



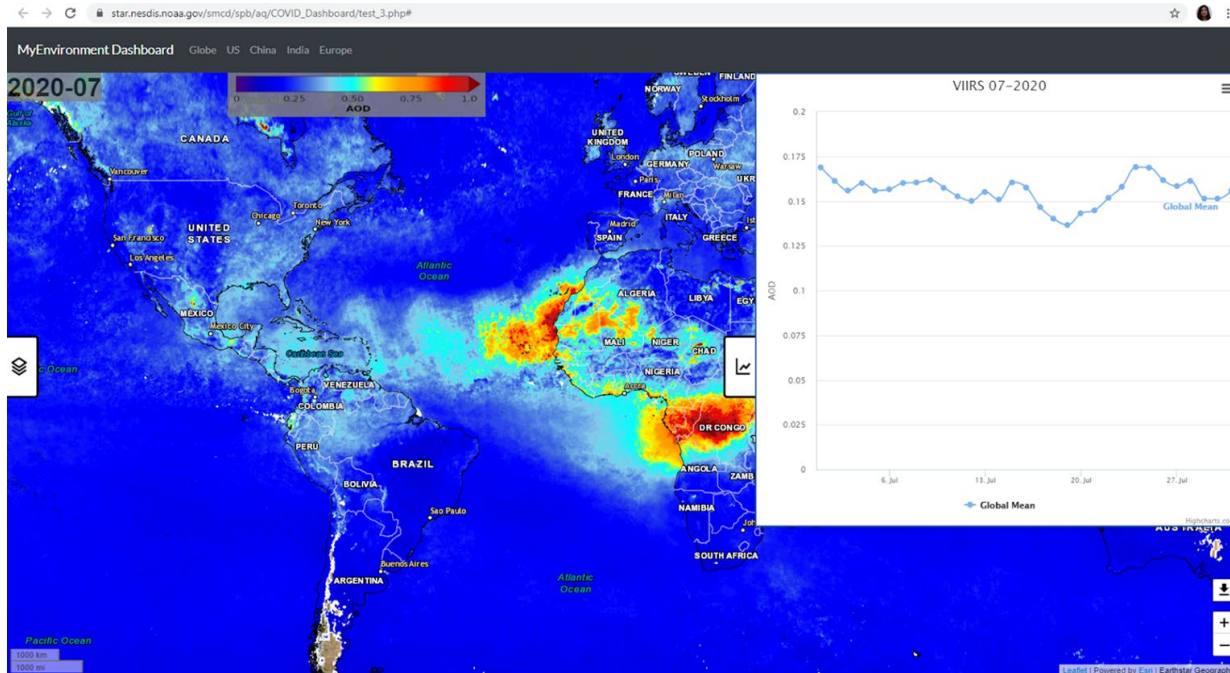
NOAA JPSS Monthly Program Office

AMP/STAR FY20 TTA

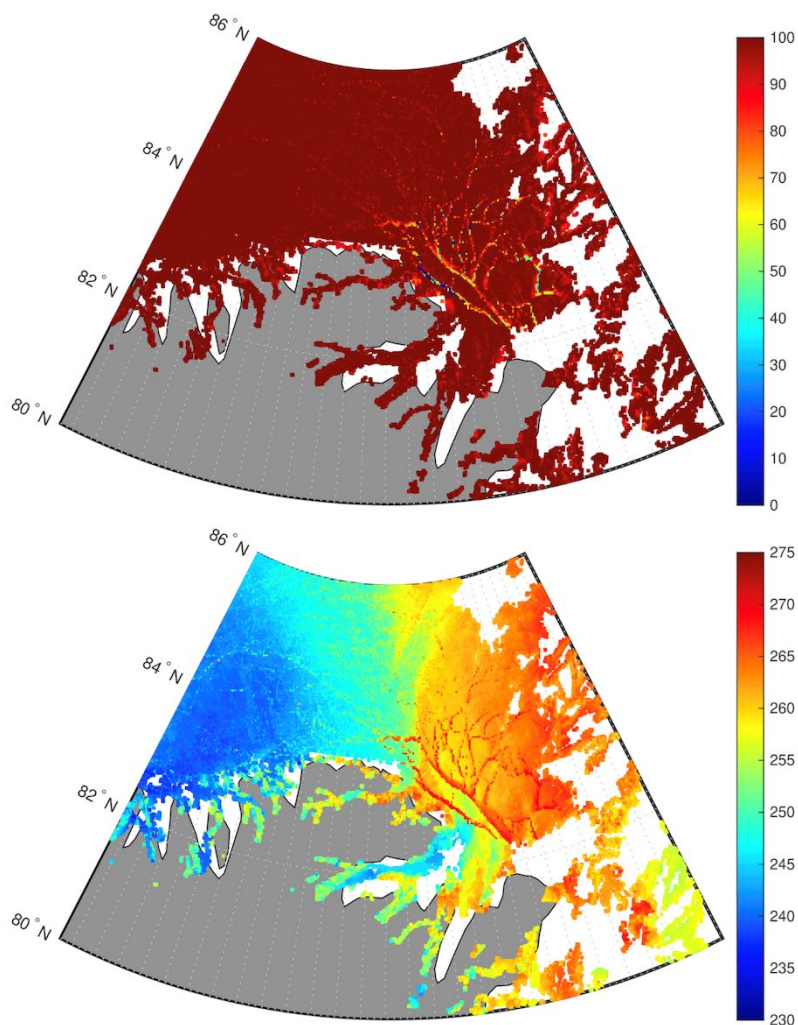
Lihang Zhou, DPMS Deputy
Bonnie Reed, Algorithm Sustainment Lead
Alisa Young, AMP Deputy for Science
& JPSS STAR Program Manager

March 15, 2021

Aerosol team completes draft of MyEnvironment website



The aerosol team has completed the development of a preliminary version of *MyEnvironment* dashboard that displays monthly means of SNPP VIIRS aerosol optical depth product and OMPS nitrogen dioxide product. The site has features that will allow the user to compare and contrast products from different time periods and also generate time series of products for different regions or urban locations across the globe. A screenshot of the dashboard is shown below depicting the aerosol optical depth for July 2020 and the time series of global mean. The dashboard will eventually have the entire Suomi NPP and NOAA-20 aerosol optical depth and nitrogen dioxide products after the reprocessing is completed. Currently we have access to the entire sensor data records, courtesy of the calibration team. We have begun the reprocessing efforts and soon as it is completed, we will update the dashboard.



VIIRS 375-meter High-Resolution Warm Intrusion into the Arctic

The VIIRS Image Bands (I-bands) can be utilized to increase the resolution of the VIIRS ice products from 750 to 375 m resolution. On 19 Feb 2021, a warm intrusion into the Arctic north/northeast of Greenland was observed from VIIRS Ice Surface Temperature (IST). Utilizing the I-bands we can derive Ice Concentration (SIC) and IST at twice the resolution of the M-band products.

We show in the figure that the I-band SIC and IST from 12:35 to 12:40 UTC over the region of interest indicated in Figure 1. In Figure 2, the 375-meter I-band SIC product can detect leads (fractures), both large and small, associated with lower SIC, while the IST product illustrates the detail of the much warmer ice within leads, which is approaching the melting point. Noteworthy in this case is the large temperature gradient from warm (right) to cold (left), estimated to be about 20 K over 160 km.

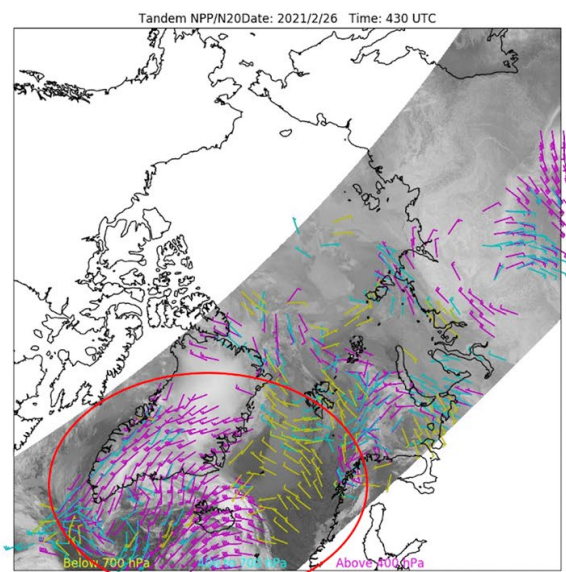
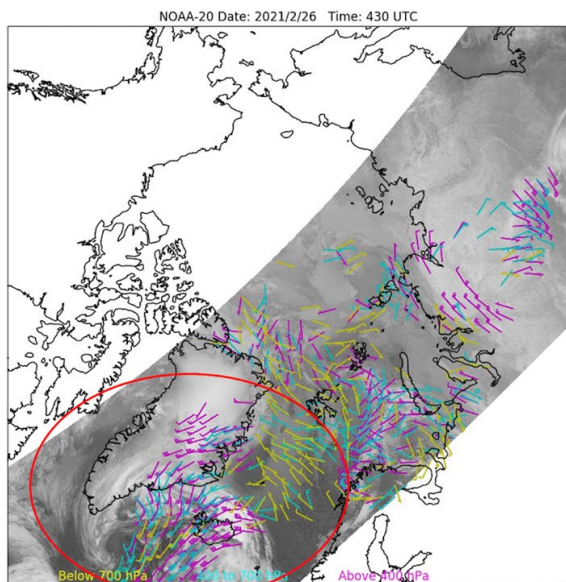
375 m resolution (I-band) Sea Ice Concentration (top) and Ice Surface Temperature (bottom) over the Arctic Ocean north of Greenland on 19 February 2021.

Tandem JPSS Winds Product Shows Enhanced Coverage

As of February 2021, the polar winds team at CIMSS is routinely generating the “tandem” NOAA-20/S-NPP atmospheric motion vector (AMV) product within the Enterprise Framework environment. This provides cloud motion wind observations over both the Arctic and Antarctic in near real-time. Quicklook imagery is available at the [Real-time Polar Winds from MODIS and AVHRR \(wisc.edu\)](https://wisc.edu) website.

In the case study shown in the figure is a strong jet stream exit region of 40-50 knots pushing over Iceland at upper-levels (above 400 hPa) that is indicated by the magenta vectors. The tandem winds provide enhanced spatial coverage, in this case over West Greenland, the Labrador Sea, and south of Iceland in the anticyclonic part of the jet exit region. The greater coverage of the JPSS tandem AMV product is due to the greater overlap areas of preceding and succeeding S-NPP and NOAA-20, and the shorter time interval between them (50.5 versus 101 minutes). This demonstrates the ability of the experimental product to provide additional wind information that can be assimilated into global weather forecast models and downstream potential to make the weather models more accurate in forecasting atmospheric flow.

Figure: AMVs for the same date and time on 26 Feb 2021 at 0430 UTC over the Arctic and North Atlantic. Top: AMVs from NOAA-20 only. Bottom: AMVs from successive NOAA-20 and S-NPP overpasses. The area of interest is indicated by the red circle. Yellow AMVs are below 700 hPa; cyan are 400-700 hPa; and magenta are above 400 hPa.



Accomplishments

- **Delivery Algorithm Packages (DAPs) - Mission Unique Products:**
 - 1/28/2021: VIIRS SDR DAP (ADR9526/CCR5361: NOAA-20 VIIRS DNB LGS-GAINS LUT #6 - Fast Track update) delivered to DPMS
 - 2/5/2021: JPSS-2 ATMS PCT Initial Submission (ADR9393/CCR5198) re-delivered to DPMS (to IDPS Cloud)
 - 2/8/2021: JPSS-2 CrIS PCT Initial Submission (ADR9415/CCR5213) re-delivered to DPMS (to IDPS Cloud)
 - 2/10/2021: JPSS-2 VIIRS LUTs Initial Submission (ADR8821/CCR5114) re-delivered to DPMS (to IDPS Cloud)
 - 1/14/2021: OMPS SDR team delivered Solar Intrusion Correction DAP to ASSISTT team
 - 2/18/2021: OMPS SDR Solar Intrusion Correction DAP (ADR9309/CCR5364, NOAA-20 OMPS NP In-Band Stray Light) delivered to DPMS
 - 2/18/2021: OMPS SDR team delivered J2 code & LUTs (ADR9095 & ADR9501) DAP package to ASSISTT team
- **DAPs – Enterprise Products:**
 - 2/11/2021: OMPS Limb Profile delta delivery DAP delivered to NDE
 - 2/12/2021: NUCAPS CO2 delta review - RFA Responses to NUCAPS CO2 Validated Maturity Science Review
 - 2/18/2021: NUCAPS team submitted updated ReadMe files for NUCAPS CO2 Validated Maturity Review
 - 2/26/2021: STAR delivered HEAP (NUCAPS) J01/NPP Maintenance DAP and Initial J2 DAP to NDE
- **IDPS Builds Checkouts:**
 - 2/26/2021: JSTAR submitted report for Block 2.3 Mx1 SOL Deploy Regression review/checkout to DPMS/RTN/OSPO
 - STAR SDR/Imagery teams reviewed/checked IDPS Blocak2.3 Mx1 I&T Deploy Regression test data files. Provided "Go" recommendation for the Mx1 I&T. Will provide summary report by 3/11/2021.
- All final J2/Enterprise Cal/Val Plans have been submitted (for all SDR/EDR products)

Accomplishments – JPSS Cal Val Supports

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

S-NPP	Weekly OMPS TC/NP Dark Table Updates	01/26/21, 02/02/21, 02/09/21, 02/16/21, 02/23/21
NOAA-20	Weekly OMPS TC/NP Dark Table Updates	01/26/21, 02/02/21, 02/09/21, 02/16/21, 02/23/21
S-NPP	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	01/26/21, 02/09/21, 02/23/21
NOAA-20	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	02/02/21, 02/16/21
S-NPP	Monthly VIIRS LUT Update of DNB Offsets and Gains	02/17/21
NOAA-20	Monthly VIIRS LUT Update of DNB Offsets and Gains	02/17/21

- *2/4/2021: IDPS Block 2.3 Mx0 TTO:*
 - ATMS lunar intrusion correction algorithm (ADR9035/CCR4985), and VIIRS SDR Geolocation Algorithm Correction (ADR9171/CCR4846) operational
- *VIIRS Surface Type team delivered VIIRS 2019 Global Gridded Annual Surface Type product.* The new product is ready for users to download at STAR JPSS website: <https://www.star.nesdis.noaa.gov/jpss/>. There are three product packages (each package includes three files: Readme; 8-bit binary file for the global map; ENVI header providing important meta data info):
 - [2019 AST IGBP types in Sinusoidal projection](#)
 - [2019 AST IGBP types in Lat/Long](#)
 - [2019 AST 20 types in Lat/Long](#)

Upcoming Cal/Val Maturity Reviews

- May, 2021 Maturity Review (dry run in April):
 - Full Validated Maturity:
 - OMPS NP Ozone EDR (V8Pro)

Upcoming Milestones/Deliveries

- JSTAR Code/LUT/Product Deliveries:

DAP to DPES:

- Mar-21: OMPS J2 code (high res OMPS TC) & initial J2 LUTs DAP to DPMS

NOAA-20 Algorithm DAP to NDE/CoastWatch:

- Mar-21: Initial J2 DAP (JRR/VPW/LST/LSA, include NPP/N20 updates)
- Mar-21: Initial J2 DAP (Surface Reflectance, include NPP/N20 updates)
- Mar-21: Initial J2 DAP (NVPS: VI/GVF, include NPP/N20 updates)
- Mar-21: Initial J2 DAP (V8TOz, include NPP/N20 updates)
- Mar-21: Initial J2 DAP (MiRS/SFR, include NPP/N20 updates)
- Apr-20: Vegetation Health – Final N20 / initial J2 DAP
- May-21: Initial J2 DAP (SST, include NPP/N20 updates)



FY21 STAR JPSS Milestones

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Algorithm Updates DAPs				
ATMS: Final J2 PCT/MM-coef DAP	Sep-21	Sep-21		
CrIS: Initial J2 PCT DAP	Oct-20	Oct-20	10/16/20	
CrIS: Final J2 PCT/MM-coef DAP	Jul-21	Jul-21		
VIIRS: Final J2 Launch-ready LUTs/MM-coef DAP	Sep-21	Sep-21		To ASSISTT
OMPS: Initial J2 Launch-ready LUTs DAP (<u>combined code & LUT DAPs, ADR9095 & ADR9501</u>)	Jan-21	Mar-21		12/28/20 DAP to ASSISTT
Imagery: N20 NCC LUT update DAP	Jul-21	Jul-21		
Initial J2 ready DAP (include NPP/N20 updates), Clouds/Aerosol/VolcanicAsh/Cryosphere/LST/LSA/VPW	Jan-21	Mar-21		downstream data testing
Initial Enterprise Fires DAP (NPP/N20/J2, I/M-Band)	Jun-21	Jun-21		
Surface Reflectance: Initial J2 ready DAP	Jan-21	Mar-21		Same as JRR
NVPS (VI & GVF): Initial J2 ready DAP	Feb-21	Apr-21		Data testing
Vegetation Health: Initial J2 ready/final N20 DAP	Apr-21	Apr-21		
SST: Initial J2 ready DAP (ACSPO 2.80)	Apr-21	May-21		Cloud deliveries
NUCAPS: Initial J2 ready DAP	Apr-21	Apr-21	02/26/21	
MiRS & SFR: Initial J2 ready DAP	Mar-21	Mar-21		
OMPS Ozone V8Pro: Initial J2 ready DAP	Dec-20	Dec-20	12/31/20	
OMPS Ozone V8TOz: Initial J2 ready DAP	Mar-21	Mar-21		11/25/20 DAP to ASSISTT

FY21 STAR JPSS Milestones

Milestones	Original Date	Forecast Date	Actual Date	Variance Explanation
Algorithm Cal/Val/LTM				
J2/Enterprise Cal/Val Plan - final delivery (all SDR/EDR products)	Dec-20	Dec-20	12/31/20	
GCOM: AMSR-3 Cal/Val Plan - draft delivery	Sep-21	Sep-21		
Updated JPSS-2 OMPS SDRs Pre-launch Characterization Report	May-21	May-21		
JCT2 - Data System Event (SDR teams, test/run through RDRs from JCT2-DSE, generate J2 SDRs)	Aug-21	Aug-21		
NUCAPS CO2 Full Validated Maturity (N20 & NPP)	Dec-20	Dec-20	12/17/20	
N20 OMPS NP EDR (V8Pro) Full Validated Maturity	May-21	May-21		Dry run: Apr-21
Transition of reprocessed SNPP SDR data to CLASS/NCEI	Sep-21	Sep-21		
JPSS-2 ICVS-LTM Test Readiness Review	Sep-21	Sep-21		
ICVS-J2 prototype Website (ready for JCT-3 test run)	Sep-21	Sep-21		
Maintain / expand existing EDR LTM web pages and mappers	Sep-21	Sep-21		
Delivery of JPSS Product Monitoring Phase 9 DAP to OSPO	Sep-21	Sep-21		
AST-2020 (VIIRS Annual Surface Type)	Sep-21	Sep-21		



FY21 STAR JPSS Milestones

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Operational/Program Support				
S-NPP: Weekly OMPS TC/NP Dark Table Updates	Weekly	Weekly	10/06/20, 10/13/20, 10/20/20, 10/27/20, 11/03/20, 11/10/20, 11/17/20, 11/24/20, 12/01/20, 12/08/20, 12/15/20, 12/22/20, 01/05/21, 01/12/21, 01/19/21, 01/26/21, 02/02/21, 02/09/21, 02/16/21, 02/23/21	
S-NPP: Bi-Weekly OMPS NP Wavelength & Solar Flux	Bi-Weekly	Bi-Weekly	10/06/20, 10/20/20, 11/03/20, 11/17/20, 12/01/20, 12/15/20, 01/12/21, 01/26/21, 02/09/21, 02/23/21	
S-NPP: Monthly VIIRS LUT update of DNB Offsets and Gains	Monthly	Monthly	10/21/20, 11/24/20, 12/22/20, 01/19/21, 02/17/21	
NOAA-20: Weekly OMPS TC/NP Dark Table Updates	Weekly	Weekly	10/06/20, 10/13/20, 10/20/20, 10/27/20, 11/03/20, 11/10/20, 11/17/20, 11/24/20, 12/01/20, 12/08/20, 12/15/20, 12/22/20, 01/05/21, 01/12/21, 01/19/21, 01/26/21, 02/02/21, 02/09/21, 02/16/21, 02/23/21	
NOAA-20: Bi-Weekly OMPS NP Wavelength & Solar Flux	Bi-Weekly	Bi-Weekly	10/13/20, 10/27/20, 11/10/20, 11/24/20, 12/08/20, 12/22/20, 01/05/21, 01/19/21, 02/02/21, 02/16/21	
NOAA-20: Monthly VIIRS LUT update of DNB Offsets and Gains	Monthly	Monthly	10/21/20, 11/24/20, 12/22/20, 01/19/21, 02/17/21	
Block 2.3 Mx builds I&T deploy regression data review/checkout (Nov-20 Mx0 ; Mar-21 Mx1; Apr-21 Mx2; Jun-21 Mx3; Jul-21 Mx4; Sep-21 Mx5)	Sep-21	Sep-21	11/24/20 Mx0 I&T review/checkout report 12/10/20 updated Mx0 I&T review/checkout report 03/26/21: Mx1 SOL review/checkout report	
Parallel OPS support	Dec-20 Jan-21	Dec-20 Jan-21	11/6/2020 - 12/4/2020: daily POC support, weekly/monthly DAP deliveries (to both OPS & Cloud) 1/11/2021 – 1/21/2021 daily reports	
Verification of cloud implementation	Dec-20	Dec-20	11/06/20 - 12/04/20 daily reports 12/10/20 Mx0 I&T review/checkout report	

