NOAA JPSS Monthly Program Office

AMP/STAR FY20 TTA

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January 26, 2021

Highlights from the Science Teams

JPSS Clouds Product Suite added to JSTAR Mapper

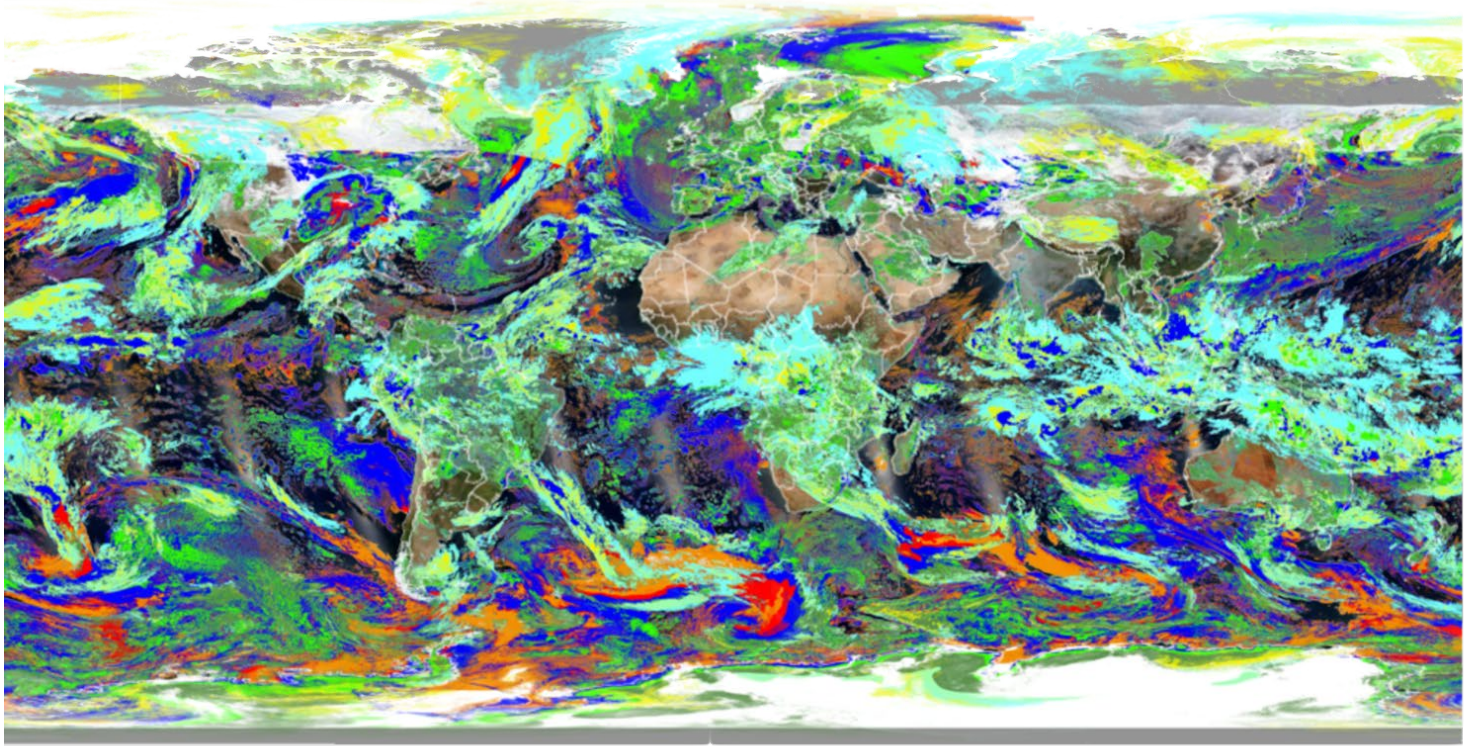


Figure. Cloud Base Height product from JSTAR Mapper. This product is of particular interest to aviation concerns.

The JSTAR Mapper team has added the full suite of required JPSS Clouds EDR products to the JSTAR Mapper website starting September 2020. These products are available for both ascending and descending nodes and for S-NPP and NOAA-20. The images are updated on a daily basis at this time.

The site already hosted the Enterprise Cloud Mask product. Cloud Top Height, Cloud Top Temperature, Cloud Top Pressure, Cloud Base Height, Cloud Particle Size, Cloud Phase/Type, and Cloud Optical Depth are now included.

Highlights from the Science Teams

Convective Cloud Fraction Product Progress

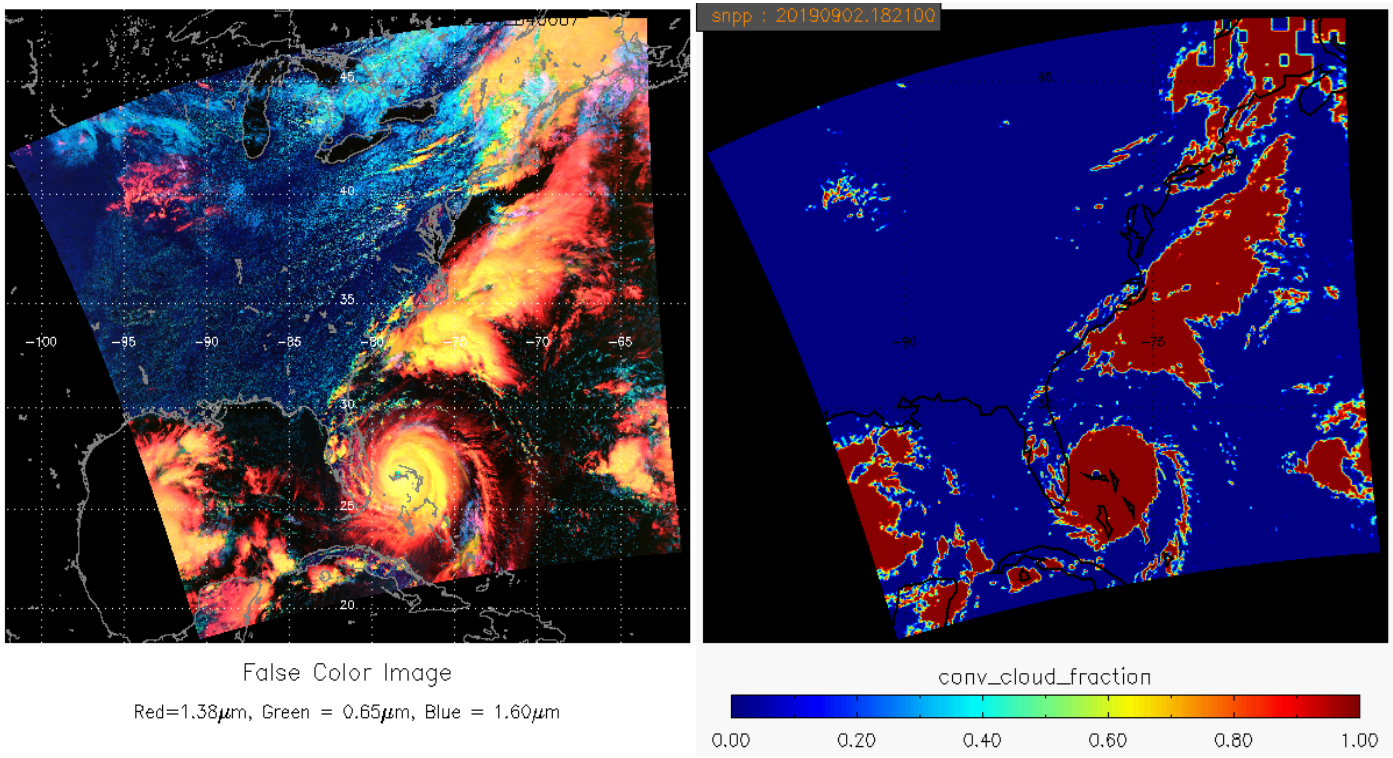


Figure. An RGB image (left) and total convective cloud fraction (right) derived using ACHA cloud top products and the computed level of free convection for Hurricane Dorian.

