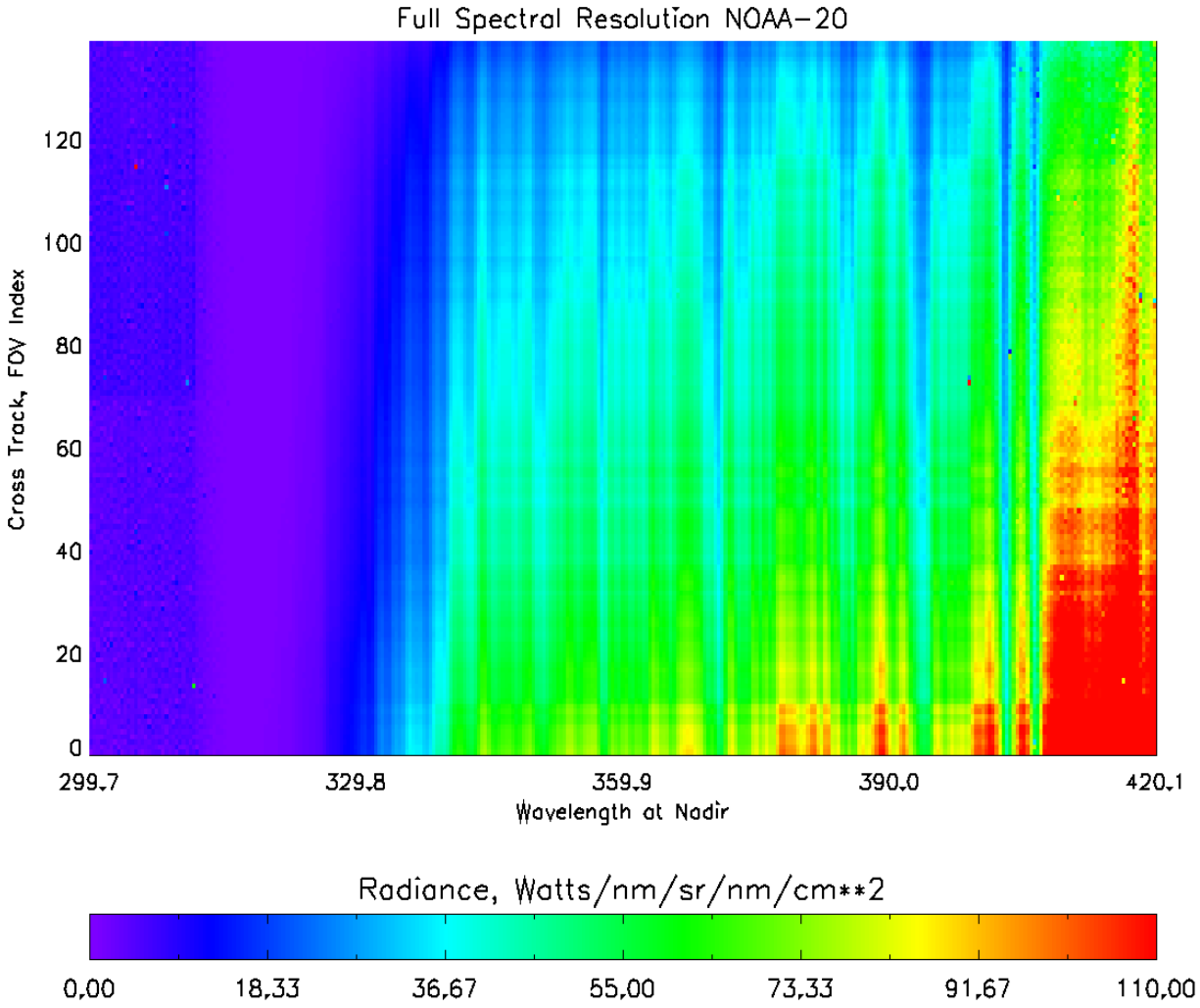
Radiance differences (%) between 35CT (Operational) and 139CT (New) N20 OMPS NM Data are ±0.1%, where the SL correction is turn off to better validate the performance of the wavelength table. The OMPS EDR user is happy with the quality of 139CT SDR data.

Off-line ADL SDR Processing Code Development with J4/J3 OMPS NM Full Spectral Range and Resolution: Demonstarteion by Using NOAA-20 SDR as Proxy

A stand-alone demonstration version of ADL was completed that allows the full spectral range of JPSS4 and JPSS3 OMPS NM SDR measurements to be processed. The current ADL/IDPS is limited to a maximum of 259 unique spectral values and a 381nm maximum spectral range. The modified and future version will use the full spectral range up to 439 nm* and have an overlap with the VIIRS M1 Band for J04 and J03.

Right: The full spectral range of OMPS nadir-mapper is processed with the modified version. The image shows J01 at one scene with full spectral range and all cross track. The current operational J01 produces lower resolution output with 35 cross track and 196 wavelength.

An Example of N20 NM Radiance with an extended wavelength to 420.1 nm (Proxy for J4)



* Note: We don't have the J04 OMPS sample tables yet, while J01 OMPS NM only has a maximum value of about

OMPS Ozone (V8Pro, V2Limb & V8TOz)

August 2025

Major Accomplishments / Last Month:

Delivered a new E_V8TOz version to ASSISTT with the capability to process Metop-SG Sentinel 5 UVNS measurements. The satellite was launched on August 12, 2025.

Supported the Operational Readiness briefing for the V2Limb at NCCF on August 29, 2025. This is part of the product upgrade for NCCF 1.25-4.3 which will occur on September 4, 2025. We have collected five minor upgrades to the V2Limb but have delayed delivery to allow the current version to proceed to operations. New monitoring plots for the LIMB EDR and SDR are in beta testing. The overpass codes have been updated for the new format.

Participated in the successful TOAST (LTOAST and NTOAST) combined Operational and Algorithm Readiness Review (ORR/ARR) on August 26, 2025. These process are also part of NCCF 1.25-4.3.

Continued to expand content of the STAR internal monitoring pages for all EDRs.

Related Work:

Attended the ACX / TEMPO Science Team Meeting and gave a presentation on lessons learned from OMPS and TEMPO for application to GeoXO ACX.

Review test processing for soft calibration for Metop-C GOME-2 E-V8TOz.

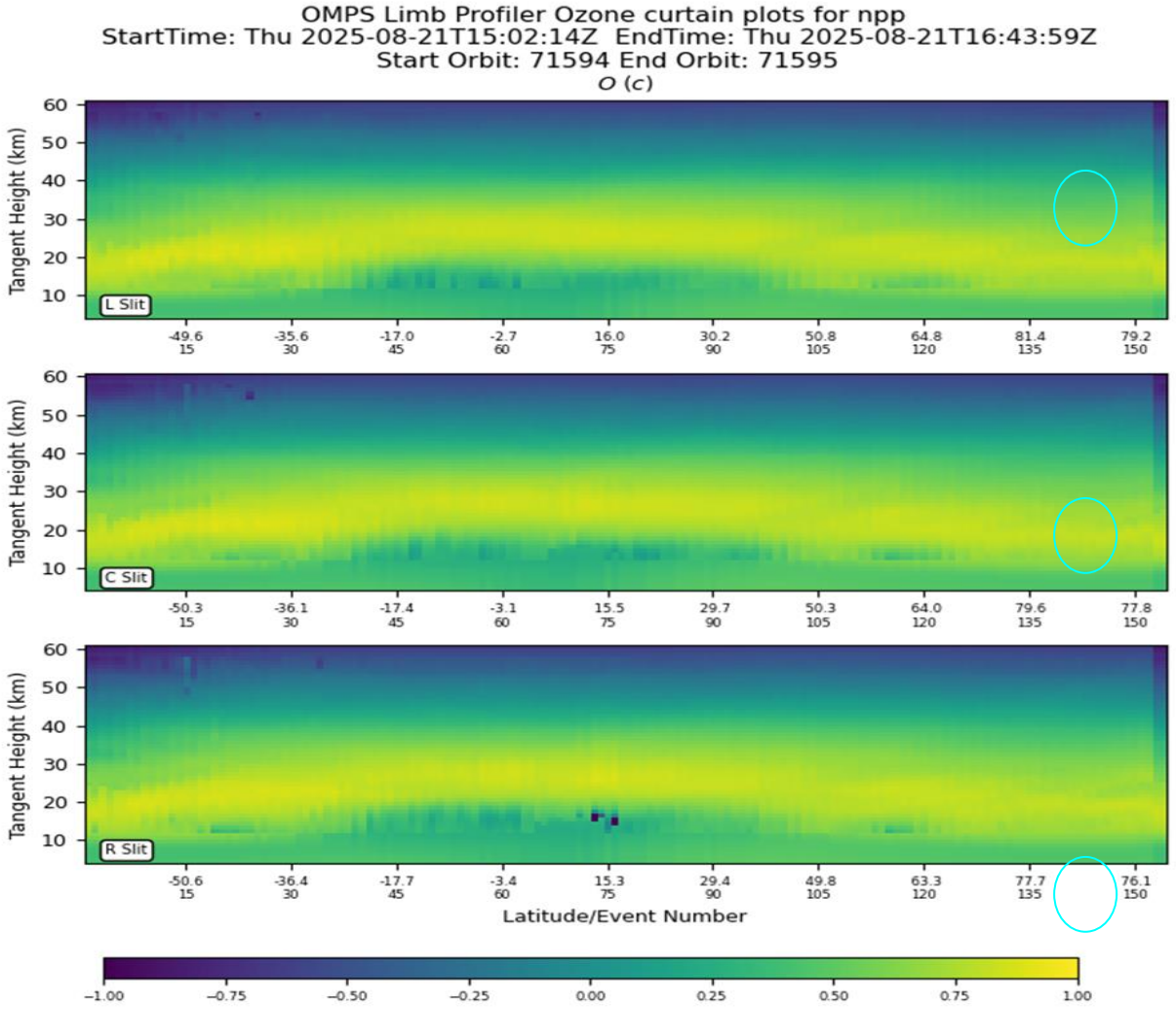
Preparing E-V8Pro with capability to process Metop-SG Sentinel 5 UVNS Level 1 SDRs.

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		ASTSA 2.0, SDR improvements

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

Issues/Risks: ASTA 2.0 Option Year One support is a work in progress. We do not yet have sample data for three SDR ADRs.



False color images with estimates of atmospheric ozone in 1-km layers from 5 to 60 km above the Earth versus Latitude. The data are from the V2Limb algorithm applied to the S-NPP Ozone Mapping and Profiler Suite Limb Profiler (OMPS LP). These are called “Curtain Plots” as they show vertical slices through the atmosphere below the orbital path of the satellite. The colors distinguish ozone mixing ratio amount and are on a log scale. The high-concentration yellow values are often referred to as the “Ozone Layer”. It exists in the lower stratosphere – higher in the tropics where the tropopause is over 15 km high compared to the mid-latitudes where the tropopause may be below 10 km. The OMPS LP makes measurements through three separate slits, corresponding to the three curtain plots.

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

Tasks/Deliverables/Milestones	Estimated Completion
Task 1: *Maintain, Sustain, Validate, Improve and Reprocess OMPS V8Pro Ozone Profile EDRs, V8TOz Total Column Ozone EDRs, V8TOS Total Column Ozone and SO2 EDRs.*	May 2026
Subtask 1.1: *Monitor and validate operational OMPS products by using ground-based assets and time series analysis and comparisons. Create and deliver (Monthly) regular overpass datasets for NOAA ground-based networks. Maintain STAR internal monitoring pages (Monthly) and work with the STAR IT group to help coordinate resources for the ozone team. Keep STAR Linux Cluster OMPS databases up to date.*	Monthly Updates
Subtask 1.2: *Construct, improve and deliver tables and codes, and perform validation studies. Make changes to V8Pro soft calibration adjustment tables as the OMPS SDR Team implements solar calibration changes. Provide presentation of results to maintain and demonstrate Ozone EDR Maturity and Improvements.*	As Needed June 2025 (NDE OPS July 23, 2025)
Subtask 1.3: *Reprocess the full V8Pro records for NPP and N20 after developing soft calibration adjustments to create a homogenized Climate Data Record. Reprocess the full V8TOz record with time dependent soft calibration adjustments to account for degradation. Provide presentations validating and document each set of results.*	NPP V8Pro completed April 2025 N20 V8Pro completed May 2025 (except for 2018) NPP V8TOz August 2025
Subtask 1.4: *Maintain, monitor, trouble-shoot all NOAA OMPS Nadir Ozone and SO_2 products.*	Ongoing
Subtask 1.5: *Test and implement approaches to improve SNR for small-FOV N21 OMPS V8TOS EDRs. Coordinate OMPS Processing capabilities with Enterprise DOAS Trace Gas EDR advances.*	September 2025 → January 2026
Subtask 1.6: *Support preparation, testing, table development and code changes for J04 OMPS Nadir Products. Deliver initial instrument and soft calibration tables.* Subtask 1.7: *Modify and deliver V8TOs and V8Pro for application to higher resolution NOAA-20 OMPS NM SDRs.*	September 2025 (waiting for sample data from SDR Team) July 2025 (Code at NDE is ready) September 2025 (Better soft calibration)
Task 2: *Maintain, Sustain, Validate and Improve the Nadir Total Ozone Analysis using Stratospheric and Tropospheric sources (NTOAST) products.*	Sept 2025
Subtask 2.1: *Validate operational NTOAST processing and help to prepare the Algorithm / Operational Readiness Reviews and associated documents (ATBD, UMM, SMM)*	June 2025 - Both NTOAST and LTOAST are on NDE. STAR ARR/ORR August 26, 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*	October 2025. Week of 139 CT SDR data for NOAA-20