STAR JPSS Schedule

STAR JPSS Schedule: TTA Milestones

Task	2020												2021											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
ATMS SDR/TDR			■	◆		▼	▲	▲	▲	■	▼	▲	■	■	■	■	■	■	■	■	■	■	■	
CrIS SDR	■		■	◆	▼	■	▲	▲	▲	■	▼	▲	■	■	■	■	■	■	■	■	■	■	■	
VIIRS SDR			■	■	▼	■	◆	▲	▲	■	▼	▲	■	■	■	■	■	■	■	■	■	■	■	
OMPS SDR			■	■	◆	▼	▲	▲	▲	■	▼	▲	■	■	■	■	■	■	■	■	■	■	■	
Imagery EDR			■		■					■	▼	▲	■	■	■	■	■	■	■	■	■	■	■	
Sea Surface Temperature						▼		◆				▼					◆			◆			◆	
Ocean Color						▼	■					▼		▼									◆	
OMPS Ozone (TC: V8TOz)					▼		◆				◆	▼				◆		◆					◆	
OMPS Ozone (NP: V8Pro)			◆		▼		◆					▼						◆		◆			◆	
Aerosol Optical Depth (AOD)				◆		▼		◆	◆			▼				◆	◆						◆	
Aerosol Detection (ADP)				◆			▼	◆	◆			▼				◆	◆						◆	
Volcanic Ash (VolAsh)				◆		▼		◆	◆			▼				◆	◆						◆	
Cloud Mask				◆		▼		◆	◆			▼				◆	◆						◆	
Cloud Properties				◆		▼		◆	◆			▼				◆	◆						◆	
Ice Surface Temperature				◆		▼		◆	◆			▼				◆	◆						◆	
Sea Ice (Age/Concentration)				◆		▼		◆	◆			▼				◆	◆						◆	
Snow Cover				◆		▼	■	◆	◆			▼				◆	◆						◆	
Active Fires	■	◆				▼	◆	◆			◆	▼				◆		◆		◆		◆	◆	
Surface Reflectance						▼	◆					▼				◆		◆				◆	◆	
Surface Albedo				◆		▼		◆	◆			▼				◆	◆						◆	
Land Surface Temperature				◆		▼		◆	◆			▼				◆	◆						◆	
Vegetation Indices				■		▼	◆					▼				◆		◆					◆	
Green Vegetation Fraction				■		▼	◆					▼				◆		◆					◆	
Vegetation Health						▼	◆					▼				◆		◆					◆	
Annual Surface Type						▼		■	◆			▼				◆		◆			◆		◆	
NUCAPS			◆	■		▼	◆					▼	■	■	■	■	■	■	■	■	■	■	■	
MIRS				◆	▼		◆					▼				◆		◆		◆		◆	◆	
Snow Fall Rate (SFR)				◆		▼	◆					▼	■	■	■	■	■	■	■	■	■	■	■	
VIIRS Polar Winds				◆		▼						▼				◆	◆						◆	
GCOM									◆				◆								▼	◆	◆	

■ MxCk
 ■ JCT
 ■ Val
 ◆ iDAP
 ◆ fDAP
 ◆ mDAP
 ▲ Report
 ▲ Algo
 ▲ iLUT
 ▲ fLUT/MM
 ▼ iCVplan
 ▼ fCVplan

Color code:

Green:

Completed Milestones

Gray:

Non-FY21 Milestones

Accomplishments / Events:

- Discussed the ATMS science data quality flag setting in current operational data and proposed the optimal usage method for end users
- Processed NOAA-20 and S-NPP operational data and reprocessing data vs. RO profile simulation match-up data and generated time series plots to support ATMS science data quality assessment paper manuscript
- Discussed the potential root cause of the systematic bias between NOAA-20 and S-NPP ATMS science data. Proposed the analysis steps to revisit current calibration algorithm, nonlinearity coefficients generation from TVAC data, impact of SRF measurements, and contamination of cold calibration targets.
- Reprocessed lifetime S-NPP ATMS RTM simulation using ECMWF forecast data as background using the same CRTM version as NOAA-20 ATMS so as to improve the science data inter-satellite comparison accuracy
- Kept developing ATMS SDR User's Guide document
- Finished the ATMS science data quality journal article initial draft and distributed to the ATMS cal/val team members for comments and revisions

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.

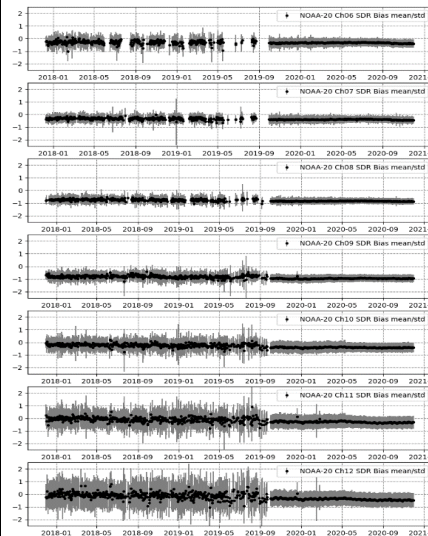
Issues/Risks:

None

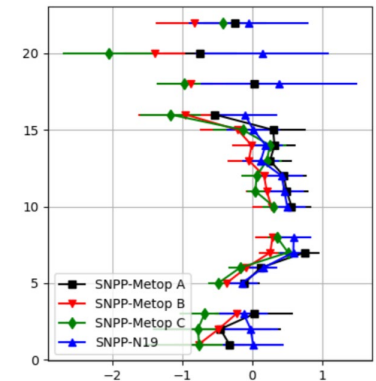
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/31/20	
Initial J2 PCT update: re-delivery			02/05/21	
Final J2 PCT update, including Mounting Matrix Coefficients update based on the pre-launch mounting measurement report	Aug-21	Aug-21		SER + 6w (to ASSISTT)
Final J2 PCT/MM-coef delivery	Sep-21	Sep-21		To DPMS
JCT2 - Data System Event	Aug-21	Aug-21		
Update ATMS TDR antenna pattern correction coefficients to improve SDR data quality	Jun-21	Jun-21		
Evaluate JPSS-2 ATMS spacecraft pre-launch testing data	Sep-21	Sep-21		
Support NASA SNPP ATMS scan motor current anomaly analysis	May-21	May-21		
Reprocess NPP/NOAA-20 ATMS science data using latest calibration algorithm	Sep-21	Sep-21		
Annual ATMS TDR/SDR performance report	Sep-21	Sep-21		
Parallel OPS support	Dec-20	Dec-20	Dec-20 Jan-21	11/6-12/4/20 1/11-21/21
Verification of cloud implementation	Dec-20	Dec-20	Dec-20	Report
IDPS Mx build I&T deploy support:				
Block 2.3 Mx builds I&T deploy regression data review/checkout (Nov-20 Mx0; Mar-21 Mx1; Apr-21 Mx2; Jun-21 Mx3; Jul-21 Mx4; Sep-21 Mx5)	Sep-21	Sep-21	11/09/20 Mx0 I&T 02/16/21 Mx1 SOL 03/03/21 Mx1 I&T	Report

Highlights:

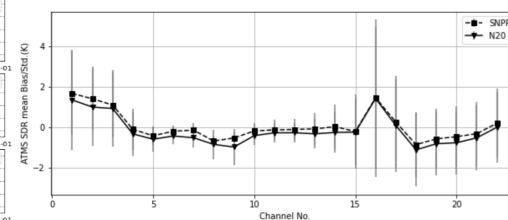
NOAA-20 vs. RO matchup profiles mean and standard deviation of O-B Tb results



S-NPP vs. AMSU SNO matchup bias



S-NPP and N20 NWP global mean bias for nadir FOVs



Accomplishments / Events:

- Updated the spectral assessment results by including the histograms of spectral absolute shift at per-spectrum level (Fig. 1). Discovered an unexpected bi-modal distribution pattern for FOVs 1&4 for S-NPP CrIS. Confirmed the two modes correspond to two FORs #15 and #16 used in the spectral shift assessment.
- Completed the computation of the J2 Nonlinearity Coefficients using the Diagnostic Mode method. Confirmed that results obtained at NOAA/STAR are consistent with those found at the University of Wisconsin (Fig. 2). Results are also consistent with the coefficients derived using the ECT stepped temperature method.
- Prepared the final radiometric assessment of the Metop-C IASI reconstructed radiances. The source of the large bias in the Band 3 residuals between the observed and reconstructed radiances in the region from 2252 to 2384.75 cm⁻¹, (Fig. 3), was traced to the characteristically small magnitude of the radiance observed in this region, particularly for cold fields of view in the southern hemisphere at night.
- Finished supporting the 10-Day Parallel OPS Cloud Test. The Cloud B2.3 Mx0 review and checkout continued until 01/21/2021. Between 01/15/2021 and 01/20/2021, the assessment of the CrIS SDR data quality between the Cloud and On-Prem IDPS was performed using 8 hours of SDR products every day. There was no quality issues found for the Cloud NOAA-20 and S-NPP CrIS SDR products. The B2.3 TTO occurred on 02/04/2021.

Overall Status:

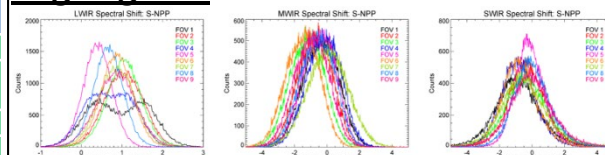
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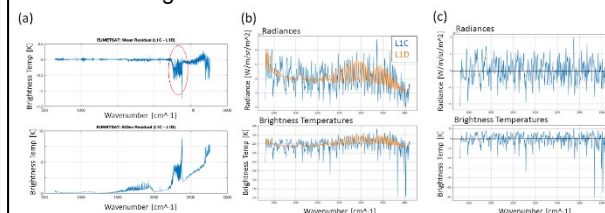
Issues/Risks:

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/23/20	
Initial J2 PCT update based on pre-launch test data and other changes	Oct-20	Oct-20	10/16/20	
Initial J2 PCT update: re-delivery			02/08/21	
Verification of operational CrIS SDR data at FSR after the termination of NSR data			11/06/20	
Final J2 PCT update, including Mounting Matrix Coefficients update based on the pre-launch mounting measurement report	Jun-21	Jun-21		SER + 6w (to ASSISTT)
Final J2 PCT/MM-coef delivery	Jul-21	Jul-21		To DPMS
JCT2 - Data System Event	Aug-21	Aug-21		
Inter-sensor comparison: S-NPP and NOAA-20 CrIS SDR data against other IR observations, including MetOp/IASI, AQUA/AIRS and GOES/ABI	Sep-21	Sep-21		Report
Annual CrIS SDR performance report	Sep-21	Sep-21		
Parallel OPS support	Dec-20	Dec-20	Dec-20 Jan-21	11/6-12/4/20 1/11-21/21
Verification of cloud implementation	Dec-20	Dec-20	Dec-20	Report
IDPS Mx build I&T deploy support:				
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Highlights:

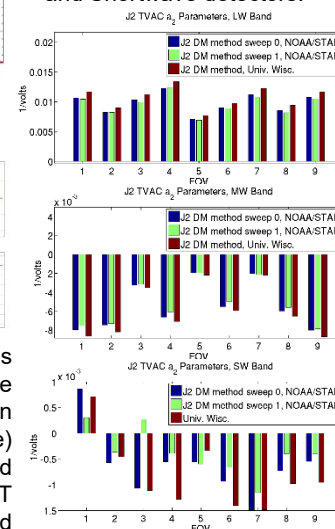


(1) The distributions of the S-NPP CrIS spectral shift calculated using CRTM modeled radiance as a reference.



(2) (a) The mean and standard deviation of the BT residuals between the observed IASI-C L1C spectrum and the reconstructed L1D spectrum for April 30, 2020. (b) An example of the observed (blue) and reconstructed (orange) spectra in the region from 2252 to 2384.75 cm⁻¹ for a cold FOV in the southern hemisphere in radiance space and BT space. (c) The residuals between the observed and reconstructed spectrum.

(2) J2 Nonlinearity Coefficients derived using the Diagnostic Mode method for the Longwave, Midwave, and Shortwave detectors.



Accomplishments / Events:

- Verified return of the NOAA-20 VIIRS SDR products to nominal after recovery from the rotating telescope on-orbit anomaly on 2/14/2021
- Created and delivered for deployment in the IDPS operations updated NOAA-20 and S-NPP DNB offset and gain ratios LUTs generated using new moon calibration data from 2/11/2021 as well as the NOAA-20 DNB LGS gains LUT that reduces striping in certain aggregation zones
- Successfully implemented the on-demand S-NPP VIIRS SDR reprocessing function at Amazon Web Services for the STAR COVID-19 project through collaboration with the NCIS and AIT teams
- Analyzed lunar calibration data from the NOAA-20 and S-NPP roll maneuvers on 1/24/2021 and observed consistent 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			

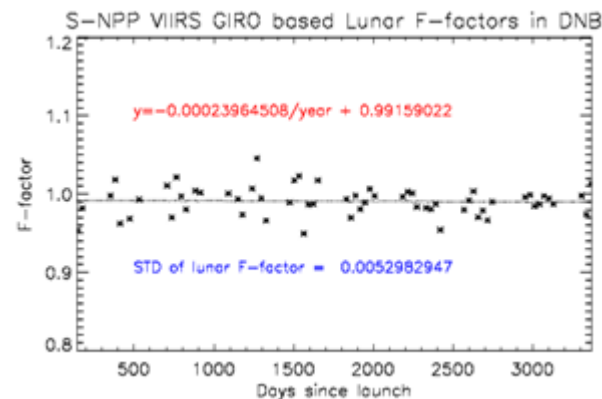
1. Project has completed.
2. Project is within budget, scope and on schedule.
3. Project has deviated slightly from the plan but should recover.
4. Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

none

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/23/20	
Initial J2 LUTs: re-delivery			02/10/21	
Launch-ready J2 LUTs (final delivery), including Mounting Matrix Coefficients update based on the pre-launch mounting measurement report	Sep-21	Sep-21		SER + 6w (to ASSISTT)
Launch-ready J2 LUTs (final delivery)/MM-coeff.	Oct-21	Oct-21		To DPMS
JCT2 - Data System Event	Aug-21	Aug-21		
Cal/Val tool testing/upgrade in the cloud computing environment	Sep-21	Sep-21		
Generate Science Quality (SQv2.0) Suomi NPP VIIRS SDR from 2017 onward to meet user needs (COVID-19, TROPOMI)	Dec-20	Jan-21	01/31/21	Hardware failure/repair
Initial NOAA-20 VIIRS recalibration & reprocessing	Sep-21	Sep-21		
Cross-calibration and monitoring between NOAA-20 and SNPP VIIRS	Sep-21	Sep-21		
Annual VIIRS SDR performance report	Sep-21	Sep-21		
N20 DNB LGS-GAINS LUT #6 update (ADR9526)			01/28/21	
VIIRS LUT update of DNB Offsets and Gains	Monthly	Monthly	On schedule	NPP & N20
Parallel OPS support	Dec-20	Dec-20	Dec-20 Jan-21	11/6-12/4/20 1/11-2/1/21
Verification of cloud implementation	Dec-20	Dec-20	Dec-20	Report
IDPS Mx build I&T deploy support:				
Block 2.3 Mx builds I&T deploy regression data review/checkout (Nov-20 Mx0; Mar-21 Mx1; Apr-21 Mx2; Jun-21 Mx3; Jul-21 Mx4; Sep-21 Mx5)	Sep-21	Sep-21	11/20/20 Mx0 I&T 02/17/21 Mx1 SOL 03/08/21 Mx1 I&T	Report

Highlights:



Suomi NPP VIIRS DNB lunar F-factor trend over 9+ years of the satellite on-orbit operations using the updated RTA degradation model that validates stability of the current NPP DNB calibration

Accomplishments / Events:

- Delivered the J02 OMPS ADL code (DR9505) with DR9309 solar intrusion to the ASSITT.
- Delivered OMPS weekly Dark tables and NP solar irradiance bi-weekly LUTs to the ASSITT.
- Further improved SNPP and NOAA-20 NM Field Angle Map (FAM) LUTs.
- Verified the initial version of all J2 OMPS NP/NM LUTs by implementing them into J2 ADL (in progress).
- Analyzed the most recent OMPS NP solar flux degradation data to support the OMPS EDR team's analysis.
- Examined scalar and vector CRTM radiance differences for multiple different solar zenith angles across all observed wavelength channels. A non-negligible impact at wavelengths from 300 to 310 nm is observed
- Investigated the inconsistency issue regarding the SNPP and NOAA-20 NP SDR data at wavelengths from 300 through 310 nm. A series of analyses are in a god progress.
- Completed the source code in matlab for SNPP/NOAA-20 NP dark count delivery,
- Tried to recover the tool from OMPS RDR to L1B processing to prepare for the inputs to the OMPS NM/NP dark and solar flux algorithm code.
- Reviewed the PCA legacy code and reference to develop the algorithm for reconstructing OMPS SDR data using a noise-reduction PCA algorithm.
- Coordinated with Dr. Likun Wang (UMD CISESS) to develop a monitoring tool for SNPP and NOAA-20 NM geolocation error assessment.

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.

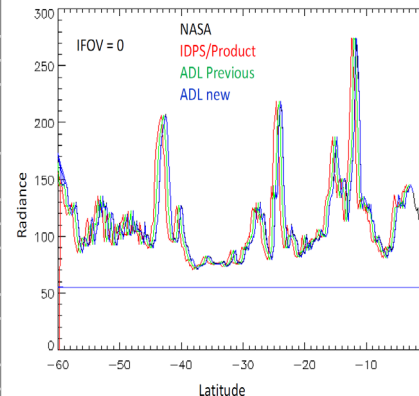
Issues/Risks:

None

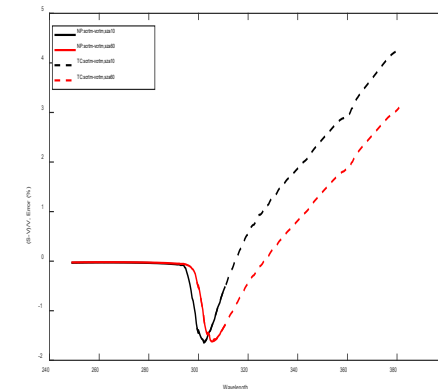
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/18/20	
Updated JPSS-2 OMPS SDRs Pre-launch Characterization Report	May-21	May-21		
Launch-ready J2 LUTs (initial delivery), to ASSITT	Dec-20	Dec-20	12/28/20	To ASSITT
Launch-ready J2 LUTs (initial delivery), to DPMS	Jan-21	Mar-21		B2.3 Mx0 TTO
Launch-ready J2 LUTs (final delivery), including Mounting Matrix Coefficients (PCT) updates based on the pre-launch mounting measurement report	FY22	FY22		Dec-21 To ASSITT; Jan 22 to DPMS
J2 NM/NP dark and solar raw flux processing package preparation	Sep-21	Sep-21		
J2 NM backup spatial resolution code development	Sep-21	Sep-21		
JCT2 - Data System Event	Aug-21	Aug-21		
OMPS RDR to Level 1B processing code in preparation for J2	Sep-21	Sep-21		
NOAA-20 OMPS NP In-Band Stray Light (ADR9309)	Mar-21	Mar-21	02/08/21	1/14/21 to ASSITT
SNPP/NOAA-20 NM off-nadir geolocation error correction LUTs (ADR9361)	Mar-21	Mar-21		Est: 02/26/2021 to ASSITT
Annual OMPS SDR performance report	Sep-21	Sep-21		
Weekly updates darks for NM and NP (NPP & N20)	Weekly	Weekly	on schedule	
Bi-weekly update NP Wavelength and solar flux (SNPP & N20)	Bi-Weekly	Bi-Weekly	on schedule	
Parallel OPS support	Dec-20	Dec-20	Dec-20 Jan-21	11/6-12/4/20 1/11-21/21
Verification of cloud implementation	Dec-20	Dec-20	Dec-20	Report
IDPS Mx build I&T deploy support:				
Block 2.3 Mx builds I&T deploy regression data review/checkout (Nov-20 Mx0; Mar-21 Mx1; Apr-21 Mx2; Jun-21 Mx3; Jul-21 Mx4; Sep-21 Mx5)	Sep-21	Sep-21	11/20/20 Mx0 I&T 02/24/21 Mx1 SOL 03/08/21 Mx1 I&T	Report

Highlights:

New FAM LUT Verification and Impact of polarization Simulations on OMPS radiance



Left panel: Comparison of NOAA-20 OMPS NM Earth View radiance at the left utmost field-of-view (IFOV) (IFOV = 0) on 01/22/2021 among four data sources.