The Cloud Cover/Layers team has developed a method for determining the level of free convection, which will be used to determine the convective cloud fraction. Efforts to make better use of LFC and CAPE for convective clouds detection are in progress.

Highlights from the Science Teams

Polar Winds using SWIR bands now available from CIMSS

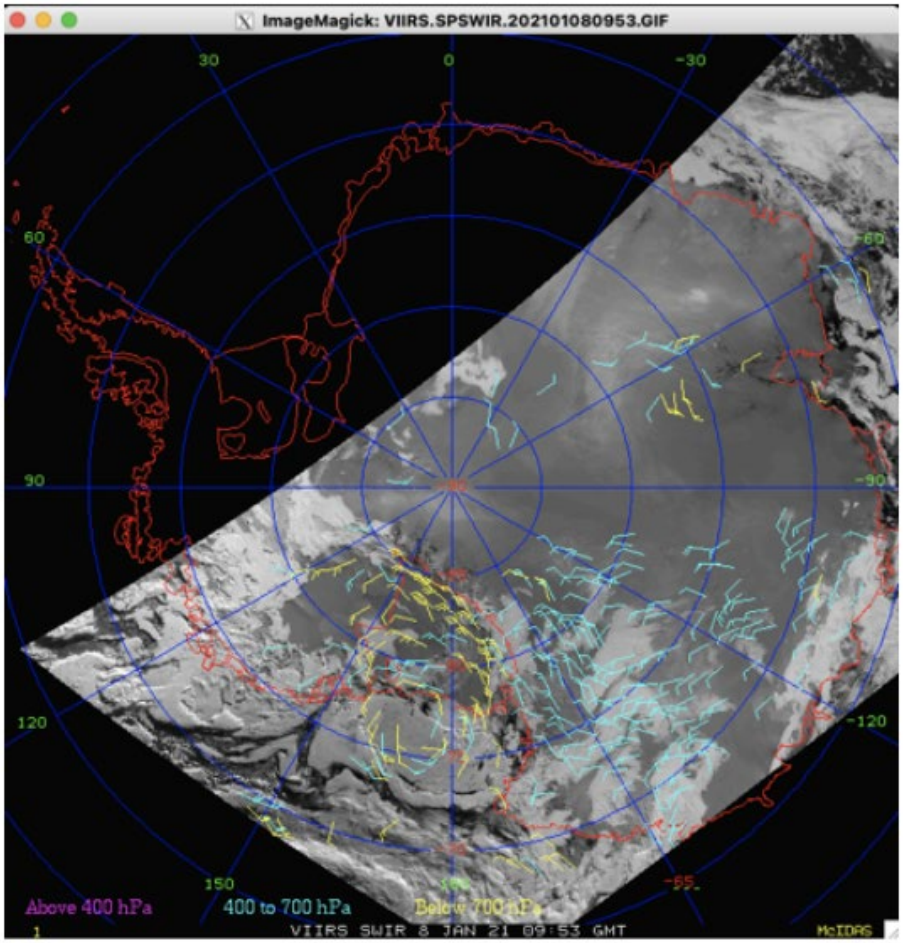
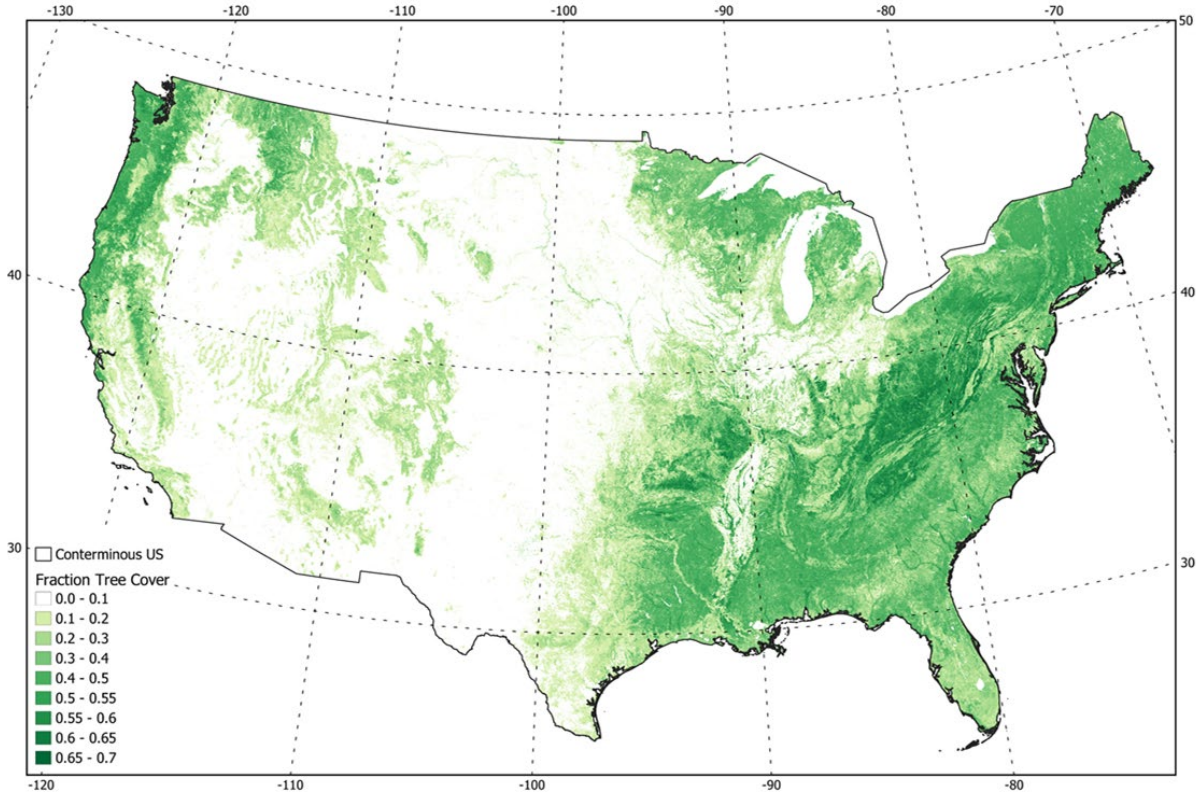


Figure : VIIRS SWIR winds over Antarctica at 09:53 UTC on 8 January 2021.

- VIIRS shortwave infrared (SWIR) winds are now routinely generated at CIMSS using the M11 (2.2 μm) band. Using a SWIR band provides greater contrast between liquid clouds and the underlying snow/ice surface, which are both bright in the visible and may have similar temperatures in the infrared.

Highlights from the Science Teams

VIIRS Surface Type Percent Tree Cover



A prototype fractional tree cover product derived using VIIRS data and Lidar measurements from NASA's GEDI mission (Rishmawi et al., in revision).

EMC scientists expressed interests in VIIRS-based data products on vegetation structure. To address their needs, the surface type team has:

- Developed an approach for deriving such products using VIIRS data and Lidar measurements from NASA's GEDI mission
- Produced CONUS-wide products on key forest attributes including tree height, fractional tree cover, etc.
- Summarized the results in a journal article for peer review.

