



NOAA JPSS Monthly Program Office

AMP/STAR FY23 TTA

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October, 2023

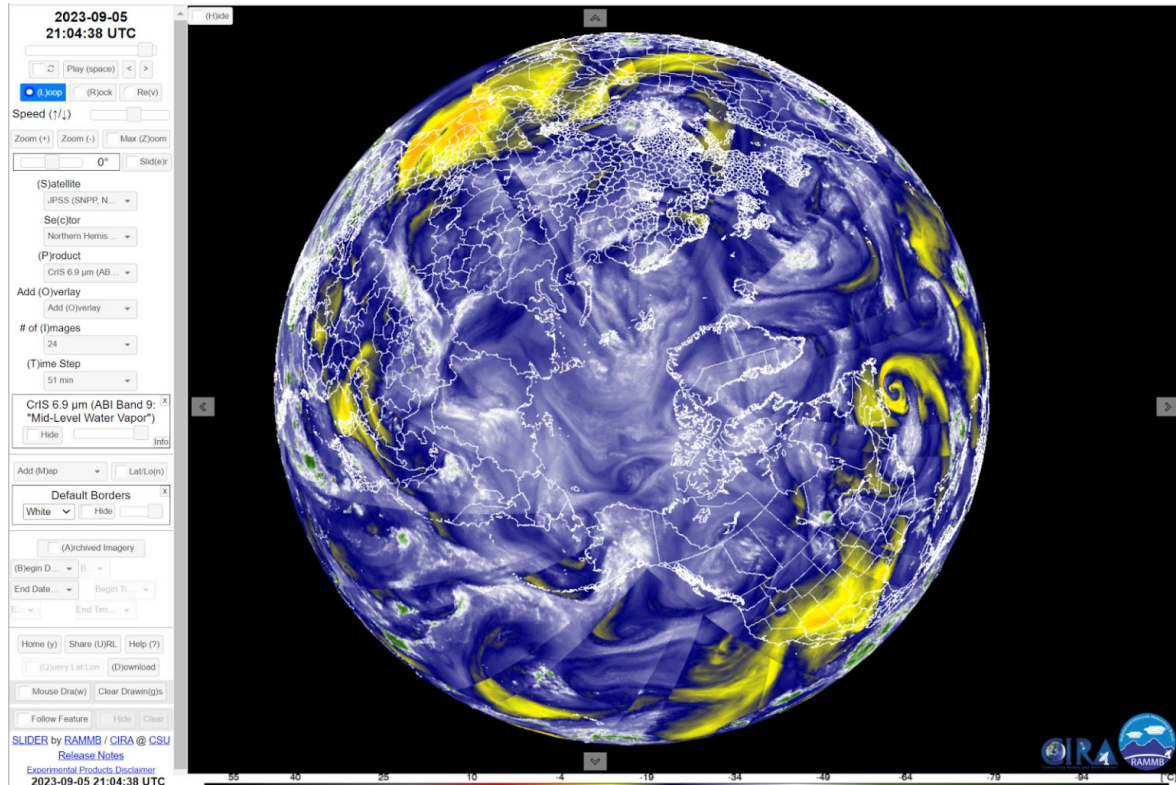
September Maturity Review and other meetings

The September JPSS-2 Maturity Review took place on September 28. The review committee found that the CrIS SDR had reached Validated maturity, while the Vegetation Health product was found to be Provisional maturity.

STAR JPSS scientists attended the following meetings in September:

- EUMETSAT Conference; Malmo, Sweden; Sep 11-15
- NASA Precipitation Measurement Missions (PMM) 2023 Science Team Meeting; Minneapolis, MN; Sep 18-22
- NOAA AI Workshop, virtual, Sep. 19-21
- Committee on Earth Observation Satellites (CEOS) Precipitation Virtual Constellation (P-VC) Meeting; virtual; Sep. 20
- 5th International Earth Surface Working Group (IESWG) Meeting; Helsinki, Finland; Sep. 26-28

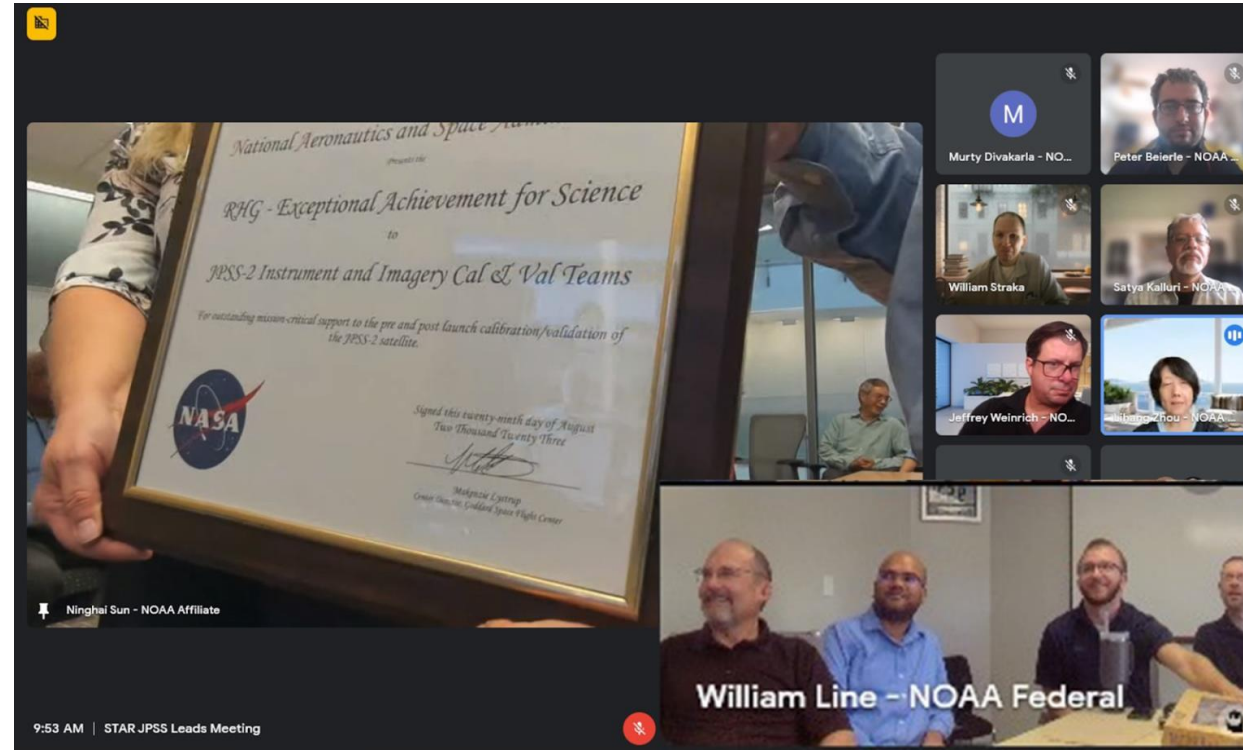
New CrIS Imagery Products added to CIRA SLIDER



New products were recently added to the JPSS Northern and Southern Hemisphere sectors of CIRA SLIDER. The “CrIS Imagery” products were developed from a collaboration between the STAR Imagery and CrIS Science Teams, and take advantage of the broad spectral characteristics of CrIS. For example, water vapor imagery from CrIS provides unique value over the polar regions where such imagery is otherwise lacking (VIIRS does not have any water vapor bands). Also available are additional Infrared bands and two unique RGBs. [The new imagery can be accessed here.](#)

VIIRS Imagery Team given NASA Robert H. Goddard Award

The VIIRS Instrument and Imagery Cal/Val Teams were presented with the NASA Robert H. Goddard Award for Exceptional Achievement in Science for their work on pre- and post-launch calibration and validation of JPSS-2 (now NOAA-21) instrumentation, as well as VIIRS imagery, which is a Key Performance Parameter for the JPSS mission. On the CIRA side, the following members of the VIIRS Imagery Team were recognized for their contributions: Galina Chirokova, Cindy Combs, Jack Dostalek, Steve Finley, Srikanth “Kumar” Gampa, Don Hillger, Steve Miller, Curtis Seaman and Jorel Torres. Bill Line and several members of the CIRA team remotely attended the award ceremony hosted at NCWCP on 25 September 2023.



Transition of the reprocessed SNPP SDRs from STAR to CLASS completed



As of September 8, 2023, the transition of the reprocessed SNPP VIIRS SDR from STAR to CLASS has been completed. With this completion, the transition process for the reprocessed SNPP SDRs from STAR to CLASS for all four instruments, ATMS, CrIS, OMPS, and VIIRS is fully completed. The time period of the SDR datasets was roughly from January 2012 to the recent two years, depending on specific instruments. The total data volume being transitioned is about 1.75 Pb and the total transition time was 22 months. The reprocessed SNPP ATMS, CrIS, and OMPS SDRs were available on the CLASS website from March 2022. It is expected that the reprocessed SNPP VIIRS SDRs are also available on the CLASS website in a few weeks for user support

EFIRE Active Fires algorithm moves to production

The Active Fire team has been working on the monitoring of the new operational Enterprise Fire (EFIRE) VIIRS I-band product. The team and downstream users now have an overlap period until November 30, when both EFIRE and the (now) legacy NDE VIIRS I-band active fire products are available. The STAR team and OSPO have been working with downstream users on facilitating transition to EFIRE. The team also presented details of the new EFIRE product at the 2023 EUMETSAT conference, as part of the presentation on the status of the NOAA VIIRS I-band product.

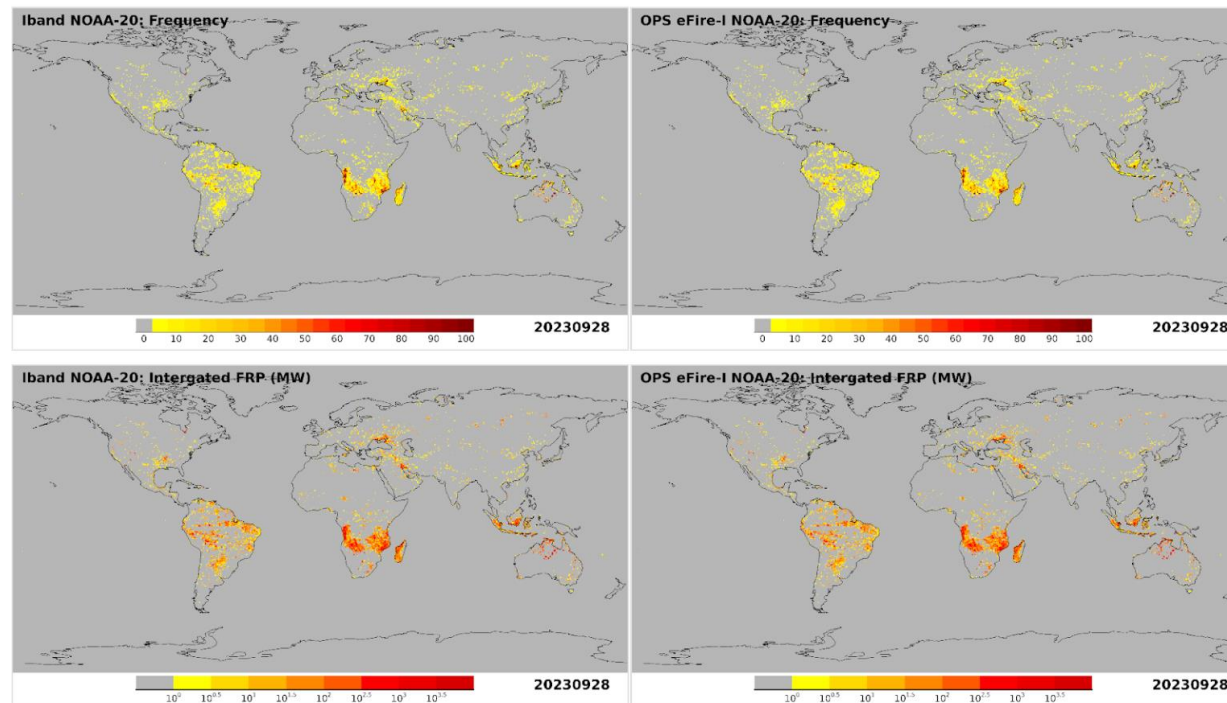


Figure. A comparison between the NDE legacy VIIRS I-band product (left) and the new operational Enterprise Fire VIIRS I-band product (right). Top: hot spot detections; bottom: total fire radiative power (FRP). Data shown are for NOAA-20 on September 28, 2023

Accomplishments

Delivery Date	Delivery Algorithm Packages (DAPs) – Enterprise Products:	Recipient
8/30/23	Final CCAP delivery of the VIIRS Radiance Cluster to NCCF for integration	NCCF
9/8/23	Final delivery of the JPSS Ice Age and Ice Concentration CCAPs to NCCF.	NCCF
9/11/23	V8 Patch Delivery of BUFR Toolkit v6.0 to the NCCF S3 bucket. Includes VIIRS Rad cluster and test cases for GOES-R CSR/ASR.	NCCF
9/12/23	Four separate ACSPO SST final CCAPs (ACSPO SST AHI v2r0, ACSPO SST AVHRR v2r0, ACSPO SST VIIRS v1r0, ACSPO SST L3S v1r0)	NCCF
9/13/23	Patch delivery of the SMOPS to the NCCF S3 bucket to address an error.	NCCF
9/15/23	ACI Final CCAP Patch delivery (uses: VIIRS bands: I1, I4, M15, M16) The Arctic Composite Imagery (ACI) algorithm package produces an hourly mosaic of geostationary and polar-orbiting satellite data over the Arctic region.	NCCF
9/18/23	SCR for SFR Standalone code outside of MiRS	NCCF
9/20/23	Patch CCAP delivery of Surface Reflectance to accommodate Cloud Mask input changes	NCCF
9/28/23	SCR for the Leaf Area Index (LAI) algorithm CCAP for OSPO review.	NCCF
9/29/23	SCR for the OMPS LP Ancillary algorithm	NCCF

Accomplishments – JPSS Cal Val Support

NOAA-20/21/S-NPP Operational Calibration Support:

S-NPP	Weekly OMPS TC/NP Dark Table Updates	9/5/23, 9/12/23, 9/19/23, 9/26/23, 10/3/23, 10/11/23
NOAA-20	Weekly OMPS TC/NP Dark Table Updates	9/5/23, 9/12/23, 9/19/23, 9/26/23, 10/3/23, 10/11/23
NOAA-21	Weekly OMPS TC/NP Dark Table Updates	9/5/23, 9/12/23, 9/19/23, 9/26/23, 10/3/23, 10/11/23
S-NPP	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	9/12/23, 9/26/23, 10/11/23
NOAA-20	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	9/19/23, 10/3/23
NOAA-21	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	9/19/23, 10/3/23
S-NPP	Monthly VIIRS LUT Update of DNB Offsets and Gains	9/25/23
NOAA-20	Monthly VIIRS LUT Update of DNB Offsets and Gains	9/25/23
NOAA-21	Monthly VIIRS LUT Update of DNB Offsets and Gains	9/25/23
NOAA-21	Monthly VIIRS DNB Straylight correction update	9/25/23



NOAA-21 Cal/Val Maturity Reviews

September, 2023 Maturity Reviews

CrIS SDR	Validated	Review successfully held 9/26, Attained Validated effective 9/26/23
Vegetation Health	Provisional	Review successfully held 9/26; Attained Provisional effective 3/30/23

October, 2023 Maturity Reviews

Clouds (Cloud Mask Beta to Provisional), Cloud Phase/Type, Cloud Cover Layer, Cloud Base Height, DCOMP, and NCOMP	Beta/Provisional	10/26
Cryosphere (Ice Surface Temperature, Ice Concentration, Ice Thickness/Age, Binary Snow Cover, Fractional Snow Cover)	Provisional	10/26
Ozone NP Ozone v8 Pro	Provisional	10/26

November, 2023 Maturity Reviews

Ocean Color	Beta	Review Date TBD
Polar Winds	Beta	Review Date TBD
OMPS LP (SDR & EDR)	Beta	Review Date TBD

JSTAR Code/LUT/Product Deliveries

Date	DAPs to DPMS
9/11/23	9/11/2023 ADR-10358/ CCR-6761 J2 CrIS PCT update for validated maturity

Date	Remaining J2-Ready DAPs to NCCF
March, 2023 (Delayed to January 2024)	ASSISTT delivered LP pre-processor CCAP for SCR on 9/29. Final J2 preliminary CCP will be in November, and final delivery in January, 2024.
March, 2023 (Delayed to October)	J2-ready (J2-Beta) Ocean Color DAP to NCCF (ASSISTT -- > NCCF) ASSISTT team plan: SCR delivery to OSPO in June (Delivered on 6/20), and final CCAP delivery expected by October 18.



FY23 STAR JPSS Milestones

Milestones	Original Date (column I)	Forecast Date	Actual Completion Date	Variance Explanation
Algorithm Updates DAPs/CCAPs				
ATMS J2 PCT updates (as needed)	Jan-23	Jan-23	Delivered	
CrIS J2 Eng Pkg update delivery	Jan-23	02/09	Delivered on 02/09 for Beta	
VIIRS J2 LUTs update delivery	Jan-23	Jan-23	Delivered (January 26)	
OMPS J2 LUTs update delivery	Jan-23	Jan-23	Delivered	
OMPS LP J2 ready DAP (to NCCF)	Mar-23	June-23	Delivered for S-NPP on April 14. ASSISTT delivered LP pre-processor CCAP for SCR on 9/29. Final J2 preliminary CCP will be in November, and final delivery in January.	
Ocean Color J2 ready DAP (to NCCF)	Mar-23	Aug-23	Preliminary CCAP SCR Delivered: June 22, and Final ASSISTT delivery will be on October 18	
CCAP to NCCF (Aerosol AOD & ADP)	Oct-22	Oct-22	10/26/22	
CCAP to NCCF (CM, Phase, Height, CBH, CCL, COMP)	Oct-22	Oct-22	10/26/22	
CCAP to NCCF (VPW, Cryosphere, Volcanic Ash)	Nov-22	Nov-22	11/15/2022, 11/18/2022, VPW: 01/06/2023	
CCAP to NCCF (LST, LSA)	Nov-22	Nov-22	Delayed to 12/15/2022 Delayed: 01/20/2023	
CCAP to NCCF (VI, GVF)	Nov-22	Nov-22	11/15/2022, 1/11/2023	
CCAP to NCCF (MiRS, OMPS LP V8Pto)	Jan-23	Jan-23	MiRS:12/31(separate delivery) MiRS: v11.9 Final CCAP Delivered:1/26/2023 Delivered: OMPS 12/23; V8TOz Delivered: 3/1/23	
CCAP to NCCF (HEAP, N4RT)	Mar-23	Mar-23	Code delivered for SCR 2/6 Initial Delivery Completed, Final Delivery on June 30	
CCAP to NCCF (ACSPO SST)	Apr-23	Aug-23	Science team provided updated code to use VIIRS TC GEO on March 7, and preliminary CCAP (SCR) delivered June 5, SCR review: 7/7; final CCAP delivered on 9/12	
Enterprise Fires	Apr-23	Apr-23	ASSISTT Delivered to NCCF on 4/19	
CCAP to NCCF (VH, VOLCAT Phase 1 for Volcanic Ash, OMPS V8TOz)	May-23	May-23	Delivered V8TOz (4/23), VH (4/14) ASSISTT to NCCF, VOLCAT SCR August 17, Preliminary CCAP delivered (8/1) Final CCAP: 11/17	
CCAP to NCCF (Gridded Land)	Jul-23	Jul-23	VIIRS Gridded Land Preliminary CCAP for software code review, OSPO completed Review on 6/1	
CCAP to NCCF (Cloud Provisional)	Jul-23	Jul-23	Patch delivery made, No plans yet from ASSISTT	



FY23 STAR JPSS Milestones

Milestones (Algorithm Cal/Val and LTM)	Original Date	Forecast Date	Actual Date	Variance Explanation
JPSS-2 First Light Images (Nov-22: ATMS; Dec-22: VIIRS VIS/NR, Feb-2023 VIIRS TEB, Feb-2023 VIIRS DNB, Feb-2023 OMPS, Feb-2023 CrIS)	Dec-22	Dec-22	11/22/2022 ATMS 12/05/2022 VIIRS VIS/NIR 02/09/2023 VIIRS TEB 02/09/2023 VIIRS DNB 02/12/2023 CrIS SDR 02/18/2023 OMPS	Delays due to Transmitter anomaly
FY24 Program Management Review (all teams)	Jun-23	Jun-23	Completed	
AST-2022 (VIIRS Annual Surface Type)	Sep-23	Sep-23	Completed (9/30)	
Transfer reprocessed S-NPP SDR data to CLASS	Sep-23	Sep-23	Completed (9/8)	
JPSS-3 pre-launch test data review/analyze (SDR teams); JPSS-3/JPSS-4 activities/reviews support	Sep-23	Sep-23	On-schedule and on-going following JPSS-3 and JCT schedules	JPSS-3 instrument reviews completed and other pre-launch efforts are on going as per the JPSS-3 schedules. All planned milestones identified in the quad charts are completed.
Maintain / Update ICVS (develop ICVS JPSS-2 modules to support various activities: monitoring, inter-sensor comparison, ...)	Sep-23	Sep-23	On-schedule and additional improvements are on-going (>95% done)	ICVS has implemented modules for NRT monitoring of NOAA-21 ATMS, OMPS-NM, OMPS-NP, CrIS, and VIIRS. ICVS demonstrated basic functions for LP using SNPP data as a proxy and is waiting to receive NOAA-21 LP data.
Maintain / Expand (to include JPSS-2 products) JSTAR Mapper	Sep-23	Sep-23	On-schedule and on-going and will be completed based on the Provisional Maturity of NOAA-21 EDR Products (March-24)	Currently NOAA-21 AF (EFIRE), MiRS, VIIRS I5 and True Color images are in JSTAR Mapper. Some of the NOAA-21 EDRs are unavailable in the SCDR, and once available after Provisional Maturity, JSTAR Mapper will assimilate them
Images of the Month	Monthly	Monthly	On-schedule and on-going (Monthly Quad Charts)	



FY23 STAR JPSS Milestones

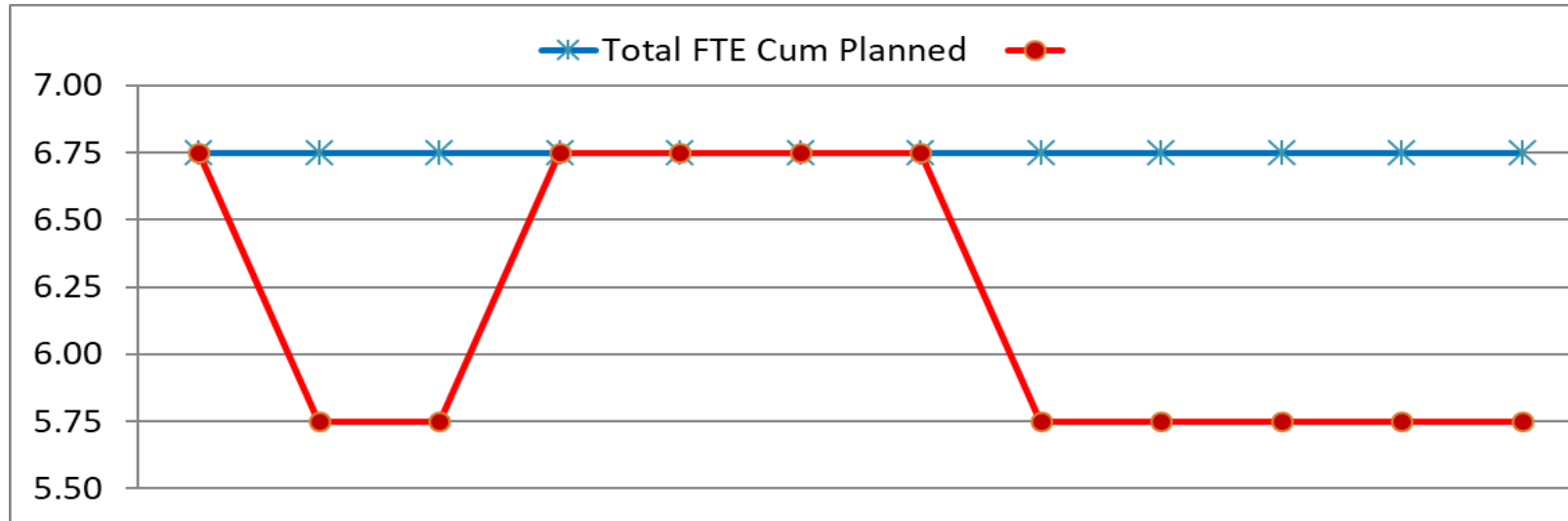
Milestones	Original Date	Forecast Date	Actual Date	Variance Explanation
NOAA-21 Cal/Val Maturity Reviews				
ATMS TDR/SDR (B/P: Dec-2022; V: May-2023)	May-23	May-23	Validated Review held 6/22; Attained Validated effective 05/12	
CrIS SDR (B: Jan-23; P: Feb-23; V: Aug-23)	Aug-23	Aug-23	Validated Review held (09/28) Attained Validated effective 09/26/23	Transmitter anomaly
VIIRS SDR (B: Dec-22; P: Feb-23; V: May-23)	May-23	May-23	Provisional Achieved: 03/30; Attained Validated maturity effective June 23	Transmitter anomaly
OMPS SDR (B: Jan-23; P: Feb-23; V: Aug-23)	Aug-23	Aug-23	Provisional Achieved: 03/30; Validated Planned: 01/04/24	Transmitter anomaly
KPP VIIRS Imagery (B: Jan-23; P: Feb-23; V: May-23)	May-23	May-23	Provisional Achieved: 03/30; Attained Validated maturity effective June 23	Transmitter anomaly
Non-KPP VIIRS Imagery (B: Feb-23; P: Mar-23; V: Jul-23)	Jul-23	Jul-23	Provisional Achieved: 03/30; Attained Validated maturity effective June 23	Transmitter anomaly
Clouds (B: CM: Apr-23; Others: Jul-23; P: Aug-23)	Aug-23	Aug-23	Provisional Planned: 10/26	Transmitter anomaly
Aerosol AOD (B: Apr-23; P: Sep-23)	Sep-23	Sep-23	Beta Review held: 6/22; Attained Beta effective 02/10	Transmitter anomaly
Aerosol ADP (B: Mar-23; P: Aug-23)	Aug-23	Aug-23	Provisional Review held 8/24; Attained Provisional effective February 11	Transmitter anomaly
Volcanic Ash (B: Jul-23; P: Aug-23)	Aug-23	Aug-23	Provisional Review held 8/24; Attained Provisional effective March 30, 2023	Transmitter anomaly
Cryosphere (B: May-23; P: Aug-23 for Sea Ice & Binary Snow)	Aug-23	Aug-23	Attained Beta effective May 1; Provisional Planned: 10/26	Transmitter anomaly
Active Fires (B: May-23; P: Aug-23)	Aug-23	Aug-23	Beta/Provisional Review held: 6/1; Attained Provisional effective 03/30	Transmitter anomaly
LST/LSA/SR/GVF/VI (B: May-23)	May-23	May-23	Beta Review held: 8/03; Attained Beta effective March 30	Transmitter anomaly
Vegetation Health (B: Jul-23)	Jul-23	Jul-23	Beta/Provisional Review held: 9/28, Attained Provisional effective 03/30/23	Transmitter anomaly
Ocean Color (B: Sep-23)	Sep-23	Sep-23	Beta Review Planned: 11/30	Transmitter anomaly
SST (B: Mar-23; P: Jun-23)	Jun-23	Jun-23	Provisional Review held 8/24; Attained Provisional effective March 20	Transmitter anomaly
VPW (B: Sep-23)	Sep-23	Sep-23	Beta Review Planned: 11/10	Transmitter anomaly
VFM (B: May-23)	May-23	May-23	Provisional Review held 8/24; Effective date will be upon successful integration of v1.1 to be delivered in September 2023.	Transmitter anomaly
NUCAPS (B: May-23)	May-23	May-23	Beta Review held on 6/1; Attained Beta effective 3/23	Transmitter anomaly
MiRS (B: Mar-23; P: Aug-23)	Aug-23	Aug-23	Provisional held: 6/22; Attained Provisional effective 5/12	Transmitter anomaly
SFR (B: May-23)	May-23	May-23	Beta Review held: 4/27; Attained Beta effective 12/3/2022	Transmitter anomaly
OMPS NP EDR V8Pro & V8TOz (B: Feb-23; P: Mar-23)	Mar-23	Mar-23	Beta Review held:03/30; Attained Beta: 4/3; ; Provisional maturity held on 8/3 for V8TOz, V8TOS. Effectivity upon successful implementation of soft calibration tables in August. Provisional review planned for V8Pro: 10/26	Transmitter anomaly