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 December 2025 – Paused to concentrate on getting the Limb to Ops.
Subtask 1.2: *Provide weekly table deliveries for Darks, Wavelengths and Orbital Definition files.*	Weekly
Subtask 1.3: *Complete NOAA-21 V2Limb validation and move to operations. Validate operational LTOAST processing and help to prepare the Algorithm / Operational Readiness Reviews and associated documents (ATBD, UMM, SMM). Provide guidance on OSPO Limb Monitoring.*	V2Limb is on NDE UAT. It will move to Ops in Sept.
Subtask 1.4: *Monitor and validate operational products by using ground-based assets and time series analysis and comparisons. Create and deliver (Monthly) regular overpass datasets for NOAA ground-based networks. Maintain STAR internal monitoring pages (Monthly) and work with the STAR IT group to help coordinate resources for the ozone team. Keep STAR Linux Cluster OMPS databases up to date.*	Monthly Updates
Subtask 1.5: *Provide sample days of N21 and NPP V2Limb NetCDF files to teams working on LTOAST, BUFR, and Monitoring.*	Provided May 2025
Subtask 1.6: *Support Cal/Val Plan preparation, testing, table development and code changes for J04 OMPS Limb*	Plan May 2025 Tables Dec

Snowfall Rate

August 2025

Accomplishments / Events:

- The SFR team is switching the JPSS data source from NESDIS operation to NODD for more stable data flow.
- The team is studying data augmentation and data balancing in training ML models to improve SFR accuracy for deep stratiform snowfall as well as intense snowfall.
- The multi-ice-habit microphysics model for S-NPP has been finalized. The model combines three ice habits: sphere, snow1, and hollow-bullet-rosette, and uses a ML model to select the weight for each habit based on satellite observations and model data that reflect the environmental conditions. The new model improves the SFR accuracy, especially in transition zones where abnormally retrievals may occur.

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

Overall Status:

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

1. *Project has completed.*
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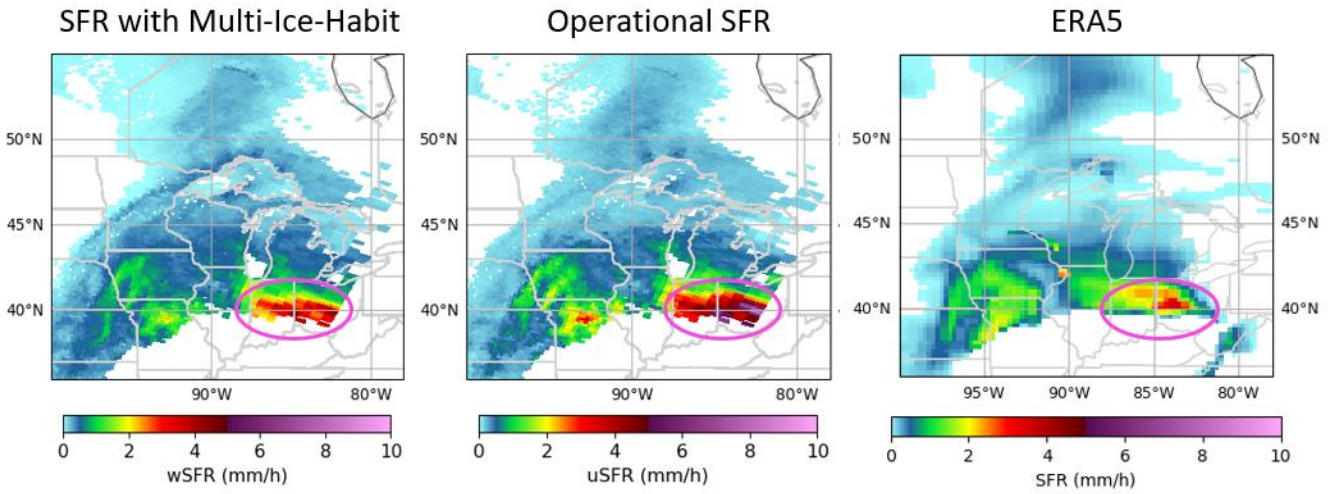
Issues/Risks: None

Highlights:



Left: SFR retrieved with the multi-ice-habit microphysics; Middle: the operational SFR shows much higher intensity than the multi-ice-habit model compared to the reference; Right: ERA5 reanalysis hourly snowfall as the reference

Sea Surface Temperature

August 2025

Accomplishments / Events:

- We tested new ACSPO capability to process 3D dust aerosol data from the NOAA Global Ensemble Forecast System (GEFS). We compared GEFS and CAMS aerosol data for a whole year (2024). Since the aerosol concentration and temperature now enter the SST retrievals, we were concerned about systematic differences between GEFS and CAMS aerosol products which can result in systematic bias in retrieved SST. Fortunately, we did not observe systematic differences GEFS vs CAMS that are big enough to be a concern for SST.
- We processed two years of ACSPO VIIRS SST data for NPP, N20 and N21 to train a new candidate SST retrieval algorithm based on a feedforward neural network. In addition to the traditional input features (brightness temperatures and view angle), we include atmospheric variables such as total precipitable water, average water vapor temperature, dust concentration, dust temperature, ozone concentration, wind speed and net shortwave insolation. Based on our analysis we found significant improvement in SST validation statistics and reduced regional SST biases due to dust contamination (see Figure). Based

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

Overall Status:

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

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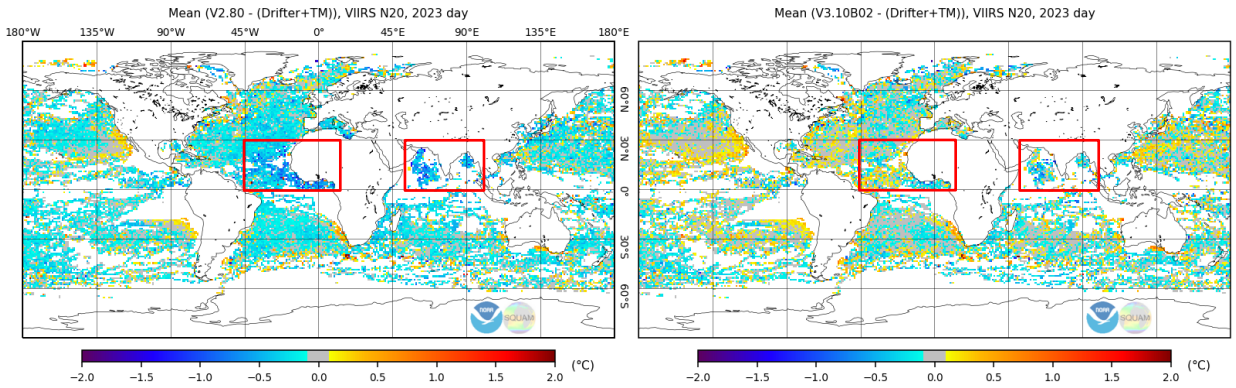
Issues/Risks:

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

***Highlights*: Neural-network-based SST retrievals that take advantage of atmospheric dust information**

Yearly aggregated (2023) bias between ACSPO N20 VIIRS daytime SST and in-situ SST from drifters and tropical moorings. Left: Current operational version of ACSPO (V2.80). Right: Current development version (V3.10B2) with new SST algorithm. Reduced cold SST biases in dust-affected regions with V3.10B02 are emphasized with red rectangles. Note that the V2.80 results have a global mean cold bias due to VIIRS calibration drift since V2.80 was released and are not related to the SST



Surface Albedo

August, 2025

Accomplishments / Events:

- Implementation of the VIIRS BRDF Monitoring System
  - Completed visualization of key parameters on the team website and LandWatch.
  - Currently working on the validation component.
- Developed a hybrid gap-filling method for the new sea ice albedo climatology, balancing efficiency and accuracy, and providing continuous, reliable estimates.
- Initiated development of the VIIRS albedo reprocessing prototype, with attention to workflow design and computing resource requirements.

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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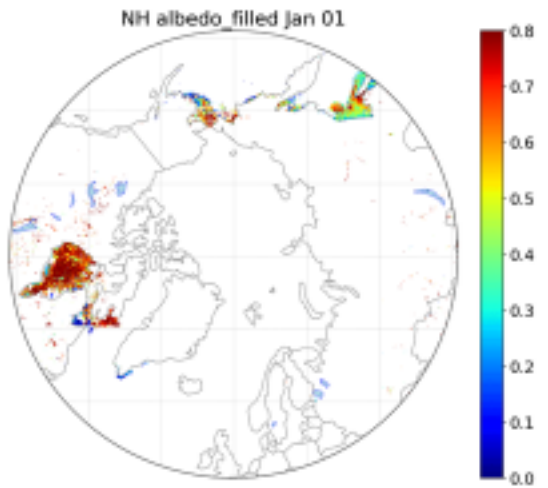
Issues/Risks:

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

Highlights:

Gap-filled VIIRS sea-ice albedo climatology



VIIRS sea ice albedo climatology highlights the dynamic changes in multi-year mean sea ice reflectivity over North America based on clear-sky retrievals. **The gap-filled version** provides valuable prior knowledge that strengthens the accuracy and consistency of VIIRS albedo retrievals.

Interpolation algorithm

Hybrid Sea Ice Albedo Gap-Filling Strategy

Objective: Fill missing values in sea ice albedo climatology data using a combination of similarity-based filling and temporal interpolation methods.Core Strategy:

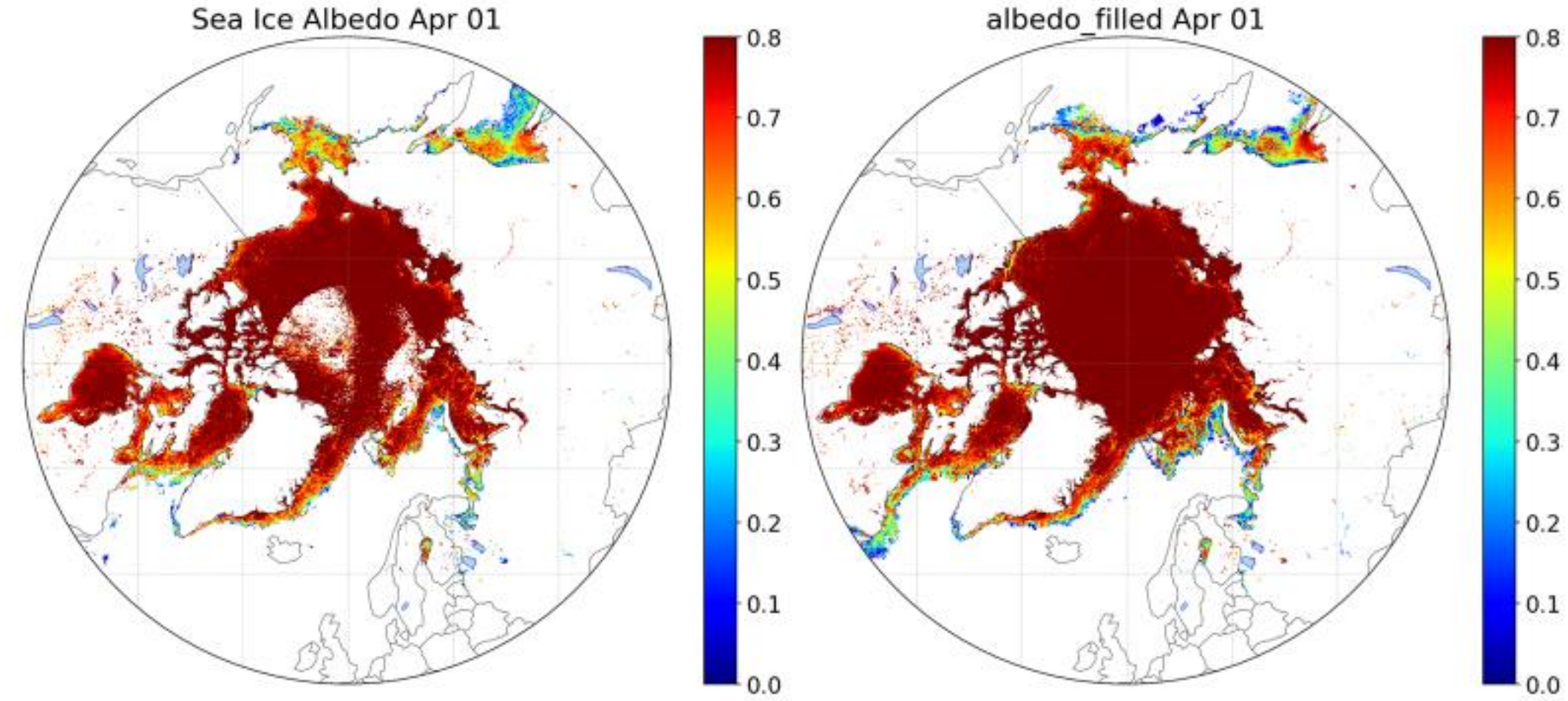
Step 1: Apply similarity-based filling every 8 days (sparse sampling)