Highlights from the Science Teams

Snowfall Rate improvement in intense snow

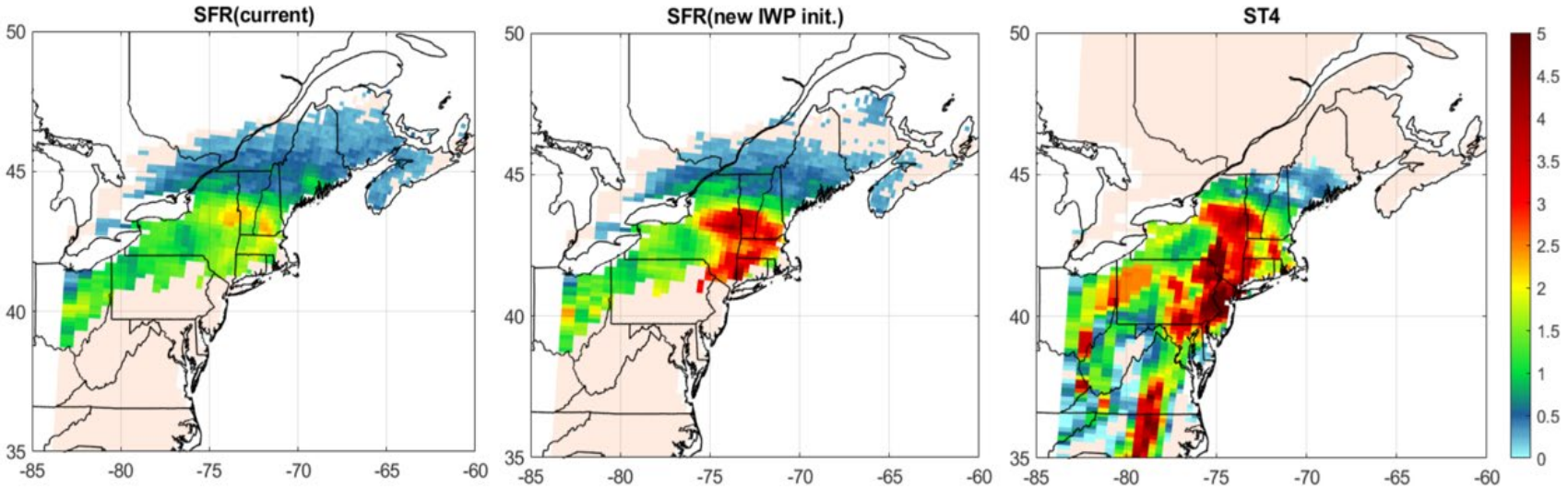


Figure. Snowstorm on January 20, 2019. Left: current NOAA-20 SFR at 6:26 UTC, middle: the same as left but SFR is retrieved with the new IWP FG, right: Stage IV hourly precipitation at 7 UTC.

A new approach is being developed to derive ice water path (IWP) first guess (FG) for the 1DVAR in the SFR algorithm. The current IWP FG is computed from an empirical equation that was established between brightness temperatures (TBs) and estimated IWP. An issue with this approach is that the uncertainties in the IWP estimation will impact the accuracy of the IWP FG and eventually propagate to the SFR retrieval. In the new method, however, the IWP FG is directly linked to the Stage IV hourly radar and gauge combined precipitation estimates as well as some environmental parameters from GFS for additional information content. Preliminary results indicate that the new approach significantly improves SFR accuracy especially for intense snowfall.

Accomplishments

- Delivery Algorithm Packages (DAPs) - Mission Unique Products:
  - 12/28/2020: OMPS SDR team delivered Initial J2 LUTs DAP to ASSISTT team
  - 1/14/2021: OMPS SDR team delivered DAP (Solar Intrusion Code Delivery DR9309) to ASSISTT team

- DAPs – Enterprise Products:
  - 12/31/2020: OMPS NP Ozone EDR initial J2 DAP (V8Pro v4r0) delivered to NDE
  - 1/7/2021: GCOM GAASP system patch DAP (CentOS7 upgrade, and script update to fix an issue with a grep command with new GFS v16) delivered to NDE
  - 1/19/2021: GCOM GAASP system patch DAP delivered to CSPP
  - 1/19/2021: science update for Cloud Base algorithm delivered to ASSISTT team
  - 1/13/2021: Vegetation Index, & Green Vegetation Fraction final J2/Enterprise Cal/Val plans delivered to DPMS
  - 1/19/2021: Ocean Color final J2/Enterprise Cal/Val plan delivered to DPMS

- Cloud Implementation Support / IDPS Builds Checkouts:
  - 1/6/2021: JSTAR submitted ATMS team's summary report for Block 2.3 Mx0 I&T review/checkout CCR-4985 (lunar intrusion correction) implementation verification
  - 1/15/2021: JSTAR submitted Block 2.3 Mx1 SOL deploy regression review/checkout data request to DPMS/RTN
  - STAR supported IDPS additional 10-day parallel ops testing event, provided daily evaluation reports (1/11/2021 - 1/21/2021)
    - Daily reports available at google folder: https://drive.google.com/drive/folders/1PL_cMP5TFNgrFn75mYpGOAGlwCe__PrU

- GFS v16 Testing/Evaluation:
  - 1/7/2021: JSTAR submitted new GFS v16 testing/evaluation summary report to DPMS
  - 1/15/2021: JSTAR submitted updated GFS v16 testing/evaluation summary report to DPMS (with Surface Reflectance results).

- **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	01/05/21, 01/12/21, 01/19/21
NOAA-20	Weekly OMPS TC/NP Dark Table Updates	01/05/21, 01/12/21, 01/19/21
S-NPP	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	01/12/21
NOAA-20	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	01/05/21, 01/19/21
S-NPP	Monthly VIIRS LUT Update of DNB Offsets and Gains	01/19/21
NOAA-20	Monthly VIIRS LUT Update of DNB Offsets and Gains	01/19/21

- ***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

Milestone Summary

- **BLUF**: Milestones are tracking well against the TTA. we were on schedule for all scheduled Q1-FY21 milestones/deliveries:
- TTA Milestone Delta
  - **Cloud Migration Support**
    - Previous: Cloud Migration: (1) Parallel OPS support; (2) Verification of cloud implementation.
    - New: (Activity is unchanged w/more specific deliverables separating out IDPS and ADA Support)
      - 01/31/2021 Cloud ADA Tests and Migration Report
      - 01/31/2021 Cloud IDPS Migration Report
  - **GCOM/AMSR Team**
    - Only two milestones on TTA. Team Lead proposed adding additional milestones:
      - Annual report on AMSR2 algorithms and data product performance (Currently scheduled for Q4 requesting for Q3 - TBC)
      - AMSR2: updated SSW and RR products, reprocessed mission dataset Currently scheduled for Q4 requesting for Q3 - TBC)
  - **SST and OC Teams**
    - Following updates on Equipment Resources, JSTAR will meet with the team leads to understand if there will be any deltas to the milestones.

Upcoming Cal/Val Maturity Reviews

- May, 2021 Maturity Review:
  - Full Validated Maturity:
    - OMPS NP Ozone EDR (V8Pro)
    - Proposing for Dry Run in April with review scheduled for May.
      - JSTAR Met with OMPS EDR and SDR team leads (L. Fynn and B. Yan).
      - At present, work has been performed as outlined in the "Path_to_OMPS_EDR_V8Pro_ValidatedMaturityReview.doc". However, the work completed in Q1 has not successfully mitigated the differences between the Ozone EDR V8Pro product when comparing SNPP and NOAA-20. The latitudinal biases remain.
        - JSTAR will meet will request biweekly updates and provide another status update in February.