FY23 STAR JPSS Milestones

Operational/Program Support	Original Date	Forecast Date	Actual Completion Date
S-NPP: Weekly OMPS TC/NP Dark Table Updates	Weekly	Weekly	10/04/22, 10/12/22, 10/19/22, 10/26/22, 11/01/22, 11/08/22, 11/15/22, 11/22/22, 11/28/22, 12/06/22, 12/13/22, 12/19/22, 01/03/23, 01/10/23, 01/17/23, 01/23/23, 01/31/23, 02/07/23, 02/14/23, 02/21/23, 02/28/23, 03/07/23, 03/14/23, 3/21/23, 3/28/23, 4/4/23, 4/11/23, 4/17/23, 4/25/23, 05/02/23, 05/09/23, 05/16/23, 05/23/23, 05/31/23, 06/06/23, 6/13/23, 6/20/23, 6/27/23, 8/2/23, 8/8/23, 8/15/23, 8/22/23, 8/29/23, 9/5/23, 9/12/23, 9/19/23, 9/26/23, 10/3/23, 10/11/23
S-NPP: Bi-Weekly OMPS NP Wavelength & Solar Flux	Bi-Weekly	Bi-Weekly	10/12/22, 10/26/22, 11/08/22, 11/22/22, 12/06/22, 12/19/22, 01/03/23, 01/17/23, 1/31/23, 02/14/23, 02/28/23, 03/14/23, 3/28/23, 4/4/23, 4/11/23, 4/25/23, 05/09/23, 05/23/23, 06/06/23, 6/20/23, 7/5/23, 7/18/23, 7/26/23, 8/1/23, 8/15/23, 8/29/23, 9/12/23, 9/26/23, 10/11/23
S-NPP: Monthly VIIRS LUT update of DNB Offsets and Gains	Monthly	Monthly	10/04/22, 11/01/22, 11/28/22, 01/03/23, 01/30/23, 02/27/23, 3/28/23, 4/24/23, 05/30/23, 6/26/23, 7/26/23, 8/23/23, 9/25/23
NOAA-20: Weekly OMPS TC/NP Dark Table Updates	Weekly	Weekly	10/04/22, 10/12/22, 10/19/22, 10/26/22, 11/01/22, 11/08/22, 11/08/22, 11/15/22, 11/22/22, 11/28/22, 12/06/22, 12/13/22, 12/19/22, 01/03/23 , 01/03/23, 01/10/23, 01/17/23, 01/23/23, 01/31/23, 02/07/23, 02/14/23, 02/21/23, 02/28/23, 03/07/23, 03/14/23, 3/21/23, 3/28/23, 4/4/23, 4/11/23, 4/17/23, 4/25/23, 05/02/23, 05/09/23, 05/16/23, 05/23/23, 05/31/23, 06/06/23, 6/13/23, 6/20/23, 6/27/23, 7/5/23, 7/11/23, 7/18/23, 7/26/23, 8/2/23, 8/8/23, 8/15/23, 8/22/23, 8/29/23, 9/5/23, 9/12/23, 9/19/23, 9/26/23, 10/3/23, 10/11/23
NOAA-20: Bi-Weekly OMPS NP Wavelength & Solar Flux	Bi-Weekly	Bi-Weekly	10/04/22, 10/19/22, 11/02/22, 11/15/22, 11/29/22, 12/13/22, 01/03/23, 01/10/23, 01/24/23, 02/07/23, 02/21/23, 03/07/23, 3/21/23, 4/4/23, 4/18/23, 05/02/23, 05/16/23, 05/31/23, 6/13/23, 6/26/23, 7/12/23, 7/26/23, 8/8/23, 8/22/23, 9/5/23, 9/19/23, 10/3/23
NOAA-20: Monthly VIIRS LUT update of DNB Offsets and Gains,	Monthly	Monthly	10/04/22, 11/01/22, 11/28/22, 01/03/23 , 01/30/23, 02/27/23, 3/28/23, 4/24/23, 5/26/23, 6/26/23, 7/26/23, 8/23/23, 9/25/23
NOAA-21: Weekly OMPS TC/NP Dark Table Updates	Weekly	Weekly	01/31/23, 02/14/23, 02/21/23, 03/07/23, 03/14/23, 3/21/23, 3/28/23, 4/4/23, 4/11/23, 4/18/23, 4/25/23, 05/02/23, 05/09/23, 05/16/23, 05/23/23, 05/31/23, 06/06/23, 6/13/23, 6/20/23, 6/27/23, 7/5/23, 7/11/23, 7/18/23, 7/26/23, 8/2/23, 8/8/23, , 8/15/23, 8/22/23, 8/29/23, 9/5/23, 9/12/23, 9/19/23, 9/26/23, 10/3/23, 10/11/23
NOAA-21: Bi-Weekly OMPS NP Wavelength & Solar Flux	Bi-Weekly	Bi-Weekly	03/07/23, 03/22/23, 4/6/23, 4/18/23, 05/02/23, 05/16/23, 05/31/23, 6/13/23, 6/27/23, 7/12/23, 7/26/23, 8/8/23, 8/22/23, 9/5/23, 9/19/23, 10/3/23
NOAA-21: Monthly VIIRS LUT update of DNB Offsets and Gains	Monthly	Monthly	03/6/23, 3/28/23, 4/26/23, 5/25/23, 6/26/23, 7/26/23, 8/23/23, 9/25/23
Mx builds deploy regression review/checkout (Mx8 - SDRs and VIIRS Imagery teams)			<ul style="list-style-type: none"> ✓ MX8 SOL STAR 'Go/No GO' Report Delivered: 4/14 ✓ MX8 I & T Data call for Go/NOGO issued (June 1-28), STAR Report due and Go/NOGO: 6/20 ✓ NCCF and NDE both performed verifications ✓ TTO: 7/13

J-STAR FY23 Planned v Actual Staffing Plan



J-STAR FTEs	Oct '22	Nov '22	Dec '22	Jan '23	Feb '23	Mar '23	Apr '23	May '23	Jun '23	Jul '23	Aug '23	Sep '23
Cum Planned (CS)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Cum Actual (CS)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00
Cum Planned (WYE)	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75
Cum Actual (WYE)	5.75	4.75	4.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75
Total FTE Cum Planned	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75
Total FTE Cum Actual	6.75	5.75	5.75	6.75	6.75	6.75	6.75	5.75	5.75	5.75	5.75	5.75

CS: vacant (Alisa Young now with GLERL)
 WYE: Qingyuan Richard Zhang (Corp)
 Prasanjit Dash (SOCD)
 Michael Cheeseman (SMCD)
 Murty Divakarla (25%)
 Tom Atkins (50%)
 Jeffrey Weinrich
 Wei W. Li
 Tess Valenzuela (RMD)

Color code:

Green: Completed Milestones

Gray: Ongoing FY23 Milestones

Accomplishments / Events:

- On 9/5/2023 the EFIRE VIIRS I-band product transitioned to operations in NCCF
- Initial feedback from downstream users, including NOAA Hazard Mapping System, confirmed performance as expected
- A patch to address a minor issue, resulting to omissions of a small number of hot spots over water (i.e. flares from gas/oil production), was developed and evaluated
- Two presentations related to VIIRS I-band products (Baseline NDE and EFIRE, NGFS) were given at the 2023 EUMETSAT meeting
 - An update on the NOAA Operational VIIRS Active Fire product - poster
 - An evaluation of the impact of improved fire detection and characterization from VIIRS on regional fire radiative power estimations – oral

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
I-band algorithm improvements for non-optimal conditions and ATBD updates	Sep-23	Sep-23	Sep-23	Coordinating with NGFS development
Science code updates to ASSIST/CSPP for eFire for NDE/NCCF	Sep-23	Sep-23	Sep-23	
Reactive maintenance of Suomi NPP and NOAA-20 M-band and I-band NDE products	Sep-23	Sep-23	Sep-23	
LTM & Anomaly Resolution (L) with Suomi NPP / NOAA-20 data analysis and feedback	Sep-23	Sep-23	Sep-23	

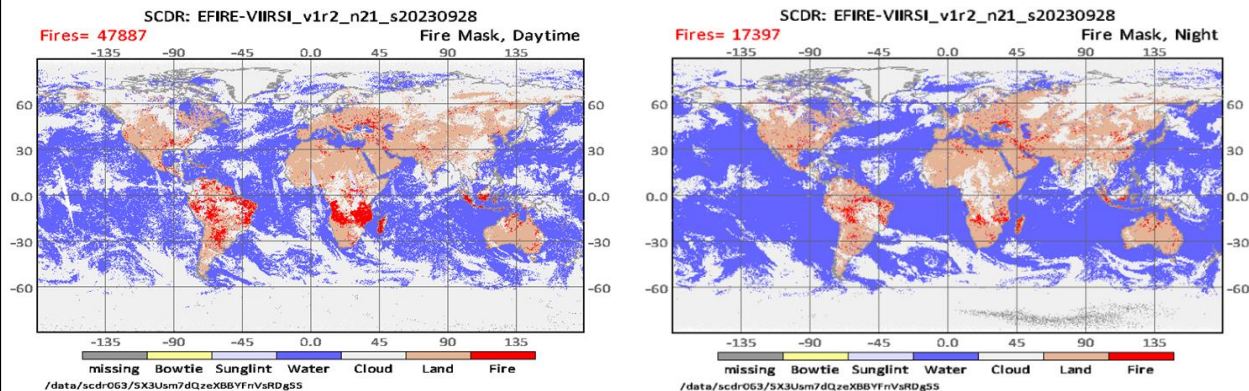
Overall Status:

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

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

Issues/Risks:

Highlight: Enterprise Fire VIIRS I-band product in NCCF operations



NOAA-21 operational Enterprise Fire VIIRS I-band fire mask for September 28, 2023. Left: daytime; right: nighttime

Accomplishments / Events:

- Participation and presentation on multiple topics at the Committee of Earth Observation Satellites Atmospheric Composition Virtual Constellation (CEOS AC-VC) on 23-27 October 2023 in Brussels, Belgium. Shobha Kondragunta and Michael Cheeseman are doing a presentation using VIIRS data entitled “Can satellite data drive public policy for fine particulate pollution?”
- Emerging partnership with Singapore meteorological services regarding NOAA satellite fire and smoke products. Coordination work is being done by NESDIS IIAD. JPSS project scientist Satya Kalluri and AAC team lead Shobha Kondragunta are the POCs for this activity
- NESDIS HQ requested AAC team lead Shobha Kondragunta to submit “High Impact” articles for end of the year compilation. Two articles were submitted: (1) Satellite Data Drive Public Policy Discussion for Fine Particulate Pollution, and (2) NOAA Satellites Track Trends in Greenhouse Gases from Anthropogenic and Natural Sources
- AAC team member Jim Limbacher is exploring the development of new aerosol models for over ocean aerosol optical depth retrievals that have a potential to improve the accuracy
- Completed reprocessing of one year of SNPP VIIRS ADP using call back procedure to retrieve thick smoke that is flagged as cloud. Work is ongoing to identify the improvements.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
NOAA-21 Aerosol Products (ADP, AOD) Provisional Maturity	Aug-23 Sep-23	Aug-23 Nov-23	June 23 (AOD) August 23 (ADP)	
Update to a faster version AI-based surface-reflectance-relationship algorithm (ML-SFRA)	Jun-23	Sep-23	TBD	developer left
Work with ASSIST team in delivering DAPs associated with algorithm updates	Sep-23	Sep-23	Sep-23	

Overall Status:

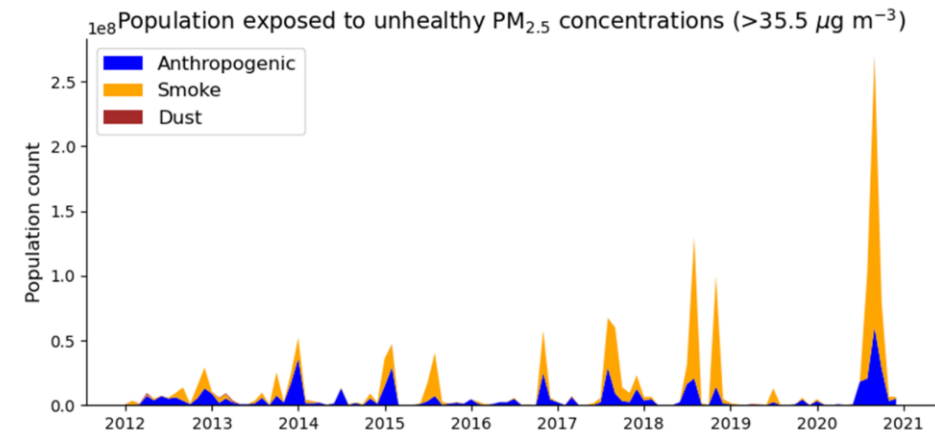
	Green ¹ (Completed)	Blue ² (On-Schedule)	Yellow ³ (Caution)	Red ⁴ (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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

Issues/Risks:

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

Highlight:



Time series of number of people exposed to exceedances of daily PM_{2.5} health standard stratified by pollution type. Note an increase in smoke contribution

Accomplishments / Events:

- Presented AI based ATMS imagery product demonstration presentation in the NOAA AI workshop. Both innovative parts and artifacts of the product are presented and discussed. A solid scientific validation of the imagery products is planned to further improve the reliability of the product. Shown in Figure 1 is a NOAA-21 VIIRS true color and ATMS channel 18 imagery composite image for Storm Daniel. A potential heavy rainfall regions can be estimated within the cloudy area.
- Participated the NOAA-20 SCP reset recovery ATMS instrument and data quality assessment activities to support OSPO operational ATMS data dissemination service. The near real time (NRT) NOAA-20 ATMS instrument and data quality trending products shown in ICVS website indicate that NOAA-20 ATMS recovered to the validated maturity data quality level about 48 hours after the event. Shown in Figure 2 is the NOAA-20 ATMS shelf temperature and warm load PRT temperature variation during the event. Both have returned to nominal values .
- Started the NOAA-20 ATMS spectral response function (SRF) raw data review and reprocess based on the lessons learned from NOAA-21 ATMS SRF data processing.
- Developed and tested ATMS native resolution imagery product generation package for JSTAR Mapper. It will be used as a replacement for AI based imagery product before it has been scientifically validated.

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			

- Project has completed.
- Project is within budget, scope and on schedule.
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- Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

None

Highlights:

Fig 1. NOAA-21 VIIRS true color and ATMS AI-based high resolution imagery over Mediterranean on September 10, 2023

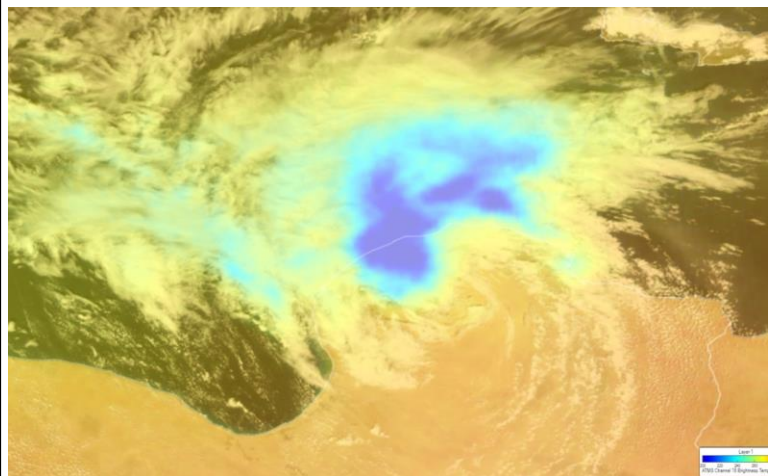
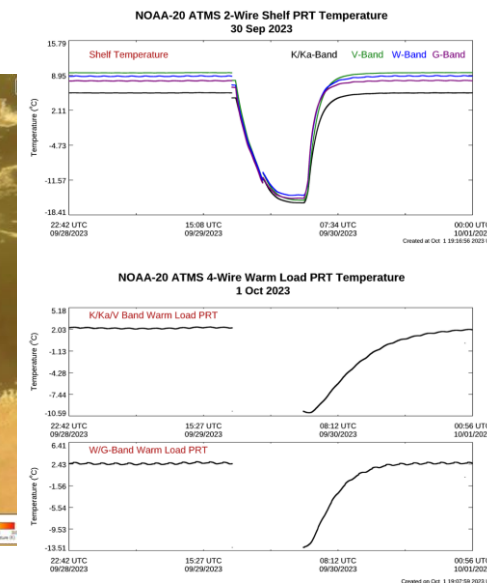


Fig 2. NOAA-20 ATMS shelf temperature (upper) and warm load PRT temperature (lower) trending during SCP reset event



Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
NOAA-21 ATMS TDR/SDR First light and Beta Maturity	Nov-23	Nov-23	11/30/22	
NOAA-21 ATMS TDR/SDR Provisional Maturity	Dec-23	Dec-23	12/15/22	
Evaluate new NEDT algorithm performance	Sep-23	Sep-23	7/13/23	

Accomplishments / Events:

- The Cloud team is continuing to work on assembling data necessary for the NOAA-21 Cloud Products Beta and Provisional reviews along with beginning analysis for the review in late Oct. This has been the primary work done in September
- Work is ongoing with the replacement of NCOMP with the ACHA Cloud optical depths. Also expecting a new ECM LUT in November 2023.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validate CCL that was recently delivered, especially convective/supercooled layers as part of CCL Beta review	Jul-23	Oct-23		Changed due to Transmitter issue
NOAA-21 Cloud Products Beta Maturity	Jul-23	Oct-23		Changed due to Transmitter issue
NOAA-21 Cloud Products Provisional Maturity	Aug-23	Oct-23		Changed due to Transmitter issue

Overall Status:

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

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

Issues/Risks:

None

Highlights:

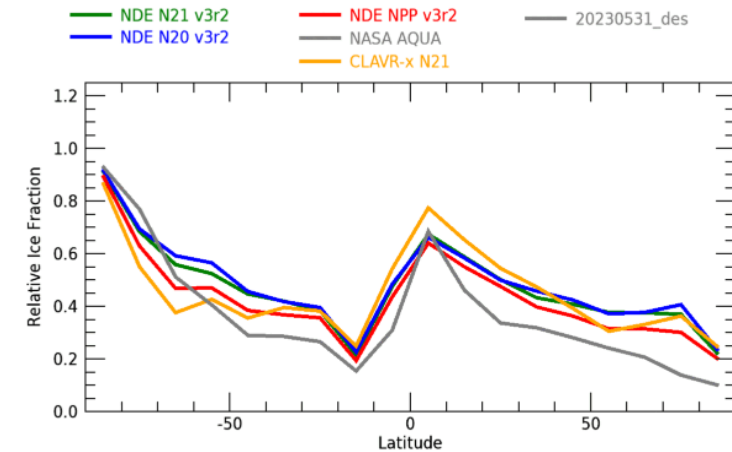


Figure 1. Zonal plot of relative ice fraction for several days during the provisional “Golden days” dataset showing the good agreement between all of the satellites as well as reference implementation.

Accomplishments / Events:

- Continue to monitor the NOAA-21 CrIS instrument (quality flags, CrIS-ABI intercomparisons, NEdN noise monitoring, geolocation accuracy, instrument responsivity, telemetry), along with the other two sensors (NOAA-20 and S-NPP)
- SNPP CrIS had its electronics board switched back to side 2 on 8/31 in order to recover the Midwave Infrared Band, correct calibration parameters were uploaded on 9/6, and rigorous assessments were performed to ensure good data quality and nominal performance (Fig. 1)
- A first draft of the product requirements for the CrIS cal/val Python algorithm has been created
- Quantitative assessments of the NOAA-21 CrIS Elevated Imaginary Radiance observation were performed including the long-term time series of the Lunar Intrusion Quality Flag (Fig. 2), Correlations in time between the imaginary radiance observation and other parameters (including Quality Flags, the Scan Baffle Temperature, and the Beam-splitter Temperature), the Instrument responsivity, and a Radiometric Impact assessment. This includes measuring the radiometric differences between the operational NOAA-21 CrIS SDR data with a 30 scan vs 6 scan window size (generated using a modified version of the ADL). Mean BT biases are within 0.1 K for LWIR/MWIR and exhibit a large bias for SWIR over the affected region (Fig. 3).
- Generated the NOAA-21 CrIS cal table v212 XML files, verified table contents, and EPv212 was uploaded on 9/20. Radiometric and Spectral Assessments were performed to quantify the impact of EPv212. This was done in support of the validated maturity review
- PCT table for enabling polarization correction was deployed in the IDPS I&T environment for data quality review before operational deployment. A team checkout was organized and recommended the polarization correction be operationalized in time for the validated review. The CrIS team included the operational polarization correction results in the review.
- Presented results of the assessments for the NOAA-21 CrIS validated maturity review on 9/28 and successfully achieved validated status shortly thereafter. Assessments of the operational NEdN noise with EP v212 for NOAA-21 CrIS was within specification (Fig. 4). The geolocation accuracy of the NOAA-21 CrIS found to be good and within specifications (Fig. 5). Double differences between for NOAA-21 CrIS and NOAA-20 CrIS (with CRTM as a reference) are within +/- 0.2 K for the 3 bands (Fig. 6). NOAA-21 CrIS spectral uncertainty was well within requirements (Fig. 7) and Radiometric Intercomparisons with other Instruments with Infrared Bands (including IASI, ABI, and VIIRS) was performed (Fig. 8).
- The NOAA-20 CrIS Entered Safe Mode on September 29 after a NOAA-20 Satellite SCP Reset. Recovery and Assessment of NOAA-20 CrIS was performed in October, and will be provided in the October JSTAR CrIS SDR Report.

Overall Status:

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

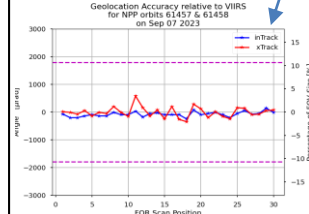
- Project has completed.
- Project is within budget, scope and on schedule.
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Issues/Risks:

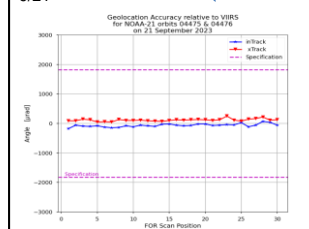
The CrIS Team got a 100TB storage on STAR servers (data638 and data645) in May 2022. However, the CrIS Team is still in need of hardware/software resources. Presently, there is only two server dedicated to 6 CrIS Team members, and these servers have shown to have issues (as exemplified by the rhw1304 and rhw1377 failures during the 9/30/23 weekend). We have received access to new servers, but these are shared with other STAR teams, and additional dedicated servers is still desirable. There is a risk for the CrIS SDR Team to continue on such a single 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/storage as soon as possible (< 2 months) and add another server/storage in the next months. A new MATLAB license is also required. Corresponding hardware/software 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.