Right panel: Relative radiance error due to neglecting the polarization vs. wavelength. A non-negligible impact at wavelengths from 300 to 310 nm is observed.

Accomplishments / Events:

- Completed the transition of SNPP/N20 ATMS/CrIS/VIIRS/OMPS RDR data to the Cloud to support the COVID-19 project
- Transition of the reprocessed SNPP VIIRS SDR data to the Cloud is ongoing (finished ~2.5-year data transition as of 2/11/2021)
- Per ESA's request, completed VIIRS SDR and VIIRS Enterprise Cloud Mask (ECM) reprocessing for the period of 2018-04-01 to 2020-03-11, the transition to EAS is ongoing
- Analysis of the radiometric stability of reprocessed SNPP CrIS data compared to AIRS is on going (highlights)
- Worked with CLASS to prepare for the transition of reprocessed data to CLASS/NCEI

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			

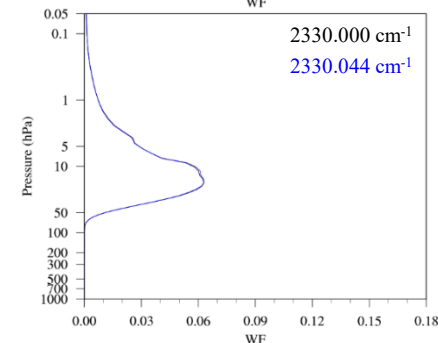
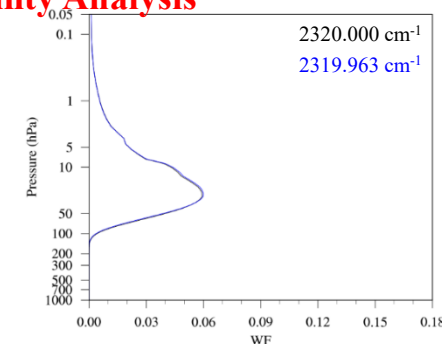
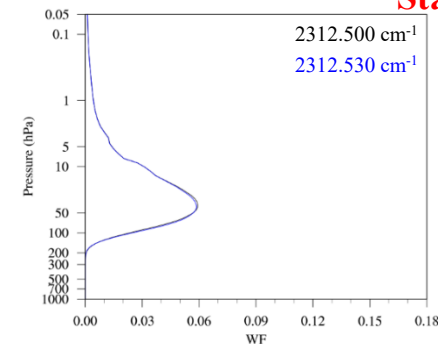
- Project has completed.
- Project is within budget, scope and on schedule.
- Project has deviated slightly from the plan but should recover.
- Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

N/A

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Reprocessing of N20 CrIS for 2018-04-01 to 2019-06-23	Nov-20	Nov-20	Nov-20	
Extend SNPP VIIRS reprocessing to 2020	Dec-20	Jan-21	Jan-21	The short delay was caused by one hard drive on UMD server Bamboo was down in Dec.,
ECM reprocessing for 2018-04-01 to 2020-03-11	Dec-20	Jan-21	Jan-21	Same as above
Present validation results on the reprocessed S-NPP SDR data at the AMS Meeting	Jan-21	Jan-21	Jan-21	
Transition of SNPP RDR and reprocessed SDR data to CLOUD	Jun-21	Jun-21		
Complete planning and testing on transition of S-NPP reprocessed SDR data to CLASS	Sep-21	Sep-21		
Deliver preliminary evaluation results on radiometric stability of reprocessed CrIS SDR data	Sep-21	Sep-21		
Transition of reprocessed SNPP SDR data to CLASS/NCEI	Sep-21	Sep-21		

Highlights: Pairing of CrIS and AIRS for Radiometric Stability Analysis



— CrIS WF — AIRS WF

- Three paired CrIS and AIRS stratospheric channels are chosen for the radiometric stability study
- These paired channels have very similar WF profiles

Accomplishments / Events:

- Updated ICVS JPSS SDR data processing modules to support JPSS-2 SDR data processing capability. Generated selected JPSS-2 ICVS sample images using NOAA-20 SDR data as proxy data and demonstrated the sample images in internal ICVS-JPSS2 web site.
- Conducted different methods to improved OMPS NP NOAA-20 vs. S-NPP 32-day mean bias accuracy
- Added NOAA-20 and S-NPP CrIS MWIR channel 7.66 um observation vs. RTM simulation product to ICVS-LTM website to extend CrIS SDR data quality O-B monitoring to MWIR
- Monitoring the transition to operation of IDPS B2.3 Mx0 and evaluated the impact to monitoring modules.
- Kept developing NOAA-20 vs. S-NPP ATMS 32-day mean bias time series to monitoring the ATMS SDR data quality variation

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			

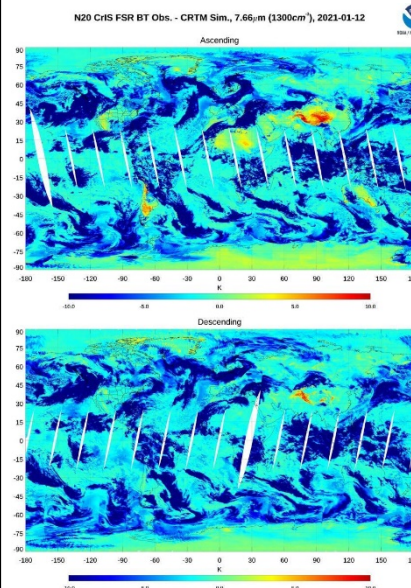
- Project has completed.
- Project is within budget, scope and on schedule.
- Project has deviated slightly from the plan but should recover.
- Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

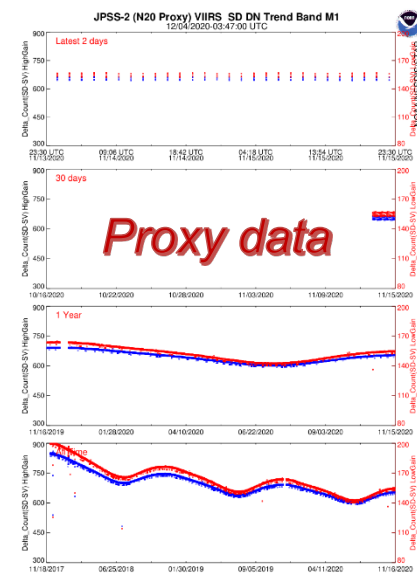
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Develop JPSS-2 ICVS prototype RDR portion (beta) (SNPP or N20 as proxy)	Jan-21	Jan-21	Jan-21	
Develop JPSS-2 ICVS prototype SDR portion (beta)	Apr-21	Apr-21		
Develop ICVS-Vector code prototype (beta)	Jun-21	Jun-21		
Develop ICVS anomaly impact watch portal prototype (beta)	Jul-21	Jul-21		
Develop ICVS testbed code (beta)	Aug-21	Aug-21		
Support JPSS-2 ICVS-LTM Test Readiness Review	Sep-21	Sep-21		
Implement the Git repository for ICVS (beta)	Set-21	Set-21		
Promote the ICVS top product matrices for operation	Sep-21	Sep-21		
Maintenance and update of SNPP/NOAA-20 ICVS monitoring tool	Sep-21	Sep-21		Daily as needed
Provide Instrument Performance Weekly, Monthly, Quarterly and Annual Reports	Sep-21	Sep-21		Monthly, quarterly and annual
Support SDR Team, NASA Flight Project, and OSPO Anomaly Analysis	Sep-21	Sep-21		Ad hoc

Highlights: Significantly contribute to STAR SDR Teams

NOAA-20 CrIS 7.66um Obs-Sim Global Map on Jan. 12th, 2021



JPSS-2 ICVS Monitoring Concept Demonstration using NOAA-20 VIIRS data as proxy data



Accomplishments / Events:

- NCC banding anomaly:** The Imagery Team has suggested a better interpolation than (the improper interpolation) used in the NCC code, that new method was coded by Raytheon, and the resulting images were displayed by CIRA, showing that the NCC banding disappears! (See the NCC granule images in the lower-right panel.) This works well for the solar illumination case, but will have to be modified for the lunar case, where the lunar phase is an extra complication that needs to be considered. Regardless, the source of the banding is now known, but the full resolution of the problem is still ahead of us, which will requiring change to the BRDF interpolation currently being used.
- JPSS Training Initiative:** J. Torres provided JPSS Liaison Updates at the JPSS Training Initiative on 29 January 2021. Updates summarized 'Near-Constant Contrast (NCC)' teletraining; specifically highlighting the number of Weather Forecast Offices (WFOs) that attended teletraining throughout CY2020.

Overall Status:

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

Recently-discovered NCC banding over Antarctica for both NPP and J01 needs detailed analysis and potential solution.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/22/20	
N20 NCC LUT update DAP (to ASSISTT)	Jun-21	Jun-21		ASF tool update
N20 NCC LUT update DAP (to DPMS)	Jul-21	Jul-21		
Images of the Month to STAR JPSS Program/website and interesting Imagery to Social Media outlets	Monthly	Monthly		
Annual VIIRS Imagery performance report	Sep-21	Sep-21		Report
Verification of cloud implementation	Dec-20	Dec-20	Dec-20	Report
IDPS Mx build I&T deploy regression support:				
Block 2.3 Mx builds I&T deploy regression data review/checkout (Nov-20 Mx0; Mar-21 Mx1; Apr-21 Mx2; Jun-21 Mx3; Jul-21 Mx4; Sep-21 Mx5)	Sep-21	Sep-21	11/15/20 Mx0 I&T 02/17/21 Mx1 SOL 03/05/21 Mx1 I&T	

Highlights: Image of the Month

NCC banding anomaly resolution progress!

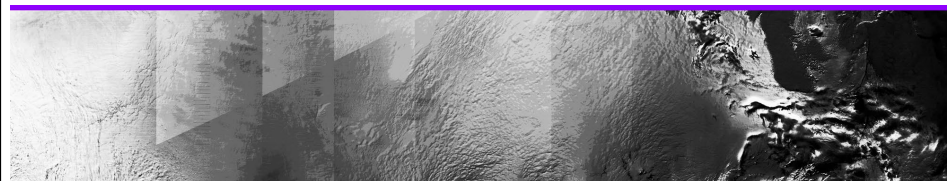


Figure A: Histogram-stretched NCC imagery with quasi-tri-linear interpolation used for the application of BRDF to turn DNB in NCC. The banding is associated with discontinuities due to improper interpolation across scan angle and zenith angle bins.

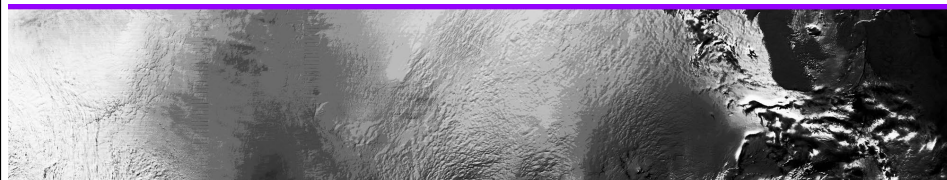


Figure B: Histogram-stretched NCC imagery with true tri-linear interpolation used for the application of BRDF to turn DNB in NCC. The discontinuities/banding is gone.

Accomplishments / Events:

- The Cloud Team delivered to ASSISTT the updates to the JPSS algorithms. This included an update to the ECM that uses the DNB and a update to the cloud height algorithm. Appropriate delivery documentation was provided on each updated algorithm. An example of the ECM analysis is shown in Figure 1
- Cloud Cover Layers was also updated to include information on convective and supercooled pixel detections. An updated ATBD will be provided in the coming weeks to reflect this change. And example is shown in Figure 2
- Supporting AK Cloud Demo (extended for a full year), the CIRA team presented at the NOAA Satellite Book Club by TOWER-S Team on the Cloud Vertical Cross-sections (produced from the Enterprise Cloud products) and user-engaged improvement activities. Many suggestions and feedback from NWS forecasters were obtained on R2O and AWIPS transition, and a new flight route (Buffalo-Boston) was added as requested by NWS Buffalo, NY.

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:

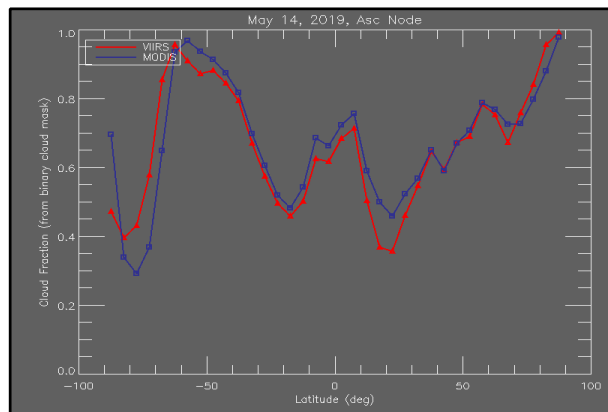


Figure 1. An example showing a zonal cloud fraction between MODIS and the latest ECM2 VIIRS LUT for 14 May 2019. Most of these differences reflect differences along cloud edges. However, the trends are similar to previous analysis. In addition, the ECM2 spec meet or exceed performance specifications.

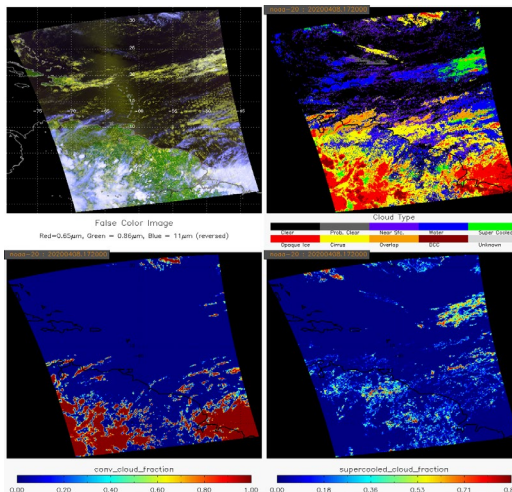


Figure 2. An example showing retrieved total convective and supercooled cloud fraction (bottom) on 04/08/2020 between 1710 and 1719 UTC. A false color RGB image and the cloud type retrieval from CLAVR-x is also shown for comparison purpose (top).

Milestones:

- On following slide

Clouds (Cloud Mask)

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
JPSS-2 Schedule				
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/10/20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/21/20	
Initial J1 ready DAP to ASSISTT	Apr-20	Apr-20	Apr-20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21		downstream data testing
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Sep-21	Sep-21		
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Algorithm Updates/Cal-Val Activities				
Add in DNB into ECM2 LUTs	Mar-21	Mar-21	Feb-21	
Work with NCEP on ASR assimilation. Adjust mask as necessary	Mar-21	Mar-21		
Verify ECM LUT against J2 simulated data	Aug-21	Aug-21		
Support Alaska Demo and ESRL usage and reviews	Aug-21	Aug-21		
Support consistency validation of products from CSPP	Sep-21	Sep-21		
Apply CALIPSO tools to NDE Mask with Lunar Ref	Sep-21	Sep-21		
Develop collaboration with OAR/ESRL/GML on use of RadFlux Cloud Fraction for Verification including high-latitude sites	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		
LTM: Implement a warning-based monitoring system	Sep-21	Sep-21		

Clouds (Cloud Phase/Type)

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
JPSS-2 Schedule				
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	07/29/20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/21/20	
Initial J2 ready DAP to ASSISTT	Apr-20	Apr-20	Apr-20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21		downstream data testing
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Sep-21	Sep-21		
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Algorithm Updates/Cal-Val Activities				
Optimize cloud phase thresholds for NOAA-21 and maintain code consistency with GOES-R deliveries	Mar-21	Mar-21	Feb-21	To ASSISTT
Modify phase as needed based on height/winds interaction and development from GOES-R	Aug-21	Aug-21		
Support S-NPP and NOAA-20 EDR monitoring	Sep-21	Sep-21		
Support consistency validation of products from CSPP	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		
LTM: Implement a warning-based monitoring system	Sep-21	Sep-21		

Clouds (ACHA)

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
JPSS-2 Schedule				
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/10/20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/21/20	
Initial J2 ready DAP to ASSISTT	Apr-20	Apr-20	Apr-20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21		downstream data testing
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Sep-21	Sep-21		
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Algorithm Updates/Cal-Val Activities				
Support NCEPs use for ASR assimilation	Mar-21	Mar-21		To ASSISTT
Continue improving multilayer ACHA by analysis of CALIPSO and AEOLUS lidars and extend to level of best fit of Polar Winds	Mar-21	Mar-21		To ASSISTT
Extend the treatment of scattering to support 3.75 micron	Aug-21	Aug-21		
Continue working with FAA for them to use ACHA products	Sep-21	Sep-21		
Continue support of Alaska Demo CTH requests	Sep-21	Sep-21		
Support consistency validation of products from CSPP	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		
LTM: Implement a warning-based monitoring system	Sep-21	Sep-21		

Clouds (DCOMP)

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
JPSS-2 Schedule				
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/10/20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/21/20	
Initial J2 ready DAP to ASSISTT	Apr-20	Apr-20	Apr-20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21		downstream data testing
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Sep-21	Sep-21		
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Algorithm Updates/Cal-Val Activities				
Develop a method that includes IR measurements to improve the performance of potentially thin clouds using ACHA technique	Aug-21	Aug-21		
Inter-sensor calibration studies by using visible reflectance and cloud optical thickness from GOES, JPSS and MODIS. Adjust VIIRS M5 and M7 as needed	Sep-21	Sep-21		
Develop collaboration with OAR/ESRL/GML on use of RadFlux Cloud Optical Depth for Verification	Sep-21	Sep-21		
Support Alaska Demo, primarily during AK rainy season	Sep-21	Sep-21		
Consistency checks for day and night retrievals	Sep-21	Sep-21		
Support consistency validation of products from CSPP	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		
LTM: Implement a warning-based monitoring system	Sep-21	Sep-21		

Clouds (NCOMP)

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
JPSS-2 Schedule				
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	07/29/20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/21/20	
Initial J2 ready DAP to ASSISTT	Apr-20	Apr-20	Apr-20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21		downstream data testing
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Sep-21	Sep-21		
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Algorithm Updates/Cal-Val Activities				
Extend NCOMP with JPSS-2 LUT	Jul-21	Jul-21		
Adding improved unit test tools to science code	Sep-21	Sep-21		
Consistency checks for day and night retrievals	Sep-21	Sep-21		
Support consistency validation of products from CSPP	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		
LTM: Implement a warning-based monitoring system	Sep-21	Sep-21		

Clouds (Cloud Base)

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
JPSS-2 Schedule				
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/10/20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/21/20	
Initial J2 ready DAP to ASSISTT	Apr-20	Apr-20	Apr-20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21		downstream data testing
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Sep-21	Sep-21		
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Algorithm Updates/Cal-Val Activities				
Leverage GOES-RR to target characterization of overlapping cloud assess CBH performance for multi-layer cloud systems	Jun-21	Jun-21		
leverage DCOMP nighttime COD (DNB) to improve performance over IR-only	Sep-21	Sep-21		
Validate products from SAPF and begin ARM data analysis to fill CALIOP/CloudSat void	Sep-21	Sep-21		
Support Alaska Demo and necessary reviews	Sep-21	Sep-21		
Support consistency validation of products from CSPP	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		
LTM: Implement a warning-based monitoring system	Sep-21	Sep-21		

Clouds (CCL)

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
JPSS-2 Schedule				
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	07/31/20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/21/20	
Initial J2 ready DAP to ASSISTT	Apr-20	Apr-20	Apr-20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21		downstream data testing
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Sep-21	Sep-21		
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Algorithm Updates/Cal-Val Activities				
Include super-cooled and convective probability	Mar-21	Mar-21	Feb-21	To ASSISTT
Continue the visualization and demonstration of CCL for the Aviation Weather Center, with focus on Alaska Region and Hawaii	Sep-21	Sep-21		
Support Alaska Demo and necessary reviews	Sep-21	Sep-21		
Support consistency validation of products from CSPP	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		
LTM: Implement a warning-based monitoring system	Sep-21	Sep-21		

Accomplishments / Events:

- Submitted a paper entitled “Fingerprints of a new normal urban air quality in the United States” to Journal of Geophysical Research – Atmospheres for a possible publication
- Started work to generate surface PM2.5 from merged aerosol optical depth product. The surface PM2.5 estimates for the US from March 1, 2020 to present have been made available to the National Weather Service for model verification applications
- Began reprocessing Suomi NPP VIIRS aerosol optical depth product on the Cloud. Completed one full year of reprocessing

Overall Status:

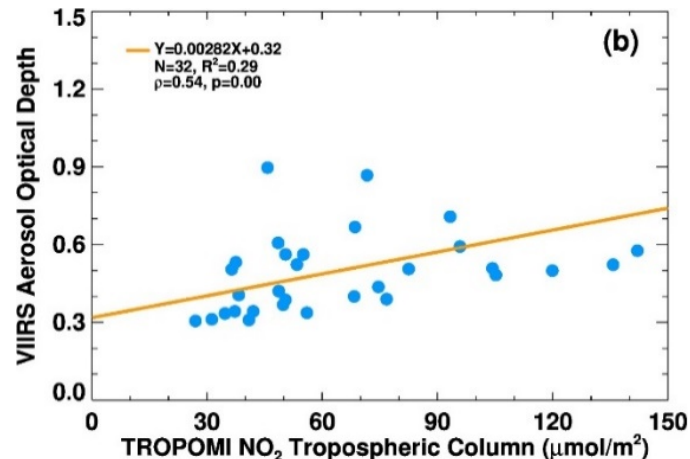
	Green ¹ (Completed)	Blue ² (On-Schedule)	Yellow ³ (Caution)	Red ⁴ (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

- 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:

No risks

Milestones	Original Date	Forecast Date	Actual Completion Date	Notes and/or Variance Explanation
JPSS-2 Schedule				
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/15/20	AOD
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	08/10/20	ADP
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/15/20	AOD
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/31/20	ADP
Initial J2 ready DAP to ASSISTT	Apr-20	Apr-20	Apr-20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21		downstream testing
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Sep-21	Sep-21		
Algorithm Updates Review	Sep-20	Sep-20	08/18/20	
Algorithm Updates/Cal-Val Activities				
<u>Details in next slides</u>				



Conducted correlation analysis between VIIRS AOD and TROPOMI nitrogen dioxide (NO₂) for several urban areas across the globe. This is part of the study to understand source sectors of aerosols and aerosol precursor NO₂. The above scatter plot is for one week in September 2020 for Los Angeles, California

Aerosol (AOD & ADP) Milestones

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Algorithm Updates/Cal-Val Activities				
Aerosol Optical Depth (AOD):				
Update surface reflectance relationships using current functional relationship with extended S-NPP, NOAA-20 and AERONET data	May-21	May-21		
Improve angular and seasonal representation of surface reflectance relationships	Jul-21	Jul-21		
Update preliminary LUT and gas-absorption parameterization for J2 if needed	Sep-21	Sep-21		
Evaluate merged S-NPP/NOAA-20 AOD product	Jun-21	Jun-21		
Evaluate gridded AOD products	Jul-21	Jul-21		
Continue individual AOD product (S-NPP, NOAA-20) validation and cross-validation	Aug-21	Aug-21		
Maintain satellite-ground AOD matchups used for products evaluation	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		
Aerosol Detection (ADP):				
Improve dust detection over the vegetated surface	Jun-21	Jun-21		
Develop surface type-dependent thresholds over land	Jun-21	Jun-21		
Exploring the use of trace gases product from TROPOMI to separate smog from smoke	Jun-21	Jun-21		
Exploratory research on an approach to combine CO/CO2 absorption bands with AAI to expand smoke detection for thick/brownish smoke plumes even over clouds	Sep-21	Sep-21		
Continue long-term validation of SNPP and NOAA-20 VIIRS ADP by comparisons with AERONET, CALIPSO, MISR, and IMPROVE	Jun-21	Jun-21		
Exploring the angular dependence of ADP by combining NOAA-20 with SNPP	Jun-21	Jun-21		Report
Annual algorithms/products performance report	Sep-21	Sep-21		

Accomplishments / Events:

- Successful test of primary VOLCAT components in the NESDIS Common Cloud Framework
- VOLCAT products support monitoring of Kilauea eruption

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
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/15/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21		downstream testing
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Sep-21	Sep-21		
Software and LUT updates in preparation for J2	Sep-21	Sep-21		
Refine thresholds and LUT's for S-NPP and NOAA-20 as needed	Sep-21	Sep-21		
Development activities that support transition to VOLCAT	Sep-21	Sep-21		
Routinely validate volcanic ash products	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		

Highlights: VOLCAT products support monitoring of Kilauea eruption



Low Fountaining, January 11

USGS Photo/M. Patrick

Accomplishments / Events:

- Implemented new Enterprise ABI algorithm that follows the general approach of the binary and fractional snow cover retrieval utilized in the operational VIIRS snow 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			

- 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/ Comments
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/30/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21		downstream testing
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Sep-21	Sep-21		
Preparation for JPSS-2	Sep-21	Sep-21		
Transition VIIRS Enterprise snow algorithms to operations for ABI	Mar-21	Mar-21		
Continued validation of NOAA-20 and S-NPP products: Product error assessments and improvements/updates	Sep-21	Sep-21		
Continuous monitoring of S-NPP and NOAA-20 products	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		

Highlights: Enterprise Snow Cover Fraction improves consistency between JPSS and GOESR products used in blended products

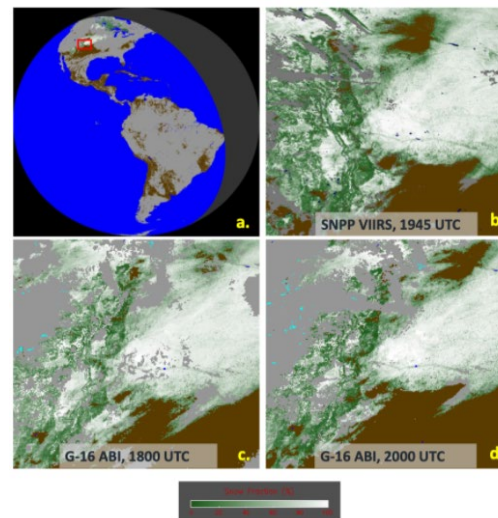


Figure 1a: Full disk GOES-16 ABI snow fraction product. b: VIIRS snow fraction for a smaller region (region is shown in red in Figure 1a). c, d: GOES-16 ABI snow fraction derived over the same region at 1800 and 200 UTC. Note: the geographical projection of VIIRS and ABI snow products is not the same.

Accomplishments / Events:

- Verified the implementation of the solar farm flag bug fix in NDE I&T
 - The impact on overall product quality is minimal, but a fix was developed and delivered to avoid occasional false alarms
- Used the VIIRS I-band product for the evaluation of the GOES-17 ABI mitigation algorithm
 - Nighttime detections used to characterize detection and false alarm rates
- Continued supporting the CSPP team's implementation of code changes to address two types of data anomalies discovered in the DB product

Overall Status:

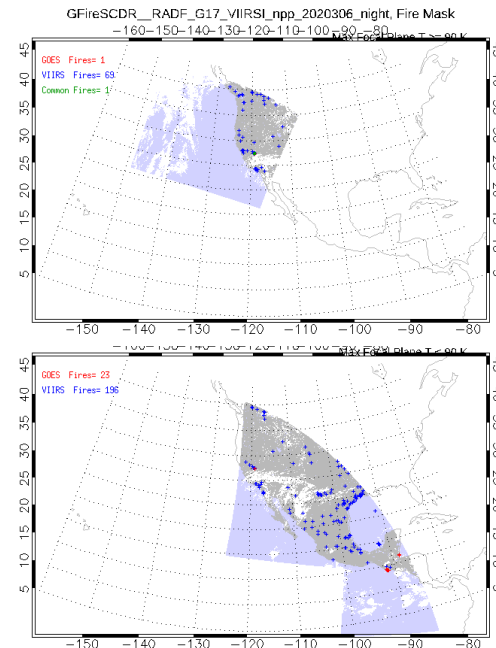
	Green ¹ (Completed)	Blue ² (On-Schedule)	Yellow ³ (Caution)	Red ⁴ (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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Issues/Risks:

Highlights:

A composite image of VIIRS granules used for the evaluation of the GOES-17 ABI mitigation algorithm on November 1, 2020. Blue and red dots indicate near-simultaneous VIIRS and ABI detections, respectively.



Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/30/20	
Enterprise Active Fires DAP to ASSISTT	Aug-20	Aug-20	08/25/20	
Initial Enterprise Fires DAP to NDE	Jun-21	Jun-21		
Final J2 updates DAP to ASSISTT	Aug-21	Aug-21		
Final Enterprise Fires DAP to NDE	Oct-21	Oct-21		
I-band algorithm improvements	Sep-21	Sep-21		
J2 readiness and sensor performance evaluation	Sep-21	Sep-21		
ASSIST, NDE and DB integration and testing support	Sep-21	Sep-21		
Suomi NPP / NOAA-20 data analysis and feedback	Sep-21	Sep-21		
Persistent anomaly data files updates	Quarterly	Quarterly		
Annual algorithms/products performance report	Sep-21	Sep-21		
Active Fires Patch DAP to NDE			12/01/20	

Accomplishments / Events:

- The surface reflectance code, enabled to process JPSS-2 data, and also including the proper handling of the NOAA-20 VIIRS I3 bad detector was delivered to T4
 - Pre-delivery activities continued
- The team is working on planning for activities for continuing integration of the surface reflectance product into the Land Product Development science team

Overall Status:

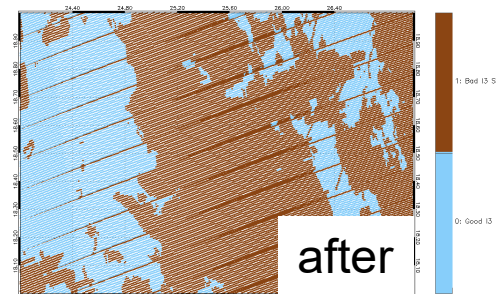
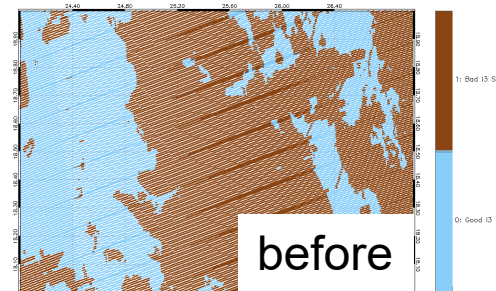
	Green ¹ (Completed)	Blue ² (On-Schedule)	Yellow ³ (Caution)	Red ⁴ (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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Issues/Risks:

Highlights:

An illustration of the change in handling the NOAA-20 VIIRS bad I3 detector. Bad data, previously flagged incorrectly as “good”, are now assigned the correct quality flag value. Data from August 1, 2020 at 11:14 UTC.



Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/30/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21		downstream testing
Final J2 ready DAP to ASSISTT	May-21	May-21		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Oct-21	Oct-21		
NOAA-20 algorithm adjustments (I3 bad detector)	May-21	May-21		
Algorithm testing and updates (ECM, QF)	Sep-21	Sep-21		
ASSIST integration and testing support of updated code delivery	Sep-21	Sep-21		
Continuing LTM and extension to NOAA SR products	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		

Accomplishments / Events:

- STAR-UMD VIIRS Surface Type team has downloaded and processed S-NPP and NOAA-20 VIIRS granule surface reflectance data acquired in February 2021.
- The team has completed derivation of monthly composites for all 2020 VIIRS data and has started generating the annual classification metrics.
- The team has published the following paper demonstrating that VIIRS observations could be used with lidar measurements from NASA's GEDI mission to map canopy fraction cover:

Rishmawi, K.; Huang, C.; Zhan, X. Monitoring Key Forest Structure Attributes across the Conterminous United States by Integrating GEDI LiDAR Measurements and VIIRS Data. Remote Sens. 2021, 13, 442. <https://doi.org/10.3390/rs13030442>.

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			

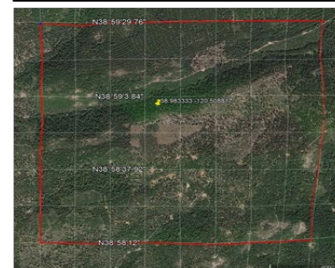
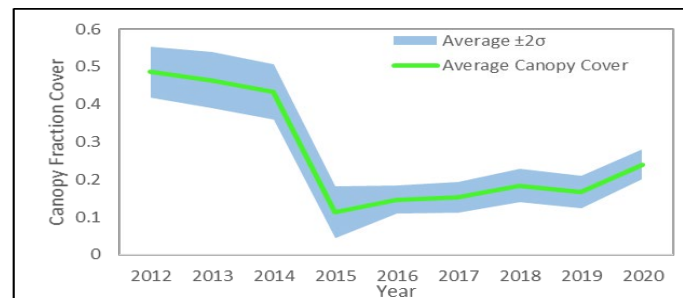
1. Project has completed.
2. Project is within budget, scope and on schedule.
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4. Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

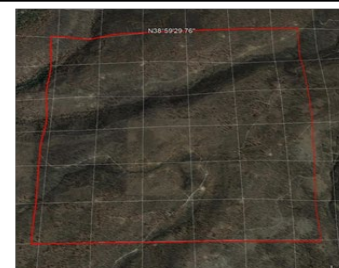
None

Highlights:

A test of the Rishmawi et al. (2021) method in Oregon shows that it could be used to produce multi-year canopy fraction cover (CFC) data from VIIRS that could track forest cover loss following a fire in 2015 and slow recovery afterwards.



Google image, 2013, before fire



Google image, 2016, after fire

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/24/20	
AST2020 (Annual Surface Type):				
Complete monthly composites of global gridded VIIRS data (9 land bands + thermal bands) for VIIRS AST20 based on 2020 VIIRS data. Generate global annual classification metrics	May-21	May-21		
Generate VIIRS AST20 based on 2020 VIIRS data using SVM algorithm	Aug-21	Aug-21		
Comparison of AST20 with surface type validation data	Sep-21	Sep-21		
Delivery of AST20 (available for users through STAR FTP)	Sep-21	Sep-21		
AST DAP NDE delivery (ASSISTT, with JRR DAP)				
Deliver AST-2018 to NDE	Jan-21	Mar-21		10/1/20: SCR
Deliver AST-2019 to NDE	Sep-21	Sep-21		
Annual performance report	Sep-21	Sep-21		

Accomplishments / Events:

- Uncertainty estimation was performed on the NCEP forecast total precipitable water vapor (spatial resolution at 0.25 degree) data using ground measurements of Microwave Water Radiometer (MWR) from ARM network. (slide 2)
- Finished the module design of the VIIRS LST uncertainty estimation which provides the base for the corresponding software development. (slide 3)
- Comparisons analysis of the NOAA20 and SNPP LST LUTs and was performed. (Highlights & slide 4)
- Modified the procedure of brightness temperature calculation in simulation database, for better spectral response function involution; it may improve accuracy and stability of the simulation data.(slide 5)
- Finished the simulation database and LUT generation for JPSS-2.
- Continue to prepare the manuscript for a book chapter on the LST validation.

Overall Status:

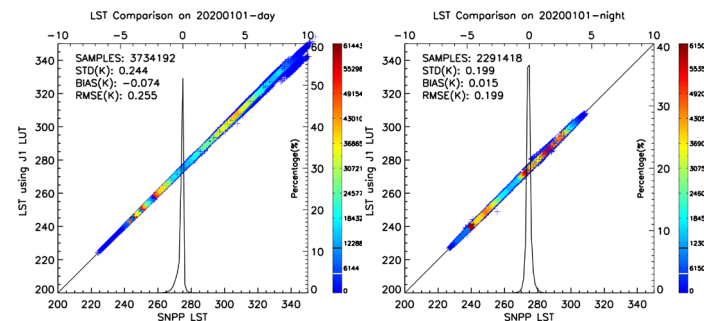
	Green ¹ (Completed)	Blue ² (On-Schedule)	Yellow ³ (Caution)	Red ⁴ (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

1. Project has completed.
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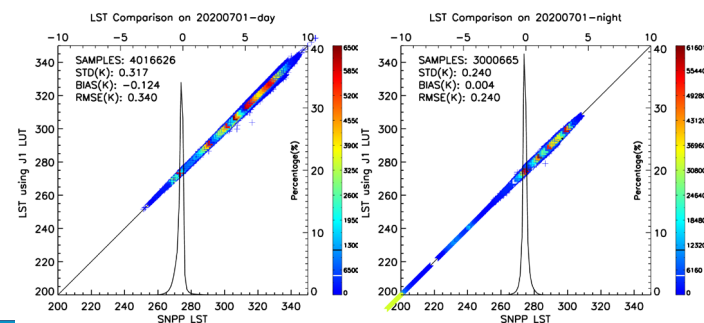
Issues/Risks:

Highlights:

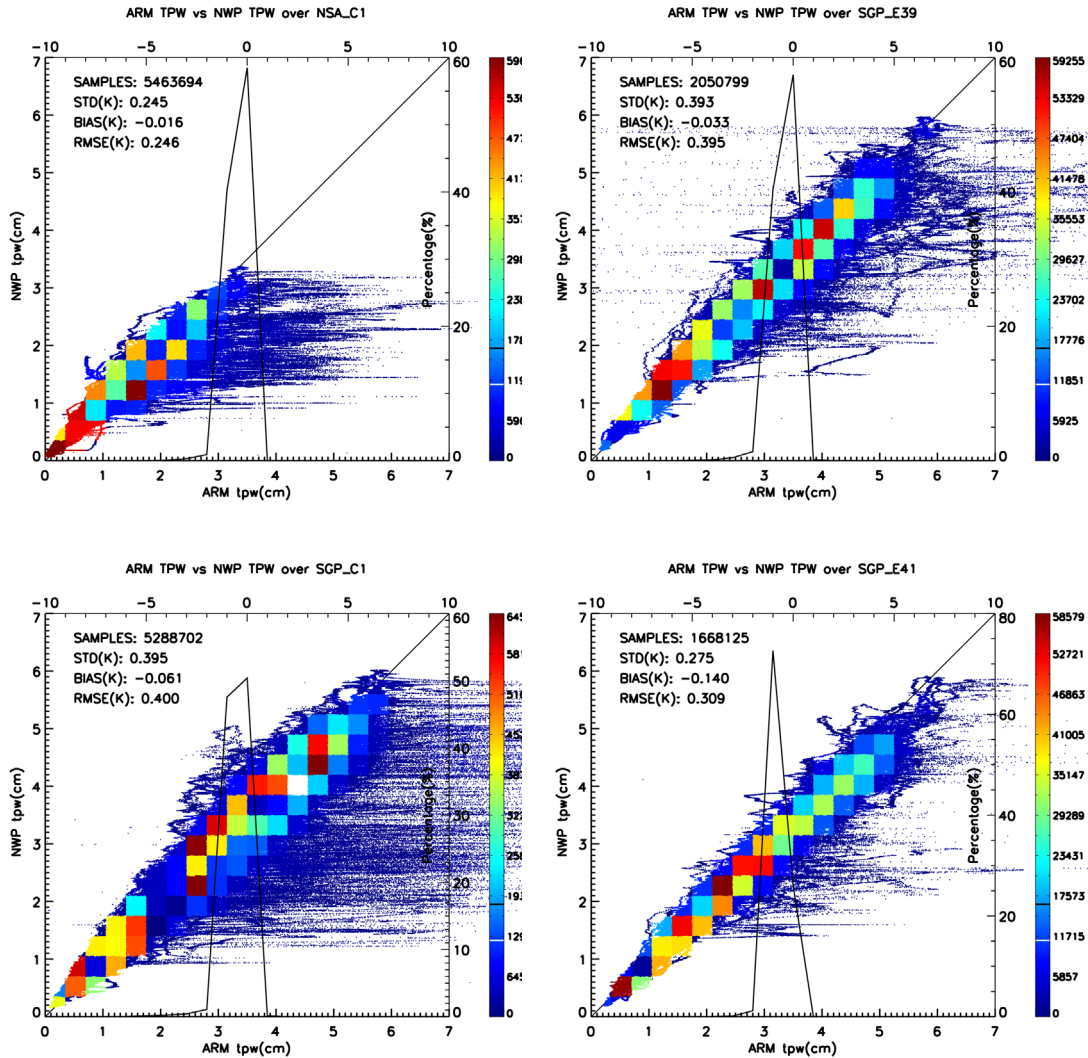
Global test:
NOAA20
VIIRS LST
LUT vs
SNPP VIIRS
LST LUT



Test day:
Jan. 1, 2020
(top)
Jul. 1, 2020
(bottom)