Upcoming Milestones/Deliveries

- JSTAR Code/LUT/Product Deliveries:

  DAP to DPES:
  - Jan-21: Initial J2 LUTs (OMPS SDR, to DPMS)

  NOAA-20 Algorithm DAP to NDE/CoastWatch:
  - Jan-21: Initial J2 DAP (JRR/VPW/LST/LSA, include NPP/N20 updates)
  - Jan-21: Initial J2 DAP (Surface Reflectance, include NPP/N20 updates)
  - Feb-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-21: Initial J2 DAP (SST, include NPP/N20 updates)
  - Apr-21: Initial J2 DAP (NUCAPS, include NPP/N20 updates)
  - Apr-20: Vegetation Health – Final N20 / initial J2 DAP

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	Jan-21	Jan-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	Jan-21		
Final J2 ready DAP (include NPP/N20 updates), Clouds/Aerosol/VolcanicAsh/Cryosphere/LST/LSA/VPW	Sep-21	Sep-21		
Initial Enterprise Fires DAP (NPP/N20/J2, I/M-Band)	Jun-21	Jun-21		
Surface Reflectance: Initial J2 ready DAP	Jan-21	Jan-21		
NVPS (VI & GVF): Initial J2 ready DAP	Feb-21	Feb-21		
Vegetation Health: Initial J2 ready/final N20 DAP	Apr-21	Apr-21		
SST: Initial J2 ready DAP (ACSPO 2.80)	Apr-21	Apr-21		
NUCAPS: Initial J2 ready DAP	Apr-21	Apr-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

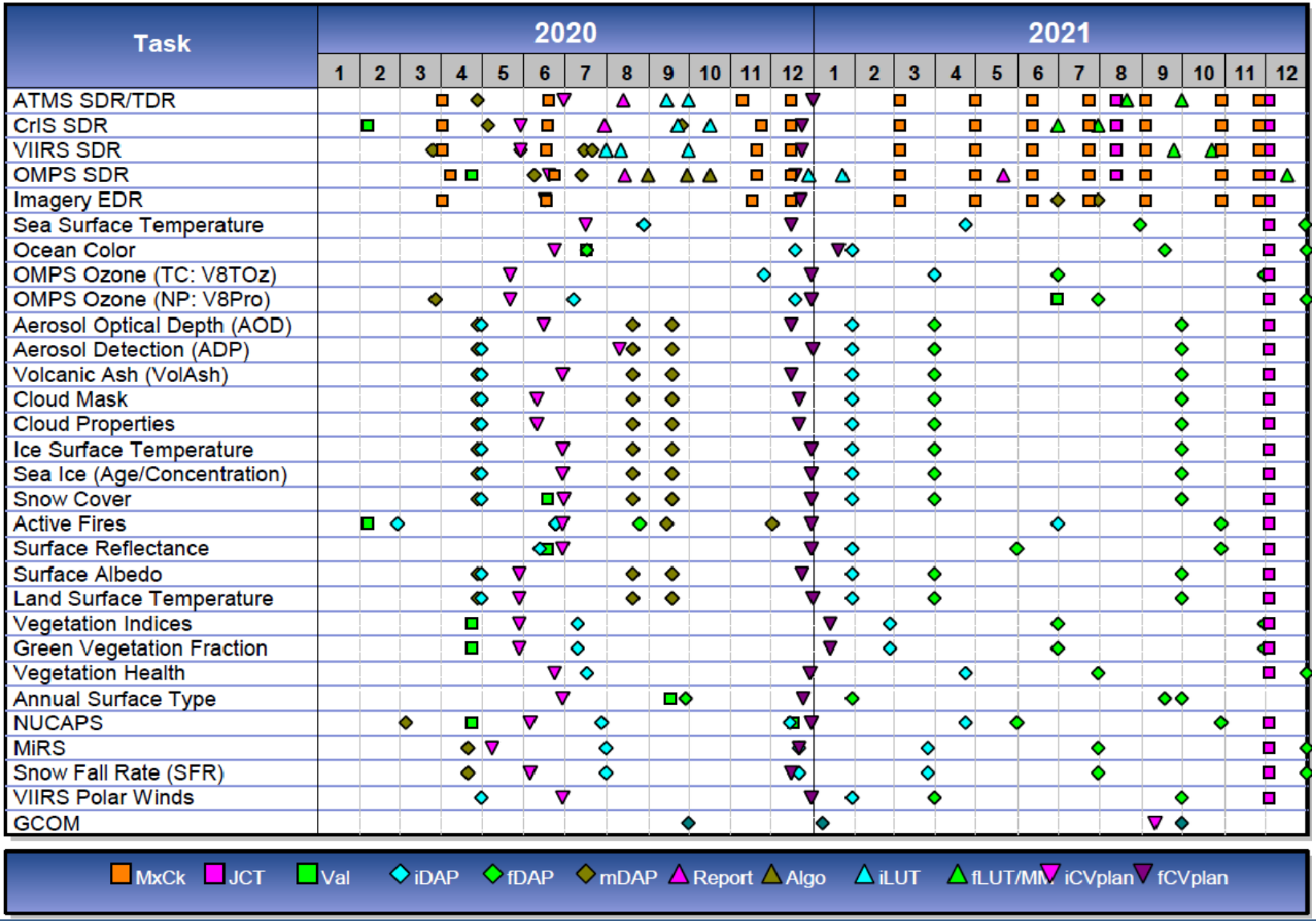
Milestones	Original Date	Forecast Date	Actual Date	Variance Explanation
Algorithm Cal/Val/LTM				
J2/Enterprise Cal/Val Plan - final delivery (all SDR/EDR products)	Dec-20	Dec-20	12/31/20	
GCOM: AMSR-3 Cal/Val Plan - draft delivery	Sep-21	Sep-21		
Updated JPSS-2 OMPS SDRs Pre-launch Characterization 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	Apr-21	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**	
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**	
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**	
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**	
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**	
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**	
Block 2.3 Mx builds I&T deploy regression data review/checkout (**Nov-20 Mx0**; Jan-21 Mx1; Feb-21 Mx2; Apr-21 Mx3; May-21 Mx4; Jun-21 Mx5; Jul-21 Mx6; Aug-21 Mx7; Sep-21 Mx9)	Sep-21	Sep-21	11/24/20 Mx0 I&T review/checkout report 12/10/20 updated Mx0 I&T 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), Out of Cycle CrIS DAP delivery **1/11/2021 – 1/21/2021 daily reportts**	
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



Color code:

Green: **Completed Milestones**

Gray: **Non-FY21 Milestones**

ATMS SDR

January, 2021

Accomplishments / Events:

- Finished evaluating ATMS space view calibration target lunar intrusion correction algorithm implemented in next operational ground processing system release version using on-orbit lunar intrusion events.
- Generated NOAA-20 vs. Suomi NPP ATMS inter-sensor bias through double difference technique using ATMS COSMIC-2 RO profile simulation minus operational TDR bias to assess ATMS reflector emission correction algorithm transitioned to operations in October 15, 2019.
- Evaluated JPSS-2 ATMS beam alignment error coefficients using antenna measurements provided by Northrop Grumman and performed the discrepancy study using NOAA-20 ATMS operational data as proxy data
- Prepared and presented ATMS SDR data long term quality and stability using inter-satellite comparison results in AMS 2021 virtual conference
- Addressed team comments in ATMS SDR ATBD draft document
- Finished the ATMS SDR data quality journal article initial draft and discussed the potential concerns in manuscript