Highlights:

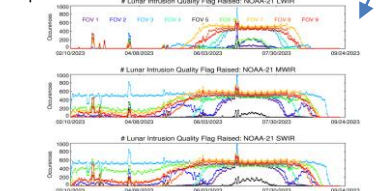
(1) The SNPP CrIS geolocation accuracy on 9/7/2023, after the side switch to side 2 electronics



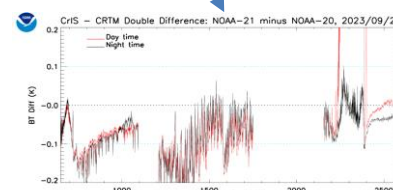
(5) NOAA-21 CrIS geolocation accuracy on 9/21



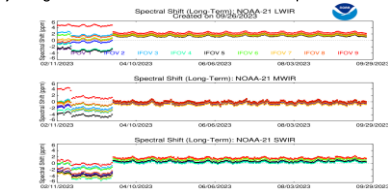
(2) Time series of lunar intrusion quality flag in the operational SDR



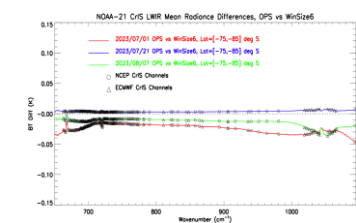
(6) Radiometric Double Difference between NOAA-21 CrIS with CRTM as a reference and on 9/27/2023.



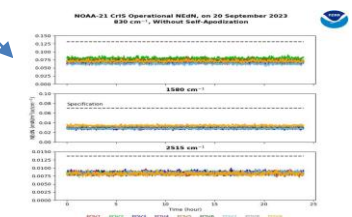
(7) Long-term trend of the NOAA-21 CrIS spectral uncertainty



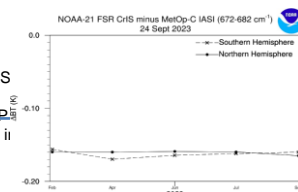
(3) NOAA-21 CrIS mean radiance differences between the operational SDR data and ADL output with cal window size of 6



(4) Operational NEdN of the NOAA-21 CrIS instrument on 9/20. NEdN is unchanged from EP v212 upload



(8) NOAA-21 CrIS minus MetOp-C IAS time series of BT biases, after the EP v212 upload, used in the validated maturity review



Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Transition the J2 CrIS SDR data product Validated Maturity Level by Launch+8 months	Aug-23	Sep-23	Sep-23	44
Participate in commissioning of NOAA-21 CrIS, requiring at least 6 months of intensive calibration and validation activities.	Sep-23	Sep-23	Sep-23	
Maintain 3 CrIS sensors (SNPP, NOAA-20 and NOAA-21) in orbit providing Key Performance Parameter (KPP) products.	Sep-23	Sep-23	Sep-23	

Accomplishments / Events:

Evaluation of NOAA-21 VIIRS snow products continues: Evaluation of the snow products generated from NOAA-21 VIIRS has been performed using daily global gridded maps of the binary snow cover and of the snow fraction which are routinely generated from corresponding product granules. NOAA-21 VIIRS snow retrievals are compared with similar retrievals from SNPP and NOAA-20 to make sure that the derived binary snow and snow fraction values are consistent across all three products. The results demonstrate a very good agreement of both the binary snow cover and of the snow fraction derived from NOAA-21 to corresponding snow products inferred from VIIRS observations of NPP and NOAA-20. Identified differences between the products were much smaller than the required product accuracy. This suggests that the accuracy of VIIRS NOAA-21 snow products will most likely satisfy the accuracy requirements similar to the snow products of NPP and NOAA-20. The figure below presents the result of quantitative comparison of the snow cover fraction as derived from the three satellites.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Weekly and monthly snow products composite and statistics	Sep-23	Sep-23		
Prepare to implement blended VIIRS + AMSR2 SIC product	Sep-23	Sep-23		
Physically-based snow and snow-free land BRDF models, algorithm to infer the snow fraction	Sep-23	Sep-23		
Calibration/validation of NOAA-20 and S-NPP products with MOSAiC data	Sep-23	May-23	Mar-23	

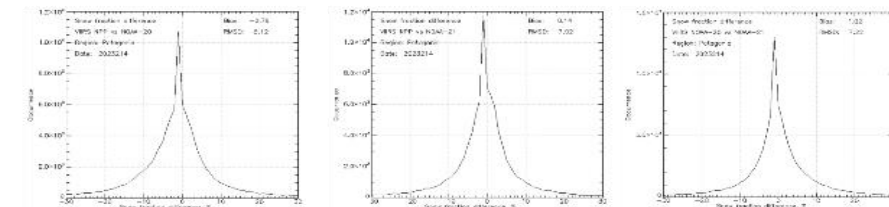
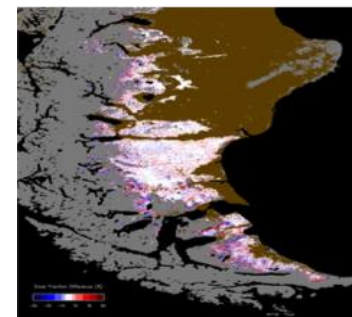
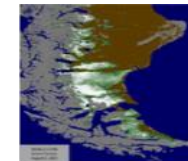
Overall Status:

	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:

None



Snow fraction difference statistics, %

	Bias	RMSD
NPP vs NOAA-20	-0.79	8.12
NOAA-21 vs NPP	0.14	7.02
NOAA-21 vs NOAA-20	1.02	7.22

Difference in the VIIRS snow fraction estimates from NPP, NOAA-20 and NOAA-21 over Patagonia. Left: Map of the difference, Right: Plots and a table providing the comparison statistics.

Accomplishments / Events:

Rainfall EDR: Typhoon Mawar, as a category-4 storm, affected the region of the Mariana Islands, making its Guam landfall on May 24th. The strongest Northern Hemisphere tropical cyclone on record for the month of May brought mandatory evacuation, flash flooding, and rainfall rates of over 2 inches per hour to the island (20+ in within a 24-hour period). Strong winds and power outages resulted in disruption of the NWS radar operation on Guam, forcing the forecasters to rely on satellite observations and NWP products only. During this time, shortly before and soon after the hurricane landfall, Advanced Microwave Scanning Radiometer-2 (AMSR2) on board GCOM-W1 made two overpasses over the region, capturing the tropical system within its swath. AMSR2 precipitation retrieval delivered detailed and highly-accurate estimates of the rainfall fields. The figure below presents AMSR2 rainfall estimated at 03:46 and 16:00 UTC on May 24th.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Assessment of all EDR's for AMSR2, initiate changes for AMSR3	Sep-23	Sep-23		
Continue AMSR2 L1 monitoring; develop AMSR3 capabilities	Sep-23	Sep-23		

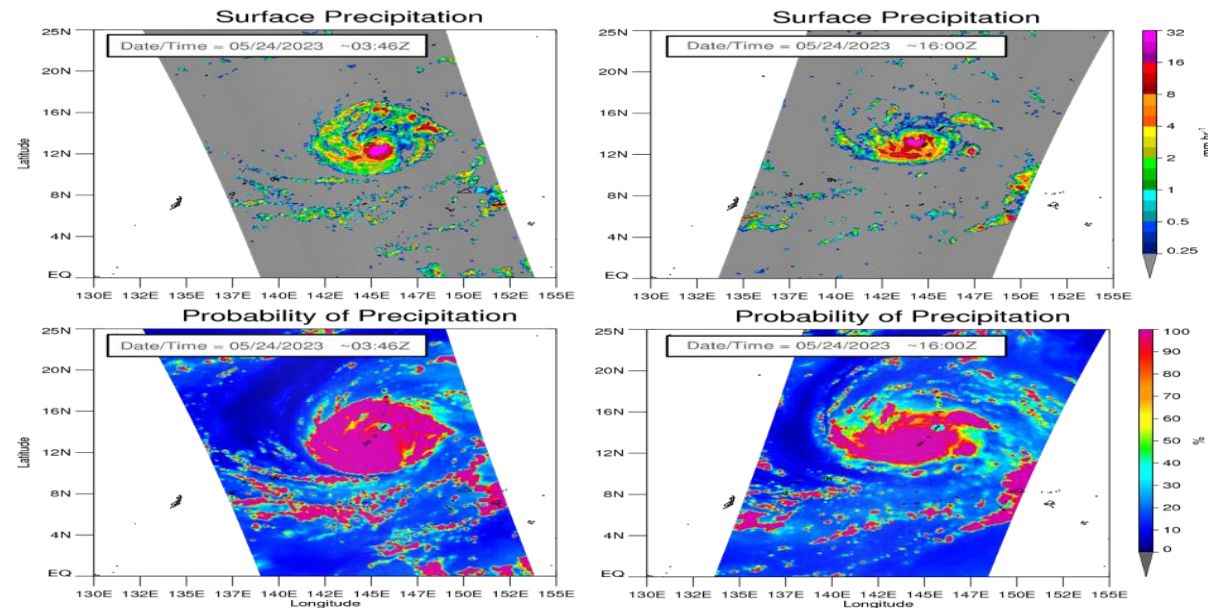
Overall Status:

	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:

Need additional funding for continuity of GCOM-W AMSR2 and GOSAT-GW AMSR3 products



GPROF AMSR2 Rainfall estimates during hurricane Mawar landfall in Guam on May 24th

Accomplishments / Events:

A key part of STAR/NPROVS monitoring is to track statistics of overall NUCAPS performance baselined to collocated operational radiosonde observations. The figures below provide a summary of such monitoring for the NUCAPS products from MetOp-C and the pending NOAA-21 which is currently in a Beta maturity stage. The figures show associated statistical time series of daily mean NUCAPS-radiosonde vertical temperature bias composites from the surface to 100 hPa (16km) for each satellite. The samples per satellite are subsets, nominally 200 collocations daily resulting in typical error estimates for bias of less than 0.1K. The comparison of the time series for each satellite shows distinct differences in the lower troposphere (below 800 hPa) where MetOp-C and NOAA-21 bias appear cool (blue) compared to previous NOAA-20 bias appears warm. It is interesting that the Beta NOAA-21 and operational Metop-C time series appear overall more similar than versus operational NOAA-20, investigation with the NUCAPS team is ongoing to better understand this difference.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
JSTAR Mapper: Maintain / expand operational JSTAR Mapper Site, STEMS	Sep-23	Sep-23		
NPROVS: Maintain /expand NPROVS Sounding Product/Sensor Monitoring/Assessment	Sep-23	Sep-23		
JPSS Dedicated Radiosonde Programs: Maintain programs for polar satellite synchronized radiosondes, convert to NOAA-21	Sep-23	Sep-23		
User Support:: Coordinate with JPSS User (NUCAPS) and Hydrological (MiRS) Initiatives	Sep-23	Sep-23		
Publications	Sep-23	Sep-23		

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: None

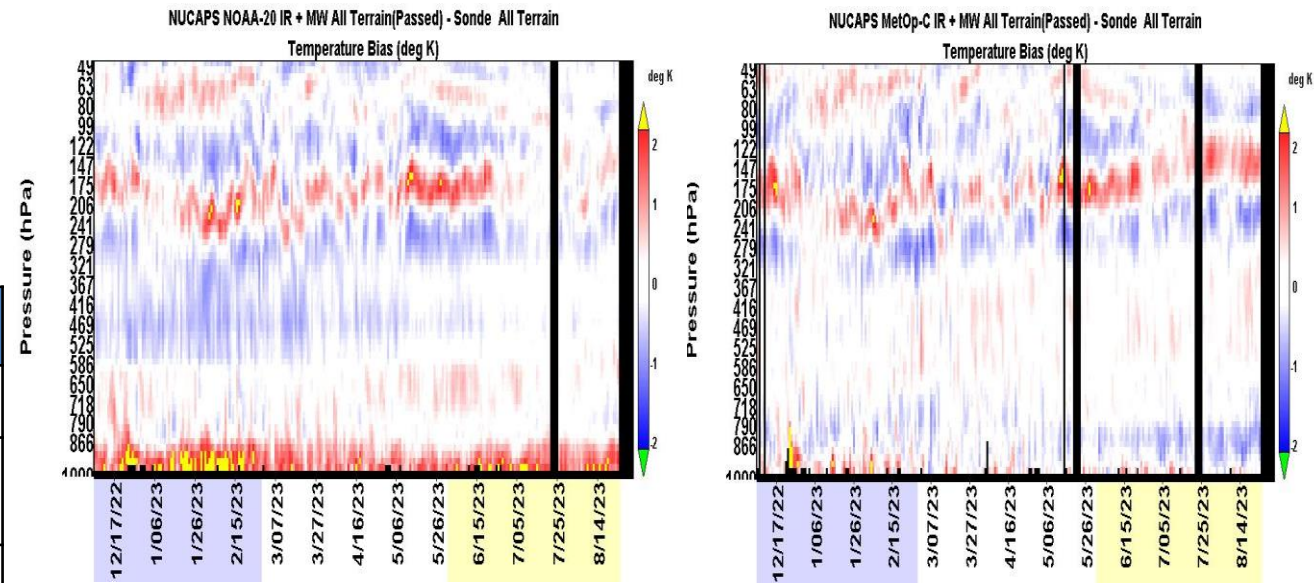


Figure 1 Statistical time series (January through August 2023) of daily mean NUCAPS-radiosonde vertical temperature “Bias” composites from the surface to 100 hPa (16km) for MetOp-C and NOAA-21. The samples for each satellite are subsets, nominally 200 collocations per day, resulting in typical error estimates for bias of less than 0.1K. The color scale from +/-2K is shown on the right.

Accomplishments / Events:

- Developed NOAA-21 vs. NOAA-20/S-NPP ATMS SDR data inter-sensor comparison product to support NOAA-21 science data quality monitoring. Shown in Figure a is the N21 vs. N20 ATMS TDR/SDR all channel 32-day mean inter-sensor bias trending. The variation shown in SDR bias is the result of the NOAA-21 ATMS calibration coefficients update after the Provisional maturity.
- Updated ICVS hurricane 3D warm core structure package by replacing the license dependent gap filling module with Python program to minimize the dependence to expensive commercial software.
- Manually produced several major hurricane/typhoon events 3D warm core animation images to support STAR JPSS program science data quality and application demonstration activities..
- Updated the JPSS spacecraft diary RDR data processing package to handle the attitude calculation during major maneuver events.
- Generated NOAA-20 spacecraft status, instrument performance, and science data quality near real time (NRT) monitoring products to support STAR-OSPO NOAA-21 SCP reset recovery activities.
- Started working on AMSR-2 data processing and exploring the new AMSR-2 imagery product generation.

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			

- Project has completed.
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Issues/Risks:

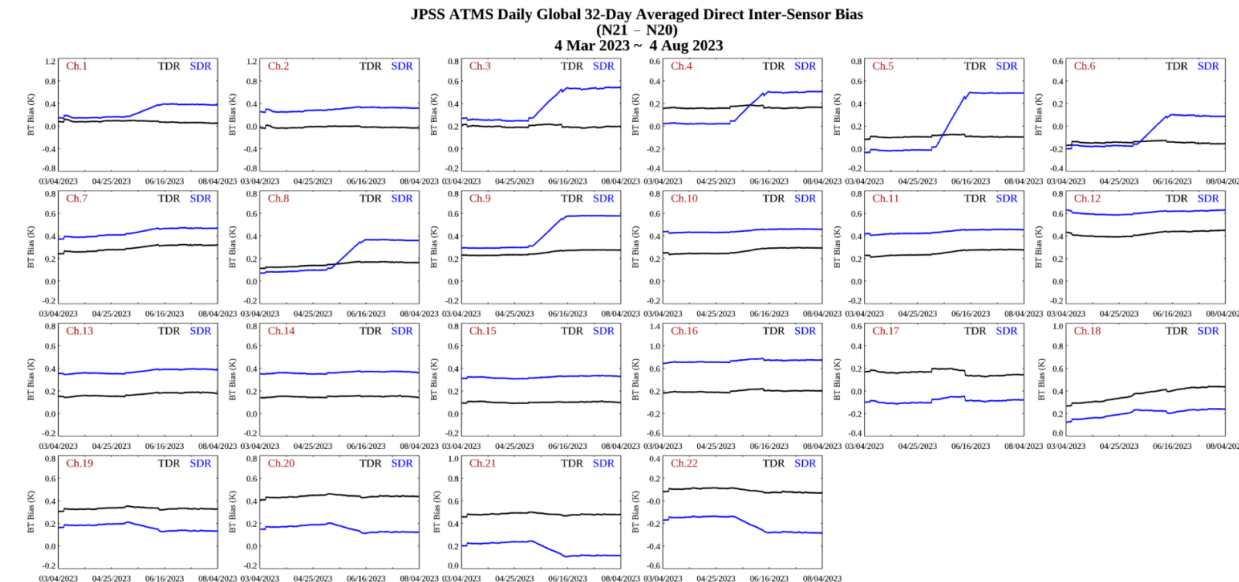
None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Develop J2 ICVS LP monitoring modules (inputs are the NDE-generated LP L1B and L1G SDR data per SDR Ozone EDR group's request)	Jul-23	Dec-23		The data are not available until Nov.
Improve the existing ICVS inter-sensor modules by extending them to J2 (e.g., ATMS vs. AMUS-A, OMPS-TC vs. GOME-2, etc.)	Sep-23		Sep-23	whole year effort
Maintain and sustain the ICVS monitoring functions for SNPP and NOAA-20 spacecraft and five sensors, including report major anomaly events as needed	Sep-23		Sep-23	whole year effort
Maintain the ICVS ATMS 3D hurricane tool and produce an event report as needed	Sep-23		Sep-23	whole year effort
Develop new ICVS modules per ad hoc requests from JPSS/key SDR/EDR users	Sep-23		Sep-23	whole year effort

Highlights:

Significantly contribute to STAR SDR Teams

(a) NOAA-21 vs. NOAA-20 ATMS TDR/SDR 32-day mean inter-sensor bias between March 4 and August 4, 2023



Accomplishments / Events:

- Reviewed NOAA-20 VIIRS EDR Imagery following Sep 29 spacecraft reset
- Recent VIIRS Presentations
 - Jorel Torres, NWA Annual Meeting, JPSS Applications: Products, Data Access, and NOAA-21 Updates
- 19 VIIRS Imagery Posts on CIRA Social Media this Month. A few posts:
 - True Color Imagery of Storm Daniel over Libya – 41.1K Views
 - Day Land Cloud RGB imagery of Greenland Ice Current – 18.5K Views
 - VIS/IR Sandwich Imagery of TS Ophelia off the east coast – 13.8K Views
- Year-End: New VIIRS Imagery products added to SLIDER this year
 - New CONUS SLIDER Sector with many products, including comparison with ABI
 - NOAA-21 integration
- Year-End: Upkeep of real-time Imagery monitoring and display systems this year
 - SLIDER
 - New PYTHON code developed to quickly create VIIRS Imagery (from EDRs) anywhere on globe
- Year-End: Many blog posts and social media posts create this year
 - Blog posts on www.satellite liaison blog.com
 - Social media posts on https://twitter.com/CIRA_CSU
 - Hired support for VIIRS imagery outreach
- McIDAS-X/V Enhancements for processing/display of VIIRS Imagery this year
 - Support for VIIRS Imagery EDR RGBs added

Overall Status:

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

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
NCC LUT Development Capability	Sep-23	Sep-23	Aug-23	
New Imagery products or product enhancements (display on SLIDER)	Sep-23	Sep-23	continuing	
Realtime Imagery monitoring and display systems (SLIDER, etc.)	Sep-23	Sep-23	continuing	
Interesting VIIRS Imagery to Social Media and Blogs	Sep-23	Sep-23	continuing	
McIDAS-X/V Enhancements for processing/display of VIIRS Imagery	Sep-23	Sep-23	continuing	

Highlights: Image of the Month

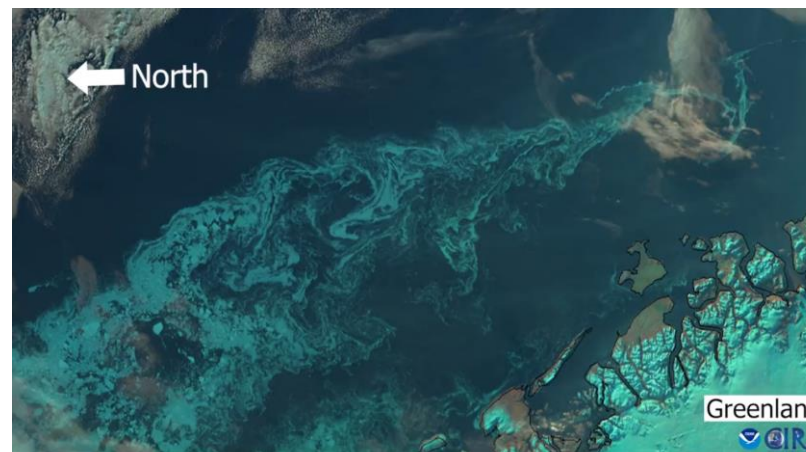


Figure: 13 Sep 2023 VIIRS Day Land Cloud RGB captures Ice swirling in the East Greenland current

Accomplishments / Events:

- Under JPSS Proving Ground Risk Reduction funding, ATMS data from both the SNPP and NOAA-20 satellites is being reprocessed with a more up to date version of the MiRS algorithm (v11.8). SNPP data from the period 2011-2020 has now been reprocessed and NOAA-20 data reprocessing is underway. To assess the applicability of the reprocessed data to monitor longer-term trends, total precipitable water (TPW) retrievals from the reprocessed data are being analyzed. The highlight figure shows the time series of departures of the monthly mean TPW from corresponding mean value determined from the entire time series record for both the MiRS reprocessed SNPP data and the ERA5 reanalysis data for the same time period (2012-2020). Results are shown for global mean values and for the tropics (23.5 S to 23.5 N). Both the departures and the estimated trend lines are shown, along with the one sigma value of the estimated trend uncertainty. Trends for both global and tropical data are shown and have similar features. The results to date show fairly strong agreement between the MiRS and ERA5 TPW trends.

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			

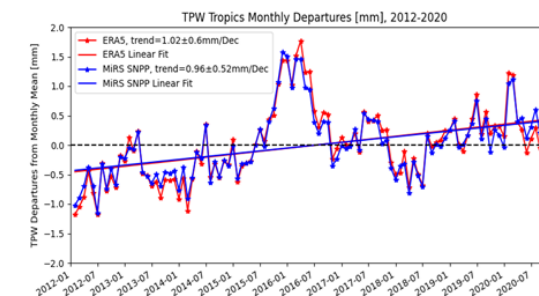
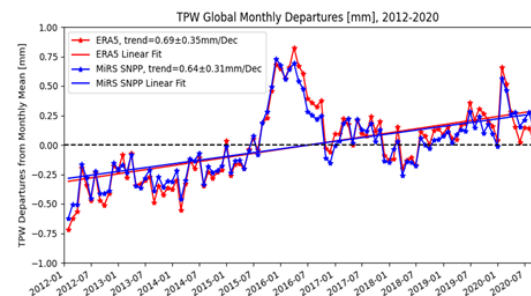
- Project has completed.
- Project is within budget, scope and on schedule.
- Project has deviated slightly from the plan but should recover.
- Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

None

Highlights:

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
MiRS DAP (v11.10): integrate SFR algorithm updates, code/science improvements, final J2 launch delivery	Feb-24	Feb-24		



Time series (2012-2020) with trend lines of monthly mean TPW departures from the monthly mean for MiRS reprocessed data (blue) and ERA5 reanalysis (red). Results are shown for global (left) and tropical (right) regions. One sigma values of uncertainty for the estimated trends are also shown.

Accomplishments / Events:

- Support ASSIST team for the LAI code integration and wrap up, then complete the initial delivery to OSPO. Prepare the data verification demo for the upcoming process.
- Investigate how LAI is used in Noah-MP land surface model and collect the information how the model user would like to use LAI product in the model.
- Collected more data of NOAA SR products (SNPP, N20 and N21) and working on the training model update using the new datasets.
- Keep work on the LAI evaluation, figuring out the current GBOV validation bias and inter-comparison with widely used LAI products such as MODIS, GLASS and GEOv2.