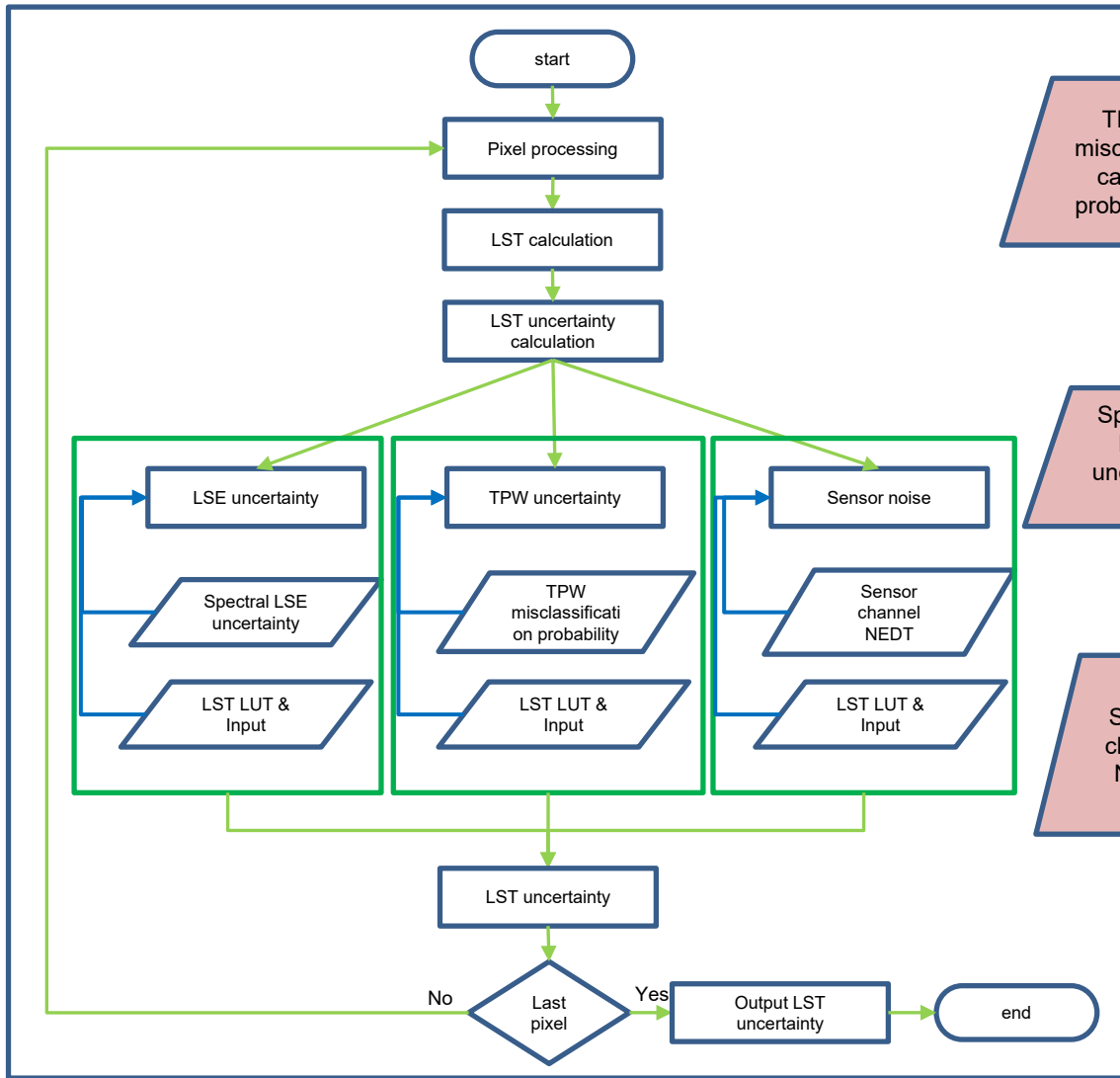


Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
CalVal report on current SNPP and N-20 Product	Dec-20	Dec-20	Dec-20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/31/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates, ASSISTT delivery)	Jan-21	Mar-21		downstream testing
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21		
Experimental error estimate dataset	May-21	May-21		
Validation and improvement of L3 LST product	Jul-21	Jul-21		DAP
Annual algorithms/products performance report	Aug-21	Aug-21		
Validation tool update; Validation with extended data set	Sep-21	Sep-21		
Routine Validation of L2 LST & gridded LST products	Sep-21	Sep-21		
Final J2 ready DAP to NDE (include NPP/N20 updates, ASSISTT delivery)	Sep-21	Sep-21		



- GFS at 0.25 degree resolution data was used
- The ground observation was quality screened. Problematic and suspicious data was removed
- Spatially closest pixel data and temporally linear interpolated gfs tpw was compared with ground observation at specific time.
- Overall statistics indicates the close agreement between the GFS forecast precipitable water vapor and ARM observations with bias close to 0.05cm and RMSE less than 0.34.
- Outliers were observed from the comparison results with higher tpw from the ground observation, which suggest that the further data filtering might be needed.

Flow chart for LST uncertainty estimation



TPW misclassification probability

Static nc input which can be updated when necessary. It should be consistent to the tpw dimension in the LUT which means if LUT has modification on tpw dimensions, this file needs modification accordingly.

Spectral LSE uncertainty

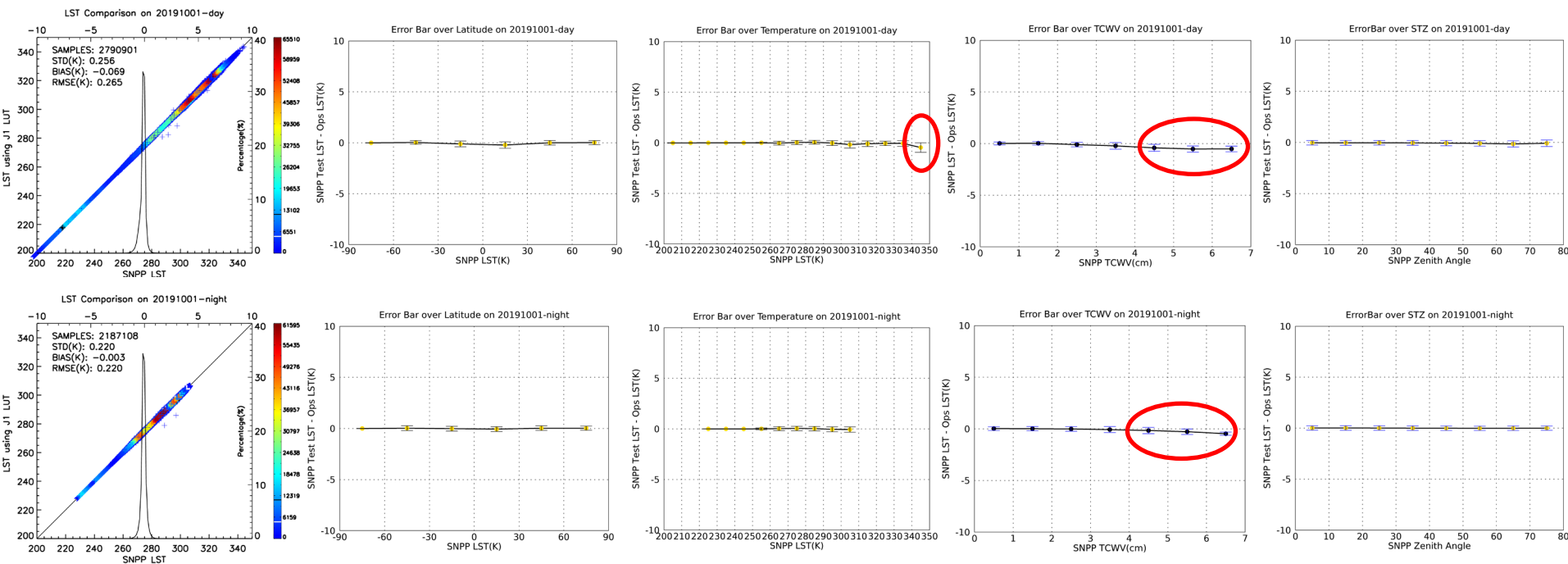
A switch is needed for the data source depending on the availability of spectral LSE uncertainty at pixel level. If available, will use them directly; if not, a module will be added to calculate the LSE uncertainty based on the LSE uncertainty level. A fixed value is set for each category.

Sensor channel NEDT

The split window channel NDET will be added into the parameter configuration file.

NOAA20 and SNPP LUT Comparison

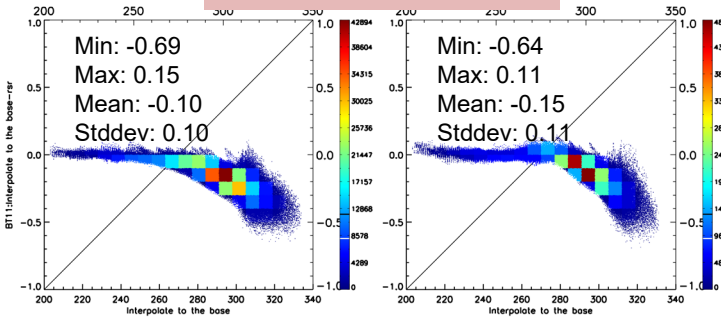
- NOAA20 LST LUT is used for SNPP LST calculation and compared with the SNPP LST
- The 5km global data from long term monitoring was used in the test, with four representative days selected '20191001','20200101','20200401','20200701'. Images show the result on day Oct. 1, 2019.
- The comparison is for clear pixels only



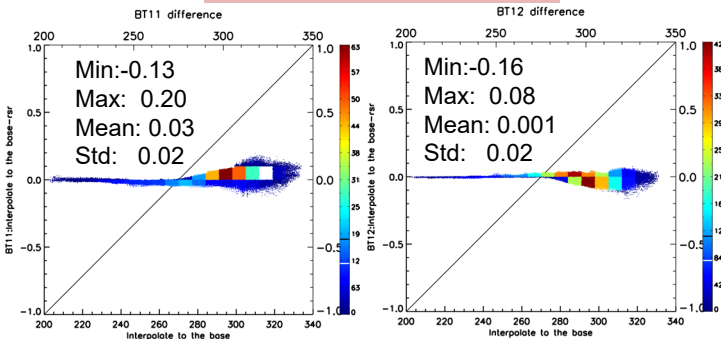
- The difference indicates the overall close agreement between the two LUTs.
- The LUT can be used interchangeably under cold temp below 260K.
- The difference increases slightly under warm temperature over 300K or moist condition when tcwv is over 4cm.
- No clear difference is observed over viewing angle dimension
- A separate LUT is suggested for each JPSS satellite.

Brightness temperature calculation procedure modification: interpolation and integration

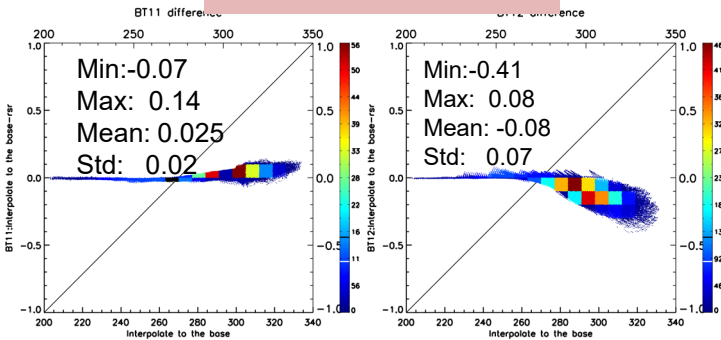
Method 1 vs method 3



Method 2 vs method 3

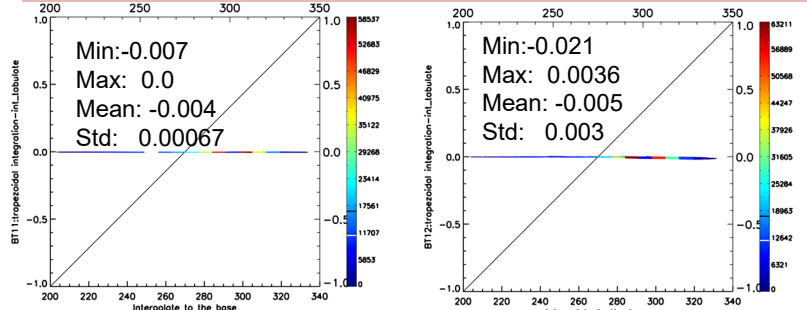


Method 4 vs method 3

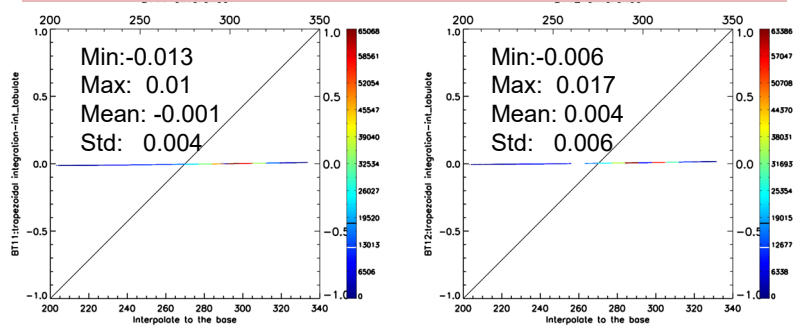


Method1	Method2	Method3	Method4
No RSR interpolation	Interpolate the rsr first to the base resolution (17nm)		Interpolate the rsr first to the finer resolution (5nm)
Interpolate the base radiance to the RSR spectral resolution	Interpolate the radiance to the RSR	Interpolate the RSR to the base, using the corresponding radiance directly	Interpolate the radiance to the RSR

(Method 4 + int_tabulated) vs trapezoidal integration



(Method 3 + trapezoidal) vs trapezoidal integration



The two combinations produce the similar results:

- two time interpolation: It requires the RSR to be pre-interpolated to the finer spectral resolution e.g. 5nm;
- one time interpolation: the trapezoidal integration method should be used in stead of int_tabulated .

Accomplishments / Events:

- Evaluated the new daily albedo climatology by comparing with existed modeled albedo
- Tested the snow albedo estimation with consideration of the surface anisotropy by trying the sea-ice albedo LUT
- Investigated the NEON network measurements in albedo validation and updated the site list in albedo validation
- Recommended to add the NEON ground data into the long-term monitoring system in the science team
- Start to draft a manuscript about the new daily albedo climatology

Overall Status:

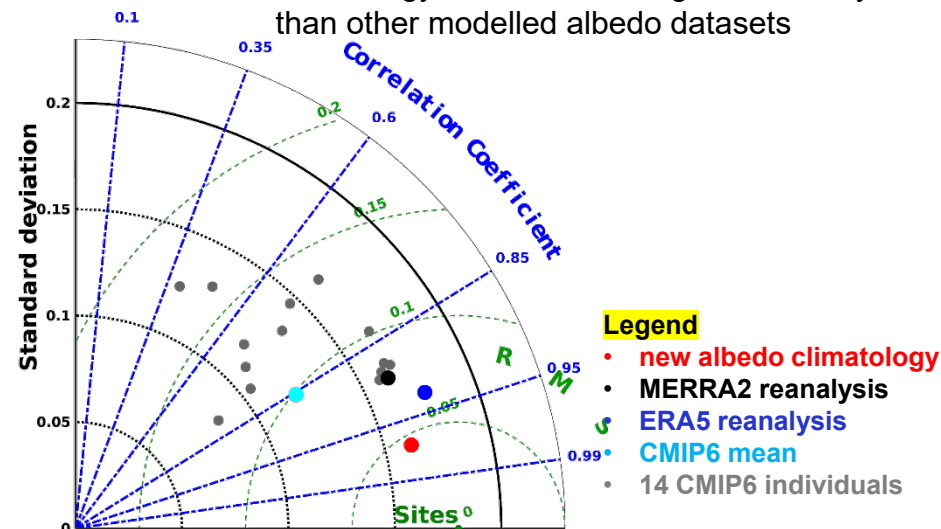
	Green ¹ (Completed)	Blue ² (On-Schedule)	Yellow ³ (Caution)	Red ⁴ (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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

Issues/Risks:

Highlights:

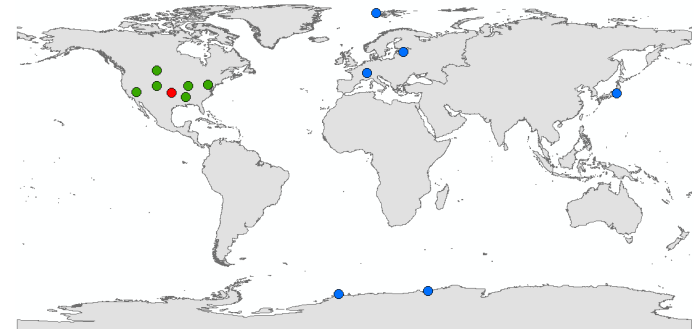
Comparing with in-situ albedo measurements as reference, the new satellite albedo climatology data have the higher accuracy than other modelled albedo datasets



Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
CalVal Report on current SNPP and N-20 data	Dec-20	Dec-20	Dec 20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/23/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates, ASSISTT delivery)	Jan-21	Mar-21		downstream testing
Final J2 DAP to ASSISTT	Mar-21	Mar-21		
Code developed for BRDF computation	Mar-21	Mar-21		
Snow albedo LUT and update	Apr-21	Apr-21		
Sample BRDF data evaluation comparing to MODIS data	Jun-21	Jun-21		
Annual algorithms/products performance report	Aug-21	Aug-21		
BRDF component code integration done	Sep-21	Sep-21		
Support to the NDE and STAR ASSIST requests	Sep-21	Sep-21		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Sep-21	Sep-21		

Validation of new climatology

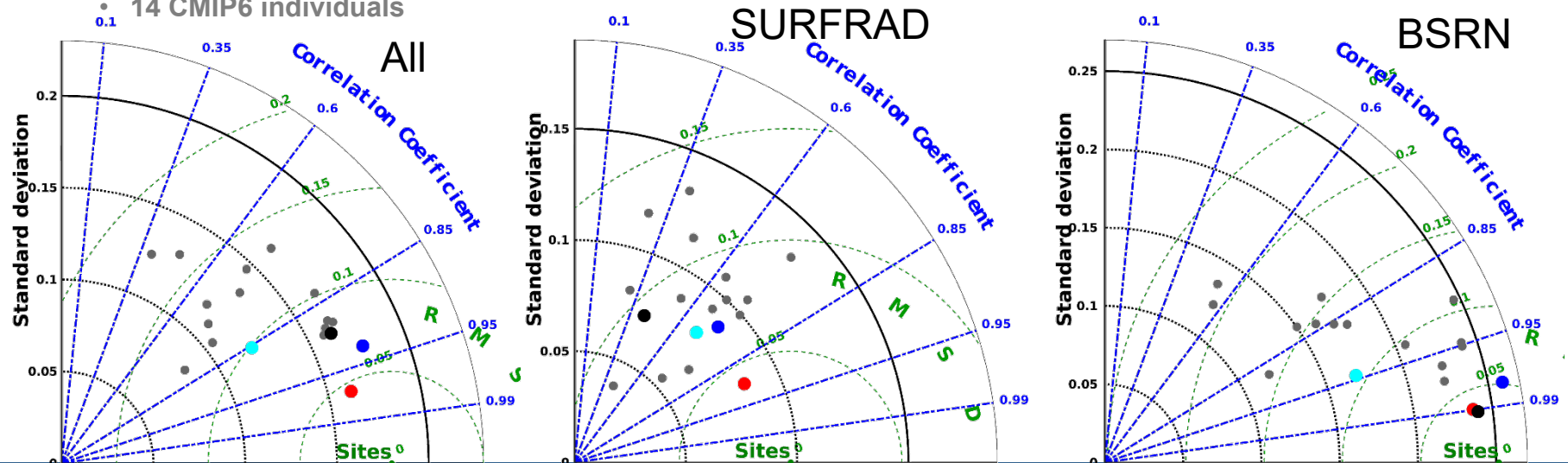
- The new climatology data is generated from the MODIS albedo in the recent two decades
- Using in-situ sites (listed in right table) measurements as reference, the new climatology data have the best accuracy comparing with other modeling datasets
- 14 CMIP6 and 2 new reanalysis were included
- Noted that CMIP6 data have various accuracy and by doing average the accuracy improved
- ERA5 have higher accuracy and spatial resolution among modeled data
- MERRA2 has lower STD (variance).



Code	Latitude	Longitude	Elevation	Network
BND	40.05192	-88.37309	230	SURFRAD
FPK	48.30783	-105.10170	634	SURFRAD
GWN	34.2547	-89.87290	98	SURFRAD
DRA	36.62373	-116.01947	1007	SURFRAD
PSU	40.72012	-77.93085	376	SURFRAD
SXF	43.73403	-96.62328	473	SURFRAD
TBL	40.12498	-105.23680	1689	SURFRAD
GVN	-70.65	-8.25	42	BSRN
PAY	46.815	6.944	491	BSRN
TAT	36.0581	140.1258	25	BSRN
TOR	58.254	26.462	70	BSRN

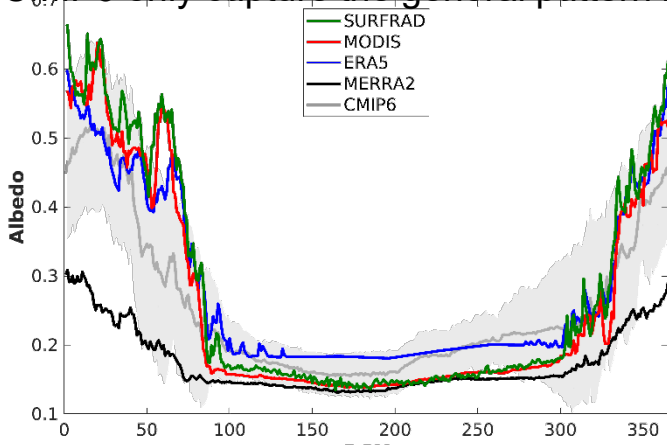
Legend

- new albedo climatology
- MERRA2 reanalysis
- ERA5 reanalysis
- CMIP6 mean
- 14 CMIP6 individuals

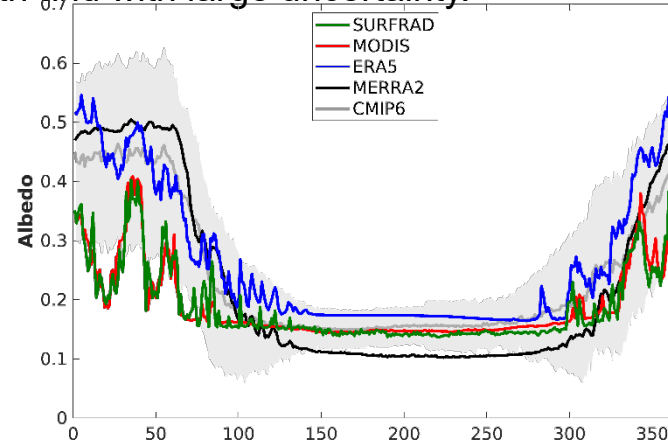


Validation of new climatology

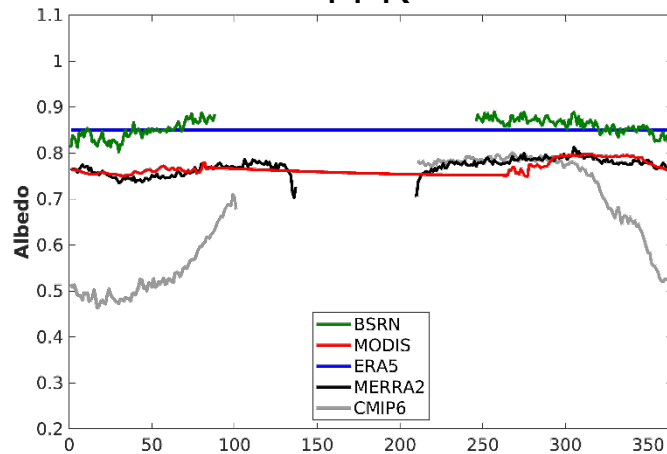
- New climatology data from MODIS albedo can capture the general pattern and detailed change in snow season
- ERA5 is second best
- MERRA2 is low and can't capture the snow variation
- CMIP6 only capture the general pattern but too smooth and with large uncertainty.