Step 2: Use temporal linear interpolation for intermediate days (dense filling)

Rationale:

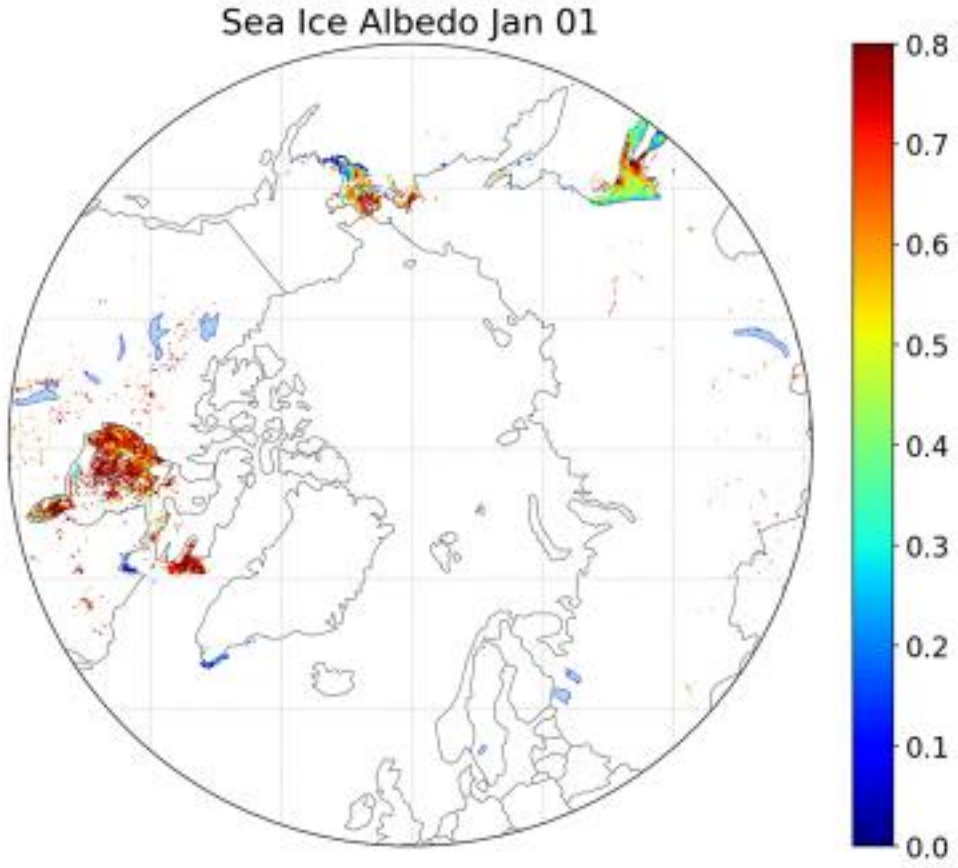
- Similarity filling provides high-quality, physically meaningful fills but is computationally expensive
- Temporal interpolation is fast and smooth but may miss spatial patterns
- Hybrid approach balances accuracy and efficiency

Original sea ice albedo clm (left) vs. interpolated sea ice albedo clm (right)

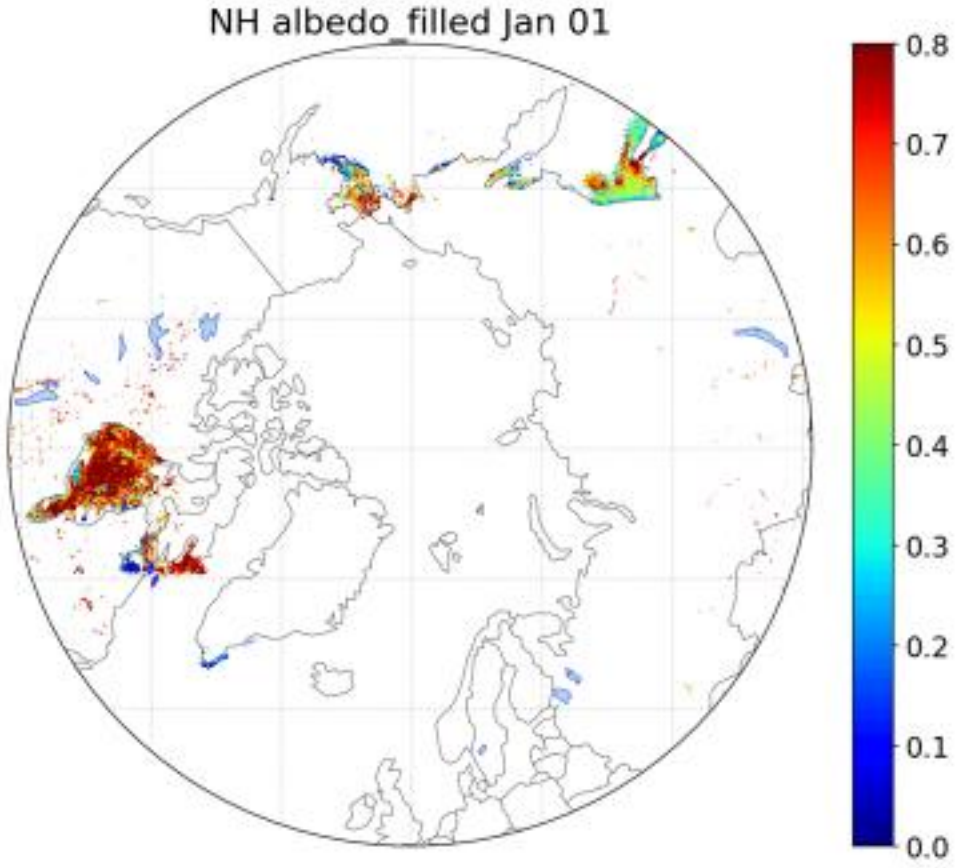


Original sea ice albedo clm (left) vs. interpolated sea ice albedo clm (right)

Original

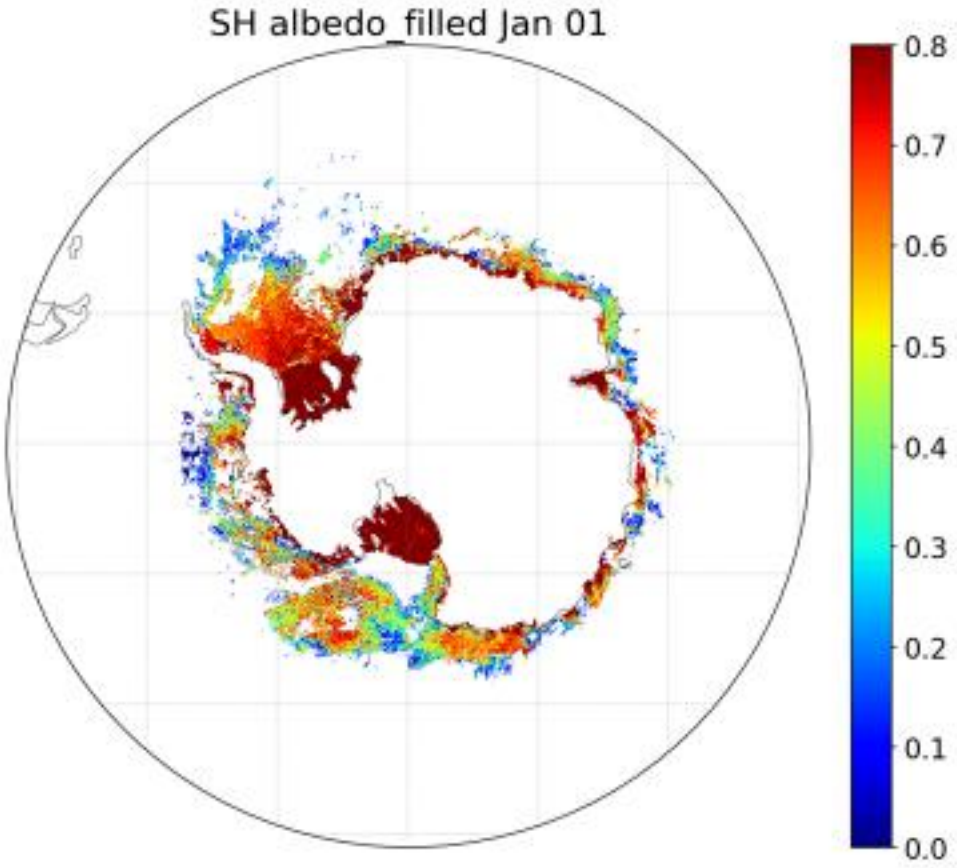


Interpolated

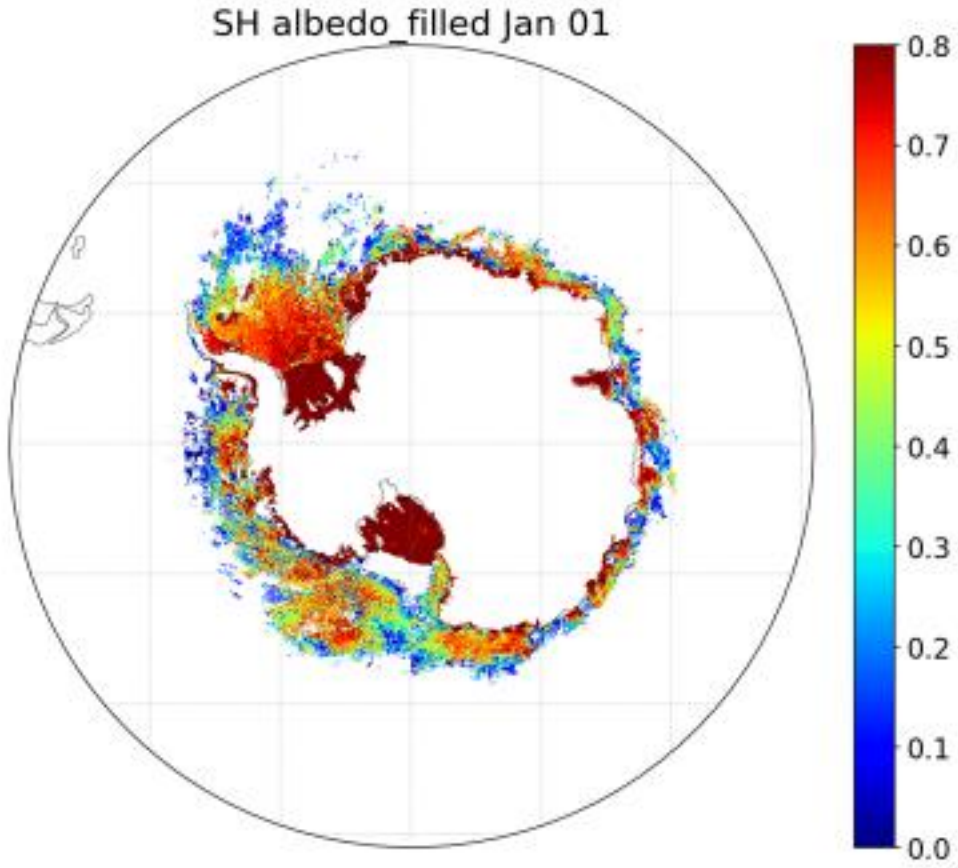


Original sea ice albedo clm (left) vs. interpolated sea ice albedo clm (right)