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			

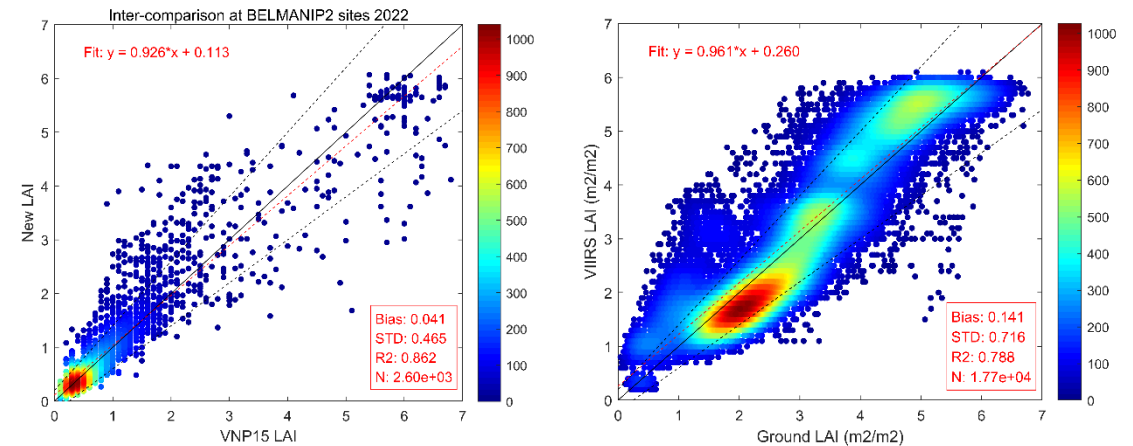
- Project has completed.
- Project is within budget, scope and on schedule.
- Project has deviated slightly from the plan but should recover.
- Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
CCAP Initial Delivery	Sep-23	Sep-23	Sep 26, 2023	
LAI product preliminary in-situ validation and inter-comparison	Nov-23	Nov-23		
CCAP final Delivery	Feb-24	Feb-24		
Incorporate the LAI test data into the LSM model to evaluate the performance in the model	May-24	May-24		
Operational readiness	Jul-24	Jul-24		
Develop LAI routine monitoring and validation tool	Sep-24	Sep-24		

Highlights:

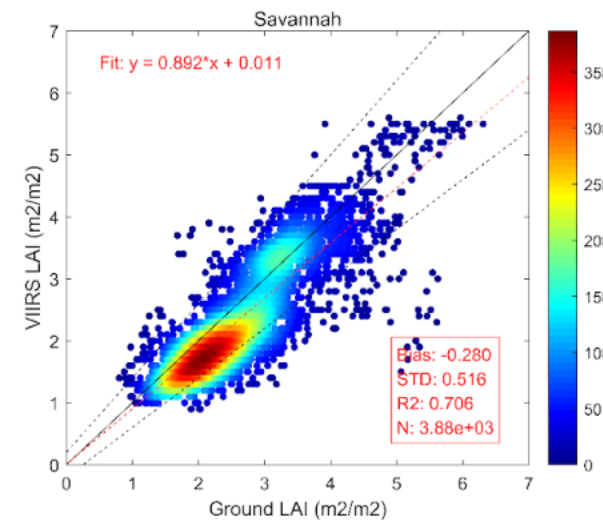
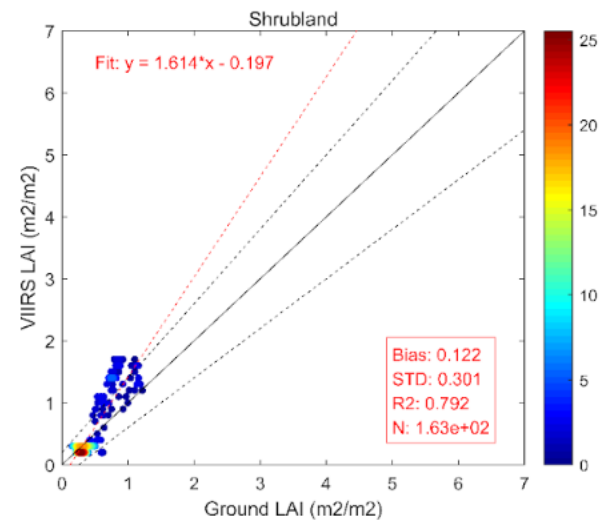
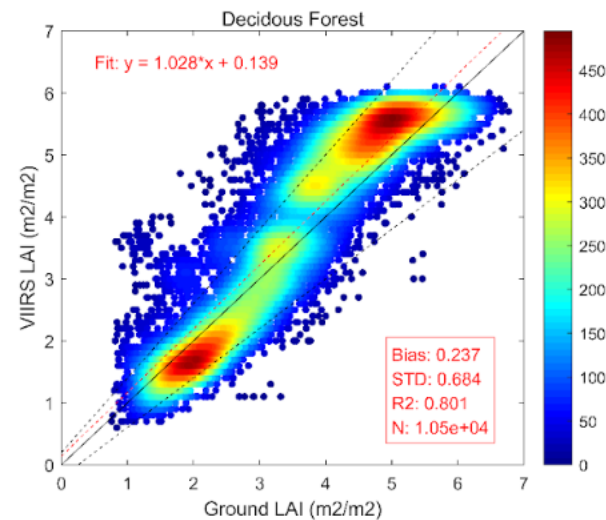
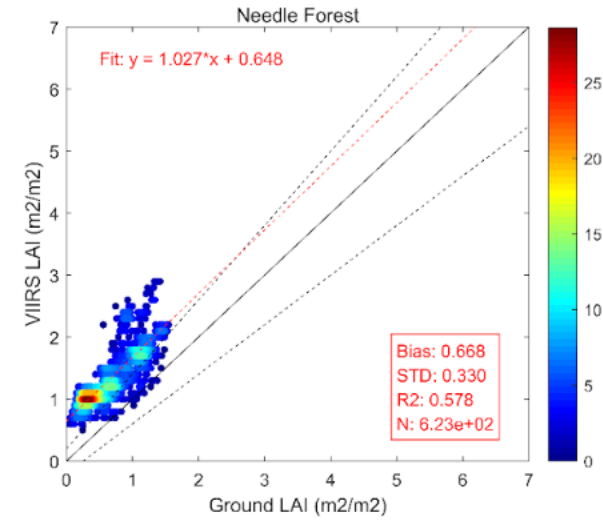
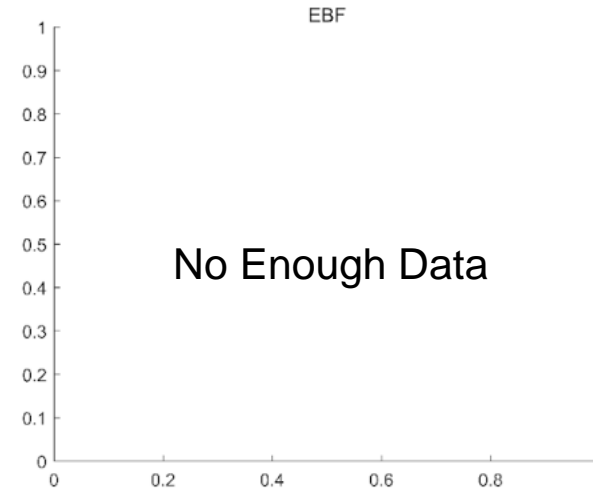
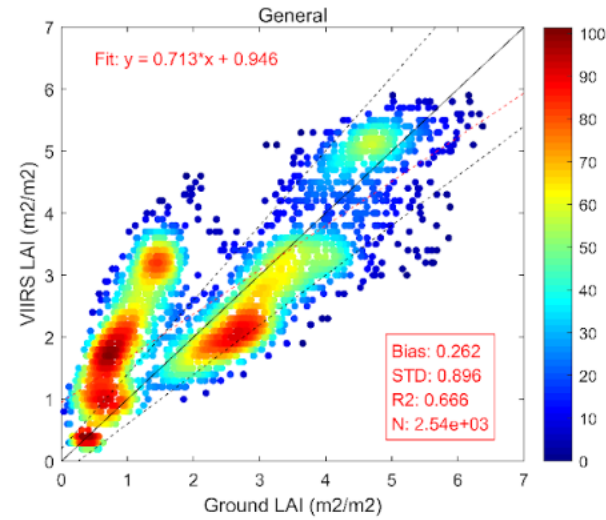


VIIRS LAI inter-comparison with VNP15 and ground validation at NEON sites

- LAI algorithm CCAP Package
 - The preliminary delivery of the Leaf Area Index algorithm CCAP is developed by science team and integrated and wrapped up by ASSIST team, for OSPO team review.
 - The package include: the source code, test data for (SNPP, N20 and N21) and documents: Delivery Memorandum, README, and Production Rules for this algorithm. and the code review spreadsheet.
 - The algorithm will run in NCCF

- LAI algorithm production rules
 - The LAI products based on daily Surface Reflectance EDR along with the geometry SDR as input, the daily process unit will generate daily LAI under clear sky condition.
 - The final LAI product is designed as weekly product (8-day), the daily LAI firstly composited into 8-day clear sky product, then temporal smoothing will fill the gap using previous LAI if enough data are available, and climatology will finally make the product gap-free by filled the left over gaps.
 - The product is produced for SNPP, N20 and N21, at 1km grid refreshing every 8 days.

- Path forward
 - Code update according to the review of OSPO
 - Algorithm update based on the product evaluation and users requirements



- LAI validation at NEON
- Using GBOV scaling up 30m LAI dataset for validation.
 - Deciduous Forest, shrubland and savannah have good agreement.
 - The Needle forest with largest uncertainty, most investigation needed.
 - General type contain the vegetation except forest and shrub land, but the results show clusters.

Accomplishments / Events:

- The gap issue in the v2r2 data from NDE has been fixed for all VIIRS sensors including S-NPP, NOAA-20 and NOAA-21
- The VIIRS albedo paper titled ‘**An evaluation of the NOAA global daily gap-filled VIIRS surface albedo**’ has been published in Remote Sensing of Environment [Link](#)
- Evaluating the feasibility of L3 blended albedo from three VIIRS sensors
 - Assessed the change of repeated observation numbers by combining all VIIRS sensors

Overall Status:

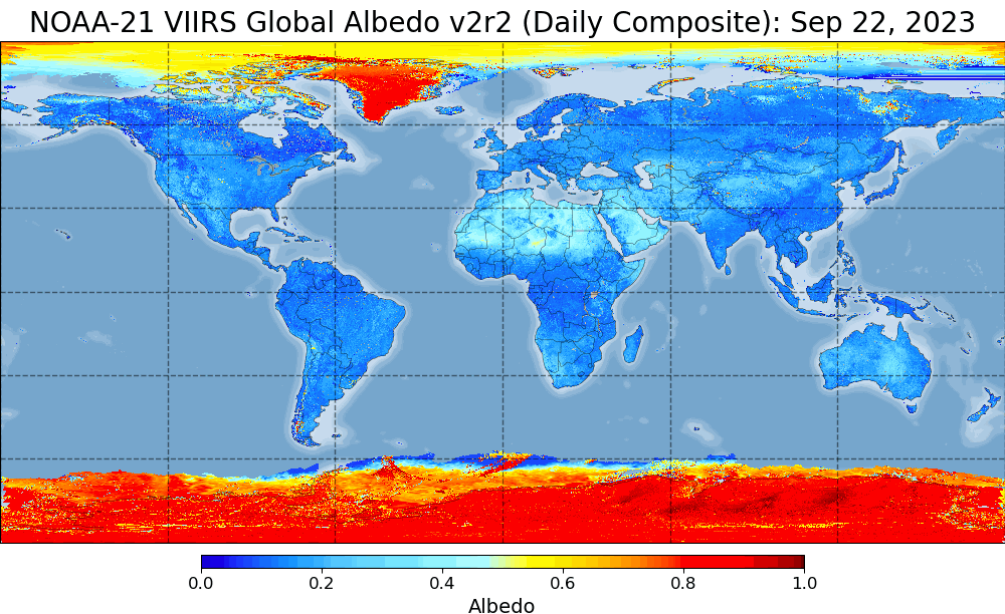
	Green ¹ (Completed)	Blue ² (On-Schedule)	Yellow ³ (Caution)	Red ⁴ (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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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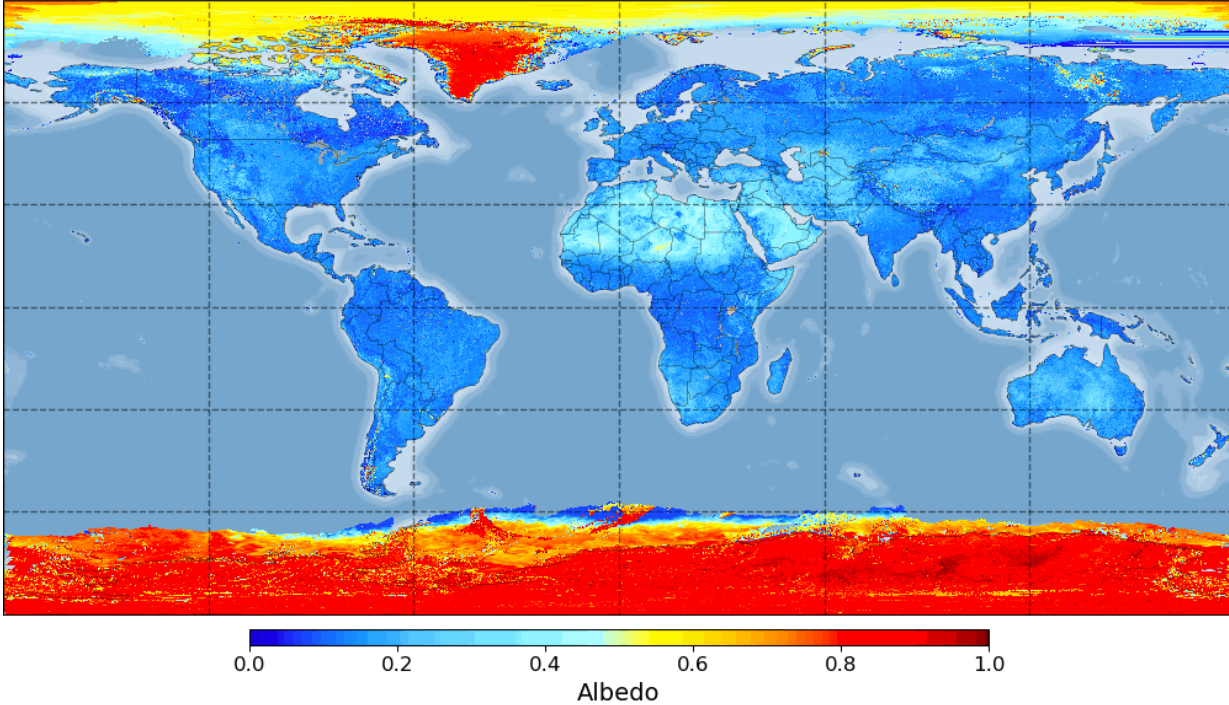
Issues/Risks:

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Share the soil albedo dataset with model users	Dec-2023	Dec-2023		
Provisional maturity of NOAA-21 Albedo	Feb-2024			
*NCCF Integration of BRDF/BSA/WSA/NBAR to Gridded BRDF-L3: operational readiness	May-2024			
Software package ready of blended SURFALB from all VIIRS sensors	Jun-2024			

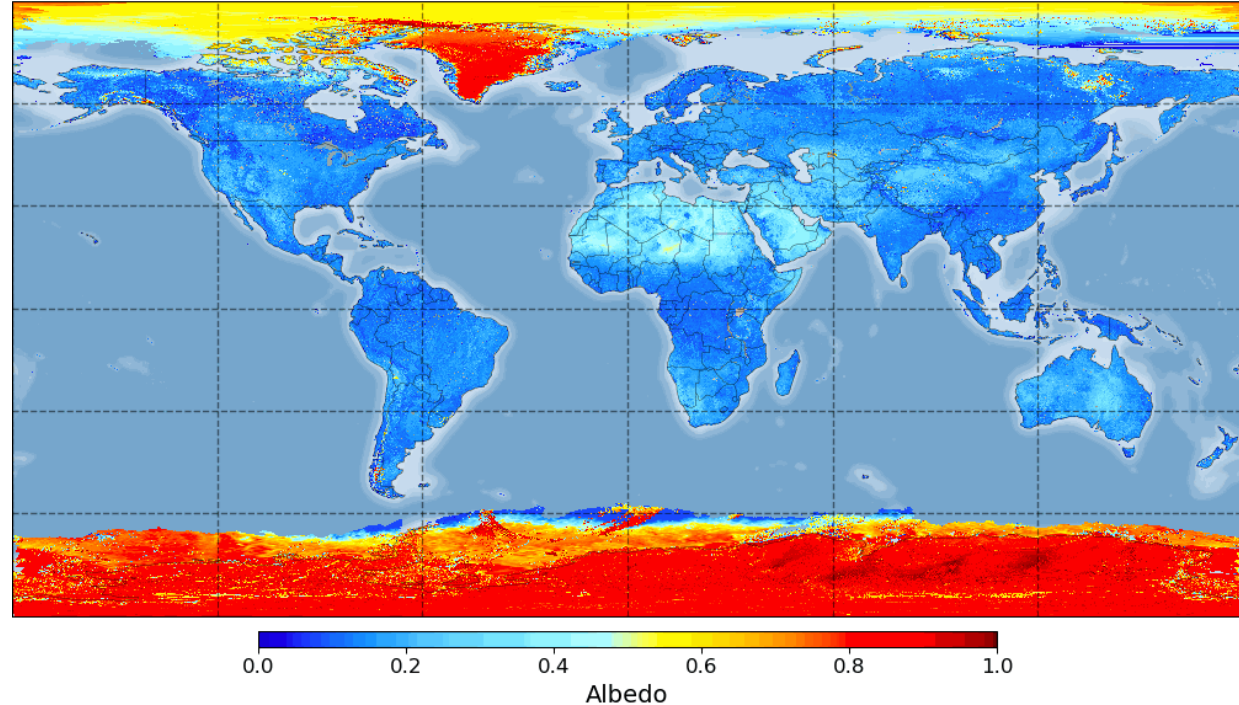
Highlights: NOAA-21 v2r2 albedo from PDA_IT



NOAA-20 VIIRS Global Albedo v2r2 (Daily Composite): Sep 22, 2023



NOAA-21 VIIRS Global Albedo v2r2 (Daily Composite): Sep 22, 2023

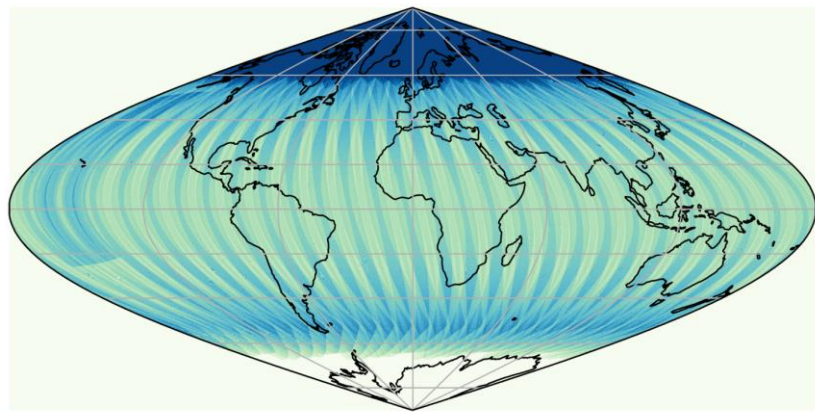


The system script fix has been conducted in NDE and the v2r2 NOAA-21 VIIRS SURFALB product became normal.

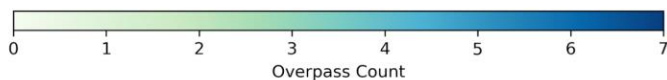
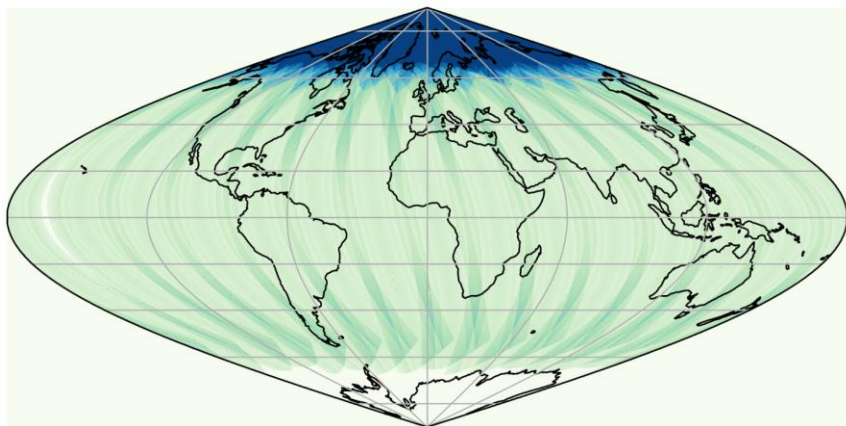
Then the fix was applied to v2r2 S-NPP and NOAA-21 albedo producing in PDA_IT and both passed the verification

The NOAA-21 and NOAA-20 albedo show good consistency.

SNPP and J01 obs. num on Jun 02, 2023

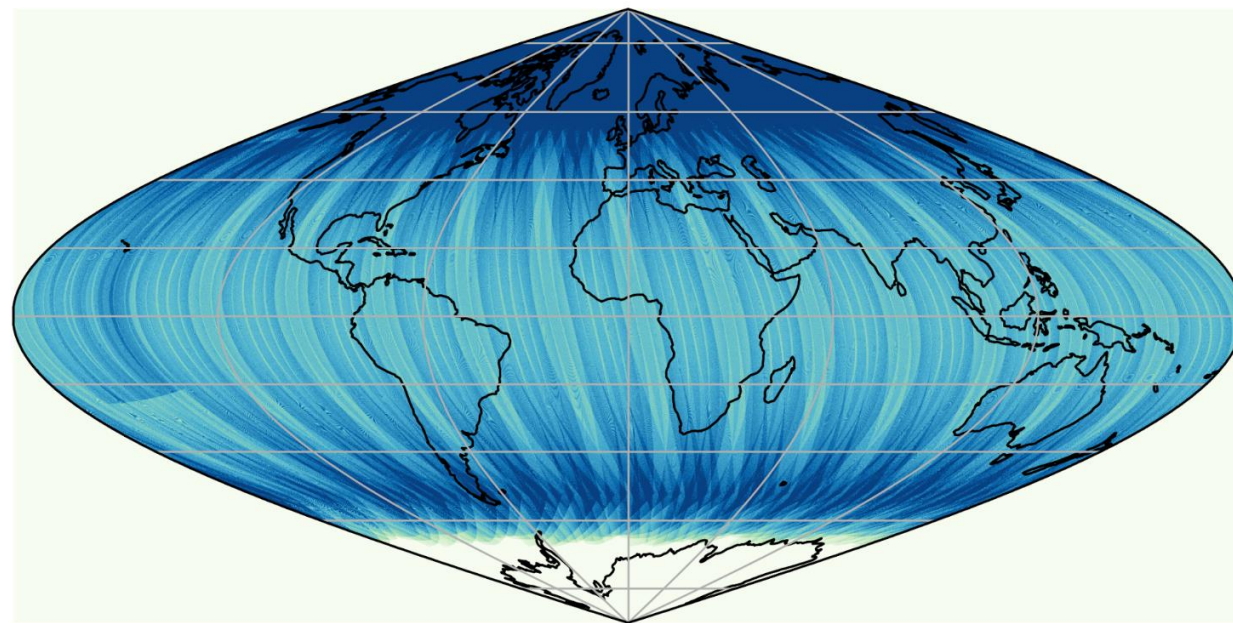


J02 obs. num on Jun 02, 2023



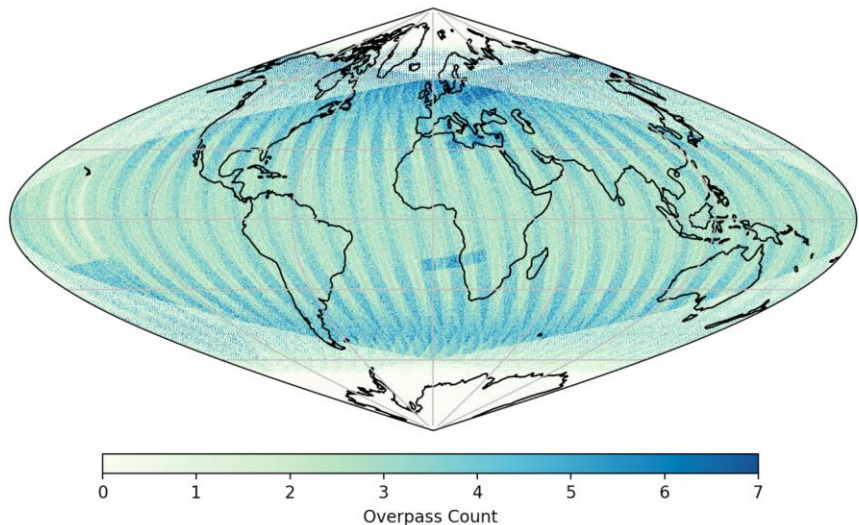
The observation number from blended VIIRS (SZA<90)

The observation numbers from NPP plus J01 plus J02 on Jun 02, 2023

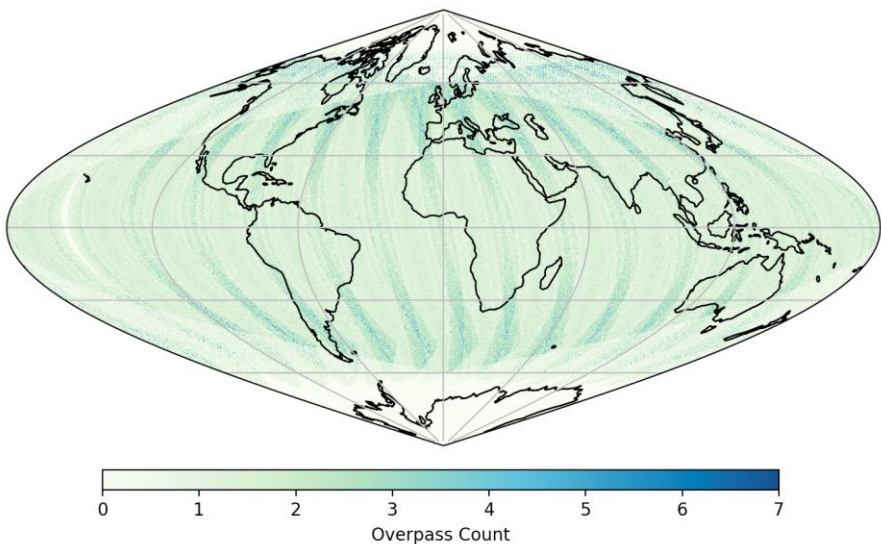


Combining SNPP, J01 and J02 could essentially increase the observation numbers available in L3 albedo composition.