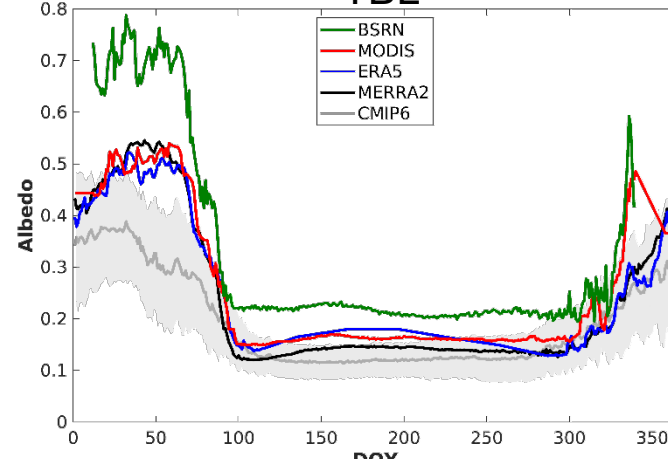
FPK



TBL



GVN (Antarctica)



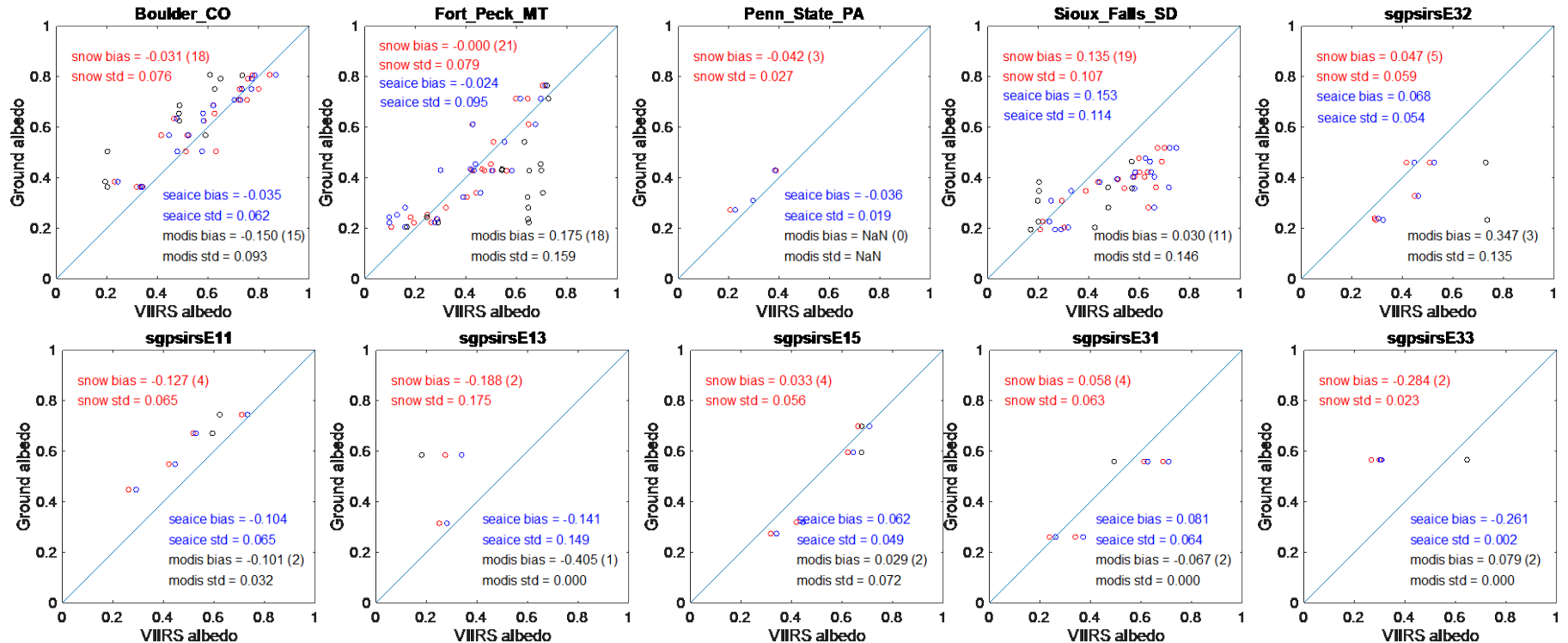
TOR

Hypothesis: The snow albedo LUT emphasizes the spectral dimension rather than the surface anisotropy, which could cause an error by assuming surface Lambertian.

Quick test: The sea-ice albedo has considered the surface anisotropy and included snow in the training scenario, which could be tested on the snow albedo retrieval to see if any difference happened. However, the method does not improve the snow albedo quality.

Result:

1. The sea-ice and snow LUTs have very similar output with minor difference. It may imply (1) the high bias and std in temporal snow match-ups are more related to the in-situ heterogeneity and scale difference (will test using high-resolution image); (2) the expression ability of current BRDF model (asymptotic radiative transfer, ART) used is limited considering the complexity of snow surface diversity; (3) The observation angles can not grasp the BRDF difference considering the strong forward-scattering feature of snow.
2. The multi-day algorithm (MODIS) cannot reflect temporal snow albedo.



Accomplishments / Events:

- Delivered initial J2 ready DAP (GVF v2r4, VI v2r1) to ASSISTT. Expected to be to NDE by the end of the month.
- Generated monthly VI climatology from nine years of data
- Determined that many VI data points labeled “poor quality” are only labeled “poor quality” because they are climatological aerosol, and are probably in fact good quality
- Began work on experimental blended vegetation data products

Overall Status:

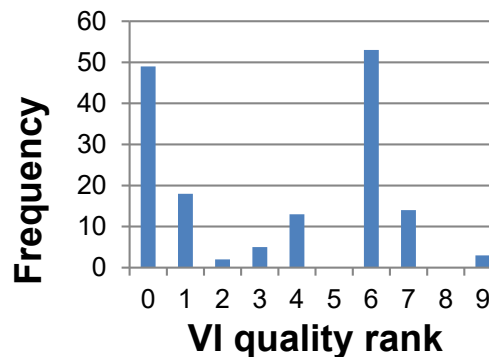
	Green ¹ (Completed)	Blue ² (On-Schedule)	Yellow ³ (Caution)	Red ⁴ (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

- 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:



Quality rank=6	53
rank=6 and aerosol=0	49
rank=6 and aerosol=3	4

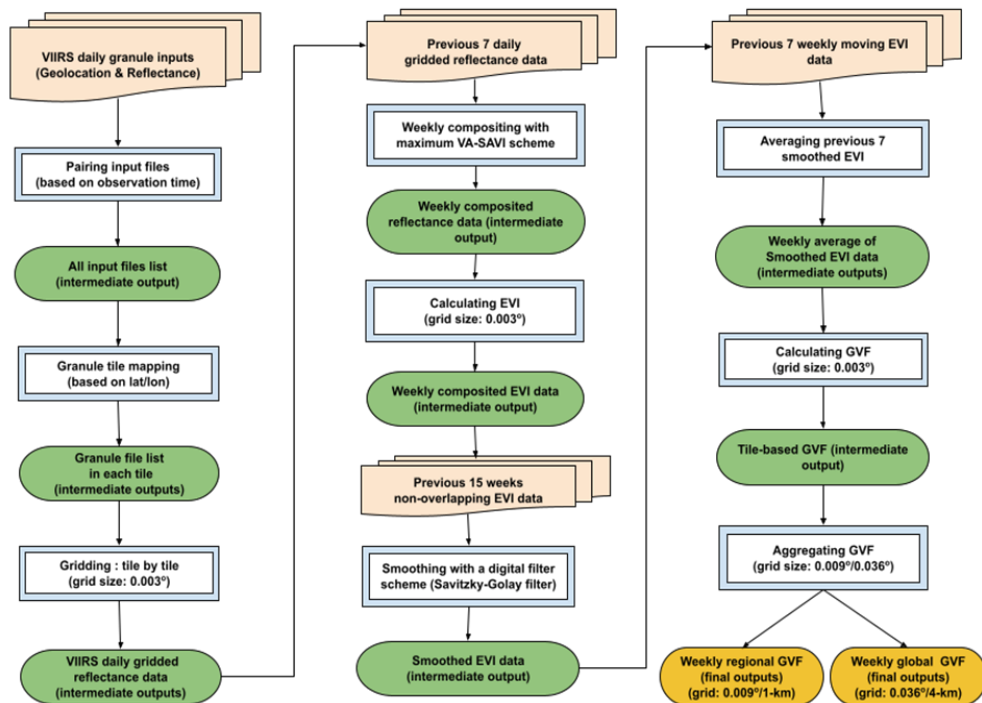
- Most of the poor VI quality rank (rank=6 or higher) pixels were found due to climatology aerosol (aerosol flag=0) rather than high aerosol (aerosol flag = 3).
- We suggest to modify the definition of poor quality. Only heavy aerosol is labeled as poor quality and **climatology aerosol should be labeled as acceptable quality.**

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Evaluation of the V2.1 VI algorithms	Dec-20	Dec-20	Dec-20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	01/13/21	
ATBD update, Detail Design Document Development	Jan-21	Jan-21	01/29/21	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Mar-21	Mar-21		
Software optimization update	Apr-21	Apr-21		
Final J2 ready DAP to ASSISTT	Jun-21	Jun-21		
Annual algorithms/products performance report	Aug-21	Aug-21		
SNPP and NOAA-20 product calibration and validation	Sep-21	Sep-21		
Experimental blended data developed	Sep-21	Sep-21		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Nov-21	Nov-21		

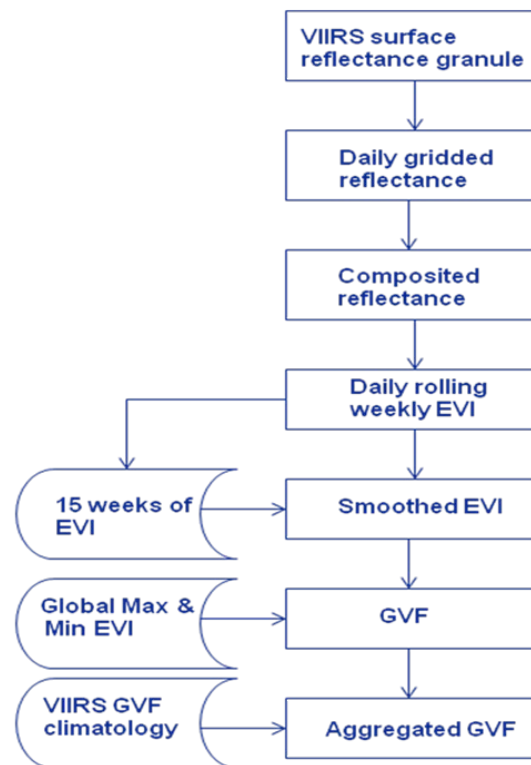
What has been updated in NVPS GVF-v2r4 Package?

- Code modifications and tests:
 - ✓ In order to make GVF v2r3 (operational version) be available for the coming JPSS-2, modified some script files and configuration files in GVF v2r3 subsystem
 - ✓ Using NOAA-20 observations in the period of April 1-16, 2020 to do tests of GVF v2r4, the tests showed the updated GVF v2r4 worked well
- Updated documents :
 - ✓ Created a MEMO to provide the downstream with the notations on this NVPS DAP
 - ✓ Edited a README to instruct how to use and install this NVPS DAP
 - ✓ Reviewed Algorithm Theoretical Basis Documents (ATBD) for GVF and VI. Modified the flowchart in GVF-ATBD (refer to next slide)
 - ✓ Reviewed External Users' Manual (EUM) of this NVPS GVF & VI package
 - ✓ Reviewed System Maintenance Manual (SMM) of this NVPS GVF & VI package

NVPS GVF-v2r4 Flowchart



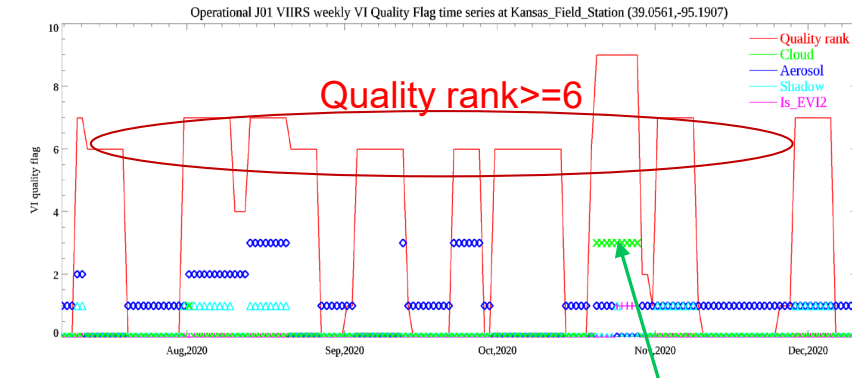
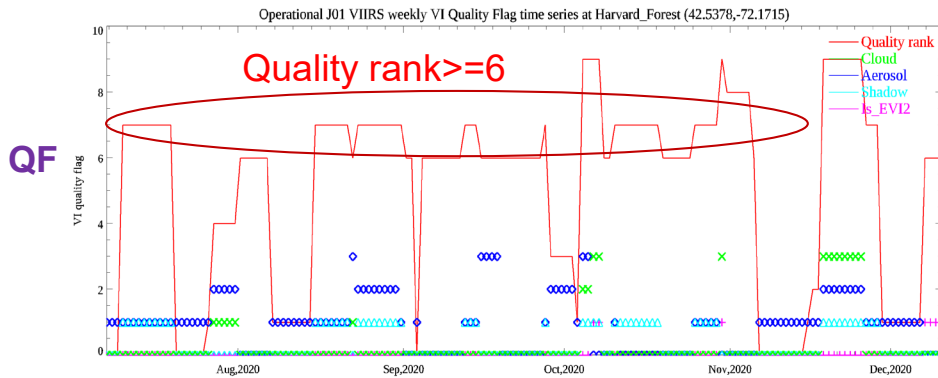
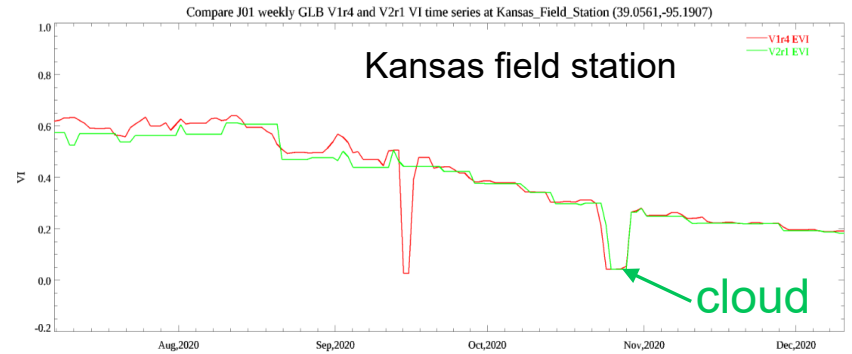
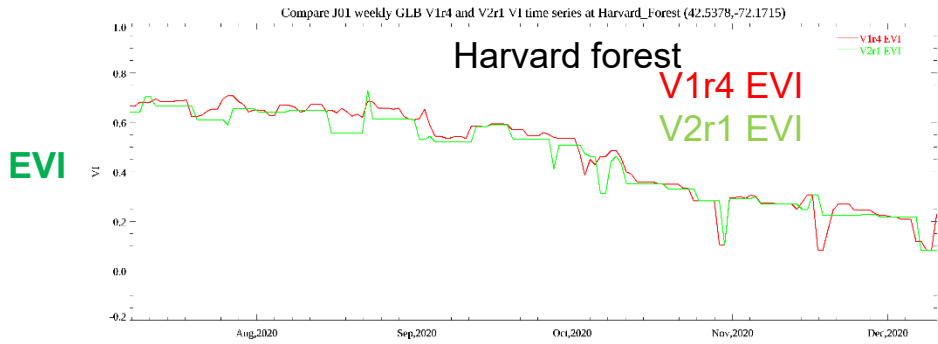
NVPS GVF v2r3 Flowchart



GVF-v2r4 flowchart over GVF-v2r3 with the following characteristics:

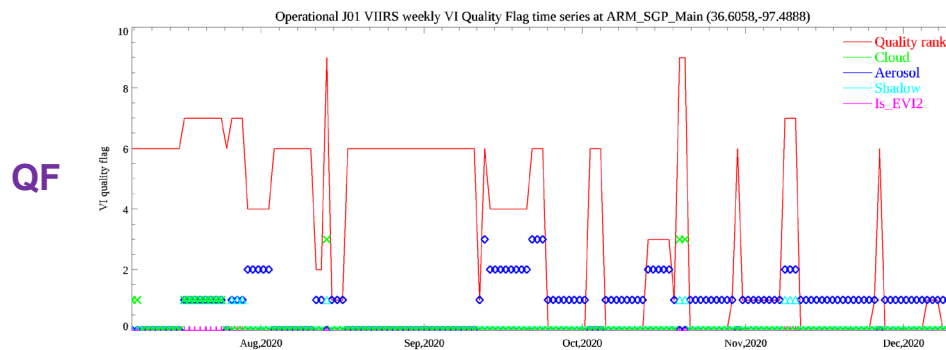
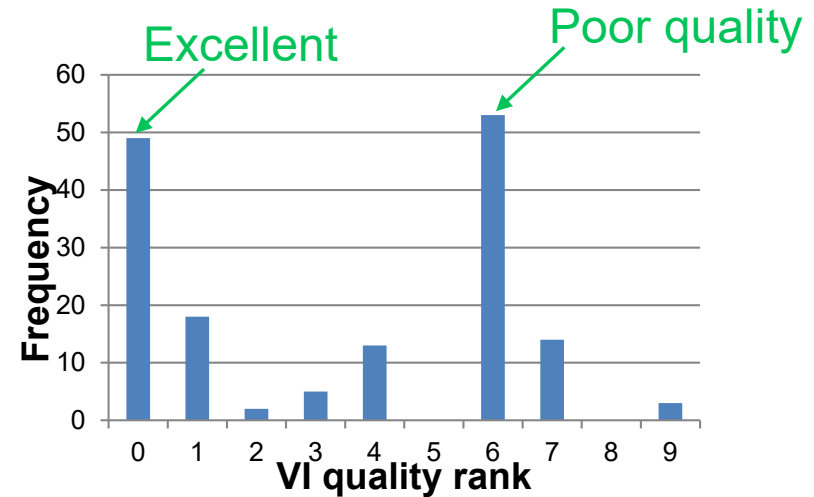
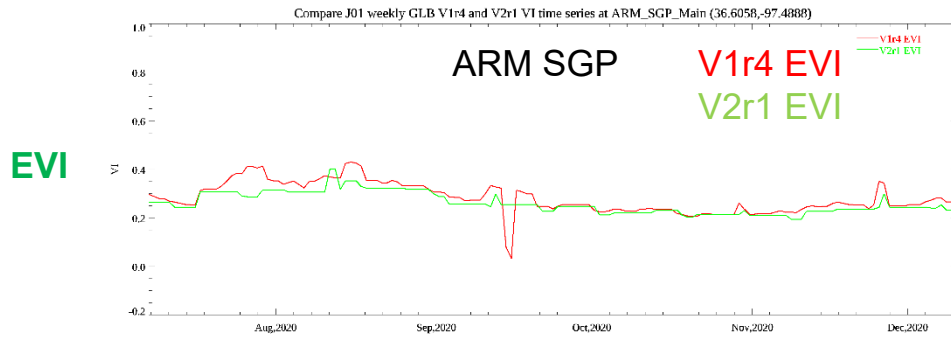
- GVF-v2r4 flowchart indicates more clearly processes and intermediate products (IP: green) and final products in different shapes and colors than GVF-v2r3 flowchart
- GVF-v2r4 describes in more detail all processes while GVF-v2r3 only focused on some primary processes