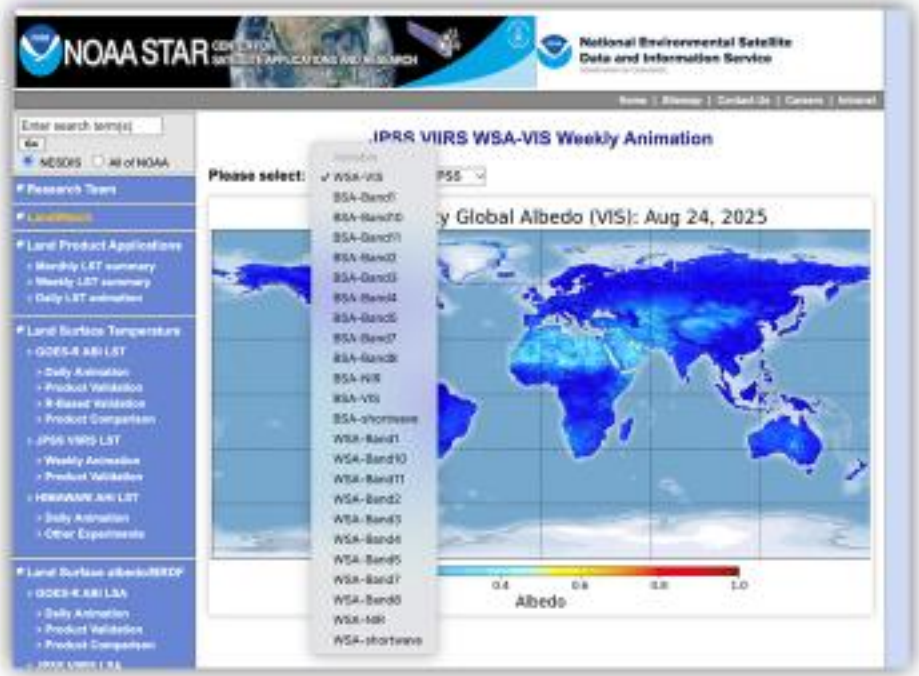
Original

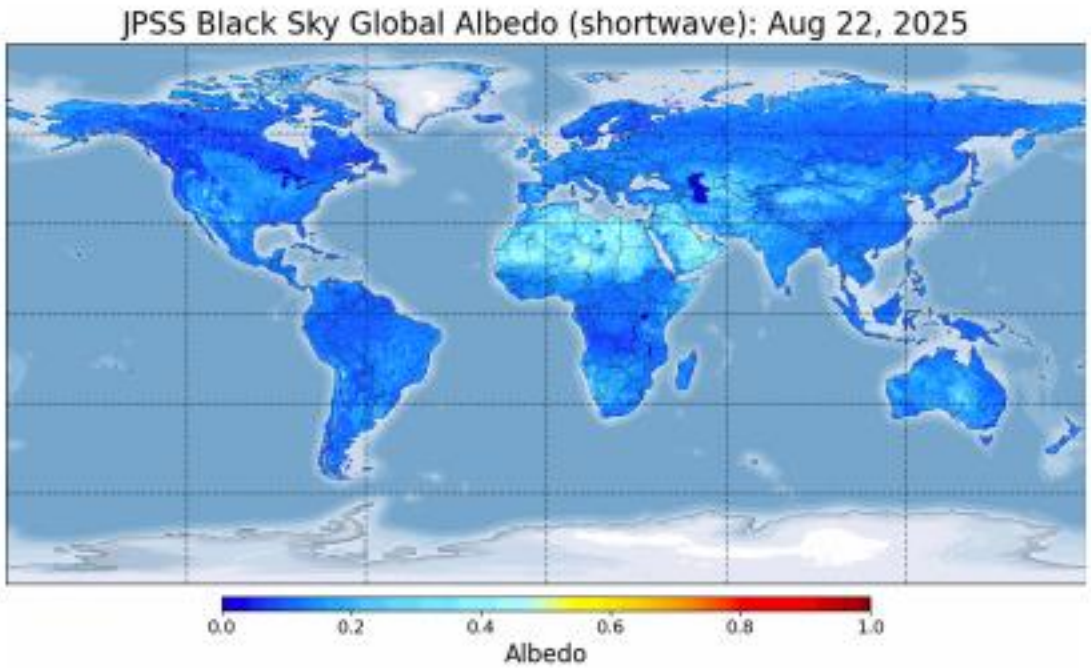


Interpolated



VIIRS BRDF Long Term Monitoring -- Visualization

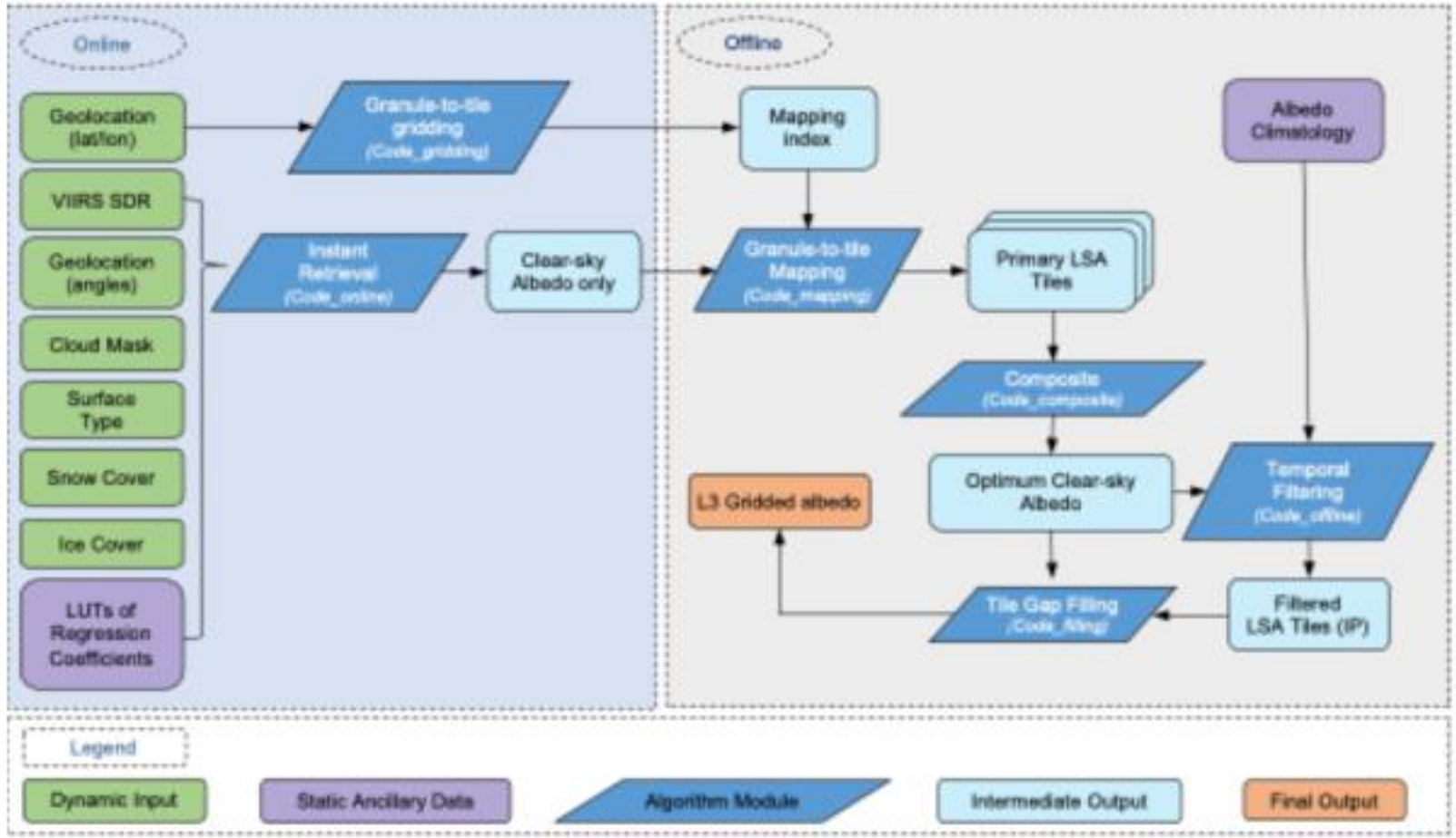




- https://www.star.nesdis.noaa.gov/smcd/emb/land/animation.php?sat=JPSS&product=BRDF&variable=BSA-shortwave#
- https://www.star.nesdis.noaa.gov/smcd/emb/land/ProductMap/dist/

Planned VIIRS LSA Reprocessing Prototype

VIIRS LSA Reprocessing Flowchart



Surface Reflectance

August 2025

Accomplishments / Events:

- Reset the Surface Reflectance routine processing at the local end due to disk migration and updated the daily monitoring accordingly.
- Checked the status of the Surface Reflectance long-term monitoring and incorporated AWS as an alternative source when data retrieval from NOAA SCDR fails.
- For daily true color image monitoring, generate semi empirical BRDF using climatology data, applied BRDF correction to the M3, M4, and M5 bands, resulting in smoother images, particularly at swath edges.
- Ongoing work includes completing the Surface Reflectance calibration and validation summary and Investigate the aerosol model used in retrieval algorithm and ground validation.

Overall Status:

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

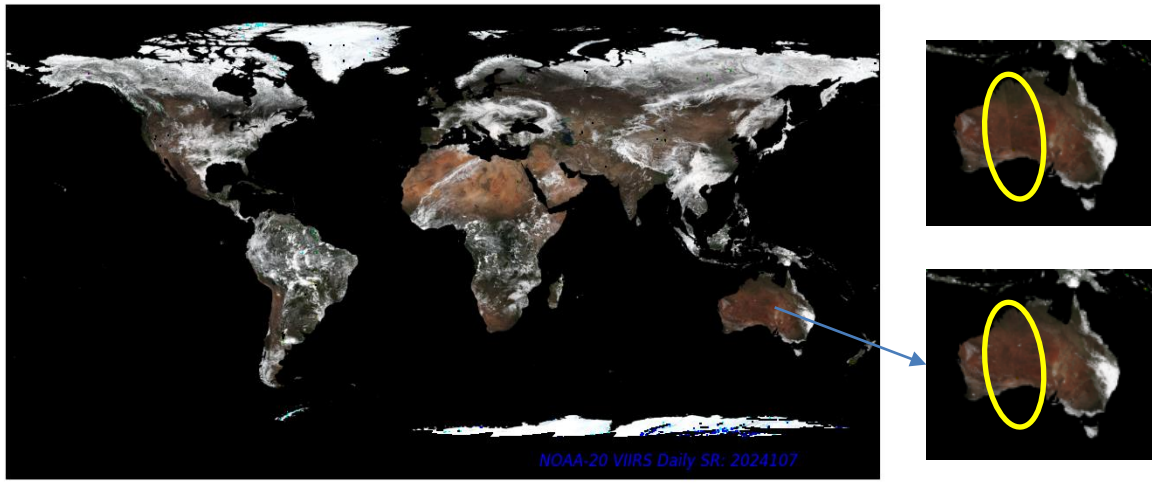
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

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

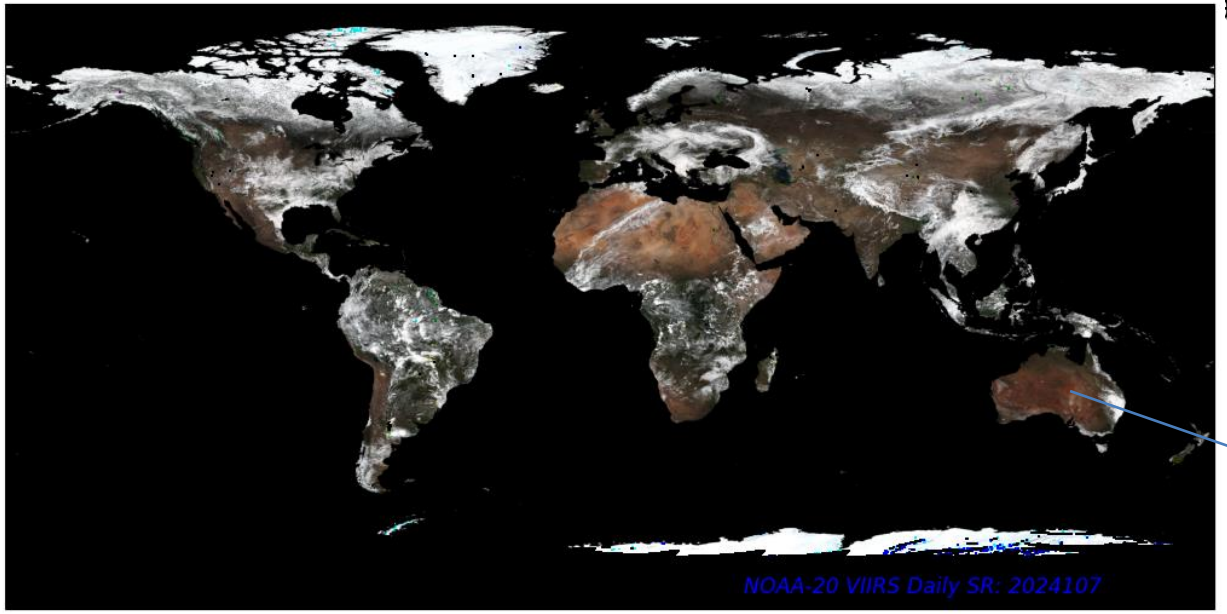
Highlights:

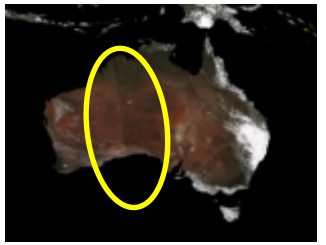


Land Watch website for VIIRS surface reflectance, display the true color image of VIIRS M3/M4/M5 surface reflectance.