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.*

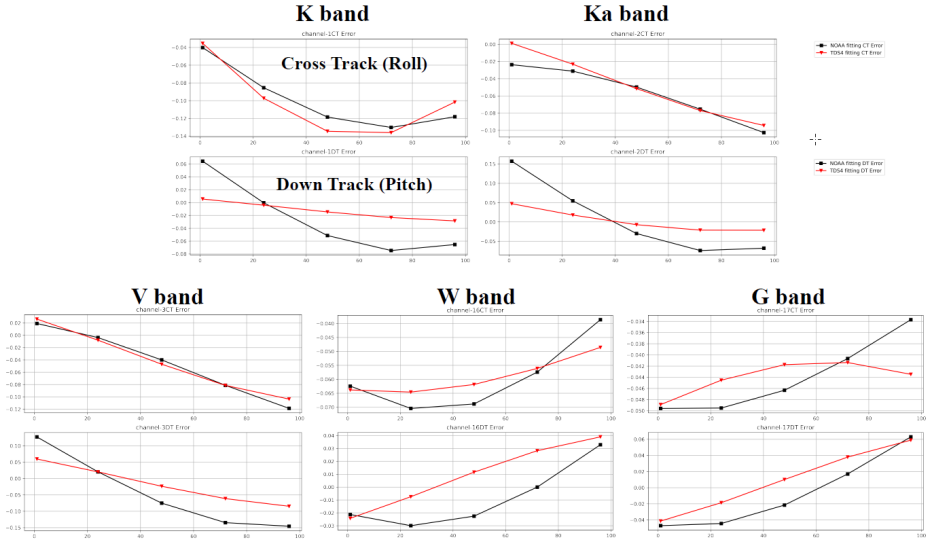
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/31/20	
Final PCT update, including Mounting Matrix Coefficients update based on the pre-launch mounting measurement report	Aug-21	Aug-21		SER + 6w (to ASSISTT)
Final 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**; Jan-21 Mx1; Feb-21 Mx2; Apr-21 Mx3; May-21 Mx4; Jun-21 Mx5; Jul-21 Mx6; Aug-21 Mx7; Sep-21 Mx9)	Sep-21	Sep-21	11/09/20 Mx0	Report

Highlights:

JPSS-2 ATMS beam alignment error coefficients comparison between STAR method (black) and original NG method (red)



CrIS SDR

January, 2021

Accomplishments / Events:

- Supported the Parallel OPS between the Cloud DP-OE and On-Prem IDPS. Very small radiometric discrepancies were found and documented in DRs 9280 and 9303. The average of the radiometric differences are in the order of 0.01 K over the LWIR and MWIR bands **(Fig. 1)**. This is 10 times smaller than the CGMS recommended threshold. Radiometric differences and volume of impacted data are within operational expectations. Team recommendations for path forward is to continue with efforts to complete TTO of Build 2.3. Analysis completes CrIS actions and shows no impact to TTO or the end user.
- The CrIS optimal thresholds for spike detection and correction algorithm (DR 8820/CCR 5199) was implemented in the NSOF string A since December 4th. Due to unexpected false alarms **(Fig. 2)**, the CrIS SDR team recommends not to implement the PCT update. The impact of the false alarms is minimal. Its potential root cause has been identified. A comprehensive assessment of the spike detection correction algorithm is in progress.
- Continue supporting the Cloud TTO checkout actions during the 10-day parallel OPS test. These activities started on Monday 01/11/2021. The largest BT differences are about $1x10^{-3}$ K for NOAA-20 and $8x10^{-3}$ K for S-NPP **(Fig. 2)**. CrIS Daily reports are being delivered.
- The CrIS SDR team presented and supported 6 presentations at the AMS 2021 Meeting.
- Three extended abstracts have been prepared and submitted to the IGARSS 2021.
- The revision of two IEEE TGRS manuscripts is in progress.

Overall Status:

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

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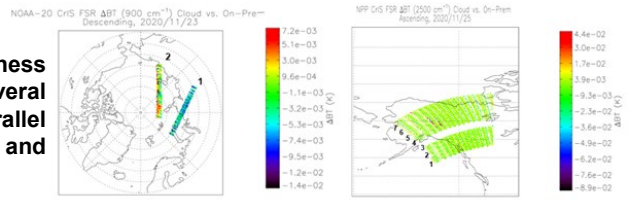
Issues/Risks:

Dr. Erin Lynch started supporting the CrIS Cal/Val activities on December 28, 2020 as a GST contractor. This action is expected to mitigate the leave of Dr. Yong Chen on September 27, 2020.

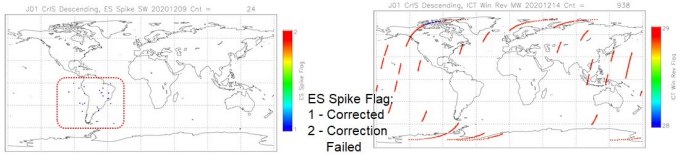
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/23/20	
PCT update based on pre-launch test data and other changes	Oct-20	Oct-20	10/16/20	
Verification of operational CrIS SDR data at FSR after the termination of NSR data			11/06/20	
Final PCT update, including Mounting Matrix Coefficients update based on the pre-launch mounting measurement report	Jun-21	Jun-21		SER + 6w (to ASSISTT)
Final 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:				
Block 2.3 Mx builds I&T deploy regression data review/checkout (**Nov-20 Mx0**; Jan-21 Mx1; Feb-21 Mx2; Apr-21 Mx3; May-21 Mx4; Jun-21 Mx5; Jul-21 Mx6; Aug-21 Mx7; Sep-21 Mx9)	Sep-21	Sep-21	11/23/20 Mx0	Report

Highlights:

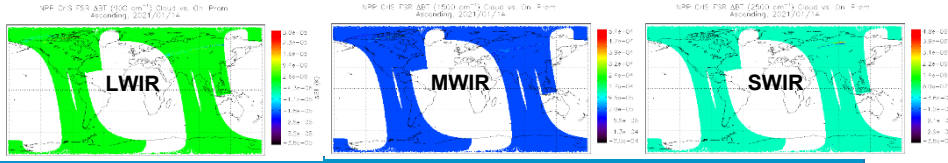
(1) Differences in brightness temperature identified in several SDR granules during the parallel OPS for both NOAA-20 and SNPP



(2) Earth scene spikes correctly detected by the optimized algorithm and thresholds, which mostly occur in SAA region (left). Small number of false alarms were detected in the NOAA-20 ICT interferograms, particular in the reverse direction (right).



(3) Radiometric difference between the Cloud and On-Prem CrIS SDR products over three CrIS channels. The Radiometric differences are within 0.01K.



VIIRS SDR

January, 2021

Accomplishments / Events:

- In support of the IDPS transition to the cloud-computing environment, compared and reported on VIIRS SDR products from IDPS Parallel Operations on DP-OE and on-premises hardware for NOAA-20 and S-NPP data acquired in January 2021
- Delivered for deployment in IDPS operations updated NOAA-20 and S-NPP DNB offset and gain ratio LUTs generated using new moon calibration data from 1/13/2021; additionally, reprocessed the test cases using ADL B2.3 Mx0 in support of the IDPS Parallel Operations in the cloud computing environment
- Analyzed lunar calibration data from the roll maneuvers on 12/25/2020
- Gave two presentations at the AMS annual conference, one of them about comparisons of VIIRS and TROPOMI reflectance measurements

Overall Status:

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Issues/Risks:

none

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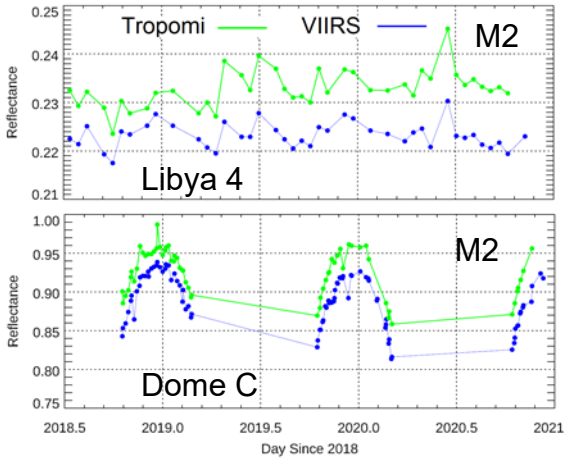
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/23/2020	
Launch-ready LUTs (final delivery), including Mounting Matrix Coefficients update based on the pre-launch mounting measurement report	Sep-21	Sep-21		SER + 6w (to ASSISTT)
Launch-ready LUTs (final delivery)/MM-coeff.	Oct-21	Oct-21		To DPMS
JCT2 - 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		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		
VIIRS LUT update of DNB Offsets and Gains (NPP & N20)	Monthly	Monthly	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**; Jan-21 Mx1; Feb-21 Mx2; Apr-21 Mx3; May-21 Mx4; Jun-21 Mx5; Jul-21 Mx6; Aug-21 Mx7; Sep-21 Mx9)	Sep-21	Sep-21	11/20/20 Mx0	Report