The observation numbers from NPP plus J01 on Sep 13, 2023

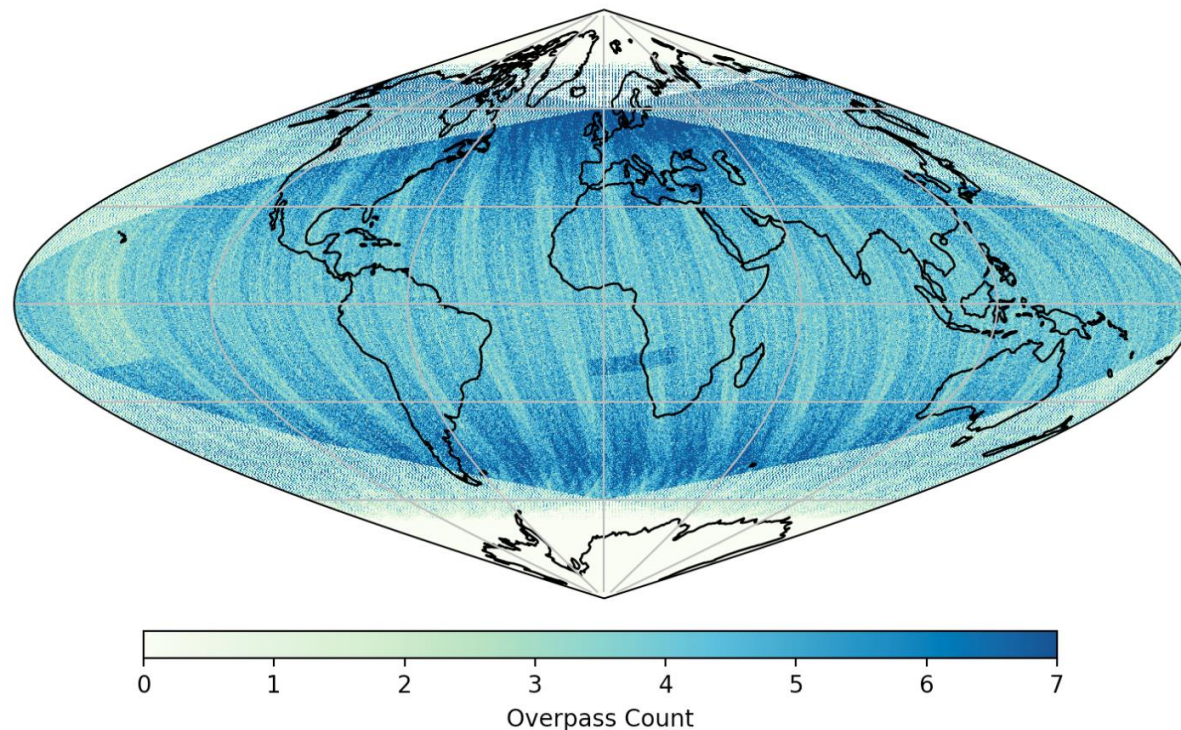


The observation numbers from J02 on Sep 13, 2023



The observation number from blended VIIRS (SZA<70°)

The observation numbers from NPP plus J01 plus J02 on Sep 13, 2023



Only observations with SZA<70° could be used in the high-quality sub-algorithm during albedo production.

Accomplishments / Events:

- Derived and delivered OMPS NM/NP weekly dark LUTs for SNPP, NOAA-20 and NOAA-21.
- Derived and delivered SNPP/NOAA-20/NOAA-21 OMPS NP solar irradiance bi-weekly LUTs.
- Presented DR10553 to fix a hot pixel that was discovered in the NOAA-21 OMPS NP data.
- Analyzed the solar reference diffuser measurement for NOAA-21 OMPS NP taken on August 25, 2023.
- Continued to work on ADR 10550 on NOAA-21 OMPS NP solar intrusion stray-light corrections.
- Further updated the NOAA OMPS SDR dark delivery package by fixing deficiencies.
- Analyzed NOAA-21 OMPS NP solar & wavelength shift algorithm towards closing the DR10365
- Efforts continued to for a sensitivity study about re-centering the N21 NP bandpass data.
- Compared the wavelength shift values for SNPP using Earth-View data and RawFlux data.
- Continued on updating and refining the OMPS SDR VCRTM package.
- Started the re-assessment of the NOAA-21 OMPS NM and NP after the SIP event.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Inter-sensor comparison among SNPP, NOAA-20, and NOAA-21 (OMPS NP)	May-23	Oct-23		N21 OMPS NM/NP SLT analysis higher priority; SNPP recovery
Inter-sensor comparison with Tropomi since the door-open	Aug-23	Oct-23		SNPP recovery assessment
OMPS NM, NP SDR Validated Maturity: Status Preview	Sept-23	Dec-23		SNPP and NOAA-20 recovery assessments
Delivery of weekly dark LUTs for NM and NP	Sep-23	Sep-23		Well done
Delivery of wavelength and solar flux LUTs for NM and NP	Sep-23	Sep-23		Well done

Overall Status:

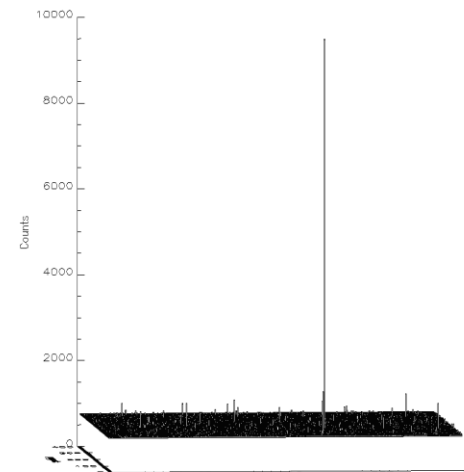
	Green ¹ (Completed)	Blue ² (On-Schedule)	Yellow ³ (Caution)	Red ⁴ (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule			X		

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

(a) Detected hot pixel on NOAA-21 OMPS NP



(b) Impact of the hot pixel on N21 OMPS NP Radiance



Figure: (a) Beginning March 21, 2023 one CCD pixel began anomalous behavior on OMPS-NP. The pixel is roughly 12 times larger than the background CCD pixels. (b) Radiance values for a granule at a solar zenith angle of 84.1°, with the blue line showing the radiance values for cross-track pixel 1 and the black line showing the values for cross-track pixel 2.

Accomplishments / Events:

- Cal/ val report, including SNPP/NOAA-20 comparisons of VI and GVF, NOAA vs. NASA SNPP VI comparisons, and comparisons of GVF results to Google Earth data.
- Kept monitoring the operational GVF data after NDE fixed the input data problem
- Compared the operational GVF with local run GVF and found the difference between them is small
- Finalized 1km global VI algorithm code and set up routine local production of this 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			

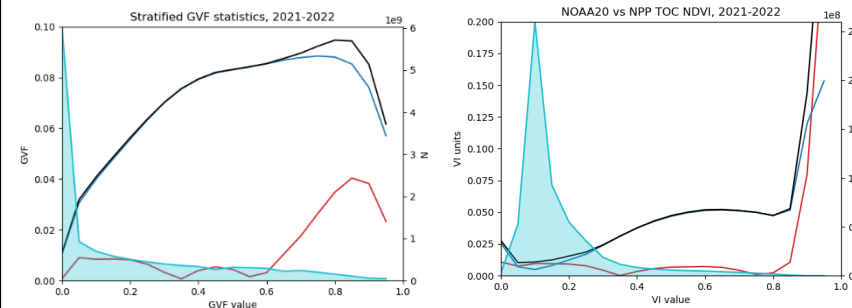
1. Project has completed.
2. Project is within budget, scope and on schedule.
3. Project has deviated slightly from the plan but should recover.
4. Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Calibration/ Validation update for SNPP and NOAA20 VI and GVF products,	Sep-23	Sep-23	Sep-23	
Ongoing support for JPSS-2 pre- and post-launch testing	Sep-23	Sep-23	Sep-23	

Highlights: Stratified VI and GVF comparison results for SNPP vs. NOAA-20 for years 2021 and 2022



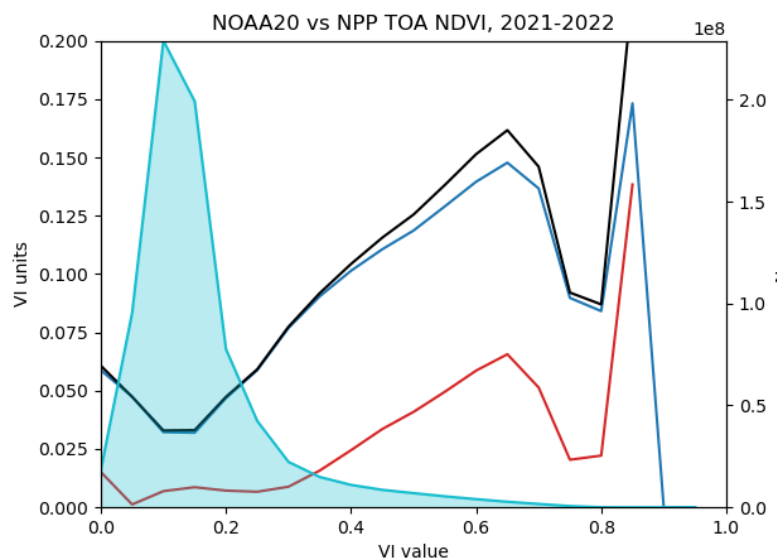
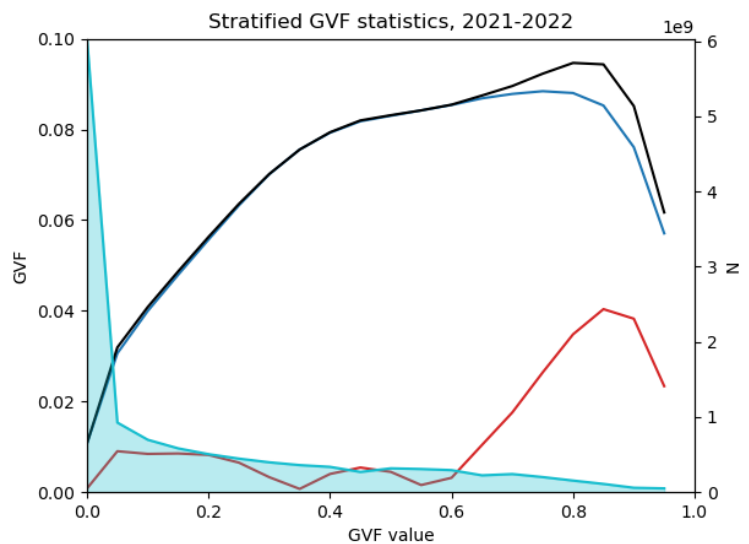
Accuracy (absolute bias)
 Precision (standard deviation)
 Uncertainty (RMS difference)
 Number of pixels

GVF accuracy, precision, and uncertainty meet specifications for full range of values.

VI accuracy, precision, and uncertainty meet specifications except for a small number of high VI pixels.

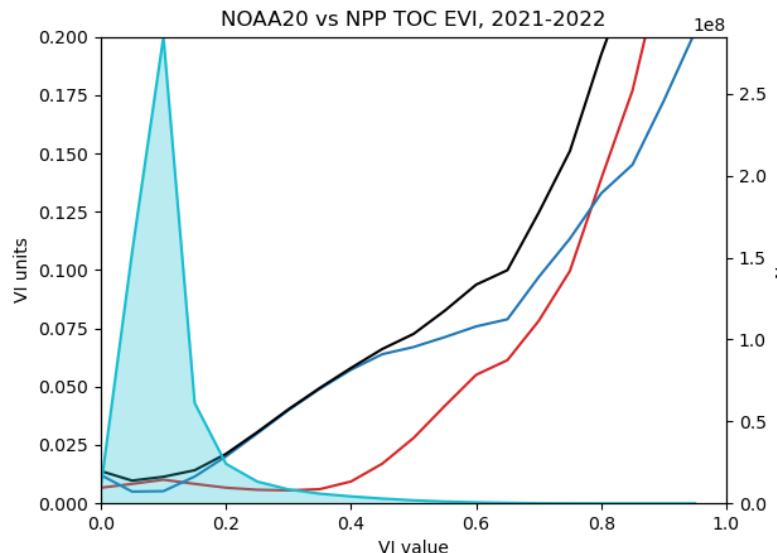
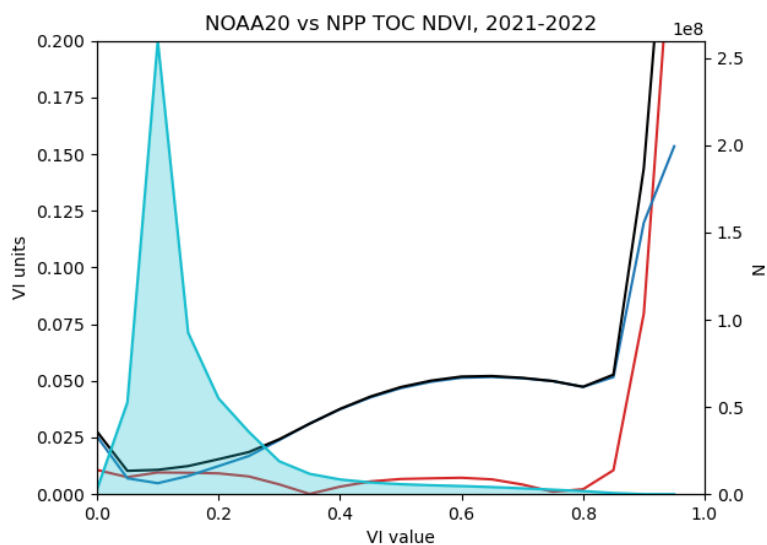
This is consistent with previous cal/ val results.

Stratified VI and GVF comparison results for SNPP vs. NOAA-20 for years 2021 and 2022



Accuracy (absolute bias)
 Precision (standard deviation)
 Uncertainty (RMS difference)
 Number of pixels

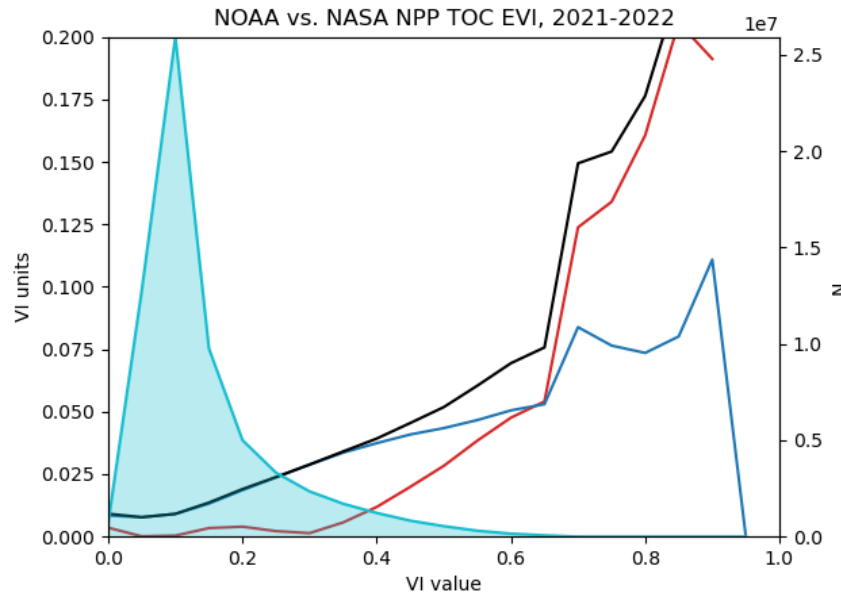
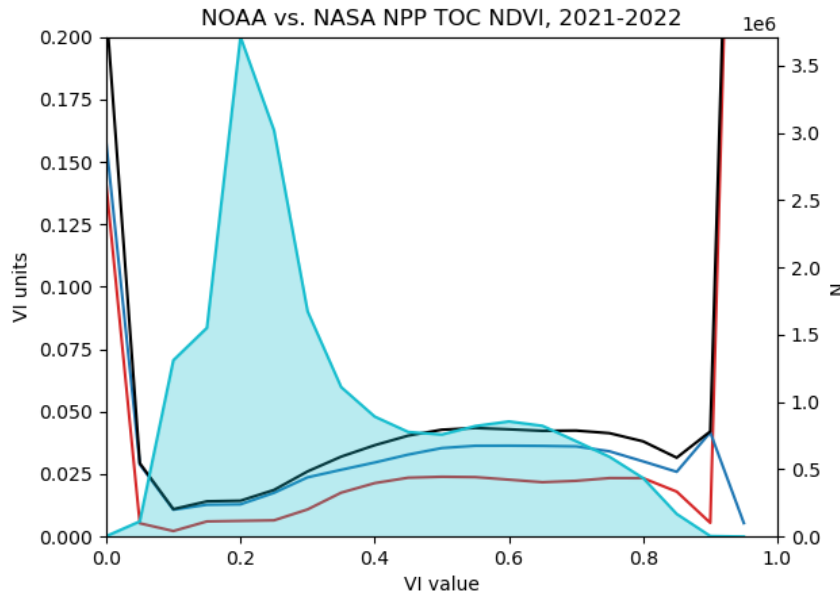
GVF accuracy, precision, and uncertainty meet specifications for full range of values.



VI accuracy, precision, and uncertainty meet specifications except for a small number of high VI pixels.

This is consistent with previous cal/ val results.

Stratified NOAA vs. NASA SNPP VI comparison results for 2021 and 2022

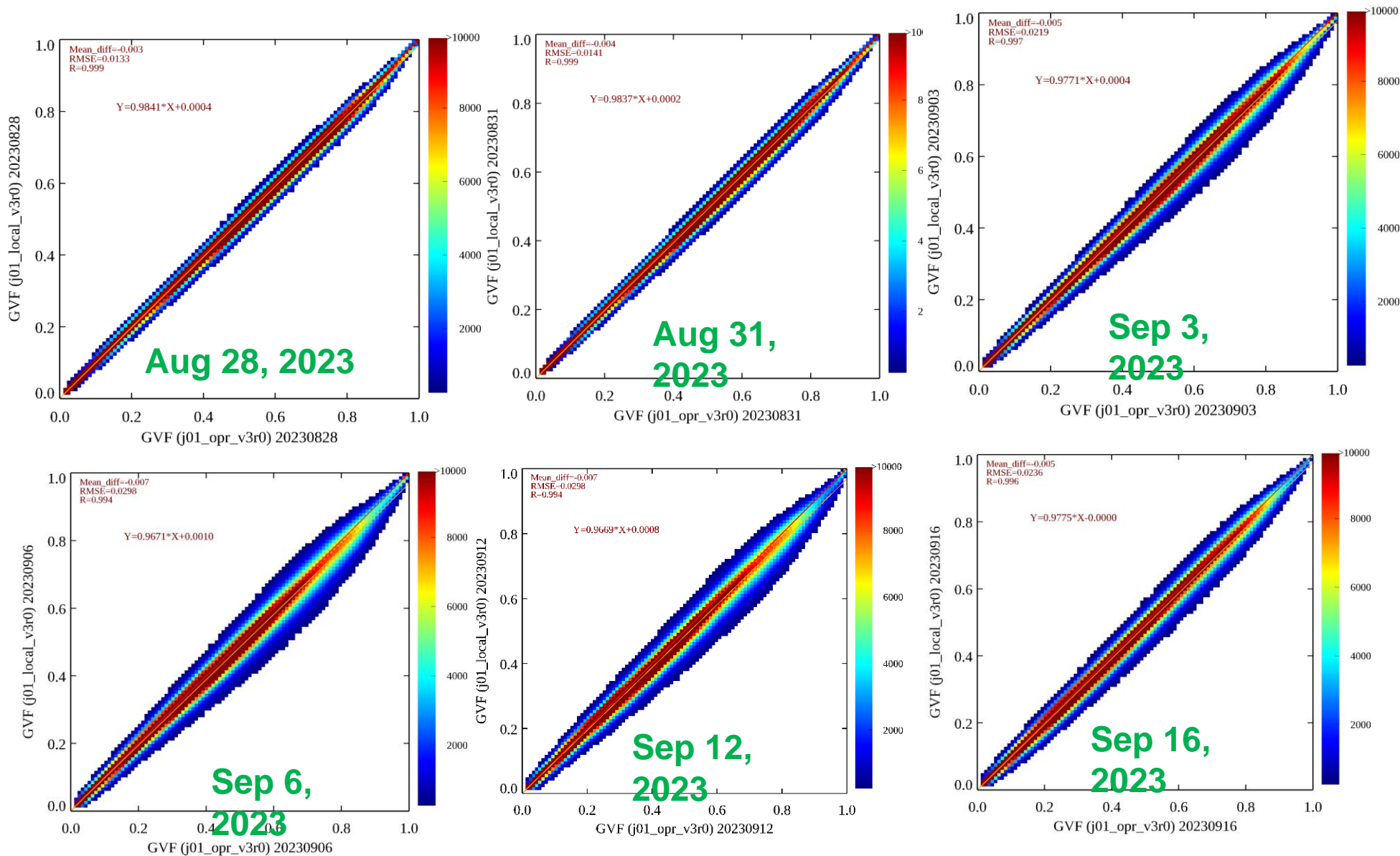


Accuracy (absolute bias)
 Precision (standard deviation)
 Uncertainty (RMS difference)
 Number of pixels

VI accuracy, precision, and uncertainty meet specifications except for a small number of high VI pixels.

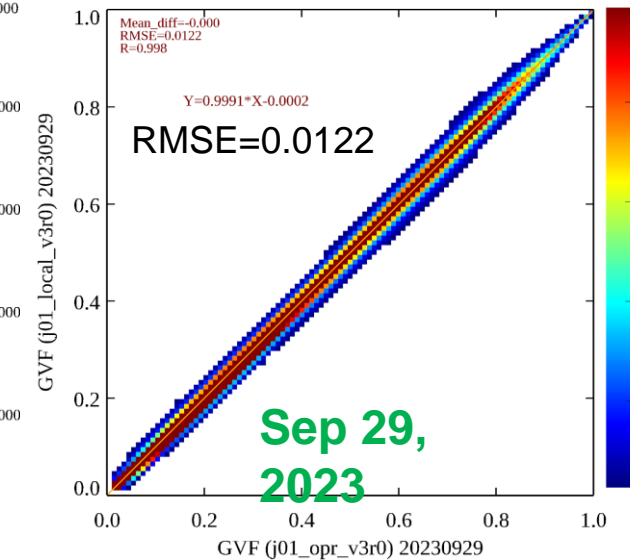
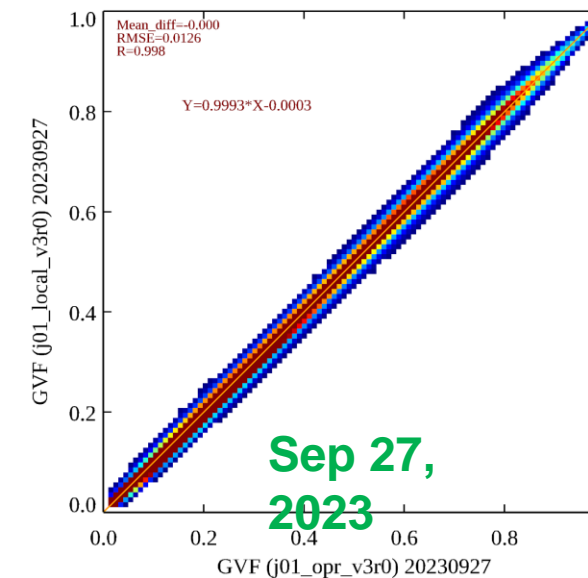
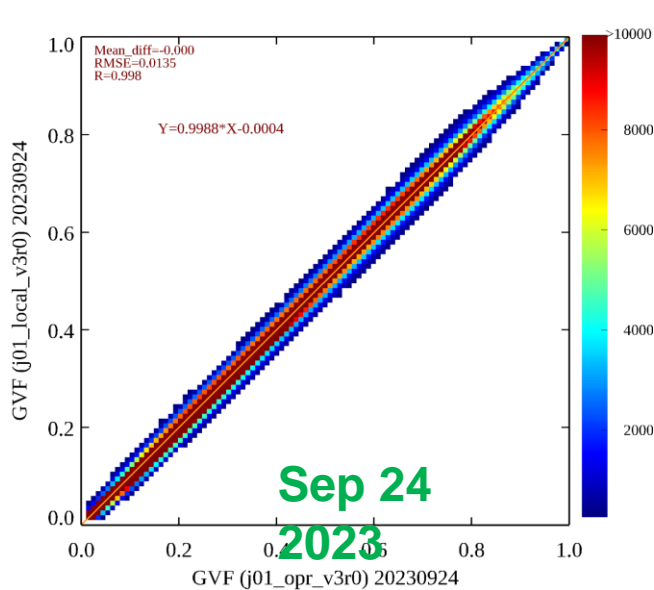
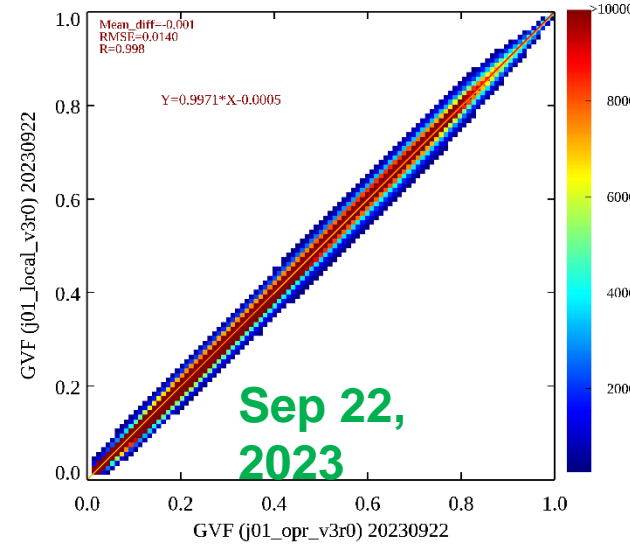
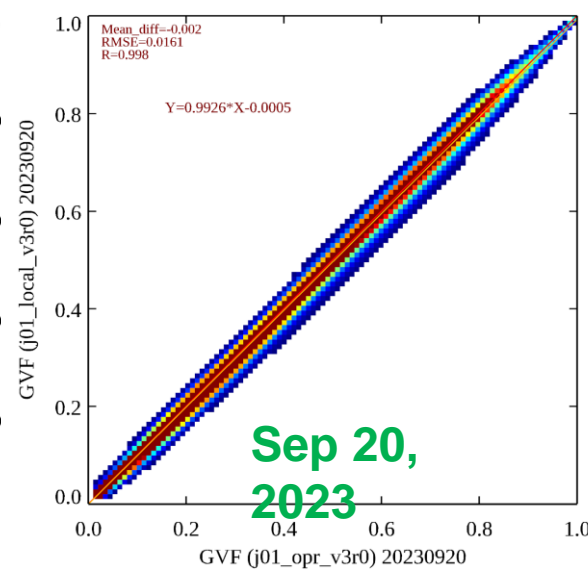
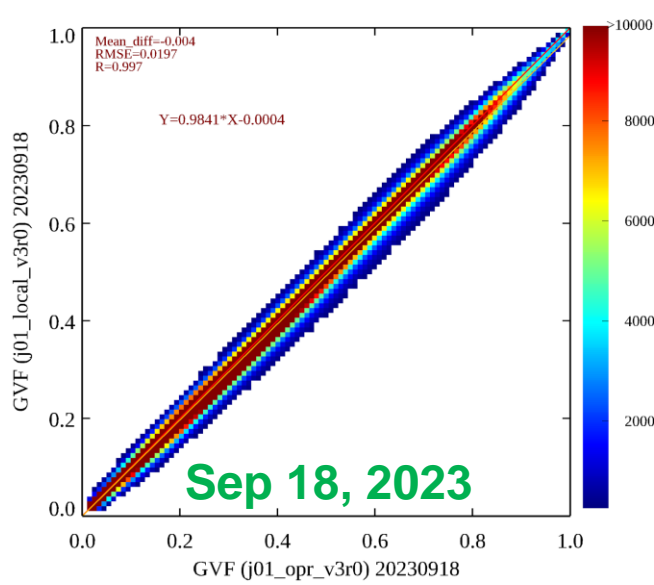
This is consistent with previous cal/ val results.