Weekly EVI and quality flag time series



- A large number of poor quality rank (rank \geq 6) pixels were found in the weekly VI time series at different sites. However, the corresponding VI time series seem stable, which suggested the VI quality rank might be too strict.
- Cloud was flagged and resulted in low EVI values in time series at Kansas field station

Weekly EVI and quality flag time series



Quality rank=6	53	
rank=6 and aerosol=0	49	Due to climatology aerosol
rank=6 and aerosol=3	4	Due to heavy aerosol

Quality rank=9	3	
rank=9 and cloud=3	3	

Quality rank=7	14	
rank=7 and shadow=1	14	

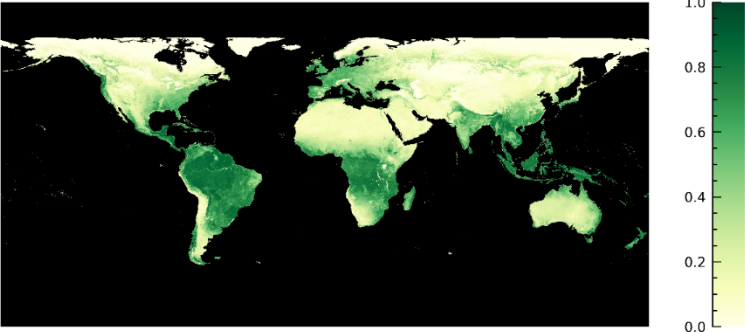
- Most of the poor quality rank (rank=6) pixels were found due to climatology aerosol (aerosol=0).
- We suggest to modify the definition of poor quality. Only heavy aerosol is labeled as poor quality and **climatology aerosol should be labeled as acceptable quality.**

Generation of VI climatology

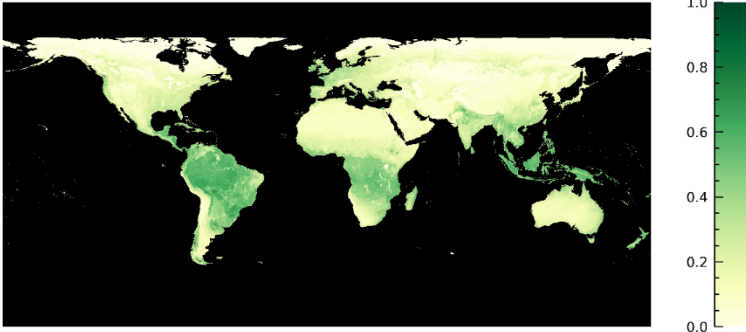
- Vegetation index climatology data may be used in place of poor quality VI data
- Nine years of monthly global NASA NPP VIIRS VI (VNP13C2) were averaged.
- Climatology generated for top of canopy NDVI, EVI, and EVI2. (TOA NDVI are not available.)
- All grid cells with pixel reliability value less than 6 were kept (lower values are better, 6 = “poor”). Grid cells with pixel reliability value of 8 (snow/ ice) were also kept in order to keep valid data at high latitudes in Northern Hemisphere winter
- Number of years of data included in a separate data field (output is hdf5)
- Coverage now extends to all areas except where daytime data is not available (far north in boreal winter), with usually at least 7 of 9 years of data available
- Data will have to be interpolated to our global and regional grid resolutions and reformatted for use in our VI algorithm

January VI climatology

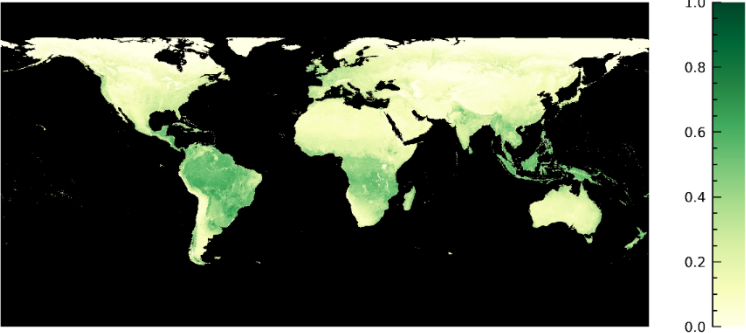
NDVI January climatology, NASA NPP



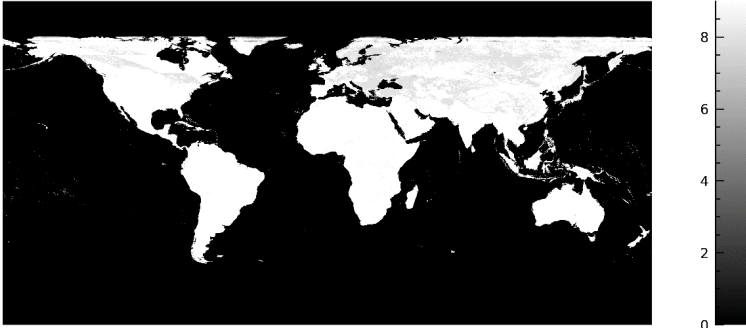
EVI January climatology, NASA NPP



EV12 January climatology, NASA NPP

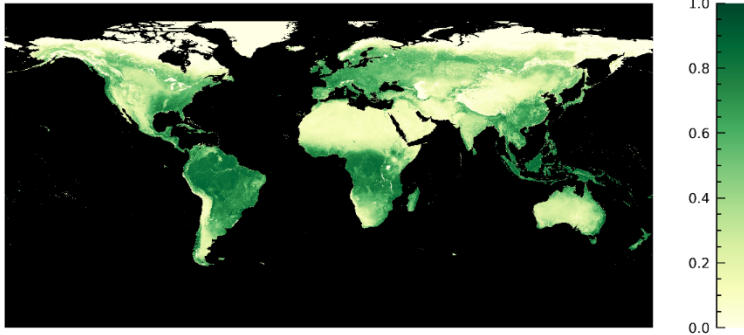


January number of values averaged

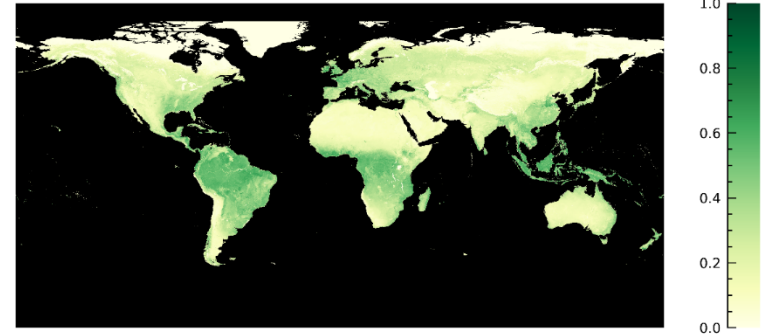


April VI climatology

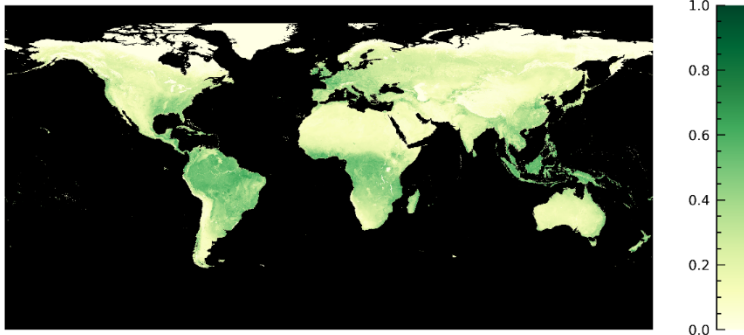
NDVI April climatology, NASA NPP



EVI April climatology, NASA NPP



EVI2 April climatology, NASA NPP

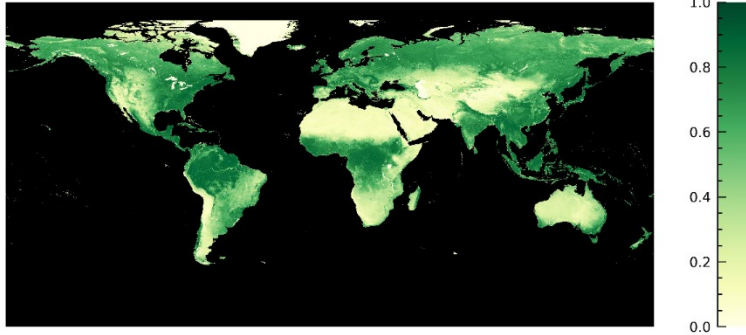


April number of values averaged

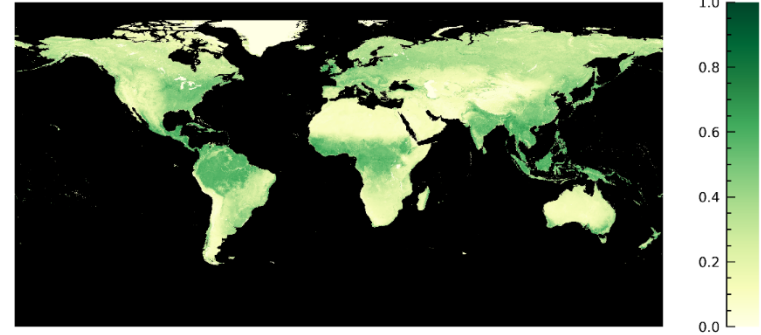


September VI climatology

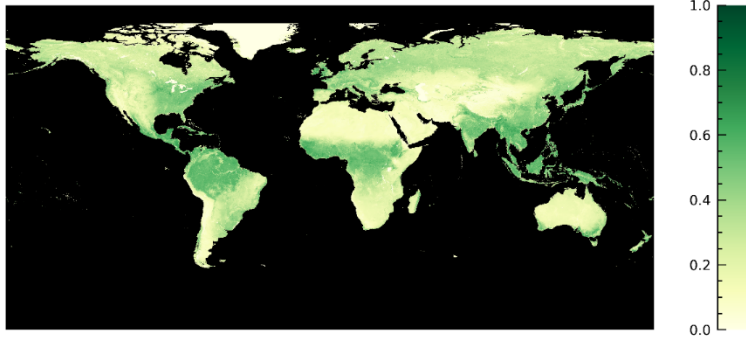
NDVI September climatology, NASA NPP



EVI September climatology, NASA NPP



EVI2 September climatology, NASA NPP



September number of values averaged



Accomplishments / Events:

- Finished revising the re-compositing approach manuscript following reviewers' comments, and resubmitted (highlighted);
- Prepared essential codes, data, and documents for disaster recovery, finished uploading the materials, and incorporated the uploading process into weekly crontab jobs;
- Read papers on vegetation health index and malaria;
- Generated a series of data and figures of VIIRS/VHP-1 and -4, -16 km resolution products, covering February 2021;
- Replied to queries about our product and website, including potential impact due to cloud mask update.

Overall Status:

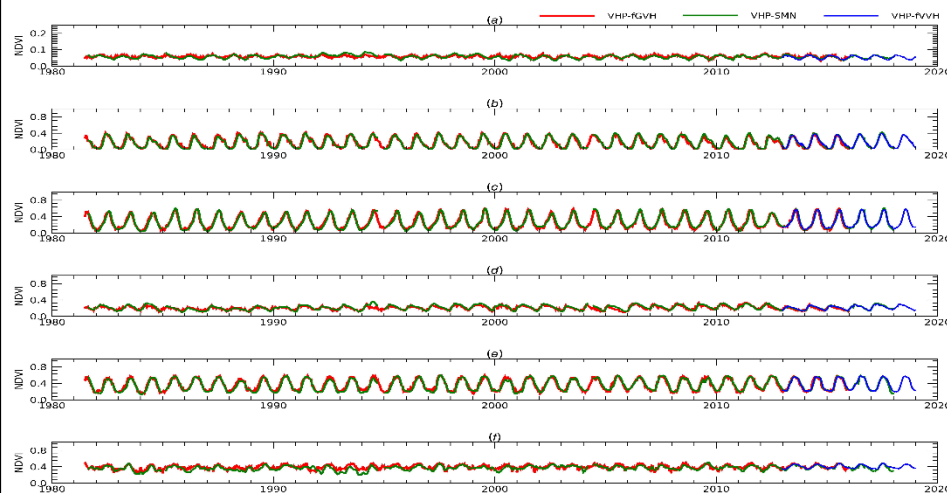
	Green ¹ (Completed)	Blue ² (On-Schedule)	Yellow ³ (Caution)	Red ⁴ (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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: Comparison Results in the Revising Paper



Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/29/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Apr-21	Apr-21		
Final J2 ready DAP to ASSISTT	Jul-21	Jul-21		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Dec-21	Dec-21		N20 final DAP
Update 1 km VH data for OSPO, USDA, NIDIS	Sep-21	Sep-21		
VIIRS-0.5 km SMN & SMT (8-year Max-Min Climatology)	Sep-21	Sep-21		
40-year Vegetation Greenness (MDVI) & Global warming	Sep-21	Sep-21		
Climate warming & temperature (SMT) in agricultural regions	Sep-21	Sep-21		
FAO locust activity vs VHindices in 2021	Sep-21	Sep-21		
NDVI _{max/min} & BT _{max/min} : 0.5 and 1 km correlation	Sep-21	Sep-21		
Regional drought and global warming trends	Sep-21	Sep-21		
Algorithm: VHindices-Locust (Africa, Arabia & India)	Sep-21	Sep-21		
Algorithm: VHindices-Malaria (South America)	Sep-21	Sep-21		
VHindices vs Locust (Africa, Arabia & India) 2020 & 2019	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		

Accomplishments / Events:

- Recent improvements made to the in situ optical radiometry shade correction calculations
- Moby Operations - M270 was deployed on September 6th and has been working in the field since that time. We will be doing a buoy swap to start deployment M271 during the first week in March. We are currently testing the instrument controller for M271 (which runs all of the instrument operations) and doing the pre-cals of the optical instrumentation on M271.
- Moby Refresh – Conducting temperature characterization for new instrument and analyzing results for potential deployment in April.

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			

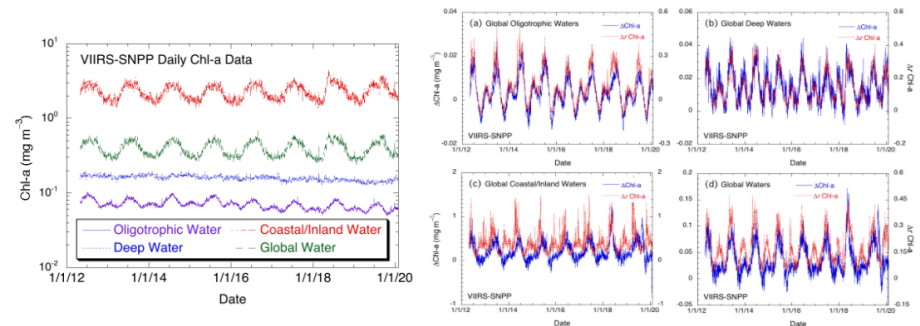
- Project has completed.
- Project is within budget, scope and on schedule.
- Project has deviated slightly from the plan but should recover.
- Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	01/19/21	
Update MSL12 LUTs and various coefficients for J-2	Jun-21	Jun-21		
Complete testing/verification of J-2 OC data processing	Sep-21	Sep-21		
Final J2 ready DAP delivery (include NPP/N20 updates) to CW	Dec-21	Dec-21		cc ASSISTT
Complete MSL12 v1.40 preparation and implementation	Jun-21	Jun-21		
Working on improvement of the ocean color data processing system (MSL12), particularly over global coastal and inland water regions	Sep-21	Sep-21		
Improve the merged VIIRS OC data from SNPP and NOAA-20, and gap-free global Chl-a data	Sep-21	Sep-21		
Continue VIIRS Cal/Val data analysis (SNPP & NOAA-20 comparison)	Mar-21	Mar-21		
In situ data collections from OC Cal/Val team including NOAA dedicated cruise and other opportunities, and continue Cal/Val for ocean color EDR	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		

Highlights: Chlorophyll-a Anomaly Products from VIIRS described in peer-reviewed publication (Int. J. Appl. Earth Obs. Geoinf)

A New Paper Published: Global chlorophyll-a anomaly products from VIIRS measurements



The first-ever near-real-time global daily chlorophyll-a (Chl-a) anomaly products have been routinely produced from VIIRS measurements. They include both Chl-a anomaly products in difference and in relative difference. Global daily Chl-a anomaly products are effective for detecting algae blooms, including harmful algal blooms. Top plots show VIIRS-derived Chl-a time series in various water regions (left) and the corresponding two Chl-a anomaly products (right).

Wang, M., L. Jiang, K. Mikelsons, and X. Liu, (2021), "Satellite-derived global chlorophyll-a anomaly products", *Int. J. Appl. Earth Obs. Geoinf.*, 97, 102288, <https://doi.org/10.1016/j.jag.2020.102288>.

Accomplishments / Events:

- NPP and N20 L2P (swath) and L3U (0.02° gridded) SST products continue to be archived at PO.DAAC and NCEI (see Table below). Current data are heavy in size, measuring approximately 10TB/year/sensor. The archived full NPP & N20 records cumulatively cover 12 years, equivalent to ~120TB & incrementing ~20TB every year.
- To make data size more manageable for data archives, users, and producers, and in anticipation of J2/N21 launch in 2022, an updated version 2.80 is being delivered to ASSISTT. This redelivery takes advantage of the NDE being ready to receive v2.80 only in Apr 2021. The L2P file size is reduced by a factor of 3, due to exclusion of some heavy data layers (brightness temperatures in individual bands), which were included in ACSPO dataset for historical continuity.
- Some data users (such as NASA GMAO and NOAA NCEP) maybe interested in BT layers, but have not used those so far. If such need occurs in the future, adding BTs to the dataset will be separately considered and negotiated.
- Reprocessing of full NPP and N20 records with v2.80 is ongoing, so that by the time 2.80 is operationally implemented in NDE, we will be ready to back-fill and provide to data archives a consistent, full 2.80 record.

Overall Status:

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

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

Issues/Risks:

None

Highlights:

Dataset	NASA PO.DAAC	NOAA NCEI
NPP VIIRS L2P	10.5067/GHVRS-2PO61	10.7289/v5pr7sx5
NPP VIIRS L3U	10.5067/GHVRS-3UO61	10.7289/v5kk98s8
N20 VIIRS L2P	10.5067/GHV20-2PO61	10.25921/sfs7-9688
N20 VIIRS L3U	10.5067/GHV20-3UO61	10.25921/7c1m-rw73

Version	Satellites	Sensor	L2P	0.02° L3U
2.61	NPP/N20/N21	VIIRS	9.5TB/yr	0.2TB/yr
2.80	NPP/N20/N21	VIIRS	3.5TB/yr	0.2TB/yr

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/15/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Apr-21	May-21		ACSPO 2.80
Final J2 ready DAP to ASSISTT	Aug-21	Aug-21		ACSPO 2.90
Final J2 ready DAP to NDE (include NPP/N20 updates)	Dec-21	Dec-21		
Algorithms improvements (clear-sky mask, SST thermal fronts) to support data fusion (ACSPO 2.90)	Aug-21	Aug-21		
J2 ACSPO and Cal/Val Readiness	Sep-21	Sep-21		
Support N20/NPP SST Cal/Val & fixes	Sep-21	Sep-21		
Continue archival w/PO.DAAC/NCEI. Work w/NCEI to complete holdings	Sep-21	Sep-21		
Maintain SQUAM, iQuam, ARMS, match-up codes, RAN infrastructure. Improve & optimize	Sep-21	Sep-21		
NOAA SST Cal/Val Tools ready to monitor N21 SST	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		

Accomplishments / Events:

- Completed an assessment of the quality of NOAA-20 VIIRS winds over the period, August 1 - October 31, 2020, where the timestamp appended to the winds is changed to reflect the time of the last image in the image triplet. This assessment will be briefed to NCEP and NRL.
- Participated in the STAR-OPC User Engagement Workshop (Dec 2020) and gave a short briefing on satellite-derived winds.