Highlights:



Comparison of Suomi-NPP VIIRS and Sentinel-5P TROPOMI measurements of top-of-atmosphere reflectance at the Saharan Libya-4 site and the Antarctic Dome-C site (VIIRS band M2 shown)

OMPS SDR

January, 2021

Accomplishments / Events:

- Completed the ADL code changes by including the solar intrusion correction for NOAA-20 NP SDR data (DR9309) and RTM validation (see figures).
- Delivered the initial version of all J2 OMPS NP/NM LUTs to the ASSIST
- Delivered the DR9309 solar intrusion correction ADL to the ASSIST.
- Verified the derived the initial version of all J2 OMPS NP/NM LUTs by implementing the tables into the ADL.
- Delivered SNPP/NOAA-20 OMPS weekly Dark tables and NP solar irradiance bi-weekly LUTs to GRAVITE.
- Initialized the NOAA/STAR version of OMPS dark processing code structure (matlab).
- Completed the required IDPS ADL OMPS cloud migration testing report. All OMPS-NP data matched for both satellites; OMPS-TC for S-NPP matched with no differences. In contrast, OMPS_TC for NOAA_20 has 2 single scans that differ at the 20% level, these scans occur at the end of the orbit due to non-identical RDR inputs.
- Verified the J2 OMPS NP Spatial Registration (SRG) LUT, where a small jump in azimuthal look angle was noted within the overlapping channels with NM.
- Reviewed 472-CCR-20-2020 JPSS-2/3/4 Integrated Mission Timeline Plan, (Rev A 01/11/2021), and provided inputs to the JPSS DPA.
- Analyzed the J2 S/C Diary Raw RDR data to ensure we could process the data.

Overall Status:

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

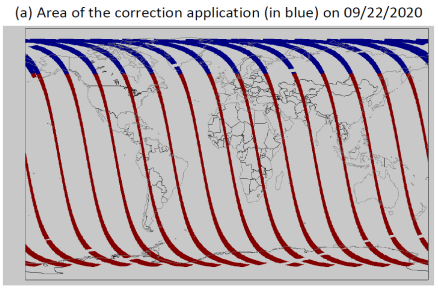
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

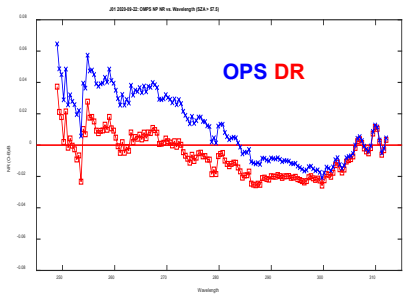
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
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 LUTs (initial delivery), to ASSISTT	Dec-20	Dec-20	12/28/20	To ASSISTT
Launch-ready LUTs (initial delivery), to DPMS	Jan-21	Feb-21		B2.3 Mx0 TTO
Launch-ready LUTs (final delivery), including Mounting Matrix Coefficients (PCT) updates based on the pre-launch mounting measurement report	FY22	FY22		Dec-21 To ASSISTT; 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		1/14/21 to ASSISTT
SNPP/NOAA-20 NM off-nadir geolocation error correction LUTs (ADR9361)	Feb-21	Feb-21		
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; Jan-21 Mx1; Feb-21 Mx2; Apr-21 Mx3; May-21 Mx4; Jun-21 Mx5; Jul-21 Mx6; Aug-21 Mx7; Sep-21 Mx9)	Sep-21	Sep-21	11/20/20 Mx0	Report

Highlights: Solar Intrusion Correction for NOAA-20 OMPS NP (ADL implementation and RTM validation





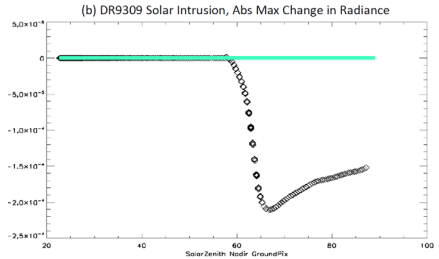


Fig. Left panel: (a) Area of the intrusion correction application for the data on 09/22/2020; (b) the radiance at 266.9 nm due to the solar intrusion correction as a function of solar zenith, where the line in green shows zero difference for points in the southern hemisphere.
Right panel: Comparison of the mean (O – B)/B as a function of wavelength for the NOAA-20 NP SDR data with (DR)/without (OPS) the solar intrusion correction

SDR Reprocessing

January, 2021

Accomplishments / Events:

- Completed the transition of SNPP/N20 ATMS/CrIS/OMPS RDR data to the Cloud (highlights)
- Transition of the reprocessed SNPP VIIRS SDR data to the Cloud is ongoing
- Per ESA's request, completed VIIRS SDR reprocessing for the period of 2018-04-01 to 2020-03-11
- Per ESA's request, completed the reprocessing of VIIRS Enterprise Cloud Mask (ECM) for the period of 2018-04-01 to 2020-03-11
- Presented the validation results on the reprocessed S-NPP SDR data the 2021 AMS annual meeting

Overall Status:

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

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

Issues/Risks:

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., and now it's back on.
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	Mar-21	Mar-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: SNPP/N20 ATMS/OMPS/CrIS RDR Transition to Cloud

(s3://dev-ncis-cov19-jpss/SNPP_Reprocessing/RDR/NPP_DATA, s3://dev-ncis-cov19-jpss/SNPP_Reprocessing/RDR/J01_DATA)

Platform	Instrument	Period	Size
SNPP	ATMS	2011-11-09 ~ 2019-10-15	1.6T
	OMPS_TC	2012-01-30 ~ 2020-07-31	856G
	OMPS_NP	2011-11-13 ~ 2020-07-31	361G
	CrIS	2011-11-09 ~ 2020-01-29	61.2T
N20	ATMS	2017-11-28 ~ 2019-10-15	364G
	OMPS_TC	2017-12-01 ~ 2020-07-31	1.9T
	OMPS_NP	2017-12-01 ~ 2020-07-31	299G
	CrIS	2017-11-29 ~ 2020-01-29	19T
Total	—	—	85.6T

ICVS

January, 2021

Accomplishments / Events:

- Updated ICVS JPSS RDR data processing modules to support JPSS-2 RDR data processing capability. Generated selected JPSS-2 ICVS sample images using NOAA-20 RDR data as proxy data and demonstrated the sample images in internal ICVS-JPSS2 web site (will be done on Jan-30).
- Added the CrIS vs. IASI double difference inter-sensor bias long term trending time series to ICVS-GSICS portal to demonstrate the CrIS data quality and long term stability, where the source code of CrIS and IASI was developed by L. Wang.
- Developed OMPS NM calibration stability monitoring package using a Deep Convective Clouds (DCC) technique.
- Applied reflectivity convolution error correction algorithm to generate OMPS NM and GOME-2 radiometric inter-comparison time series and NPP vs. NOAA-20 OMPS NM inter-sensor biases.
- Prepared and presented AMS annual conference presentations and posters

Overall Status:

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

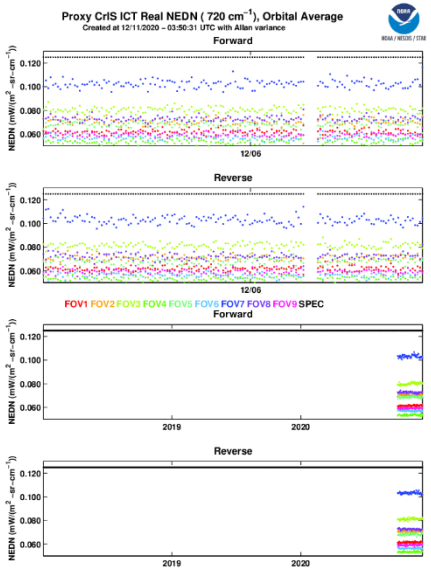
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

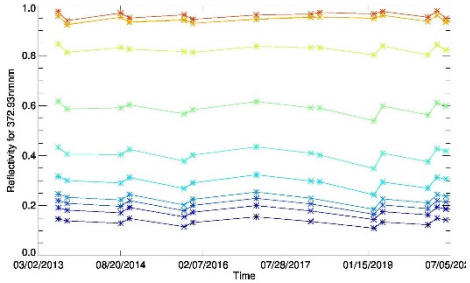
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Develop JPSS-2 ICVS prototype RDR portion (beta) (SNPP or N20 as proxy)	Jan-21	Jan-21	Jan-21	
Develop JPSS-2 ICVS prototype SDR portion (beta)	Apr-21	Apr-21		
Develop ICVS-Vector code prototype (beta)	Jun-21	Jun-21		
Develop 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

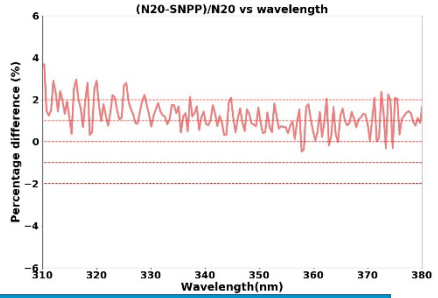
JPSS-2 CrIS ICT NEDT orbital mean Using NOAA-20 as proxy



OMPS NM Calibration stability using DCC



OMPS NM inter-consistency between NPP and N20 using double difference of NM vs GOME-2



VIIRS Imagery

January, 2021

Accomplishments / Events:

- **AMS 2021 presentation** completed, both the homework video and the live 5-minute 1-slide presentation on VIIRS 6 to 16 M-band imagery project, to be lead and validated by the Imagery Team. Hopefully, this will be funded and executed mainly by Raytheon programmers, based on preliminary analysis done in FY20.
- Started 3rd Tuesday meetings to address the **NCC banding anomaly**, setting up a sub-group of the Imagery Team to look into the problem and dig into the code to isolate the source and propose a software or BRDF LUT fix. Or particular note, is the great help from Derek Stuhmer of Raytheon, who is deciphering the NCC code and adding comments to help the rest us follow the production of NCC from DNB and the LUTs involved.
- **New Satellite Liaison Blog**: 12/23/2020 Blowing Dust and Blowing Snow https://satelliteliaisonblog.com/2020/12/23/12-23-2020-blowing-dust-and-blowing-snow/ (see image at lower-right)

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			

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:

Newly-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**; Jan-21 Mx1; Feb-21 Mx2; Apr-21 Mx3; May-21 Mx4; Jun-21 Mx5; Jul-21 Mx6; Aug-21 Mx7; Sep-21 Mx9)	Sep-21	Sep-21	11/15/20 Mx0	

Highlights: Image of the Month

Blowing Dust and Blowing Snow case study/blog

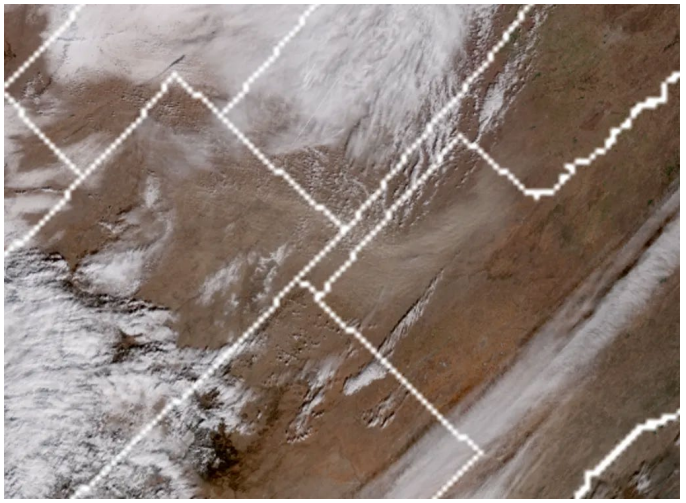


Figure: The blowing dust was captured in slightly higher detail in SNPP and NOAA-20 VIIRS geocolor imagery than from GOES imagery:

Clouds

January, 2021

Accomplishments / Events:

- The ECM team re-processed the JPSS training dataset to include DNB and has begun the analysis of the LUT prior to delivery.
- The Enterprise Cloud products are being used for the JPSS Cloud Alaska Demonstration as part of the JPSS Aviation Initiative. Minor revisions were implemented in the product display and user documents upon feedback from FAA researchers. Two talks on the user-engagement efforts for product improvement and user-friendly display were presented at AMS.
- The CBH team completed new data training with GFS for a machine learning model to improve lower cloud layer detection in multilayer scenes.
- The CCL team has developed a method for determining the level of free convection, which will be used to determine the convective cloud fraction.

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:

- ***See following slides***

Highlights:

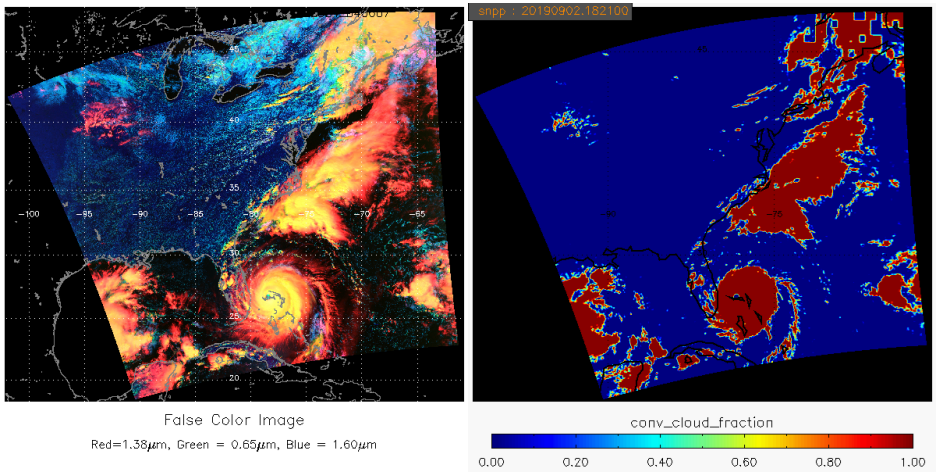


Figure 1. An RGB images (left) and total convective cloud fraction (right) derived using ACHA cloud top products and the computed level of free convection for Hurricane Dorian on 09/02/2019 between 1815 and 1822UTC. Efforts to make better use of LFC and CAPE for convective clouds detection are in progress.

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	Jan-21		10/1/20: SCR
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		
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 wtith 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	Jan-21		10/1/20: SCR
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		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	Jan-21		10/1/20: SCR
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	Jan-21		10/1/20: SCR
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	Jan-21		10/1/20: SCR
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	Jan-21		10/1/20: SCR
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	Jan-21		10/1/20: SCR
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		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		

Aerosol

January, 2021

Accomplishments / Events:

- Presentation for the Washington DC Government Council on satellite data and air quality applications. The presentation included SNPP VIIRS aerosol product and OMPS NO2 product along with in situ observations gathered from other line offices at NOAA and the Environmental Protection Agency (EPA).