Monitoring the operational GVF data after NDE fixing



- NDE fixed the input data problem in August
- The GVF difference between operational GVF and local GVF is small (RMSE=0.01) in the end of August
- The GVF difference increased between Sep 3 and Sep 12
- OSPO reported there is missing input data during the period, resulting in the GVF difference

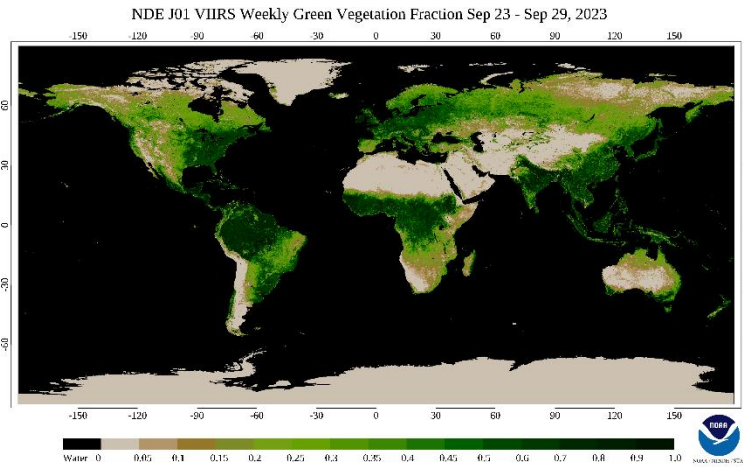
Monitoring the operational GVF data after NDE fixing



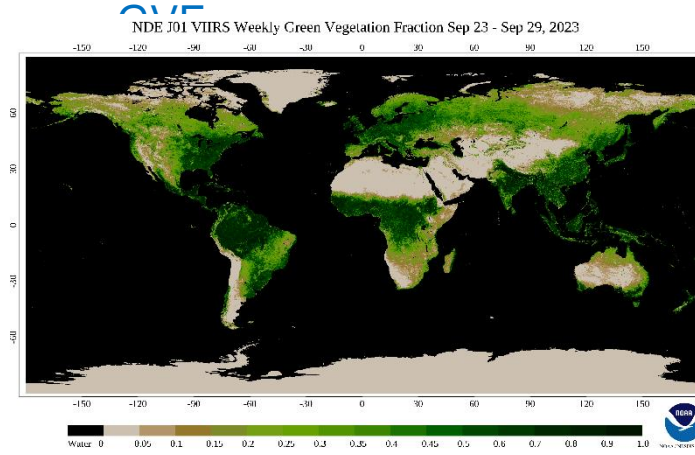
- The GVF difference decreased after Sep12
- At the end of Sep, the GVF is quite small (RMSE=0.012)
- The decreasing GVF difference indicates the quality of the operational GVF production is stabilizing

Operational J1 GVF (v3r0) vs. local run GVF (v3r0) (09/29/2023)

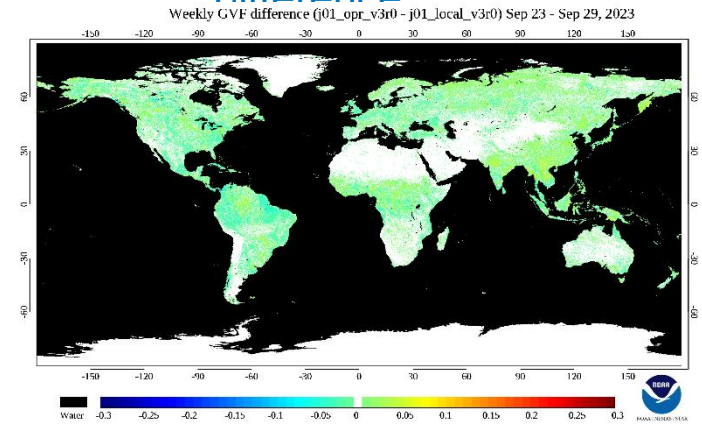
Operational



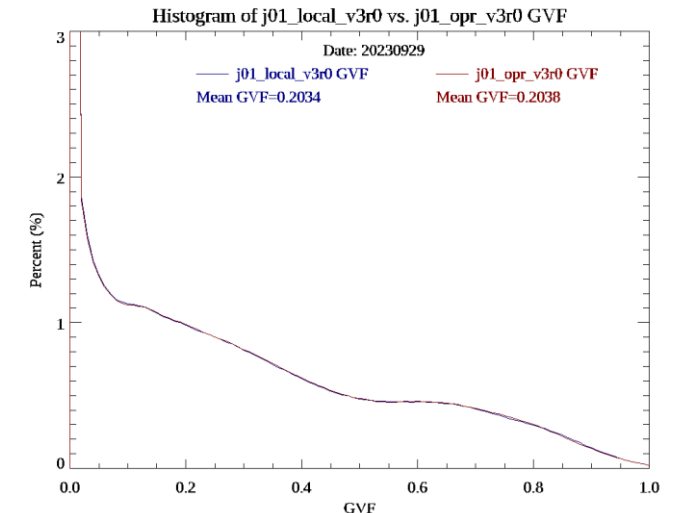
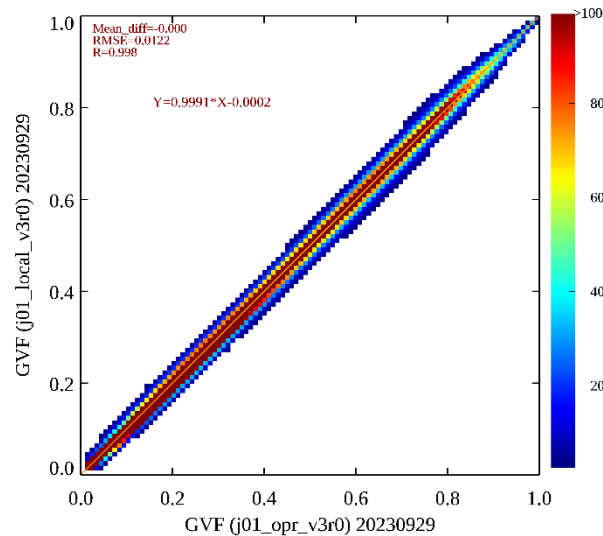
Local



GVF difference



- The operational GVF map is consistent with the local run GVF.
- The GVF difference map showed very small difference globally
- GVF histograms of the two GVF datasets matched very well



Accomplishments / Events:

- Surface Reflectance DAP re-delivery after the QF update related to the Enterprise Cloud Mask (v2), metadata, product version (from v1r2 to v1r3), related documents are updated as well.
- Investigate the reprocessed NOAA VIIRS SDR data, generated local SR for both SNPP and N20, then compared with NASA calibrated SR (VNP09 version 2)
- Working the mitigation algorithm (for the dust aerosol model) validation.
- Keep working on the SR product monitoring, and routinely generate N21 AERONET subsets for validation.
- Work with OSPO team for the SR monitoring (data visualization and metadata 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			

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

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
NCCF SR DAP redelivery and verification	Sep-23	Sep-23	Sep 20, 2023	
Mitigation algorithm development for the dust aerosol model	Dec-23	Dec-23		
Provisional Maturity of NOAA-21	Feb-24	Feb-24		
The JPSS (SNPP, N20, N21) SR consistency evaluation and correction	Mar-24	Mar-24		
GOES-R enterprise SR algorithm development and experimental product	Jun-24	Jun-24		
Operational Readiness Review (ORR) for NDE Migration to NCCF	Aug-24	Aug-24		

Highlights:

	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
QF1	Cloud-Mask-Quality		Cloud Detection Confidence		Day/Night Flag	Low Sun Flag	Sun glint	unused
QF2	Land/Water Mask			Cloud Shadow	Heavy Aerosol	Snow/Ice Flag	Reflective Cirrus-test	Emissive Cirrus-test
QF3	Bad M1 SDR	Bad M2 SDR	Bad M3 SDR	Bad M4 SDR	Bad M5 SDR	Bad M7 SDR	Bad M8 SDR	Bad M10 SDR
QF4	Bad M11 SDR	Bad I1 SDR	Bad I2 SDR	Bad I3 SDR	AOT Quality	Missing AOT	Invalid Aer Model	Missing TPW
QF5	Missing Column O3	Missing Surf Pres.	Quality of M1 Retr.	Quality of M2 Retr.	Quality of M3 Retr.	Quality of M4 Retr.	Quality of M5 Retr.	Quality of M7 Retr.
QF6	Quality of M8 Retr.	Quality of M10 Retr.	Quality of M11 Retr.	Quality of I1 Retr.	Quality of I2 Retr.	Quality of I3 Retr.	unused	unused
QF7	Snow Present	Cloud Adjacency	AOD Quantity Flag		Thin Cirrus	unused	unused	unused

Gray color: obsolete - permanently set constant value (0 or 11)
 Red color: information copied from ECM2

SR QFs Updates according to ECM2 in the v1r3 delivery.

- **Main updates compared with previous version (v1r2)**
 - Using updated & individual LUT for SNPP, N20 and N21, the new LUT use the same algorithm but updated spectral response functions.
 - For the missing aerosol model data, the default model switch from dust model to generic model.
 - In term of Enterprise cloud mask (ECM2) update, the QF of cirrus of reflective test, cirrus of emissive test are set to blank due to lack of information in ECM2, the cirrus information could be got from the thin cirrus flag (QF7 bit 1).
 - Will run in NCCF

- **Other related update and Test data**
 - Metadata update due to the quality flag changes
 - Documents update accordingly

- **Validation and test data**
 - Tested for SNPP, N20 and N21 using the new inputs (v3r2 for AOD, Cloud Mask & Cloud Height)
 - The SR data are validated using the AERONET data and show improvement compared with v1r2.
 - The SR data are evaluated using NASA VNP09 SR datasets

- **Potential risk and path forward**
 - Misclassified dust aerosol model might have larger uncertainty, mitigation algorithm is under development.
 - Redundant bits in the QFs, will reorganize in next delivery

	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
QF1	Cloud Mask Quality	Cloud Detection Confidence			Day/Night Flag	Low Sun Flag	Sun glint	unused
QF2	Land/Water Mask			Cloud Shadow	Heavy Aerosol	Snow/Ice Flag	Reflective Cirrus test	Emissive Cirrus test
QF3	Bad M1 SDR	Bad M2 SDR	Bad M3 SDR	Bad M4 SDR	Bad M5 SDR	Bad M7 SDR	Bad M8 SDR	Bad M10 SDR
QF4	Bad M11 SDR	Bad I1 SDR	Bad I2 SDR	Bad I3 SDR	AOT Quality	Missing AOT	Invalid Aer Model	Missing TPW
QF5	Missing Column O3	Missing Surf Pres.	Quality of M1 Retr.	Quality of M2 Retr.	Quality of M3 Retr.	Quality of M4 Retr.	Quality of M5 Retr.	Quality of M7 Retr.
QF6	Quality of M8 Retr.	Quality of M10 Retr.	Quality of M11 Retr.	Quality of I1 Retr.	Quality of I2 Retr.	Quality of I3 Retr.	unused	unused
QF7	Snow Present	Cloud Adjacency	AOD Quantity Flag		Thin Cirrus	unused	unused	unused

Gray color: obsolete - permanently set constant value (0 or 11)

Red color: information copied from ECM2

- NASA VNP09 v2 calibrations (Vermote, 2022)
- **Reference Aqua (NIR), Deep Convective Clouds (VIS) and Sun glint (SWIR)**

- NOAA SDR Reprocess (Wang, 2020, Cao, 2021)
- The inconsistency between SNPP and N20 has been evaluated by NOAA SDR team (Table 1)
- The reprocessed SDR has been performed (Fig. 2) and to be released

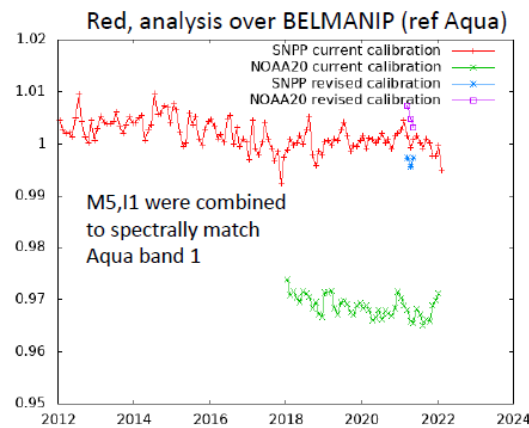
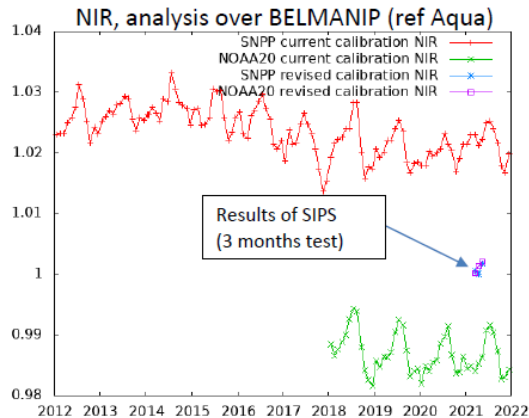


Fig. 1 SNPP and N20 compared with Aqua MODIS (NASA SR team results)

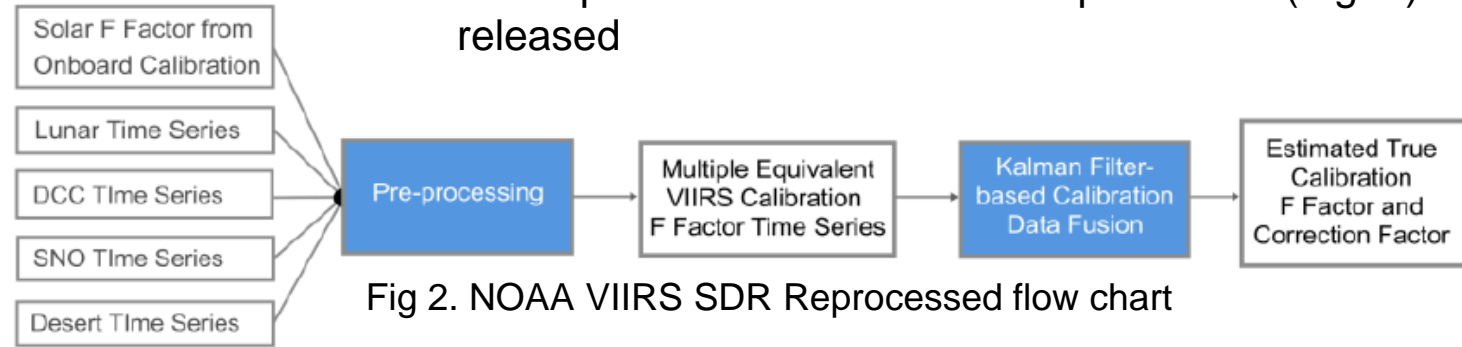


Fig 2. NOAA VIIRS SDR Reprocessed flow chart

Table 1, inconsistency between SNPP and N20

Bias (%)		Daily DCC	Dome-C	Libyan4
VIS/NIR	M1	-3.4	-2.3	-2.2
	M2	-1.2	-1.1	-1.8
	M3	-2.6	-1.8	-3.8
	M4	-2.8	-2.3	-1.6
	M5	-4.3	-3.9	-3.2
	M7	-3.6	-3.4	-3.0
	I1	-3.1	-2.3	-2.2
	I2	-3.9	-3.3	-3.2
SWIR	M8	-2.6	-2.8	-2.2
	M9	-1.5	-	-
	M10	-3.1	-	-1.5
	M11	-2.3	-	-0.6
	I3	-4.1	-	-4.0

- VIIRS SR Insistency
- The consistency issue has big impact on the product continuity and the blended product development
- The reprocessed SDR is under tested to see the improvement and explore the method to apply on VIIRS SR.
- The inconsistency impact on vegetation product will be evaluated, and the reprocessed improvement will be assessed as well.

Accomplishments / Events

- NUCAPS team presented the downstream product impacts in support of CrIS SDR validated maturity. Evaluated a new focus day of NUCAPS EDR products after the recent upload of v212 engineering packet. The NUCAPS team concluded that the sounding products generated from NOAA-21 show excellent consistency with the NOAA-20 products.
- Two NUCAPS team members attended the EUMETSAT-2023 conference held in Malmo, Sweden and presented two oral presentations. NUCAPS team members also attended and presented at the NASA Joint AIRS Sounder Science Team meeting held in College Park, MD. The NUCAPS presentation highlighted the recent results of NOAA-21 EDR products and the latest updates on the averaging kernels implementation.
- NUCAPS team presented and submitted the NOAA-GML Theme 2 (Ozone and Water Vapor) three-year summary that included many accomplishments.
- Continued efforts towards the NOAA-21 NUCAPS product provisional maturity. These include: (a) tuning of ATMS and CrIS measured radiances, (b) cloudy and clear regression LUT updates, (c) ATMS and CrIS noise file updates in the retrieval algorithms, and (d) continuation of VALAR data sets to validate temperature and water vapor.
- In connection with a query for the assimilation of NUCAPS products, the NUCAPS team provided product quality assessment for the National Meteorological Service/Environmental Modeling and Remote Sensing Center, Argentina.
- NUCAPS team held the all-hands meeting on 9/27/2023 and discussed future collaborations with the NPROVS team and exchange of data sets.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
NOAA-21 NUCAPS T(p), q(p), O3(p) Provisional Maturity	Nov-23	Dec-23	On-time	

Overall Status:

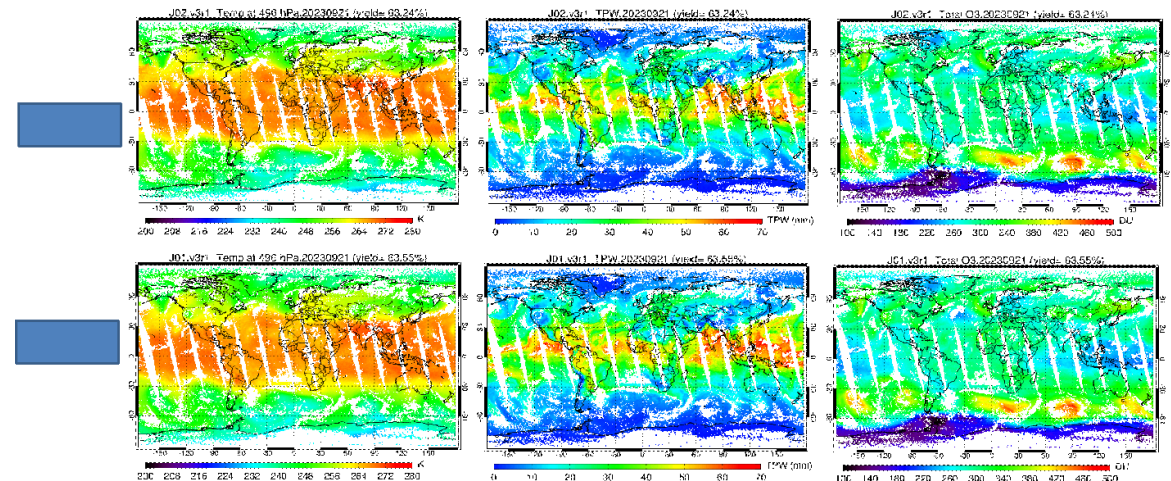
	Green ¹ (Completed)	Blue ² (On-Schedule)	Yellow ³ (Caution)	Red ⁴ (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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

Downstream NUCAPS Product Evaluation for NOAA-21 CrIS SDR Validated Maturity Review: NOAA-20/21 Sounding Products Show Excellent consistency with the EP v212



Accomplishments / Events:

- L. Flynn identified inconsistencies that led the SDR team to revise the N21 OMPS NM Stray Light correction. He also identified inconsistencies between the N21 OMPS NP irradiance and radiance wavelength shifts. The source of these differences is under investigation.
- R. Lindsay continued work to use the new V2.7Limb Level 1 codes to process the N21 OMPS Limb RDR and use their output as input for the Level 2. NASA has been revising tables and code.
- J. Niu has results for Metop-B & -C GOME-2 soft calibration and will deliver them this month. He has worked with ASSISTT and NCCF to get the EV8TOz and V8TOS successfully transitioned to the NCCF Development system.
- Z. Zhang has created multiple versions of soft calibration for N21 V8Pro & V8TOz. The work has been complicated by changes in the SDR stray light for the NM and in the SDR wavelength scales for the NP since the products became provisional.
- E. Beach continued to work on the monitoring figures for NOAA-21. He is transferring the weekly ancillary files we need to process the NOAA-21 OMPS Limb Profiler. He is capturing the NOAA-21 OMPS data and NCCF test data as they arrive at SCDR. He is providing overpass data sets for validation.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
OMPS NP Ozone EDR (V8 Pro) Provisional Review	10/23	10/23		
OMPS NP Ozone EDR (V8 Pro) Validated Review	1/24	1/24		
OMPS TC Ozone EDR (V8TOz) Validated	1/24	1/24		

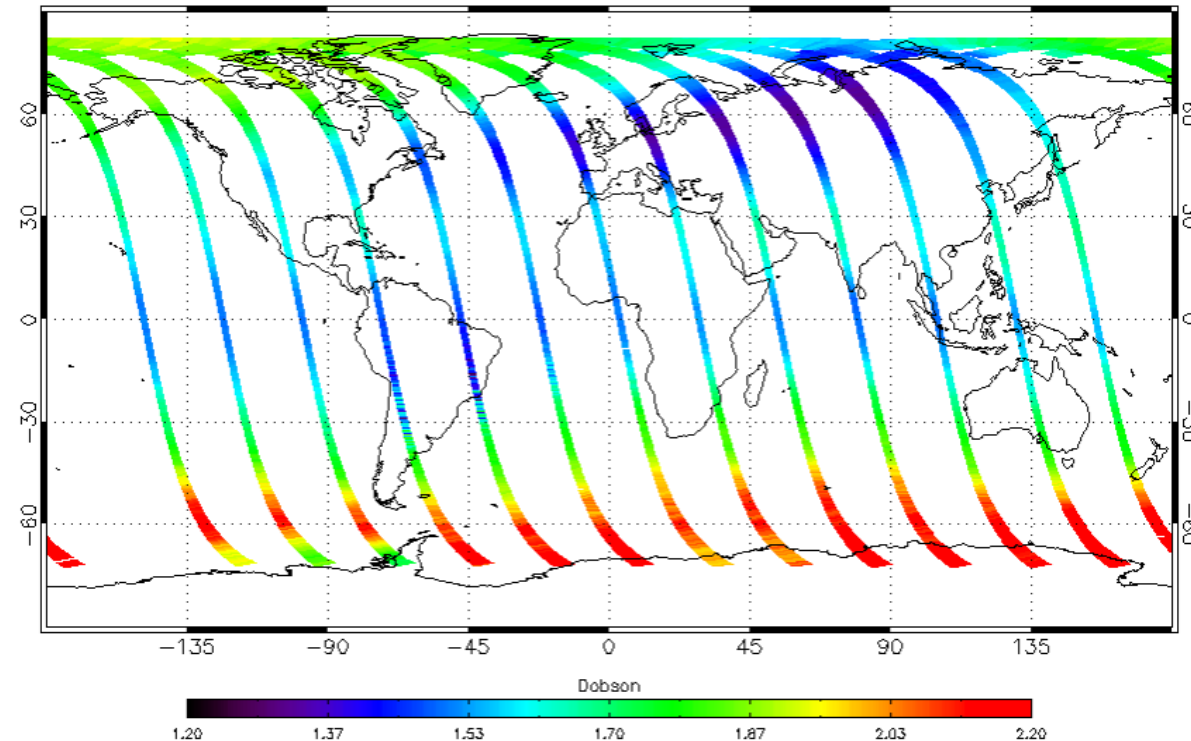
Overall Status:

	Green ¹ (Completed)	Blue ² (On-Schedule)	Yellow ³ (Caution)	Red ⁴ (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule			X		Antenna delays, SDR instability, Limb Development

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

Issues/Risks:

Layer 15 Ozone V8Pro, NPP/N21/N20 for 2023/04/15



Accomplishments / Events:

- Conducted tests on the LSE code and resolved coding issues. Finalized and delivered the DAP package for updating land surface emissivity to the ASSITT team.
- Track the availability of J2 LST data and communicate with NDE team regarding the data missing issue. (slide 2)
- Continue the work on all weather LST extension and code conversion. Complete preprocessing for MIRS LST and NDVI data.
- Identified significant data gaps in high latitude regions in the daily composited MIRS LST. Examined the relevant quality flags and resolved this issue. (slide 3).
- Developed a python software package to convert the L3 VIIRS LST from sinusoidal projection to latlon projection. The code has been tested. (highlights)
- Analyzed the relationship between I-band VIIRS LST correction and cloud coverage for daytime and nighttime granules (slide 4-5)
- Developed R-based validation procedure for historical dataset from ARM.
- Engaged in the NIHHS proposal application process including paperwork preparation, proposal related discussions and preliminary data research.