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			

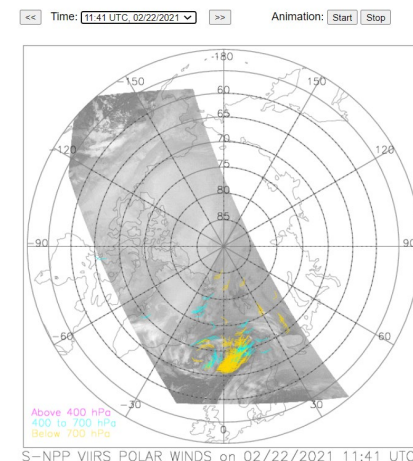
- Project has completed.
- Project is within budget, scope and on schedule.
- Project has deviated slightly from the plan but should recover.
- Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

None

Highlights: Polar Winds imagery and animations available via OSPO website (February example below)

S-NPP VIIRS Polar Winds (Arctic)



Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/30/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21		downstream testing
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Sep-21	Sep-21		
Prototype the derivation of winds with the DNB using the heritage windco algorithm	Sep-21	Sep-21		
Implementation of the shortwave IR (2.25 μm) band winds	Sep-21	Sep-21		
Adapt QC method designed for winds derived using optical flow from image pairs to VIIRS tandem winds	Sep-21	Sep-21		
Assess the use of cloud heights derived from LEO hyperspectral sounders (CrIS, IASI)	Sep-21	Sep-21		
Collaborate with NWP community on model assimilation and impact studies	Sep-21	Sep-21		
Continue to improve products monitoring capability	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		

Accomplishments / Events

NUCAPS CO2 validated maturity review : NUCAPS team prepared, reviewed and finalized responses to all the three RFAs, namely, (1) More quantitative comparisons with OCO-2, (2) README file updates with details on the latest algorithm changes, and (3) plans on routine monitoring and evaluation of the trace gas products including trending and statistical metrics. The team also has proposed reprocessing plans for mission-long S-NPP EDR products using the most recent validated maturity version including the availability of averaging.

NUCAPS team members participated in "Advancing Understanding of Grand Challenges in Atmospheric Research" quarterly workshop (held January 27), a collaborative effort of NOAA and GML teams, and presented on-going research activities, and the work-plan of collaborations for FY21 and FY22. Results presented by the NUCAPS team members on the (1) trace gases, and (2) Ozone and water vapor themes were well received.

NUCAPS team continued working with the CrIS SDR team on (a) the evaluation of the IASI Level-1D reconstructed radiances through generating NUCAPS EDR products, and (b) IR-only retrievals as a risk reduction and mitigation measure.

Overall Status:

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

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

Issues/Risks:

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity: CO2 (S-NPP & NOAA-20)	Dec-20	Dec-20	12/17/20	12/17/20
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/30/20	
NUCAPS3.0/HEAP2.3 to ASSISTT			12/14/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Apr-21	Apr-21	02/26/21	
Final J2 ready DAP to ASSISTT	May-21	May-21		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Oct-21	Oct-21		
NUCAPS averaging kernels for T/H2O/O3/CO/CH4/CO2	Sep-21	Sep-21		
Improve trace gas retrievals	Sep-21	Sep-21		
Explore the use of alternate technologies for certain NUCAPS modules such as AI-based bias tuning and regression	Sep-21	Sep-21		
Collection of validation data sets and collocated matches of satellite radiances and ancillary data sets for product validations and monitoring	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		

Highlights

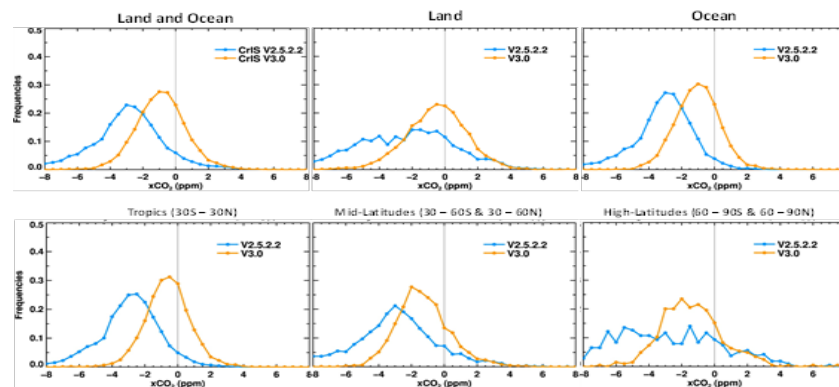


Figure: Quantitative evaluation of NUCAPS v3.0 CO2 vs. OCO-2 product stratified as land, ocean, and, over different latitude zones. In general, the NUCAPS v3.0 (orange curve) shows improved performance over the current operational version (v2.5.2.2, blue curve), and the NUCAPS product over land and oceans do not differ significantly. The NUCAPS CO2 product over tropics shows smaller differences with the OCO-2 in comparison to mid-latitudes and high-latitude stratifications.

Accomplishments / Events:

- Software Code Review was held by OSPO for MiRS v11.6 which is being transitioned to operations. Several code modifications were identified. These modifications were completed, and the updated v11.6 DAP was redelivered to OSPO on 2/5/21.
- As part of planned multi-author paper on two Smoky Mountain severe flooding events (6 Feb and 12-13 Apr 2020), analysis has continued including validation of MiRS JPSS precipitation rates. See highlights.
- Refereed article was officially published in journal Remote Sensing. This article examined the contribution of 23 GHz measurements to the retrieval of TPW over land surfaces. MiRS was used as a testbed for retrieval sensitivity experiments.
 - Liu, Q., Cao, C., Grassotti, C., Lee, Y.-K. (2021). How Can Microwave Observations at 23.8 GHz Help in Acquiring Water Vapor in the Atmosphere over Land? Remote Sens., 13, 489. [10.3390/rs13030489]

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			

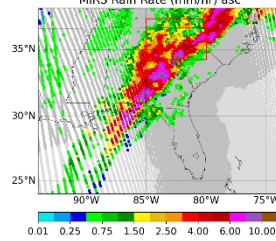
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Issues/Risks:

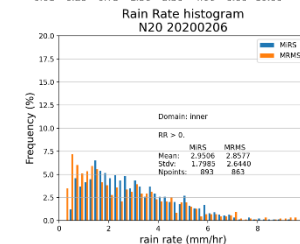
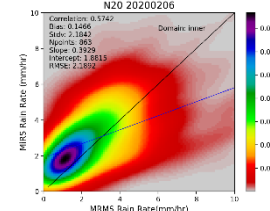
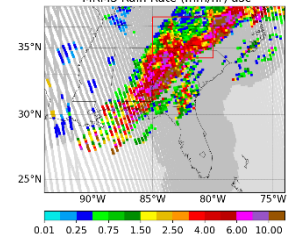
None

Highlights:

Collocated MRMS and MiRS N20 20200206
MiRS Rain Rate (mm/hr) asc



Collocated MRMS and MiRS N20 20200206
MRMS Rain Rate (mm/hr) asc



MiRS N20 (top left) and MRMS rain rates (top right), along with 2-d (bottom left) and 1-d (bottom right) histograms on 6 Feb 2020. Statistics are for the inner domain indicated by the red rectangle.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/21/20	
MiRS v11.7 to ASSISTT			12/21/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Mar-21	Mar-21		
Final J2 ready DAP to ASSISTT	Jul-21	Jul-21		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Dec-21	Dec-21		
Integrate SFR updates	Jun-21	Jun-21		
AI based radiometric bias correction	Aug-21	Aug-21		
Explore AI application for improved first guess for all weather temperature and water vapor retrievals in particular the enhancement under hurricane conditions	Sep-21	Sep-21		
ATMS SDR reprocessing data verification	Sep-21	Sep-21		
Algorithm maintenance and monitoring	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		

Accomplishments / Events:

- The SFR team is conducting a comprehensive validation study on ATMS SFR after implementing some algorithm updates recently. Preliminary study indicates that both NOAA-20 and S-NPP capture snowfall patterns well when compared to Stage IV radar-gauge combined hourly precipitation product. However, an analysis of SFR stratified by elevation also shows that there is a tendency for overestimation below 500 m and underestimation above 500 m (the Highlights session). This study will include stratification by other parameters and global validation etc.
- A new technique for initializing ice water path (IWP) has been developed and implemented in the SFR algorithms for all satellites. It improves SFR retrieval especially for intense snowfall.
- The SFR team has completed updating the DMSP F16-F18 SSMIS SFR algorithms and integrated them in the enterprise processing system. The products are produced at CISESS at near real-time and sent to some WFOs through NASA SPoRT. The team is still updating the GPM GMI SFR 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			

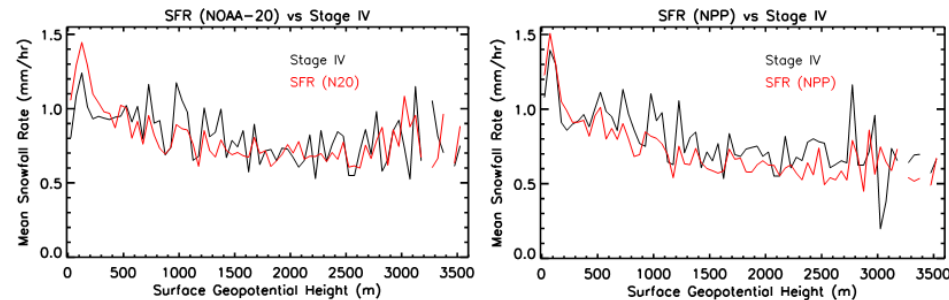
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2. Project is within budget, scope and on schedule.
3. Project has deviated slightly from the plan but should recover.
4. Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/15/20	
MiRS v11.7 to ASSISTT			12/21/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Mar-21	Mar-21		ASSISTT delivery
Final J2 ready DAP to ASSISTT	Jul-21	Jul-21		MiRS delivery
Final J2 ready DAP to NDE (include NPP/N20 updates)	Dec-21	Dec-21		ASSISTT delivery
Updated SFR algorithms for JPSS-2	Jun-21	Jun-21		
Deliver updated SFR package (for JPSS-2, NOAA-20, and S-NPP) to MiRS team for integration	Jun-21	Jun-21		11/20/20 SFR package to MiRS
Explore AI-based snowfall detection	Sep-21	Sep-21		
NOAA-20 and S-NPP cross-calibration/comparison	Sep-21	Sep-21		
Algorithm maintenance and monitoring	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		

Highlights: ATMS SFR validation



Validation of ATMS SFR stratified by elevation, (left) NOAA-20 and (right) S-NPP. SFR follows the trend and variation of Stage IV very well. However, the mean SFR generally underestimates except when elevation is below 500 m. The mean SFR tends to overestimate over areas with low elevation.

Accomplishments / Events:

- V2Limb Patch DAP for four issues delivered to NDE
 - Script revisions for Python, Centos and Gnu FORTRAN updates
 - Ancillary file name length and control file contention resolved
 - Metadata additions to meet NDE standards
 - Compatibility with improved latency scripts and new GFS forecast files
- Enterprise / Cloud V8TOz and V8TOS tested on OMPS NM SDR and GOME-2 Level 1
- Operational Readiness briefing for LTOAST (using V2Limb) provided to SPSRB
- S-NPP V8Pro reprocessed CDR for 2020 provide to NCEP

Overall Status:

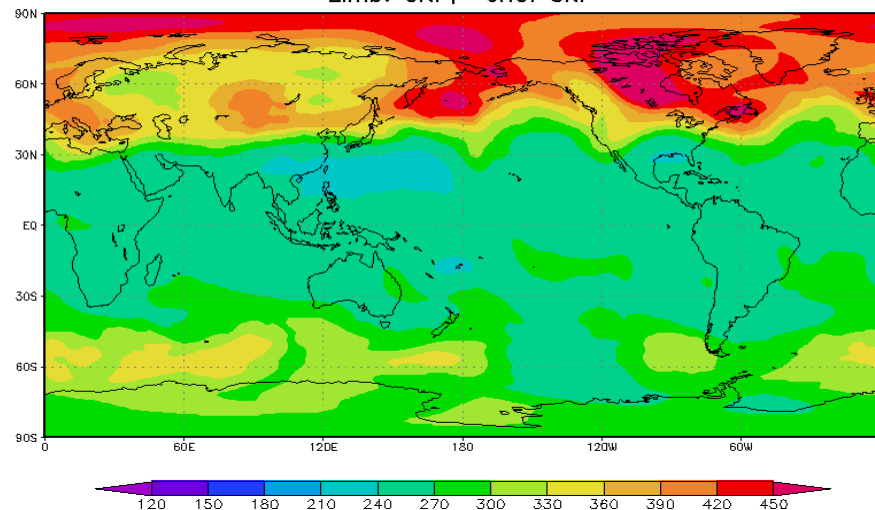
	Green ¹ (Completed)	Blue ² (On-Schedule)	Yellow ³ (Caution)	Red ⁴ (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule			X		Ozone Profile agreement between S-NPP and NOAA-20 is elusive.

- 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:

Highlights: False color map of total ozone from LTOAST

Global TOAST Analysis on 20210124
Limb: SNP, CrIS: SNP



Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
JPSS-2 Schedule				
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	05/21/20	
J2 Cal/Val Plan – V2.0 delivery	Dec-20	Dec-20	12/30/20	
Initial J2 ready DAP to ASSISTT	Jul-20	Jul-20	v4r0: 07/07/20	V8Pro
Initial J2 ready DAP to ASSISTT	Nov-20	Nov-20	v4r2: 11/25/20	V8TOz
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Dec-20	Dec-20	12/31/20	V8Pro
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Apr-21	Apr-21		V8TOz
Final J2 ready DAP to ASSISTT	Jul-21	Jul-21		V8Pro
Final J2 ready DAP to ASSISTT	Jun-21	Jun-21		V8TOz
Final J2 ready DAP to NDE (include NPP/N20 updates)	Dec-21	Dec-21		V8Pro
Final J2 ready DAP to NDE (include NPP/N20 updates)	Nov-21	Nov-21		V8TOz
Algorithm Updates Review	Sep-20	Sep-20	08/18/20	
Algorithm Updates/Cal-Val Activities				
<u>Details in next slides</u>				

OMPS Ozone (V8Pro, V2Limb & V8TOz) Milestones

Milestones	Scheduled Date	Actual Completion Date
Provide V8TOz and V8TOS DAP to ASSISTT with new code and tables for broad bandpasses, and updated capability to handle 30x241 FOVs SDR Granules in preparation for J02.	Nov-20	11/25/20 v4r2 V8TOz
Provide DAP to ASSISTT with new V8Pro code and tables to implement improved channel interpolation and latitude-dependent soft calibration adjustments.	Jan-21 Mar-21 (forecast)	
Complete work with NDE to resolve two OMPS V2Lmb issues -- Latency / Time Out and Ancillary File errors.	Feb-21	Patch DAP to NDE 2/11/21 V2Limb
Demonstrate V8TOz and V8Pro processing of J02 test data as provided by the OMPS SDR team.	Jun-21	
Complete evaluation of NDE resource needs for three-slit processing of the S-NPP OMPS Limb with V2Limb and make a decision on whether to switch from 1 slit to 3 slits.	Jul-21	
Complete rehosting of CloudRR algorithm at STAR	Aug-21	

Accomplishments / Events:

- Held meeting with OSPO and ASSISTT for planned GAASP updates in FY21
 - Progressing with SSW and RR code transitions
 - These should be completed by March 2021
- Continued product O&M
- Keeping abreast of GOSAT-2 AMSR3 activities so plans can be developed for use at STAR

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			

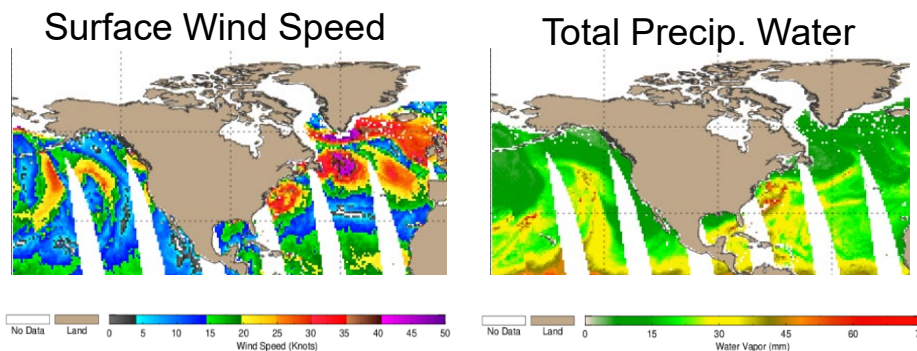
- Project has completed.
- Project is within budget, scope and on schedule.
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- Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
AMSR-3 Schedule (launch: Apr-2023)				
AMSR-3 Cal/Val Plan - draft delivery	Sep-21	Sep-21		
AMSR-3 Cal/Val Plan - final delivery	Mar-22	Mar-22		
Initial AMSR-3 ready DAP to ASSISTT	FY22	FY22		
Initial AMSR-3 ready DAP to NDE (include AMSR-2 updates)	FY22	FY22		
Final AMSR-3 ready DAP to ASSISTT	FY22	FY22		
Final AMSR-3 ready DAP to NDE (include AMSR-2 updates)	FY22	FY22		
Algorithm Updates Review	FY22	FY22		
Algorithm Updates/Cal-Val Activities				
GAASP patch DAP to NDE			01/07/21	
GAASP patch DAP to CSPP			01/19/21	
Improved SSW and RR algorithms	Mar-21	Mar-21		
Transition algorithm updates to operations	Aug-21	Aug-21		
Reprocess mission data set	Sep-21	Sep-21		
Technical Information Meeting between NOAA and JAXA	Sep-21	Sep-21		
Annual report on AMSR2 algorithms and data product performance	Sep-21	Sep-21		

Highlights: Active winter weather depicted in several AMSR2 EDR's. Shown below is the ocean wind speed and TPW products from 7 Feb 2021, showing several low pressure centers in the Atlantic and associated moisture plumes.



Accomplishments / Events:

- A case study for an Atmospheric River event along the south Alaskan coast is underway in coordination with the JPSS Hydrological Initiative (**Highlight**).
- Differences between HEAP/NUCAPS 2.5 and 3.0 versions continue to be investigated for IR+MW soundings which pass QC
- A. Reale attended and presented at the Global Energy and Water Exchanges (GEWEX) H2O Vapor Assessment Working Group meeting on February 8,9; summarized at STAR JPSS Leads Presentation Feb. 16
- A. Reale agreed to serve as mentor for a NOAA Cooperative Science Center in Atmospheric Sciences and Meteorology (NCAS-M) student to use NPROVS for studying NUCAPS lower troposphere skill in support of synoptic forecasts.
- The EDR LTM team provided custom images of NUCAPS trace gas products in support of the AERosols and Ocean Study Expedition (AEROSE) 2021 campaign (**Highlight**).

Overall Status:

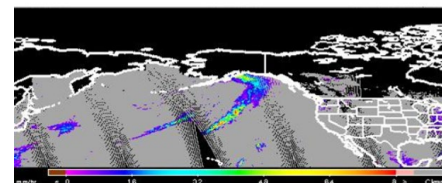
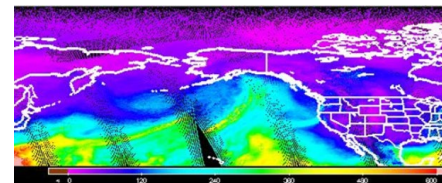
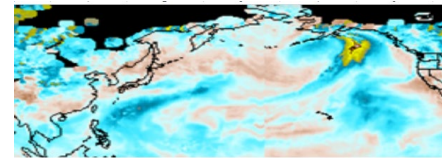
	Green ¹ (Completed)	Blue ² (On-Schedule)	Yellow ³ (Caution)	Red ⁴ (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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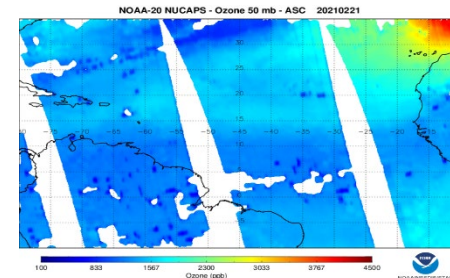
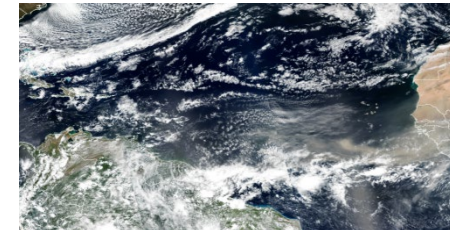
Issues/Risks: None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
LTM				
Maintain / expand existing EDR LTM web pages and mappers	Aug-21	Aug-21		
NPROVS				
Support NUCAPS / MiRS EDR soundings for NPP, NOAA-20 and MetOp-C; COSMIC-2, ...	Aug-21	Aug-21		
Manage JPSS dedicated radiosonde program (ARM, AEROSE, ...), expand to store SDR (GSICS)	Aug-21	Aug-21		
Support AWIPS- NUCAPS initiatives and case studied demonstrating NUCAPS value to users	Aug-21	Aug-21		

Highlights:



A case study comparing NESDIS Blended TPW, % of Normal (Top) and NOAA-20 MiRS TPW (middle) and Rain Rate (Bottom) shows good agreement for an eastward advancing Atmospheric River along the south Alaska coast (Dec 1 2020); JPSS Hydrological Initiative. Investigation continues



Custom made EDR LTM images of NOAA-20 VIIRS true color (top) and NUCAPS Ozone trace gas product at 50 hPa (bottom) during 2021 AEROSE campaign (Atlantic basin) onboard the NOAA science vessel Ronald H Brown. Such images of clouds and trace gas products support the crew with daily briefings and determining when to launch radiosondes.