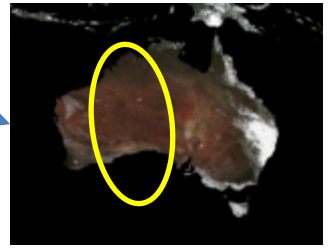
Surface Reflectance Monitoring Updates

- **Daily True color image BRDF correction (Smoother Image with angle effect corrected)**
  - Apply the BRDF correction to the daily true color image to reduce discontinuities at swath edges caused by significant satellite viewing angles difference, as the Australia case shows in bellow images.
  - The BRDF is derived from multi-year climatology at a 0.05-degree grid resolution.
- **Alternative data source from AWS (More robust in term of data source)**
  - The original data used for validation and monitoring is obtained from NOAA SCDR, which retains the latest 4 months of records.
  - Since some datasets, such as GFS/NCEP and VIIRS SDR/EDR, are now retrieved from AWS, this serves as an [illegible] from SCDR.





Original M3 (R), M4 (G) and M5 (B) SR.



BRDF corrected M3 (R), M4 (G) and M5 (B) SR.

Aerosol Model Investigation (Product & Ground Data)

- **Aerosol model (microphysical description) definition in radiative model:**
  - Particle volume size-distribution (double function for coarse and find mode)
  - Refractive parameters (refraction and absorption)
  - non-sphericity index (percentage)

$$\frac{dV(r)}{dlnr} = \frac{C_{vf}}{\sqrt{2\pi}\sigma_f} exp\left[-\frac{(lnr-ln\overline{r_{vf}})^2}{2\sigma_f^2}\right] + \frac{C_{vc}}{\sqrt{2\pi}\sigma_c} exp\left[-\frac{(lnr-ln\overline{r_{vc}})^2}{2\sigma_c^2}\right]$$

- **Two sets of aerosol model (left: MODIS SR used models, Right: NOAA SR used models)**

	Smoke Low	Smoke High	Urban Low	Urban High
Real part n_r	1.47	1.51	1.41 - 0.03 t_{440}	1.47
Imaginary part n_i	0.0093	0.021	0.003	0.014
	0.13 + 0.04 t_{440}	0.12 + 0.025 t_{440}	0.12 + 0.11 t_{440}	0.12 + 0.04 t_{440}
Standard dev. s_f	0.40	0.40	0.38	0.43
Volume concentration C_{vf} ($\mu m^3/\mu m^2$)	0.12 t_{440}	0.12 t_{440}	0.15 t_{440}	0.12 t_{440}
	3.27 + 0.58 t_{440}	3.22 + 0.71 t_{440}	3.03 + 0.49 t_{440}	2.72 + 0.60 t_{440}
Standard dev. s_c	0.79	0.73	0.75	0.63
Volume concentration C_{vc} ($\mu m^3/\mu m^2$)	0.05 t_{440}	0.09 t_{440}	0.01 + 0.04 t_{440}	0.11 t_{440}

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+ 0.434 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 C_V) 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.

- **AERONET validation aerosol models**
  - For all the parameters in the model, size distribution and refractive index, fitting a linear model as a function of AOD optical depth using long term data, and calculate the real time parameters using the measured AOD550.
  - Some sites have enough data to fitting the model and get all the parameters, some are without the refractive index.
  - The difference between the ground aerosol model and the product algorithm pre-defined model is a source of the uncertainty.
  - More work are needed to evaluated the impact from aerosol models.

Surface Type

August 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 August of 2025 for the production of AST25.
- The team has completed the post-processing of the 2024 surface type data and produced the final AST24 product suite, including the IGBP 17 type map and the EMC 20 type map.
  - A comparison of the 2024 maps with previous AST products show that multi-year AST map series captured some new deforestation hotspots outside the humid tropical forests of Amazon (see the Highlights).
  - The AST24 product suite will be validated using a statistically rigorous method, and will be delivered to end users (e.g., EMC) and archived by NCEI by the end of September.
- The team has produced gridded canopy cover and tree height samples using GEDI and ICESAT-2 LiDAR data acquired from 2020 to 2022.
- The team has created monthly H_2O composites for the recent months.

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.*

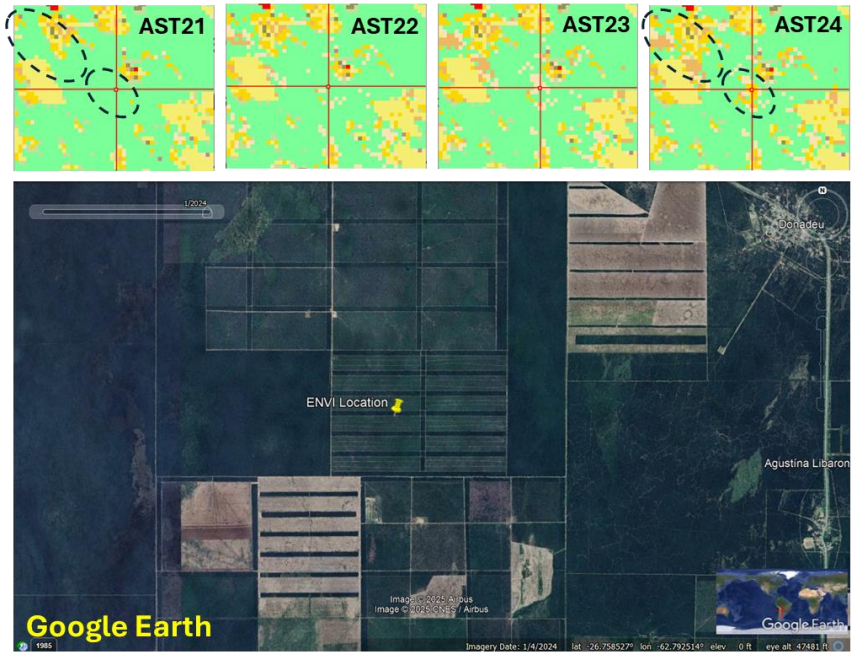
Issues/Risks:

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	May-25	
AST24 of IGBP 17 type map	Aug-25	Aug-25	Aug-25	
AST24 for EMC 20 type map	Aug-25	Aug-25	Aug-25	
AST24 Validation Statistics and delivery to JSTAR and users	Sept-25	Sept-25		

Highlights:

Forest Change Hotspots Captured by Time Serious AST Maps



Recent studies show that humid tropical deforestation over the Amazon slowed down over the past decade or so. However, new deforestation hotspots emerged in other regions, including the dry Chaco forests in South America. The ellipses in the top row of this figure highlight some deforestation hotspots captured by the VIIRS-based Annual Surface Type (AST) map series over northern Argentina. The Google Earth image acquired on 2024/04/01 provides a visual verification of forest loss at the pixel location identified by the red cursor in the top row (the same location is identified by the yellow pin on the Google Earth image).

In this local area, the green, gold, and yellow colors in the AST maps (top row) represent deciduous broadleaf forests, savannahs, and croplands. Cultivated areas such as rangelands or crop fields have rectangular or other shapes on the Google Earth image, while forests have dark green color tones.

Vegetation Health

August 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.
- Completed development of the 500m VH DAP v3.1 software package with the capability to run the new VHP system and generate STAR-wise VHP products, at 500m, 1km, and 4km resolutions, as well as 4km products derived GeoTIFF and Admin ASCII data. All jobs for a single case were tested, and the full set of products was successfully generated. The next phase will focus on developing the required OSPO processing modules in the source code to generate official operational products. These modules will remain under configuration and active development.
- Initiated VIIRS VH CCAP preparation. Reached out to OSPO and OCS/ASSISTT for the CCAP delivery details. Requested and then was granted a NCCF GitLab account to access CCAPs for further review. Planned to use GitLab as the primary platform for delivering the new package in the near future. Started to get familiar with GitLab and

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		

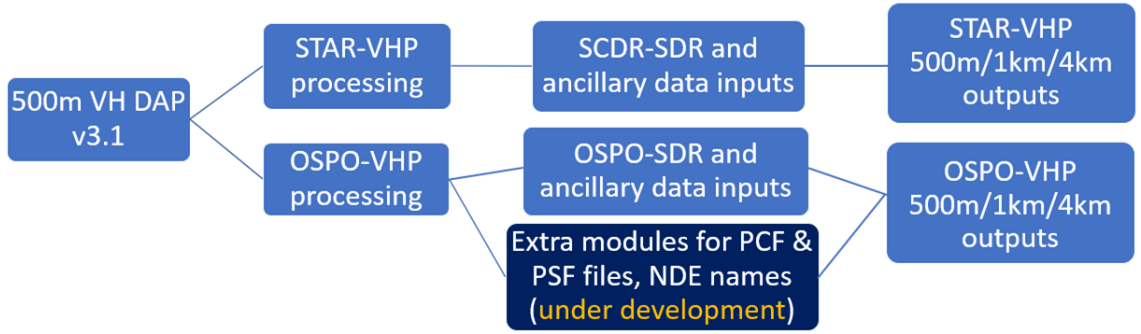
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

Team spent more time to update the land/water mask using the most recent global 250m water surface fraction product developed by VIIRS annual surface type team for NWS EMC and to reprocess the all VHP data based using the new land/water mask.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Hire staff member to lead work	Mar-25	Mar-25	Mar-25	
Deliver CCAP for VIIRS 500m global Vegetation Health Products	Sep-25	Dec-25		Delay is caused by added 2 more science improvements and OSPO/OCS delivery procedure changes
Develop CCAP for value-added and science-enhanced ASCII and Geotiff data files of regional Vegetation Health Products	Sep-25	Sep-25		

Highlight: *The VHP software package is designed to run the VHP system on both STAR and OSPO computing platforms. For example, as illustrated in the schematic diagram below, the 500m VH DAP3.1 new package can perform either STAR-VHP processing or OSPO-VHP processing. Both processing modes require ingestion of SDR and ancillary data to generate their respective products. However, the OSPO-VHP processing requires additional modules for PCF file ingestion, PSF file generation, and NDE filename conversions, which are currently in progress.*



Vegetation Index and Green Vegetation Fraction

August 2025

Accomplishments / Events:

- Further development on 20m resolution vegetation datasets
  - ✔ Produced crop classification maps for other study area;
  - ✔ Presentation with USDA partners.
- I-bands VI datasets
  - ✔ Produced experimental VIIRS I-bands VI datasets for USDA's test
- Further AI/ML-based GVF development
  - ✔ Surface type-based GVF ML model development
- Updated the VIIRS VI and GVF Calibration/Validation plan documents according to management review

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

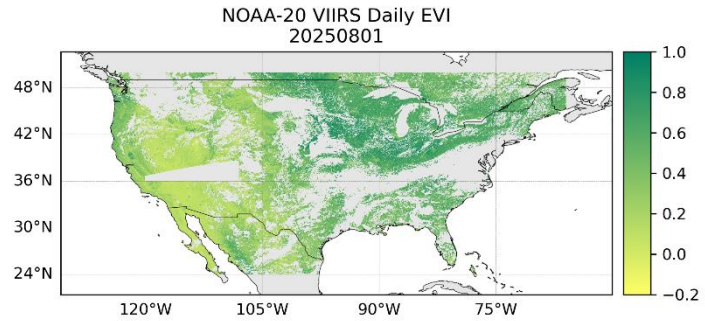
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

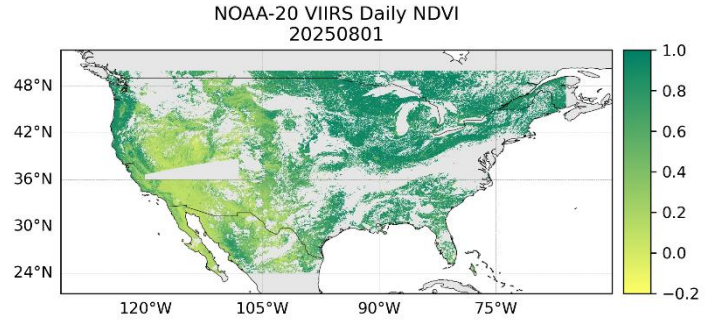
Issues/Risks:

None

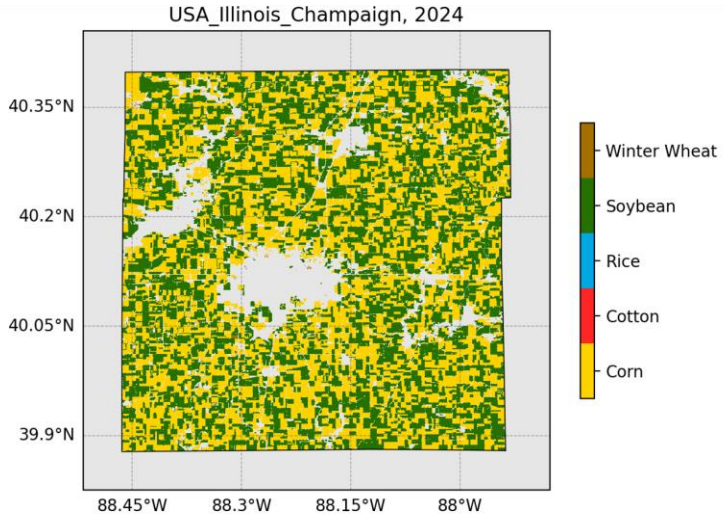
Highlights:

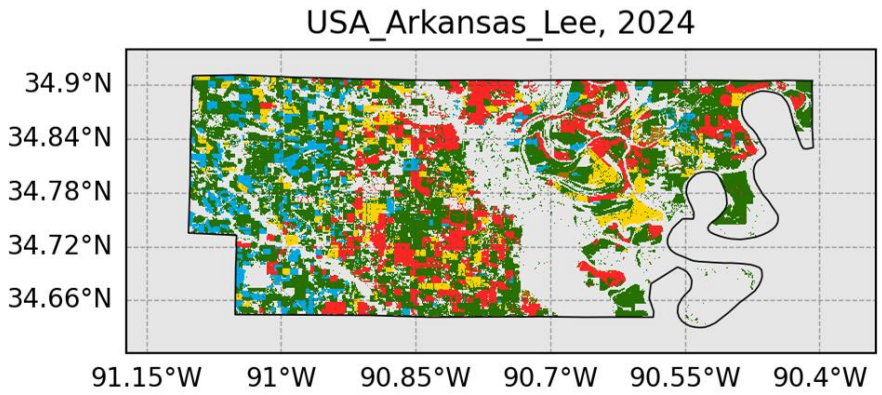
VIIRS I-bands daily NDVI and EVI maps over the CONUS region on 20250801

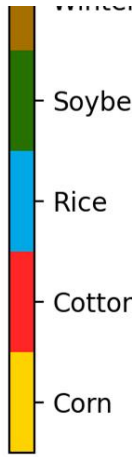


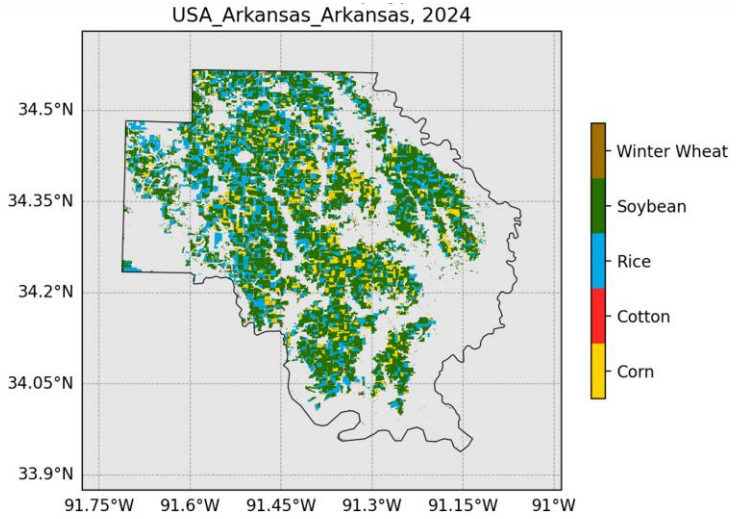


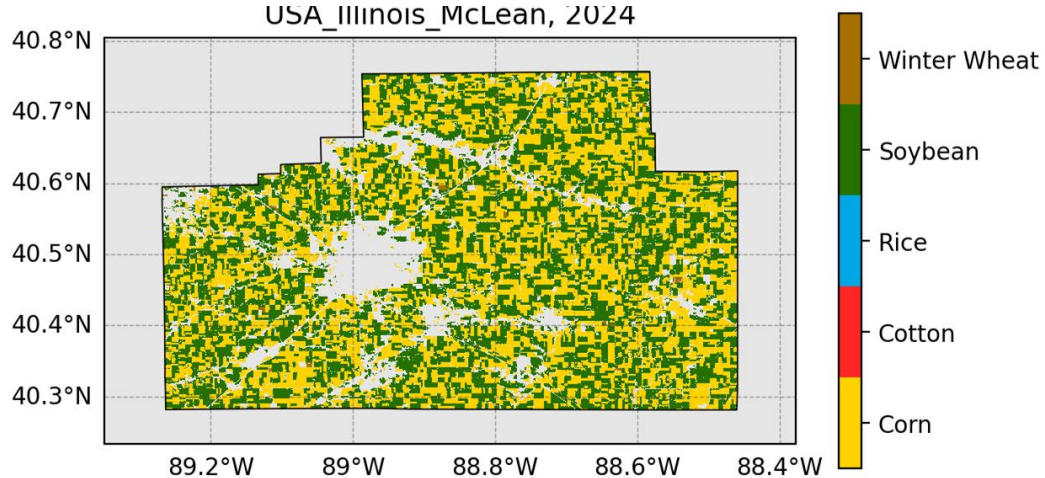
20m resolution VI for crop classification in five other study areas

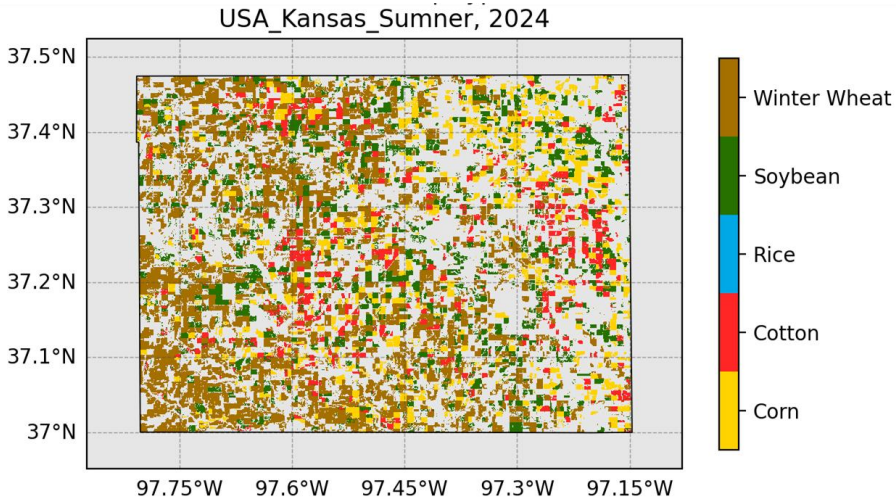






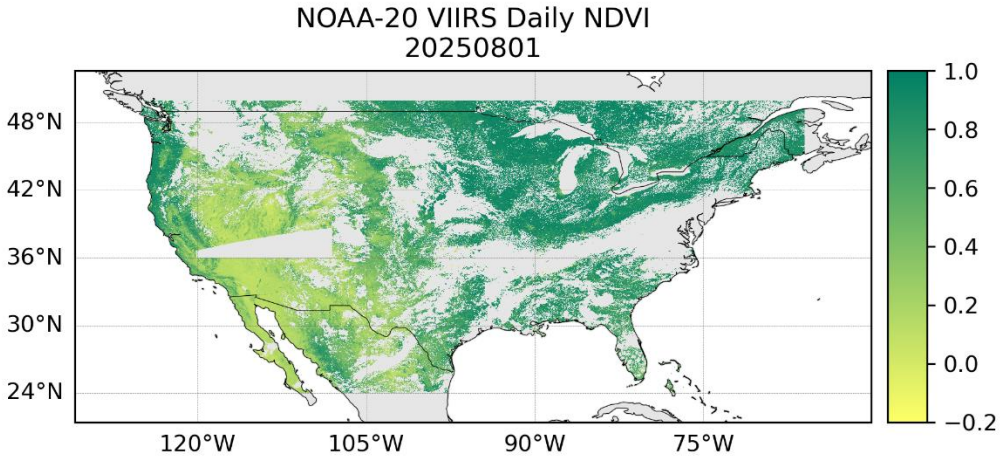


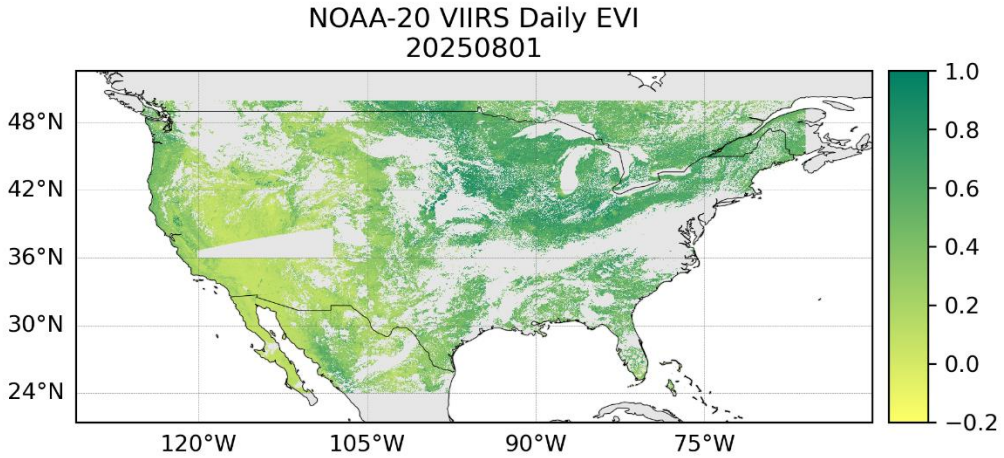




VIIRS I-bands Vegetation Index datasets

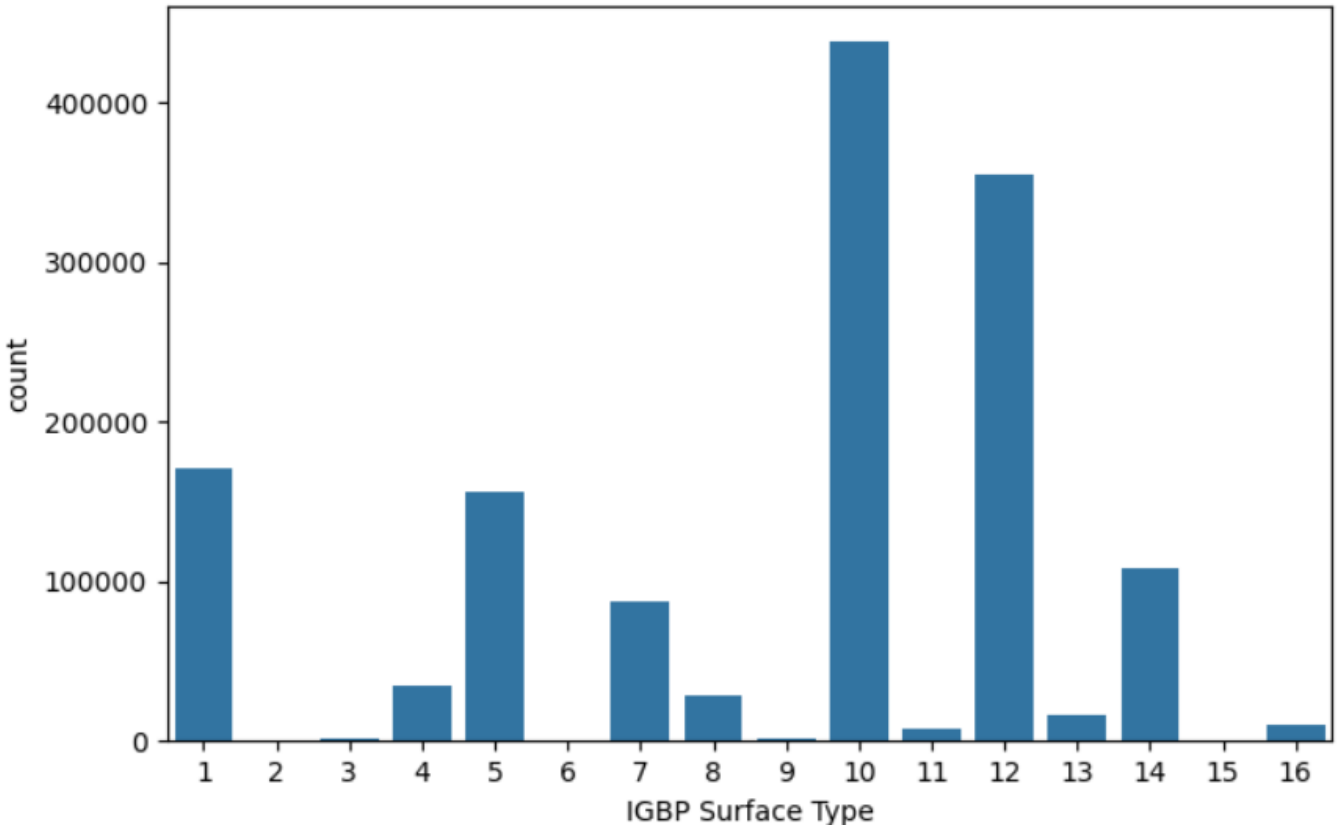
- In the meeting with USDA partners, they requested the VIIRS I-bands (375m) Vegetation Index (VI) data over the CONUS region for the crop monitoring implementation, aiming at replacing MODIS that they are currently using but will be decommissioned very soon.
- I-bands VI is not the current operational NOAA VIIRS product. It's an intermediate product (IP) of the operational one. Thanks to the local capability of producing operational product at the science team, we quickly extracted the IP, with a few post-processing, for the month of August 2025, and have provided to USDA for test.
- Below are examples of TOC NDVI and TOC EVI maps over CONUS in 20250801 with 375m resolution.