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			

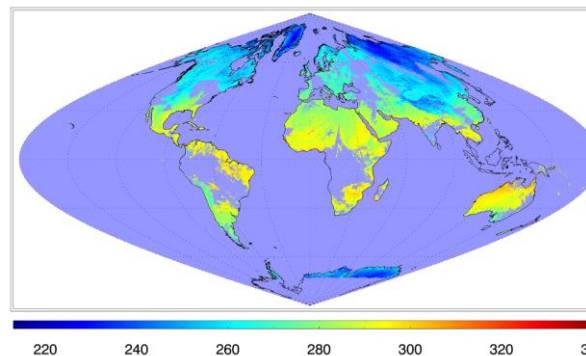
- Project has completed.
- Project is within budget, scope and on schedule.
- Project has deviated slightly from the plan but should recover.
- Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

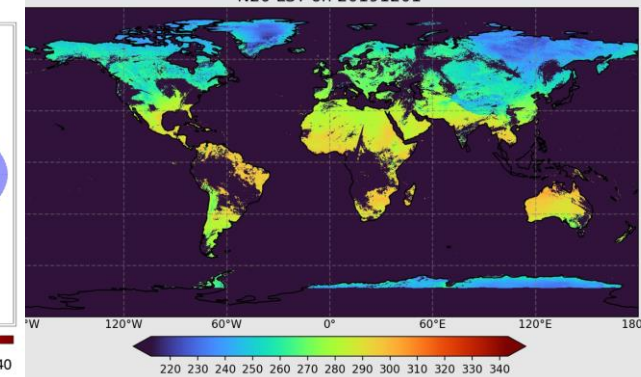
None

Highlights: L3 VIIRS LST projection conversion tool

J01 LST on 20191201 Night



N20 LST on 20191201



A python tool package was developed to convert L3 VIIRS LST from sinusoidal projection to regular latlon projection. The left figure shows the L3 VIIRS LST in a sinusoidal projection, while the right figure displays the LST in a regular lat/lon projection with a spatial resolution of 0.009 degree.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
DAP for NOAA-21 if needed	Aug-23	Aug-23	Sep-23	Postponed. Plan to have LSE update in October
Provisional review of the NOAA-21 LST	Sep-23	Sep-23		Postponed to Jan-24

Issues with the N21 VIIRS LST data missing

L2 LST data stream

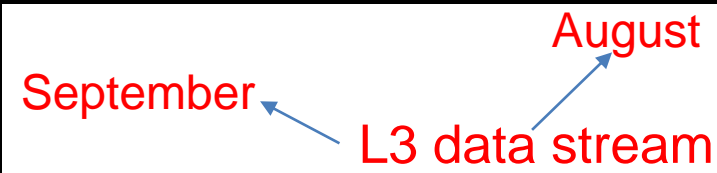
drwxr-xr-x.	2	yuling.liu	star	127	Aug	11	06:04	20230810
drwxr-xr-x.	2	yuling.liu	star	1007	Aug	17	06:35	20230811
drwxr-xr-x.	2	yuling.liu	star	3	Aug	12	05:44	20230812
drwxr-xr-x.	2	yuling.liu	star	233	Aug	28	06:35	20230822
drwxr-xr-x.	2	yuling.liu	star	234	Aug	29	06:35	20230823
drwxr-xr-x.	2	yuling.liu	star	231	Aug	30	06:36	20230824
drwxr-xr-x.	2	yuling.liu	star	68	Aug	31	06:36	20230825
drwxr-xr-x.	2	yuling.liu	star	3	Aug	26	05:32	20230826
drwxr-xr-x.	2	yuling.liu	star	183	Aug	28	00:40	20230827
drwxr-xr-x.	2	yuling.liu	star	257	Sep	3	06:35	20230828
drwxr-xr-x.	2	yuling.liu	star	912	Sep	4	06:35	20230829
drwxr-xr-x.	2	yuling.liu	star	505	Sep	6	06:35	20230830
drwxr-xr-x.	2	yuling.liu	star	19	Sep	6	05:35	20230831
drwxr-xr-x.	2	yuling.liu	star	873	Sep	16	06:00	20230915
drwxr-xr-x.	2	yuling.liu	star	1015	Sep	22	06:36	20230916
drwxr-xr-x.	2	yuling.liu	star	870	Sep	23	06:38	20230917
drwxr-xr-x.	2	yuling.liu	star	911	Sep	24	06:37	20230918
drwxr-xr-x.	2	yuling.liu	star	557	Sep	25	06:37	20230919
drwxr-xr-x.	2	yuling.liu	star	380	Sep	21	02:01	20230920
drwxr-xr-x.	2	yuling.liu	star	3	Sep	21	06:52	20230921
drwxr-xr-x.	2	yuling.liu	star	754	Sep	23	00:57	20230922
drwxr-xr-x.	2	yuling.liu	star	1014	Sep	24	00:40	20230923
drwxr-xr-x.	2	yuling.liu	star	1013	Sep	25	00:40	20230924
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drwxr-xr-x.	2	yuling.liu	star	928	Sep	27	02:55	20230926
drwxr-xr-x.	2	yuling.liu	star	84	Sep	27	06:12	20230927

It has been observed that the N21 VIIRS LST data stream is not stable with a lot of files missing since 08/11. It raised up some concerns for the provisional review. We need a longer time period of data for product validation and time series analysis.

- L2 LST: data completely missing during Aug. 12-21st, and Sep 1-14th, then significant data missing for other days
- L3 LST: data completely missing during Aug. 12-27. and Sep 1-15th, Sep. 17-22nd.

yuling.liu	landveglst	295045930	Aug	7	07:12	GRIDDED-VIIRS-LST-D_v1r1_n21_s20230801_e20230801_c202308020239080.nc
yuling.liu	landveglst	291632765	Aug	8	07:12	GRIDDED-VIIRS-LST-D_v1r1_n21_s20230802_e20230802_c202308030313300.nc
yuling.liu	landveglst	296484006	Aug	9	07:12	GRIDDED-VIIRS-LST-D_v1r1_n21_s20230803_e20230803_c202308040252000.nc
yuling.liu	landveglst	297328779	Aug	10	07:09	GRIDDED-VIIRS-LST-D_v1r1_n21_s20230804_e20230804_c202308050234390.nc
yuling.liu	landveglst	301287028	Aug	11	07:04	GRIDDED-VIIRS-LST-D_v1r1_n21_s20230805_e20230805_c202308060303440.nc
yuling.liu	landveglst	295329453	Aug	12	07:08	GRIDDED-VIIRS-LST-D_v1r1_n21_s20230806_e20230806_c202308070247290.nc
yuling.liu	landveglst	291645105	Aug	13	07:00	GRIDDED-VIIRS-LST-D_v1r1_n21_s20230807_e20230807_c202308080243230.nc
yuling.liu	landveglst	294806705	Aug	14	07:00	GRIDDED-VIIRS-LST-D_v1r1_n21_s20230808_e20230808_c202308090303470.nc
yuling.liu	landveglst	268623379	Aug	17	07:00	GRIDDED-VIIRS-LST-D_v1r1_n21_s20230811_e20230811_c202308120423400.nc
yuling.liu	landveglst	289642492	Aug	7	07:12	GRIDDED-VIIRS-LST-N_v1r1_n21_s20230801_e20230801_c202308020239080.nc
yuling.liu	landveglst	287511025	Aug	8	07:12	GRIDDED-VIIRS-LST-N_v1r1_n21_s20230802_e20230802_c202308030313300.nc
yuling.liu	landveglst	296484006	Aug	9	07:12	GRIDDED-VIIRS-LST-N_v1r1_n21_s20230803_e20230803_c202308040252000.nc
yuling.liu	landveglst	297328779	Aug	10	07:09	GRIDDED-VIIRS-LST-N_v1r1_n21_s20230804_e20230804_c202308050234390.nc
yuling.liu	landveglst	301287028	Aug	11	07:04	GRIDDED-VIIRS-LST-N_v1r1_n21_s20230805_e20230805_c202308060303440.nc
yuling.liu	landveglst	295329453	Aug	12	07:08	GRIDDED-VIIRS-LST-N_v1r1_n21_s20230806_e20230806_c202308070247290.nc
yuling.liu	landveglst	291645105	Aug	13	07:00	GRIDDED-VIIRS-LST-N_v1r1_n21_s20230807_e20230807_c202308080243230.nc
yuling.liu	landveglst	294806705	Aug	14	07:00	GRIDDED-VIIRS-LST-N_v1r1_n21_s20230808_e20230808_c202308090303470.nc
yuling.liu	landveglst	268623379	Aug	17	07:00	GRIDDED-VIIRS-LST-N_v1r1_n21_s20230811_e20230811_c202308120423400.nc

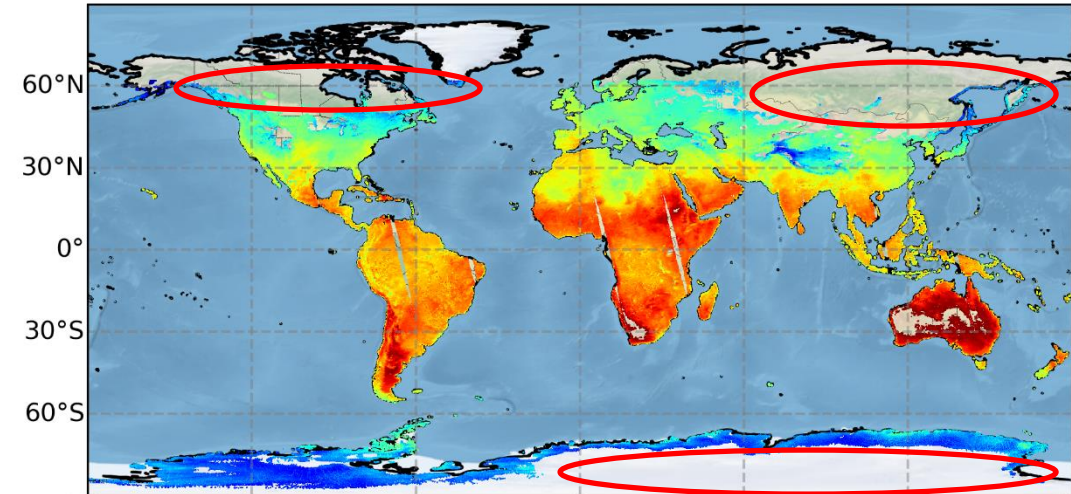
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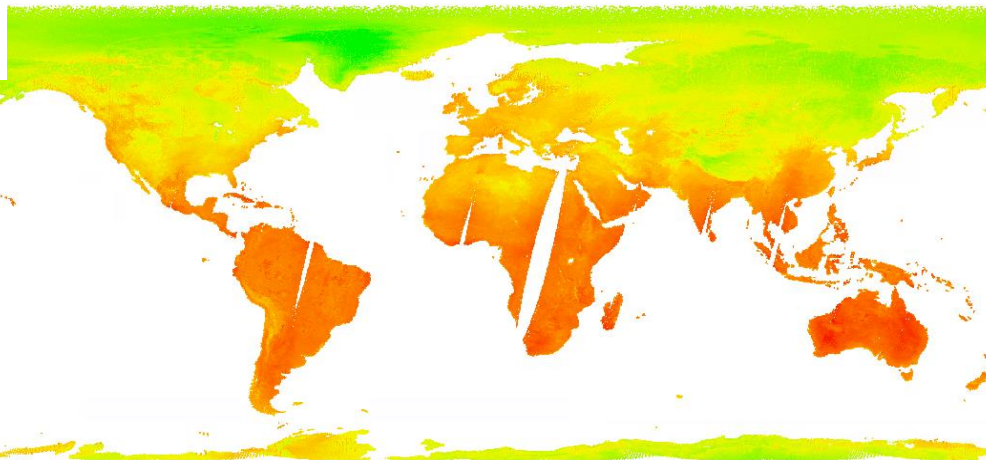
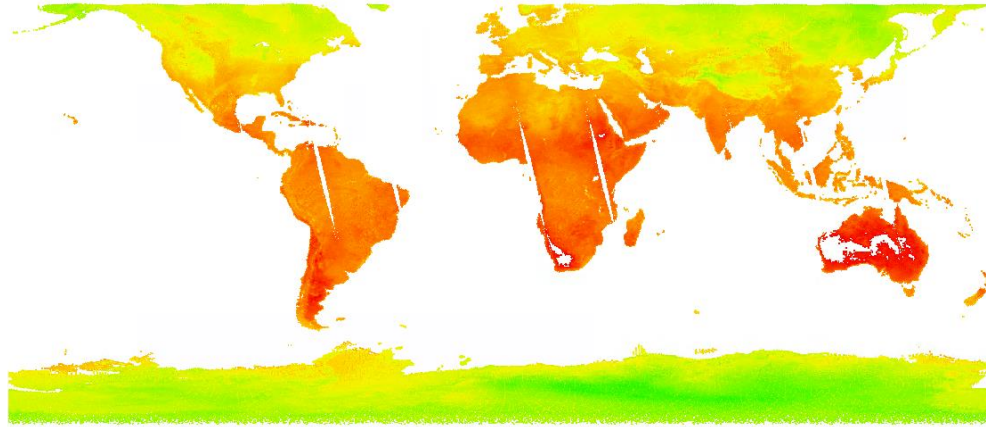
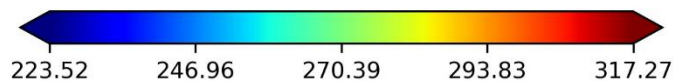
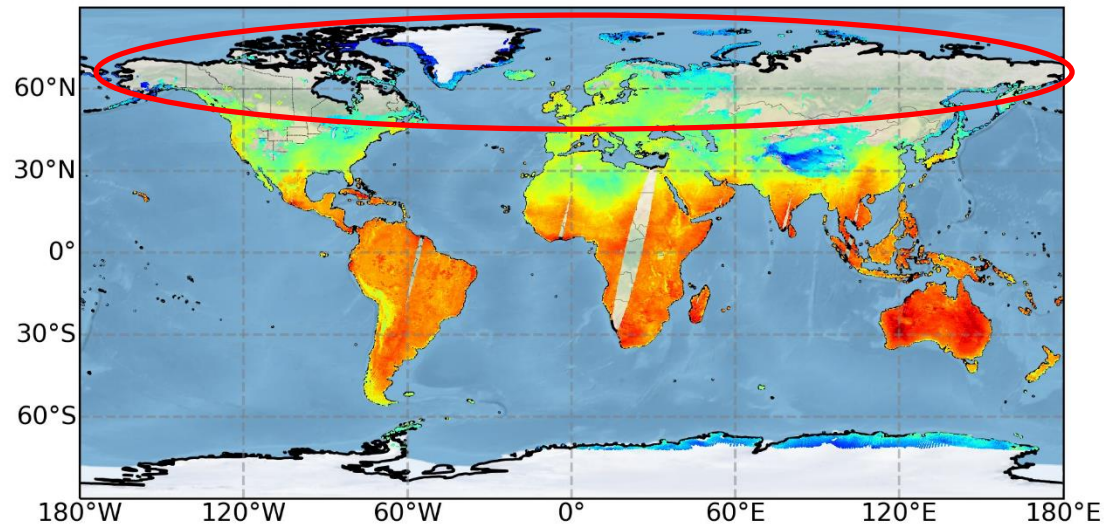
Composited daily MIRS LST Issue

all weather LST development

Data plot

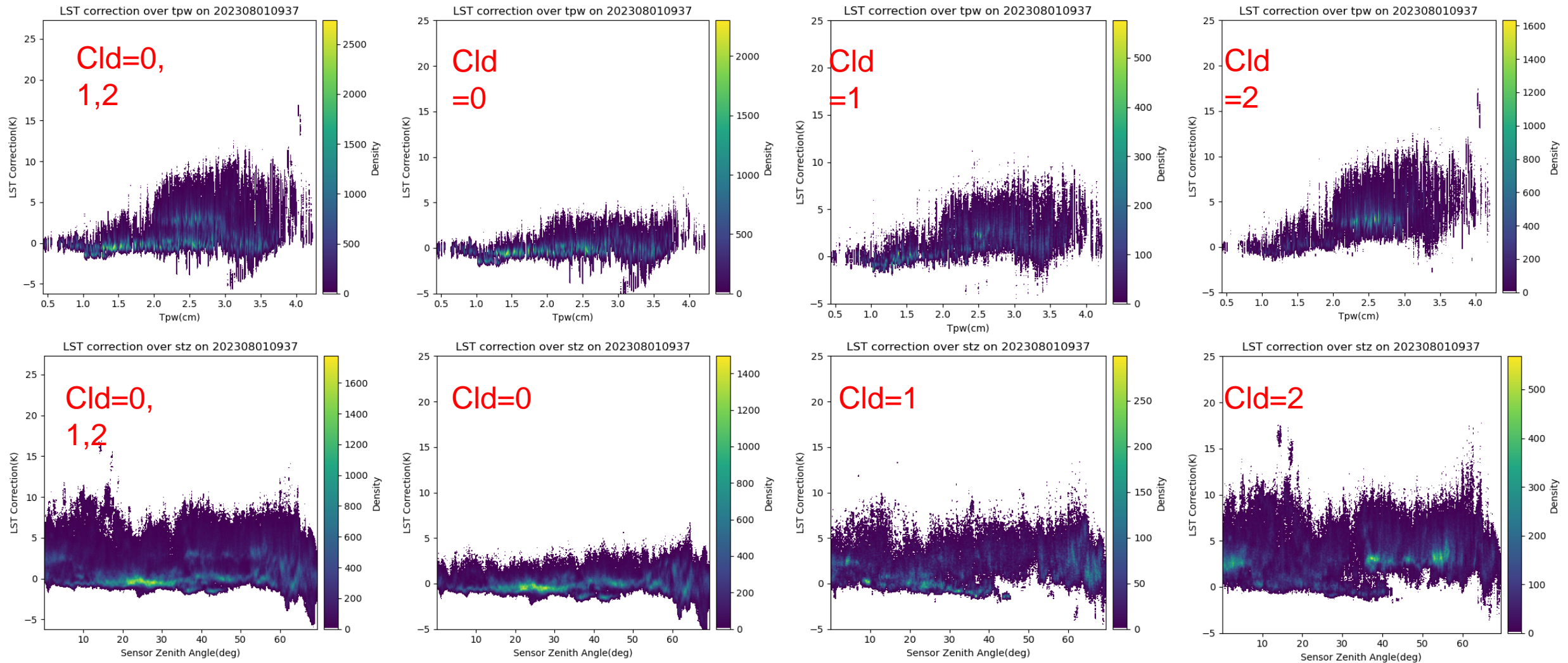


Data plot



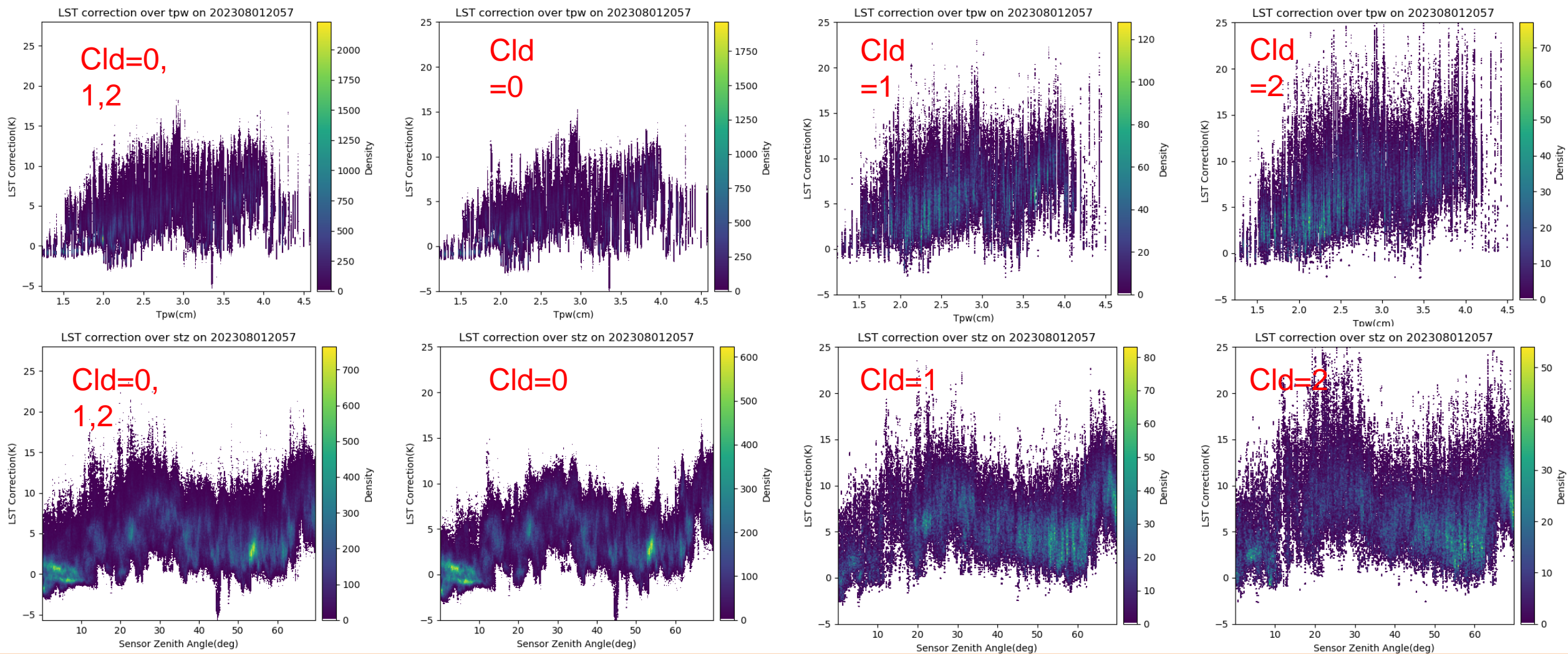
- The daily composited MIRS LST is found to have significant data gaps in the high latitude region as shown in the left figures for daytime (top left) and nighttime (bottom left).
- This issue is found attributed to the ocean bits in the quality flag specifically bit 13. land and water bits are not always mutually exclusive.
- We resolved this problem by switching to bit 12 as the land indicator.

LST correction for nighttime granule



- It has been observed that the LST correction is noisier with a larger magnitude under the cloud coverage particularly in moist conditions
- The LST correction is also noisier with a larger magnitude across the viewing angle distributions under cloud coverage

LST correction for daytime granule



- Daytime LST correction magnitude is significantly greater than at night.
- There is a noticeable linear increase in the correction magnitude over TPW when there is cloud coverage.
- The LST correction magnitude exhibits a complex progression in relation to the satellite viewing angle. It starts increase with a peak around 30 degrees then decreases till 60 degree and subsequently presents a significant increase.

Accomplishments / Events:

- The official transition of the reprocessed SNPP SDRs to CLASS/NCEI started on December 1, 2021.
- The transition of the reprocessed SNPP ATMS (V1 and V2), CrIS, and OMPS (V1 and V2) data was completed in December 2021, February 2022 and March 9, 2022, respectively. These data are available at CLASS website now.
- The transition of the reprocessed SNPP VIIRS started on March 15, 2022.
- The reprocessed SNPP VIIRS SDR data from 1/2/2012 to 04/30/2020 (**1614.7T, 100%** of total) has been completed as of September 8, 2023.
- The SNPP EDR algorithm package was obtained from the ASSIST team. The RWG extracted the EDR software from the docker image, setup and configured EDR software on UMD Bamboo cluster successfully. The EDR software can run on Bamboo cluster to generate selected EDR products now.
- The EDR reprocessing is now being tested on STAR Linux system

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Complete transition of reprocessed SNPP VIIRS SDR to CLASS	03/2022	10/2023	09/08/2023	1 month
Complete VIIRS EDR reprocessing for Clouds, polar wind, Ice Concentration; Ice Thickness; Snow Cover; and Ice Surface Temperature	02/2023	05/2024		1 month

Overall Status:

	Green ¹ (Completed)	Blue ² (On-Schedule)	Yellow ³ (Caution)	Red ⁴ (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic			X		The UMD IT would not implement the docker for EDR reprocessing. The RWG is looking at the EDR package to see if it can be executed without a docker. Execution delay is expected.
Schedule			X		

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

Issues/Risks:

None

Highlights:

Status of the Reprocessed SNPP Data Transition

Sensor	Data Type (name)	Period	Notes	Volume (Tb)	Status
ATMS	TDR (TATMS)	2011-11-08 to 2019-10-15	V2	0.406	Completed on Dec. 20, 2021
	SDR (SATMS)	2011-11-08 to 2019-10-15	V2	0.431	
	GEO (GATMO)	2011-11-08 to 2019-10-15	V2	0.420	
ATMS	TDR (TATMS)	2011-11-08 to 2017-03-08	V1	0.273	Completed on Dec. 30, 2021
	SDR (SATMS)	2011-11-08 to 2017-03-08	V1	0.289	
	GEO (GATMO)	2011-11-08 to 2017-03-08	V1	0.283	
CrIS	GCRSO	2012-02-20 to 2020-01-29	V2	0.369	Completed on Feb. 25, 2022
	SCRIS	2012-02-20 to 2020-01-29	V2	67.994	
	SCRIF	2014-12-04 to 2020-01-29	V2	74.455	
OMPS	TC (SOMTC, GOTCO)	2012-01-30 to 2018-09-30	V1	1.2	Completed on Mar. 4, 2022
	NP (SOMPS, GONPO)	2012-01-25 to 2017-03-08	V1	0.134	
OMPS	NP (SOMPS, GONPO)	2012-01-25 to 2021-06-30	V2	0.246	Completed on Mar. 9, 2022
	TC (SOMTC, GOTCO)	2012-01-30 to 2021-06-30	V2	1.695	
VIIRS	VIIRS ALL SDR	2012-01-02 to 2020-04-30	V2	1615	Completed on Sep. 08, 2023
Total				1764.65	

Accomplishments / Events:

- Participated in NPP recovery efforts. Evaluated impact of platform outage on SST product
 - NPP post-outage performance is comparable with N20/N21 nominal performance
 - Data gaps verified and filled in as appropriate in PO.DAAC archives
- NPP/N20/N21 SST Cal/Val continue. SST Team is ready for N21 Provisional review. Coordinating schedule with JSTAR for 24 Aug review.
- Reprocessing MODIS records and integrating with two hi-res SSTs (METOP-FG AVHRR FRAC & JPSS VIIRS) is underway. Preliminary VAL results for one full year of data are shown in Table.
 - Checks for consistency with MODIS was planned and conducted as a part of VIIRS Cal/Val
 - MODIS SSTs are of good quality, and only slightly degraded compared with VIIRS
 - Integration of MODIS SST into L3S-LEO AM (Metop-FG is supplemented by Terra), PM (JPSS will be supplemented by Aqua), and DY (daily product combining PM and AM) is underway
- All other activities and milestones are on schedule.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Product consistency & validation activities w/NPP/N20, non-JPSS LEO SSTs (AVHRR GAC/FRAC & MODIS).	Sep-23	Sep-23		

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			

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

Issues/Risks:

Delay with opening cryoradiator doors on N21 VIIRS pushes back the reviews by approximately 2 months.