Surface Type data for GVF ML algorithm

- NOAA VIIRS IGBP surface type was reprojected to VI/ GVF regional grid
- Surface type was added as a categorical variable to the RF regression
- Most common surface types coincident with HLS data:
  - 10 Grasslands
  - 12 Croplands
  - 1 Evergreen needleleaf forests
  - 5 Mixed forests



Random forest regressions with surface type

- VIIRS surface type data were transformed to VI/ GVF regional grid.
- Surface type was used as a training variable.
  - Results showed a modest (~0.2% RMSE) improvement in all cases, except for October data.
  - Significant differences between train and test results for single-date data suggest possible overfitting. This is less of a
- Separate regressions were also performed for the most common surface types
- Grassland and cropland had lower RMSE than overall data, but EN and mixed forests had higher RMSE.

All dates	Linear	Random forest	RF with sfc type
Training RMSE	8.201	7.249	6.828
Training R^2	0.919	0.937	0.944
Test RMSE	8.16	7.408	7.219
Test R^2	0.92	0.934	0.937

Random forest	2024-03-30	2024-06-15	2024-08-15	2024-10-01
Training RMSE	6.575	7.708	6.420	6.408
Training R^2	0.930	0.936	0.962	0.944
Test RMSE	6.957	8.271	6.739	6.407
Test R^2	0.922	0.936	0.962	0.944

RF with sfc type	2024-03-30	2024-06-15	2024-08-15	2024-10-01
Training RMSE	5.930	6.879	5.968	5.868
Training R^2	0.943	0.952	0.967	0.953
Test RMSE	6.751	7.919	6.600	6.588
Test R^2	0.926	0.937	0.960	0.941

All dates	Grasslands	Croplands	EG Needleleaf	Mixed forest
Training RMSE	6.120	6.717	6.999	7.090
Training R^2	0.918	0.929	0.952	0.925
Test RMSE	6.338	6.819	7.796	7.867
Test R^2	0.912	0.927	0.940	0.907

VIIRS Flood Mapping

September 2025

Accomplishments / Events:

- The VIIRS flood downscaling model was revised from least square error of pixel water levels and least square error of pixel water fractions estimates to least square error of pixel water levels with pixel water fraction difference of less than 15%. This revision resulted in a 55% improvement in computing time. This effort, funded by BIL, supplements JPSS Innovation funding provided to GMU.

Overall Status:

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

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

Issues/Risks:

Highlights:

VIIRS Imagery

August 2025

Accomplishments / Events:

- Established a new access method for VIIRS M-band imagery through NOAA CLASS subscriptions, improving reliability for imagery evaluation and generation compared to with the STAR server.
- Completed review of VIIRS Imagery EDR products for IDPS Block 2.3 Mx14 I&T
  - All looked good
  - Required delivery of the files from the CrIS team in the final hour, as they were not pushed to CIRA via STAR/SCDR. This will need to be rectified by next review.
- VIIRS Imagery Team Presentations
  - Jorel Torres, Aug 7 Satellite Book Club: "JPSS: Recent Visits to Weather Forecast Offices (WFOs), Training Resources, and Data Access Updates" Link
- Team Blog Posts with VIIRS Imagery
  - August 2025 Milwaukee Flooding
  - Hurricane Erin (2025) Rapid Intensification
  - Dragon Bravo Fire, Arizona
  - Rio Blanco County, Colorado – Wildfires
- 19 VIIRS Imagery Posts on CIRA Social Media (X) this Month. A few posts:
  - VIIRS NCC Imagery of Typhoon Podul, city lights, fishing boats (1.8K views)
  - VIIRS DCPD RGB Imagery of PTC Erin (23K views)
  - VIIRS Day Land Cloud RGB Imagery of Flooding in Pakistan (1.3K views)

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
FY26 Program Management Review	Jun-25	Jun-25	May-25	
Submit for Publication – CrIS Imagery	Mar-25	Mar-25	Mar-25	
Submit for Publication – Blowing Dust Climo	Jun-25	Jun-25	Mar-25	
Submit for Publication – Blowing Snow Detection via Satellite Imagery	Sep-25	Sep-25		
Completed new DNB-to-NCC LUTs for S-NPP, NOAA-20, and NOAA-21	Sep-25	Sep-25		
New Imagery products or product enhancements (display on SLIDER)	Sep-25	Sep-25	continuing	
Realtime Imagery monitoring and display systems (SLIDER, etc.)	Sep-25	Sep-25	continuing	
Interesting VIIRS Imagery to Social Media and Blogs	Sep-25	Sep-25	continuing	
McIDAS-X/V Enhancements for processing/display of VIIRS Imagery	Sep-25	Sep-25	continuing	
Block 2.3 Mx builds deploy regression review/checkout (Mx12, Mx13, Mx14			Mx12-Jan25, Mx13-Apr25, Mx14-Aug25	

Overall Status:

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

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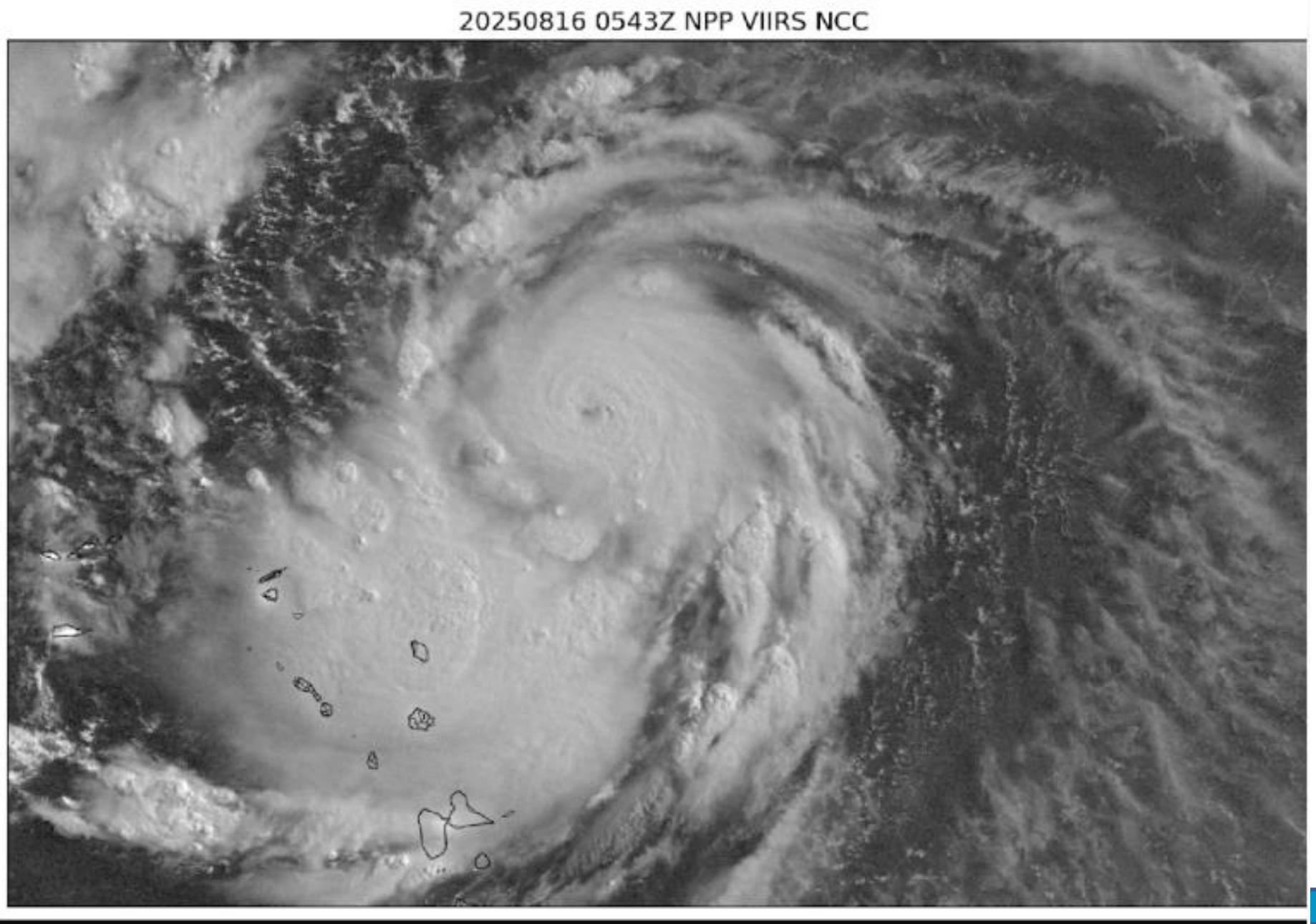
Issues/Risks:

Highlights: Image of the Month

Figure: Hurricane Erin during rapid intensification in the early morning (pre-dawn) hours of 16 August 2025, shown in S-NPP VIIRS Day Night Band (DNB) Near Constant Contrast (NCC) Imagery

VIIRS Imagery



VIIRS Polar Winds

August 2025

Accomplishments / Events:

- Completed development of a polar winds pre-processing script that handles the selection of S-NPP, NOAA-20, and NOAA-21 granules used for generating a triplet of VIIRS orbital imagery needed to generate the tandem VIIRS polar wind (VPW) product. This script will be delivered to OCS as part of the transition effort to implement the tandem VIIRS for operational implementation Figure 1 shows an example of the tandem VIIRS polar winds generated from overlapping N21, SNPP, and N20 VIIRS M15 band imagery over Antarctica at 00:32 UTC on September 3, 2025.
- Use of the enterprise winds algorithm has been expanded to derive polar winds from NOAA-20 or NOAA-21 over the Arctic by tracking cloud features derived from the VIIRS Near Constant Contrast (NCC) pseudo-albedo product and utilizing the VIIRS Day/Night Band (DNB) for quality control information. Figure 2 shows an example of these winds from NOAA-21 at 1531 UTC on August 20, 2025

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

Overall Status:

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

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

Tandem (N21-SNPP-N20) VIIRS Polar Winds

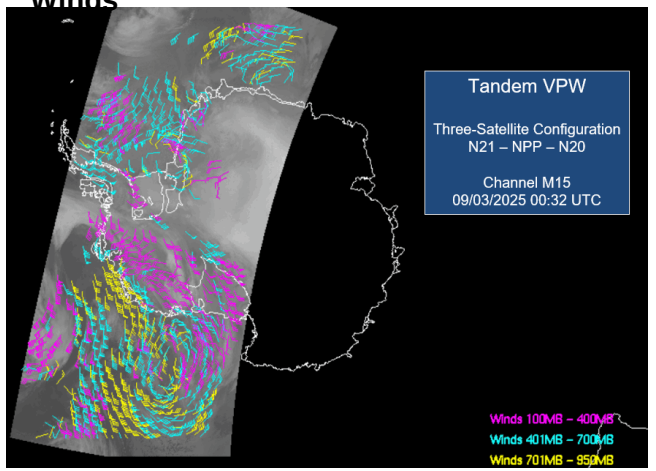

Figure 1. Tandem VIIRS polar winds generated from overlapping N21, SNPP, and N20 VIIRS M15 band imagery over Antarctica at 00:32 UTC on September 3, 2025

VIIRS NOAA-21 DNB-NCC Polar Winds

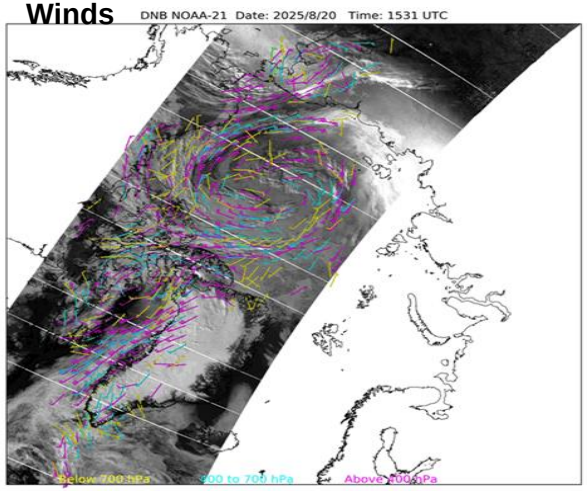

Figure 2. VIIRS polar winds generated from NOAA-21 DNB-NCC imagery over the Arctic at 15031 UTC on August 20, 2025

VIIRS SDR

August 2025

Accomplishments / Events:

- After downloading the required NOAA-21, NOAA-20, and S-NPP VIIRS SDR files from STAR CDR, CLASS, NODD, and NCCF, completed checkout of the IDPS Block 2.3 Release Mx14 software deployed on DP-TE
- After downloading the ADL Mx14 source code from the FTS website, modified the code for Linux 9, and then successfully compiled and tested for VIIRS SDR; compared the RSBautoCal outputs for S-NPP during 41 days, and the comparison of Mx14 versus Mx13.0.1 showed that the calculated numbers were the same, without any dropped orbits, confirming that RSBautoCal in Mx14 works as expected
- Calculated and verified with NASA VCST the NOAA STAR predictions of the NOAA-21, NOAA-20 and S-NPP VIIRS next lunar calibration opportunities on 11/1/2025
- 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 8/23/2025

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
TSIS-1 solar spectrum application for JPSS-3/-4 VIIRS	Dec-24		11/15/2024	
JPSS-4 VIIRS pre-launch characterization report	Mar-25		3/13/2025	
JPSS-3/-4 VIIRS granule size change verification	Mar-25		2/27/2025	Mx13 SOL
VIIRS cross-calibration with hyperspectral measurements	Jun-25		6/27/2025	
Suomi NPP and NOAA-20 VIIRS intermediate recalibration	Jun-25	Sep-25		Lunar cal. calendar
JPSS-3/-4 VIIRS SDR Cal/Val Plan (final version)	Jun-25		7/28/2025	GRAVITE shutdown
"Monthly" VIIRS lunar calibration predictions and analyses	Jul-25		7/31/2025	
Cross-calibration and comparison among NOAA-21, NOAA-20, and Suomi NPP VIIRS report	Sep-25			

Overall Status:

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

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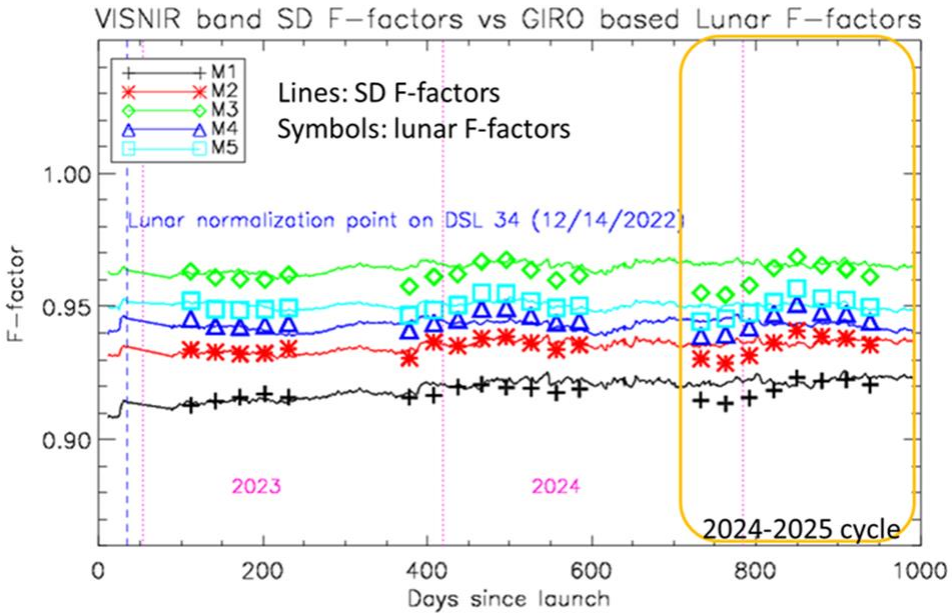
Issues/Risks:

Highlights:

NOAA-21 VIIRS solar (solid line) and lunar (symbols) calibration results for bands M1 to M5 agree within ±1%



Volcanic Ash

August, 2025

Accomplishments / Events:

- Quality/Oversight Continued to ensure high quality Volcanic Ash retrievals from EDR algorithms and VOLCAT. Routine validation of existing JPSS volcanic ash EDRs from current sensors will continue as needed, including support for ASSISTT/NDE evaluations. VOLCAT will replace volcanic ash EDRs upon successful completion of VOLCAT transfer to operations within NCCF.
- VOLCAT VIIRS volcanic ash plume identification and extraction work is an enhancement to the VOLCAT methodology. As reported previously, the newly developed random forest model has demonstrated improved skill score metrics relative to the current VOLCAT methodology using the validation portion of the classified case database. During the past month this work focused on testing usage of additional spectral/spatial metrics (e.g., combination of 3.9µm and 11µm metrics) to further improve detection skill scores relative to the current VOLCAT methodology. A version of the RF was trained and evaluated using these additional metrics, both using the validation portion of the classified database and 11 days of real-time results from May, June and August 2025. The 11 days of real-time results indicate the RF using the additional metrics has higher critical success index (CSI) scores than both the current VOLCAT methodology and the initial RF version (0.39, 0.16, 0.34, respectively (N=212)). The increase in CSI for both RF compared to the current VOLCAT methodology is achieved largely through reduction of false alarms with small increases in probability of detection. The figures included to the right show an example of the latest RF detecting a missed event (top) and eliminated false alarm (bottom) compared to the current VOLCAT methodology from the assessment of real-time VOLCAT VIIRS processing.

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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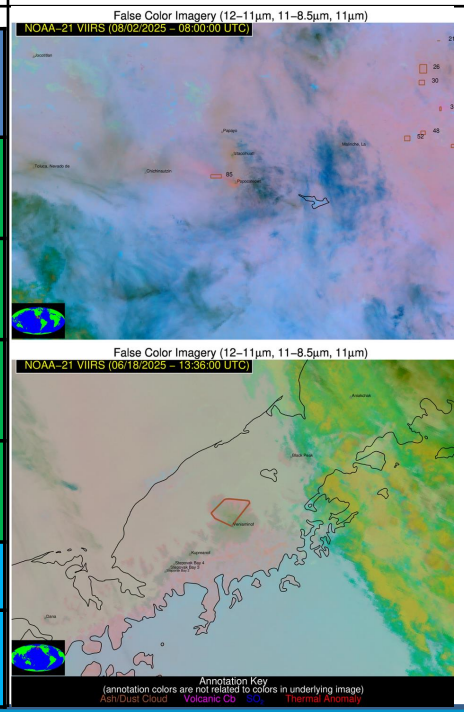
Issues/Risks:

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



Highlights: The top figure shows a subtle volcanic ash emission from the Popocatepetl volcano in Mexico on Aug 2nd, 2025. The current VOLCAT methodology missed this emission, but latest random forest detected the emission. The bottom figure shows a false alarm from the current VOLCAT methodology over the Alaskan peninsula on June 18th, 2025. The latest random forest eliminated this false alarm. The random forest approach, when compared to the current VOLCAT methodology for 11 days in 2025, had a slightly higher probability of detection (0.86 vs. 0.81) and a much lower false alarm rate (0.58 vs. 0.83). The improvements from the random forest will help the aviation industry more efficiently route flights around volcanic cloud hazards.

FY25 JPSS SDR Reprocessing Project

July 2025

- Improved the DNN-based cloud detection algorithm for OMPS NM SDR data by doing sensitivity studies with changed cloud fraction thresholds.
- Completed a manuscript draft about the cloud detection algorithm. The used DNN model performance is shown in the following figure.

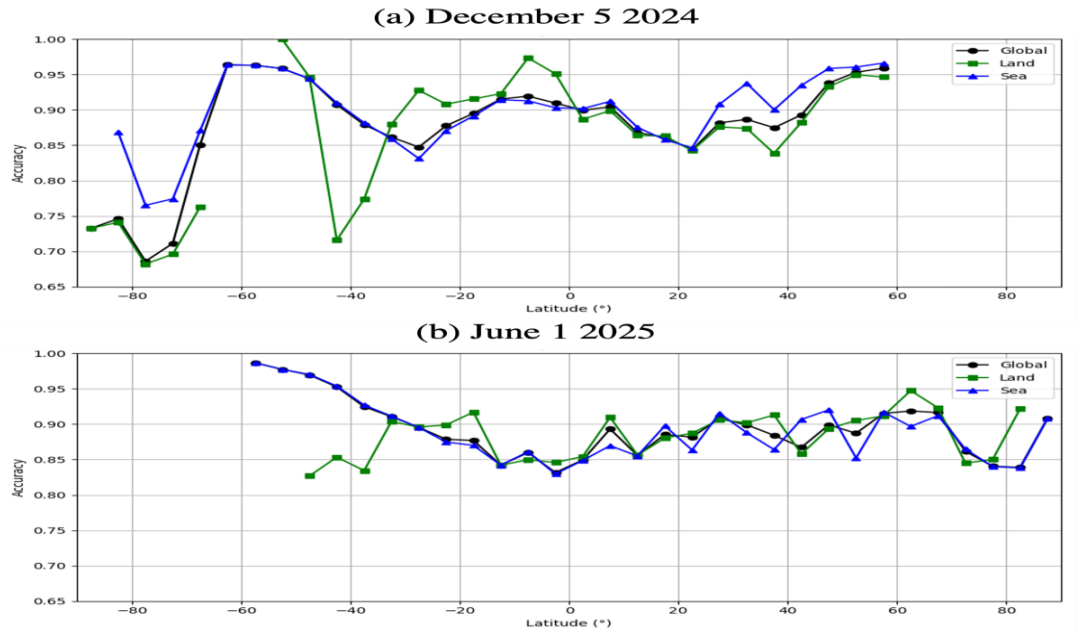


Figure. Zonal mean accuracy of the DNN model: (a) December 5 2024; (b) June 1 2024

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

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

Overall Status: The project will be added to the ICVS and OMPS SDR projects per STAR management's guidance after August 20, so this project will not be managed independently after it.

	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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FY25 Microwave Sounding Temperature Reprocessing Project

July 2025

Accomplishments / Events:

- Completed May to July monthly updates and delivery of reprocessed Microwave Sounding Temperature (MST) Products to NCEI
- Continued working on reprocessing the S-NPP and N20 ATMS measurements into the daily gridded MST data for NCEI delivery, data quality check and data analysis.
- Started to draft a manuscript about ATMS SSW event detection.

Overall Status: The project will be added to the ICVS and OMPS SDR projects per STAR management's guidance after August 20, so this project will not be managed independently after it.

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

Overall Status:

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

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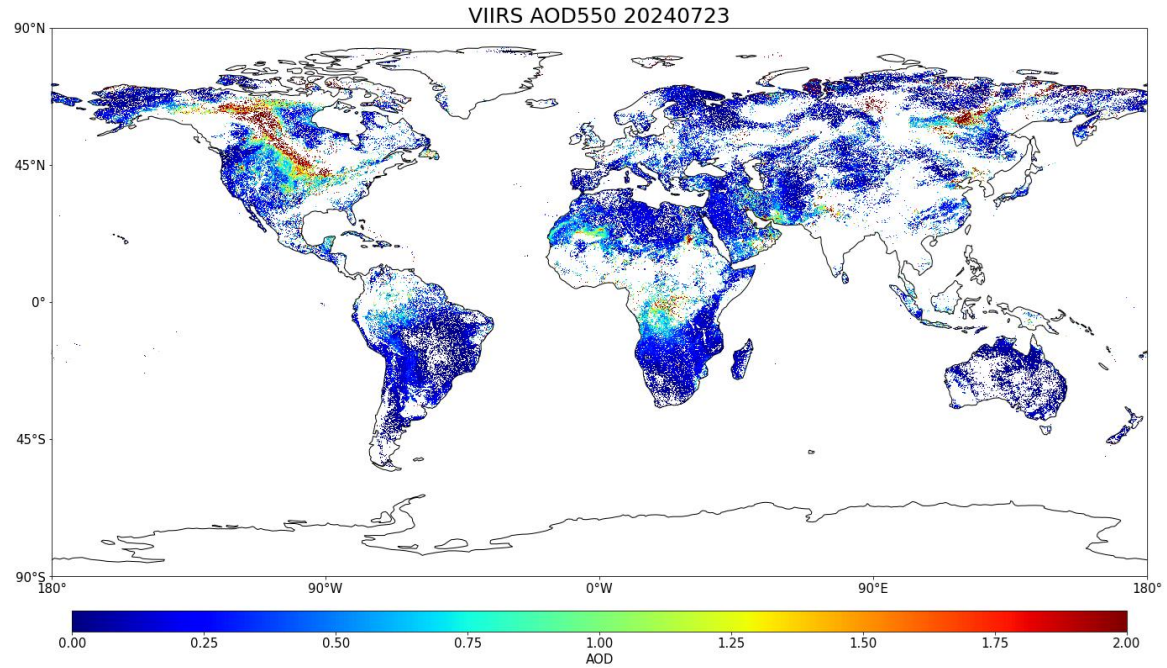
AOD impact on Surface Reflectance

- AOD is the most important parameter for atmospheric correction
  - AOD not available, then use AOD climatology (AOD550 = 0.06)
  - AOD out of range, then mark as bad retrieval
  - AOD with validation range (0-5), then divide AOD as three level: low AOD, average/medium AOD, high AOD.
- Definition of AOD quantity
  - General definition: AOD550 > 1 □ high AOD.
  - Internal Metrics: the difference between atmospheric reflectance and molecular reflectance of M4 band (green, 550nm)
  - Criteria: Medium threshold: 0.015, high AOD threshold: 0.03



- For the AOD climatology, mainly due to the cloudy condition, the SR could not properly retrieved, so the impact is limited.
- For the high AOD, aerosol contamination is significant and the SR is unreliable.
- The low AOD is ideal condition, while medium one should be use with cautious.

	Scenario	Impact
AOD climatology	Cloudy, no AOD retrieval	Most SR unusable
Low AOD	Ideal clear condition	Good quality
Medium AOD	Medium AOD load	Use be cautious
High AOD	High AOD load	Most SR unusable