Highlights: VAL Stats Against DTMs for 2 VIIRSs & 2 MODISs – Full 2019

	SST Product	Mean	Mean	SD	SD	CSR
		Sub-skin	Depth	Sub-skin	Depth	%
Night	ACSPO Terra	+0.01	+0.00	0.33	0.29	20.6
	ACSPO Aqua	+0.00	+0.00	0.33	0.28	19.1
	ACSPO NPP	-0.01	-0.02	0.32	0.27	18.8
	ACSPO N20	+0.00	-0.02	0.32	0.28	18.8
Day	ACSPO Terra	+0.02	+0.01	0.42	0.33	19.3
	ACSPO Aqua	+0.03	+0.01	0.42	0.31	20.4
	ACSPO NPP	-0.03	+0.00	0.38	0.28	19.8
	ACSPO N20	-0.04	+0.00	0.38	0.29	20.0

Global Validation Statistics against Drifters and Tropical Mooring buoys for full year 2019, from 2 VIIRS and 2 MODIS instruments

Note that VIIRS VAL statistics are slightly superior compared to the MODIS statistics

Work is underway to document MODIS 20+ years reprocessing, and incorporate MODIS SST into 0.02° global L3S-LEO SST product (data fusion from multiple hi-res LEO satellites/sensors). This will extend L3S-LEO-PM data record from 2012-on (NPP) to 2002-on (Aqua), and L3S-LEO-AM from 2006 (Metop-A) to 2000 (Terra).

Accomplishments / Events:

- Enhanced orographic snowfall retrieval through machine learning.
- In collaboration with ASSISTT, successfully passed the Standalone SFR initial NCCF SCR.
- Updated and delivered the SFR ATBD for the Standalone SFR system.
- Gave an invited TOWR-S seminar on September 28. It is in preparation for SFR and the merged radar-satellite snowfall rate (mSFR) products configurations being published in the next TOWR-S RPM (v24) in November. Once the RPM v24 is released, all NWS Weather Forecast Offices will have access to the SFR and mSFR products. These products are produced at CISS in near real-time using the direct broadcast data from CIMSS and GINA. NASA SPoRT will receive, reformat, and distribute the product data via LDM.

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			

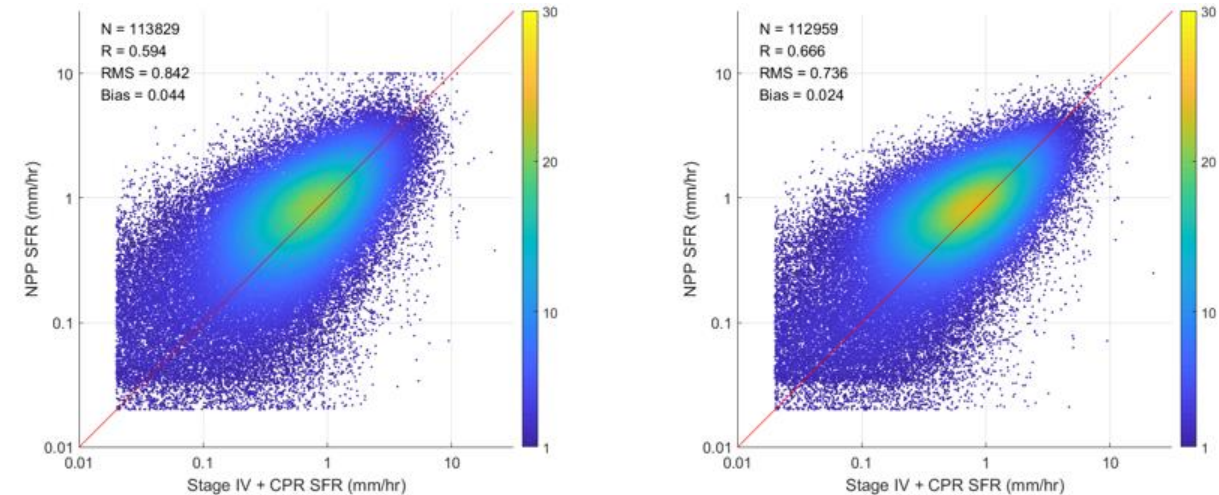
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2. Project is within budget, scope and on schedule.
3. Project has deviated slightly from the plan but should recover.
4. Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Enhance orographic snowfall retrieval through machine learning	Sep-23	Sep-23		

Highlights: Improvement to Orographic Snowfall through ML



S-NPP SFR improvement for orographic snowfall, current SFR (left) and improved SFR (right) for orographic snow cases

Accomplishments / Events:

- STAR-UMD VIIRS Surface Type team has downloaded and processed S-NPP and NOAA-20 VIIRS daily granule surface reflectance data acquired in September of 2023 for the production of AST-2023.
- The team has completed the validation of the AST22 product. This product has an overall accuracy of $78.6 \pm 0.6\%$, which exceeded the 70% L1RD requirement.
- The following products have been delivered to JSTAR and users:
 - AST22 surface type maps, including the 17-IGBP type map and the 20-EMC type map
 - A new surface type ATBD updated with AST22 accuracy data and several improvements implemented in developing the AST22 product
 - An improved multi-year climatology surface type map for use by EMC

Overall Status:

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

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Issues/Risks:

None

Highlights:

Accuracy Matrix of the VIIRS AST22 Product

AST	Reference																	total	U Acc
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		
1	2.10	0.03	0.06	0.05	0.28	0.00	0.01	0.23	0.03	0.00	0.03	0.01	0.01	0.03	0.00	0.00	0.01	2.86	73.25
2	0.00	8.46	0.00	0.08	0.12	0.00	0.00	0.39	0.09	0.03	0.00	0.05	0.02	0.05	0.00	0.00	0.00	9.28	91.17
3	0.04	0.00	1.10	0.00	0.11	0.00	0.04	0.11	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.41	77.68
4	0.00	0.00	0.01	0.95	0.07	0.00	0.00	0.09	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	1.14	83.43
5	0.19	0.12	0.31	0.75	3.68	0.00	0.00	0.63	0.07	0.00	0.02	0.02	0.00	0.17	0.00	0.00	0.00	5.95	61.81
6	0.00	0.00	0.00	0.00	0.00	0.04	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	52.31
7	0.20	0.07	0.11	0.07	0.18	0.09	11.40	0.68	0.40	1.50	0.29	0.31	0.04	0.11	0.00	0.51	0.07	16	71.25
8	0.24	0.19	0.04	0.29	0.15	0.01	0.29	5.32	0.52	0.10	0.08	0.03	0.03	0.22	0.00	0.00	0.01	7.5	70.93
9	0.03	0.18	0.00	0.08	0.05	0.20	0.46	1.22	4.76	0.20	0.05	0.36	0.00	0.51	0.00	0.00	0.00	8.08	58.93
10	0.06	0.01	0.00	0.01	0.05	0.08	0.84	0.28	0.29	6.36	0.00	0.51	0.03	0.10	0.00	0.27	0.01	8.9	71.47
11	0.01	0.00	0.00	0.00	0.01	0.00	0.08	0.04	0.08	0.01	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.73	67.86
12	0.01	0.01	0.01	0.02	0.05	0.02	0.07	0.06	0.17	0.43	0.02	7.06	0.07	0.44	0.00	0.00	0.01	8.44	83.64
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.38	0.01	0.00	0.00	0.00	0.42	89.23
14	0.00	0.13	0.02	0.09	0.06	0.02	0.07	0.43	0.45	0.17	0.00	0.23	0.02	2.64	0.00	0.01	0.01	4.35	60.78
15	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.17	0.00	0.00	0.00	0.00	10.02	0.00	0.00	10.36	96.72
16	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.00	0.00	0.14	0.00	0.05	0.00	0.00	0.00	12.77	0.09	13.37	95.5
17	0.02	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.02	0.00	0.02	0.00	0.02	0.00	0.00	0.00	1.02	1.13	90.62
total	2.89	9.19	1.65	2.38	4.82	0.47	13.75	9.48	6.89	9.12	1	8.64	0.6	4.29	10.02	13.55	1.24		
P Acc	72.57	92.1	66.34	39.97	76.31	7.82	82.9	56.1	69.1	69.72	49.32	81.71	62	61.65	100	94.23	82.75		

The values for the 17 IGBP classes and the row/column totals are area proportions in percentage (%). U Acc. and P Acc. are user's and producer's accuracies (%), respectively. The overall accuracy is $78.6 \pm 0.6\%$, which exceeded the 70% L1RD requirement.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
AST22 Validation Statistics and delivery to JSTAR and users	Sept-23	Sept-23		

Accomplishments / Events:

- Intensive Cal/Val for VIIRS SDR was conducted by the STAR VIIRS Cal/Val team during the NOAA-20 (N20) recovery from the SCP Reset anomaly on 9/29/2023: Based on VIIRS SDR team recommendation, N20 VIIRS SDR was approved for operational use starting at 20:45 UTC on 10/1/2023, after temperature of the cooled detectors return to nominal and stabilized
- Investigated IDPS impacts of the faster VIIRS scan rates for JPSS-3 and JPSS-4: identified 346 (out of about 14,300) JPSS-3 granules with 49 scans (instead of 48 or 47) appearing approximately every 55 minutes of operations, and then verified that ADL currently fails to process the 49-scan granules (while being able to process the 48-scan ones); created a new ADR for the scan rate issue; DRAT directed coordination with the EDR teams
- Delivered for deployment in the IDPS operations the 7th (out of 12) NOAA-21 (N21) VIIRS SDR DNB STRAY-LIGHT-CORRECTION LUT as well as the updated N21, N20 and Suomi NPP VIIRS SDR DNB DN0 and GAIN-RATIOS LUTs that were created based on data acquired around the new moon on 9/15/2023

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			

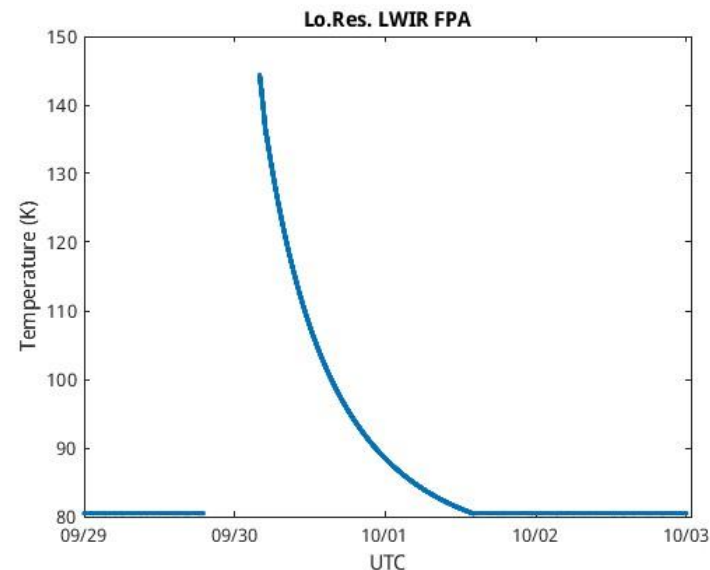
1. Project has completed.
2. Project is within budget, scope and on schedule.
3. Project has deviated slightly from the plan but should recover.
4. Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

J3/J4 VIIRS granule size change

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Monthly delivery of VIIRS DNB calibration LUTs	Sep-23	Sep-23	9/28/2023	
Geolocation monitoring using CPM (for NPP, N20 and N21)	Sep-23	Sep-23	9/30/2023	
N21 (J2) on-orbit calibration LUT development	Sep-23	Sep-23	9/28/2023	

Highlights:



NOAA-20 VIIRS longwave-infrared (LWIR) focal plane assembly (FPA) temperature throughout the satellite anomaly: the cooled detector temperature returned to nominal by 14:00 UTC on 10/1/2023

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
- Team has responded to frequent requests on data locations, file formats and product algorithms from users within and outside US. A new STAR VHP FTP webpage is built for users to access historical data files in Geo-TIFF format collaborating with STAR IT team
- Vegetation Health Products from NOAA-21 VIIRS observations has passed JPSS product provisional maturity review with preliminary qualitative and quantitative comparison with VHP of NOAA-20 and S-NPP VIIRS.

Overall Status:

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

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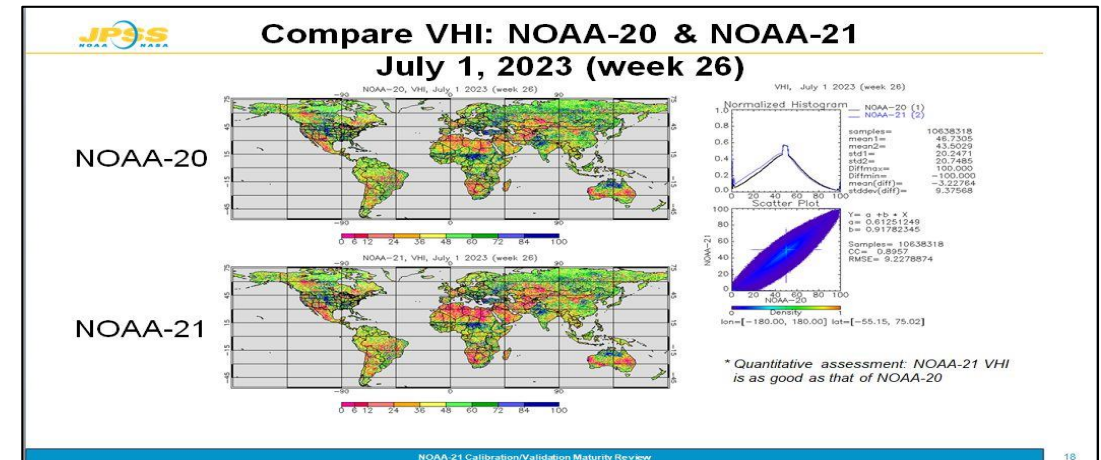
Issues/Risks:

None

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

Highlight:

The JPSS Algorithm Maturity Readiness Review Board approved the release of the JPSS **Vegetation Health Products** from NOAA-21 VIIRS to the public with a Provisional maturity level quality as of **03/31/2023** (effective date), based on JPSS Validation Maturity Review held on 9/28/2023



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 and JPSS-2 will continue as needed, including support for ASSISTT/NDE evaluations. VOLCAT is long-term plan.
- The Volcanic Ash science team continues to collect and analyze volcanic ash emissions as nature allows in preparation for the full maturity review, currently scheduled for early 2024. As of September the NOAA-21 cloud advection validation dataset now contains 57 cases (over 32,000 pixels), including a recent emission from Popocatepetl in Mexico from September 25, 2023. See the figure which depicts the ash cloud (using the Ash False Color RGB, left) and cloud advection pattern wind-height validation ash height errors for this case (median NOAA-21 VOLCAT ash height error in this case was 0.06 km (-0.21 km for NOAA-21 EDR, not shown)).
- VOLCAT VIIRS volcanic ash plume identification and extraction work is an enhancement to the VOLCAT methodology. This work was deprioritized during the second half FY23 in lieu of focus on NOAA-21 EDR/VOLCAT validation. This work will continue through much of FY24. Most recent progress toward this goal is the needed VOLCAT modifications have been made to enable output of VOLCAT metrics for missed detections and non-ash clouds. This will enable a full training database to be generated for ash and non-ash clouds for training the AI/ML methodology, including both detected and missed volcanic clouds by the current VOLCAT 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		VOLCAT enhancement (improved detection was deprioritized for validation work) will continue into much of FY24)

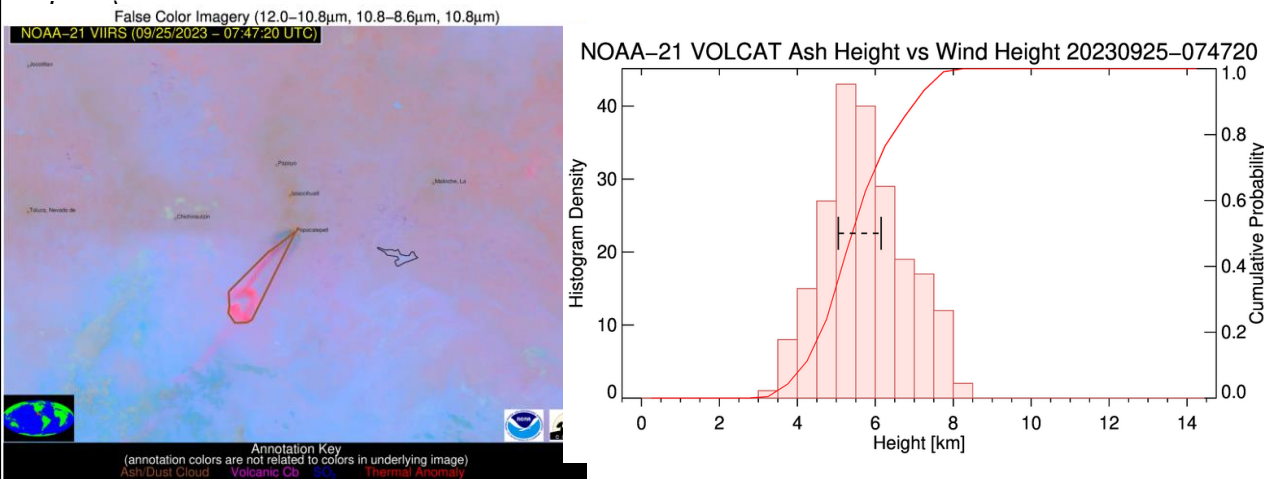
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3. Project has deviated slightly from the plan but should recover.
4. Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

We do not foresee this as a risk, but re-prioritization of needed work/timelines.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Improve VIIRS volcanic ash plume identification and extraction	Jun-23	Sep-23		See Overall Status and Bullets
NOAA-21 Volcanic Ash Beta Maturity	Sept-23	Aug-23	Aug-23	
NOAA-21 Volcanic Ash Provisional Maturity	Oct-23	Aug-23	Aug-23	
Maintain and monitor quality of volcanic ash EDR and JPSS-based products in VOLCAT	Sep-23	Sep-23	Sep-23	
NOAA-21 Volcanic Ash Full Maturity	Mar-24	Mar-24		

Highlights: NOAA-21 Ash RGB (left) with volcanic plume highlighted by brown polygon. Advection pattern wind-height errors for NOAA-21 VOLCAT ash height retrievals (right) for this case. The NOAA-21 VOLCAT (and EDR; not shown) ash height errors are very small and well within specifications (median ash height error for this case is 0.06 km—red bars represent VOLCAT ash retrievals and black line represents cloud advection truth height



Accomplishments / Events:

Verification of Test VIIRS Polar Winds (VPW) Generated by ASSISTT: ASSISTT is preparing Cloud Containerized Algorithm Packages (CCAP) for algorithm patches for the enterprise cloud height and winds algorithms. The STAR winds science team was asked to verify the quality of the VPW products generated by ASSISTT with these algorithm patches. The winds team completed its assessment of the test VPW products which includes comparisons to collocated radiosonde wind observations. Figure 1 shows comparisons of S-NPP (left) and NOAA-21 (right) test (blue) and operational (orange) VIIRS polar wind products to collocated radiosonde winds over the period Aug 22 – Sep 19, 2023. Vertical plots include the Mean Vector Difference (MVD), Standard Deviation (SRVD), and Speed Bias (SPDB). The quality of the test VPW winds is very good with improved performance observed over the operational VPW at mid and lower levels of the atmosphere.

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
Evaluation of VIIRS DNB winds and impact to NWP	Sep-2023	Sep-2023		
NOAA-21 VPW Beta Maturity	Nov-2023	Nov-2023		
NOAA-21 VPW Provisional Maturity	Jan-2024	Jan-2024		
NIOAA-21 VPW Validated Maturity	Mar-2024	Mar-2024		

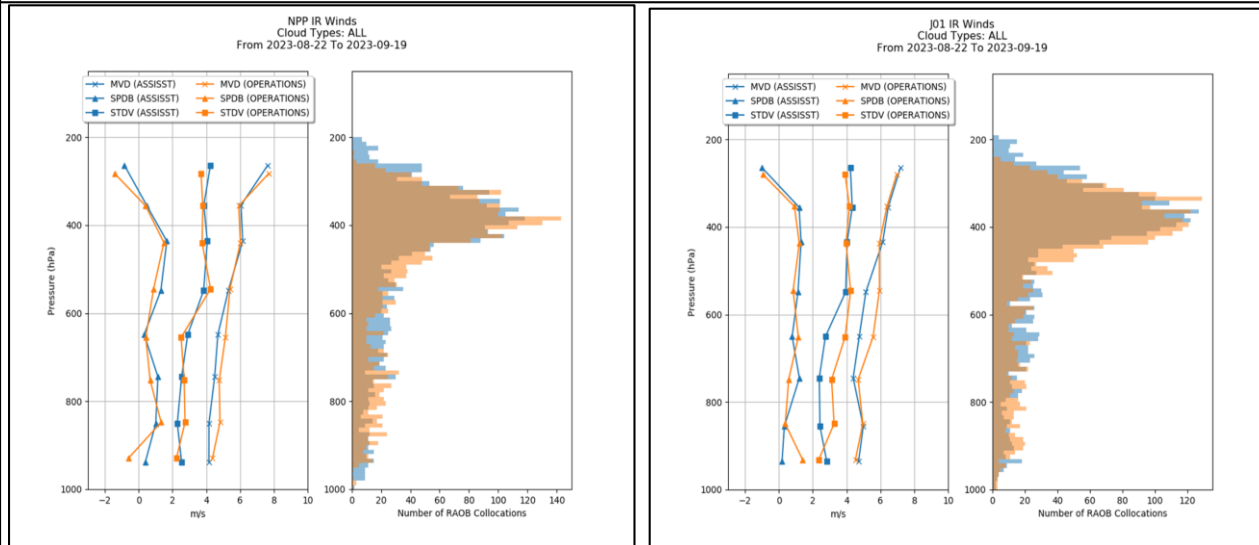


Figure 1: Comparisons of S-NPP (left) and NOAA-21 (right) test (blue) and operational (orange) VIIRS polar wind products to collocated radiosonde winds over the period Aug 22 – Sep 19, 2023. Vertical plots include the Mean Vector Difference (MVD), Standard Deviation (SRVD), and Speed Bias (SPDB)

	S-NPP	JPSS-1	JPSS-2
FY23	<ul style="list-style-type: none"> • Science maintenance/LTM/User engagement • Transition VIIRS SWIR and DNB (Near-Constant Contrast) winds from heritage to Enterprise algorithm in FW2.x (Nov 2022) • Feature tracking QC for VIIRS winds: Investigate scan angle diffs between successive orbits and impact on VIIRS winds quality; account for parallax (Jan 2023) • Transition VIIRS tandem “doublet” winds from heritage to Enterprise algorithm in FW2.x (Apr 2023) • Begin Transition of VIIRS tandem “triplet” winds to operations (if funded) (Jun 2023) • Transition of VIIRS SWIR wind type to the operational VIIRS wind product suite (Jul 2023) • Generate VIIRS SWIR, DNB, “doublet” tandem winds over a 1-2 month period for use in forecast impact experiments by NWP Centers (Jul 2023) • Evaluation of VIIRS DNB winds and impact to NWP (Sep 2023) 	<ul style="list-style-type: none"> • Science maintenance/LTM/User engagement • Transition VIIRS SWIR and DNB (Near-Constant Contrast) winds from heritage to Enterprise algorithm in FW2.x (Nov 2022) • Feature tracking QC for VIIRS winds: Investigate scan angle diffs between successive orbits and impact on VIIRS winds quality; account for parallax (Jan 2023) • Transition VIIRS tandem “doublet” winds from heritage to Enterprise algorithm in FW2.x (Apr 2023) • Begin Transition of VIIRS tandem “triplet” winds to operations (if funded) (Jun 2023) • Transition of VIIRS SWIR wind type to the operational VIIRS wind product suite (Jul 2023) • Generate VIIRS SWIR, DNB, “doublet” tandem winds over a 1-2 month period for use in forecast impact experiments by NWP Centers (Jul 2023) • Evaluation of VIIRS DNB winds and impact to NWP (Sep 2023) 	<ul style="list-style-type: none"> • Begin post-launch checkout of JPSS-2 winds, with comparisons to radiosondes, NOAA-20, and S-NPP winds. (Dec 2022) • Support J2 user readiness activities • Support J2 Winds Beta Product Maturity Review (Aug 2023)

Accomplishments / Events:

NO SEPTEMBER UPDATE

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
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		

Ocean Color Image from

<https://www.star.nesdis.noaa.gov/socd/mecb/color/ocview/ocview.html>