- Publication: Straka, W., III; Kondragunta, S.; Wei, Z.; Zhang, H.; Miller, S.D.; Watts, A. Examining the Economic and Environmental Impacts of COVID-19 Using Earth Observation Data. Remote Sens. 2021, 13, 5. https://doi.org/10.3390/rs13010005

Overall Status:

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

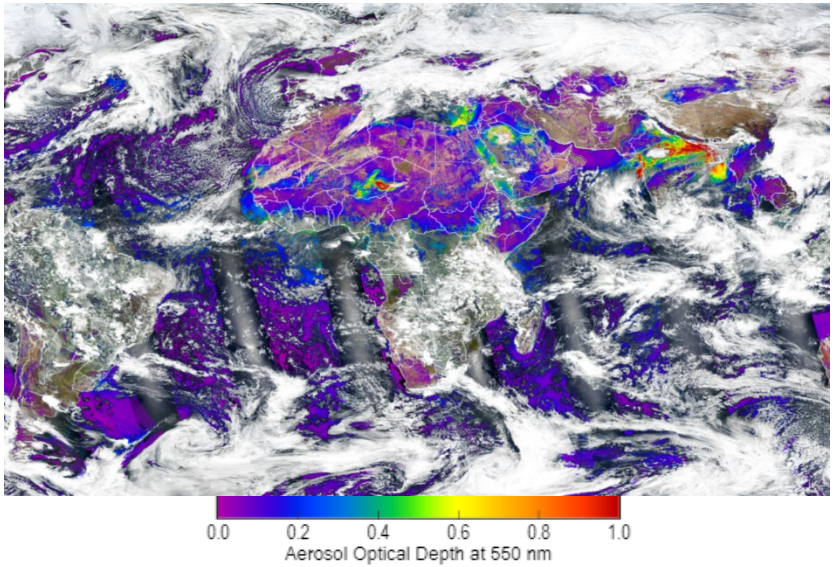
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

No risks

Milestones	Original Date	Forecast Date	Actual Completion Date	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	Jan-21		10/1/20: SCR
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				
Details in next slides				

Highlights: Aerosol Optical Depth sample imagery from JSTAR Mapper for January 10 2021 from Suomi NPP



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 combing NOAA-20 with SNPP	Jun-21	Jun-21		Report
Annual algorithms/products performance report	Sep-21	Sep-21		

Volcanic Ash

January, 2021

Accomplishments / Events:

- Continued developing new volcanic cloud detection and characterization capabilities in support of changing ICAO requirements (e.g. lightning based eruption detection, an SO2 information product for aviation, and satellite/model integration)
- Continued to provide experimental products and services in support of VAAC and volcano observatory operations, while supporting early NESDIS Common Cloud Framework transition activities
- Supported JSTAR volcanic ash EDR cal/val activities, including analysis in support of J2 ready DAP

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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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	Jan-21		10/1/20: SCR
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: Currently 4 Active Volcanoes in Washington Volcanic Ash Advisory Center (VAAC) managed by NESDIS (Jan 20 2021)

Active Volcanoes in Washington VAAC area of Responsibility:

Volcano	Lat/Lon(DMS)	Summit(ft)	Eruption Height(ft*100)	Next Advisory
FUEGO	14.47/-90.87	12346	150	20/1645Z
REVENTADOR	-0.08/-77.65	11686	--	No Further Advisories
POPOCATEPETL	19.02/-98.62	17802	185	20/1900Z
SANGAY	-2.00/-78.33	17159	210	20/2115Z

Cryosphere

January, 2021

Accomplishments / Events:

- *The new corrected version of the VIIRS cloud mask (v2r3) became operational in the beginning of August 2020. It replaced the v2r2 cloud mask that was used since the second half of 2018, which was determined to be overly aggressive over snow-covered land. The analysis of the new cloud mask and of the VIIRS snow product generated with this mask during the month of November 2020 indicates that the new cloud mask provides a more realistic cloud identification over partially snow-covered area than v2r2. The effective area coverage of the VIIRS snow product (i.e., the fraction of clear-sky pixels available for snow cover mapping) in the Northern Hemisphere has increased from 25-26% in 2018-2019 to 45% in 2020*
- *VIIRS products samples provided by ASSISTT for the upcoming SuperDAP delivery were evaluated qualitatively and quantitatively. Only small differences were noted, probably due to changes in the cloud mask.*
- *Compared VIIRS Ice Thickness Products with IceBridge flight data. The mean ice thickness for the VIIRS product along the track was 2.68m, compared to 2.80m for the IceBridge aircraft-based thickness. Standard deviations were 1.48m and 2.32m,*

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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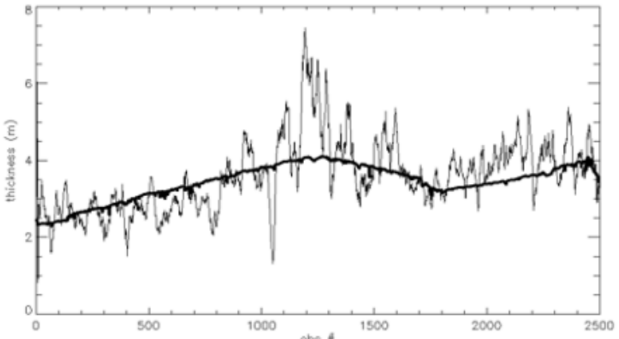
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation/ 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	Jan-21		10/1/20: SCR
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:

VIIRS Ice Thickness Product shows good agreement with IceBridge data



NPP-VIIRS ice thickness product (dark, smoother line) vs. IceBridge ice thickness measurements (jumpy line) along the flight track, for approximately 2500 observations. IceBridge observations were smoothed with a running 20-point filter.

Active Fires

January, 2021

Accomplishments / Events:

- Discovered that the solar farm flags are not set in the operational product due to a bug in the operational version of the code
  - The impact on overall product quality is minimal, but a fix was developed and delivered to avoid occasional false alarms
- Worked with the CSPP team on the evaluation of two types of data anomalies discovered in the DB product
  - The fire team developed a fix for one of the root causes
  - The other issue was related to the SDR code and the STAR VIIRS team developed a solution
- Performed analysis of M-band vs. I-band FRP during the 2020 Western US fire event
  - A ~10-30% increase in total FRP was observed from the I-band, consistent with the lower detection limit

Overall Status:

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

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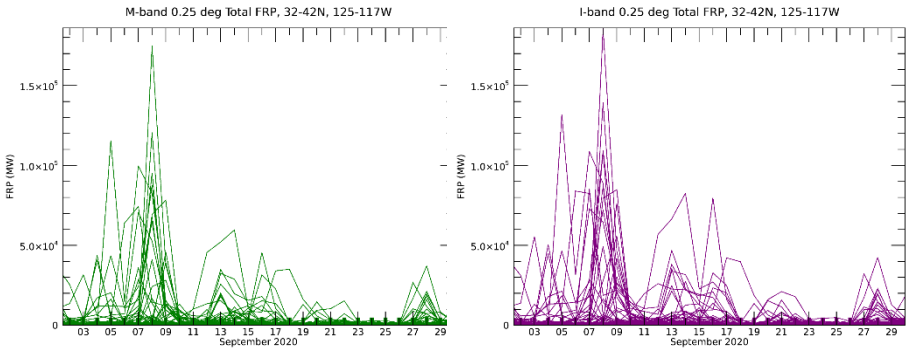
Issues/Risks:

Milestones	Original Date	Forecast Date	Actual Completion 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 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	

Highlights:



Time series of total fire radiative power (FRP) output from 0.25 degree grid cells in the Western US in September 2020. Left: VIIRS M-band product. Right: VIIRS I-band product. An increase of the FRP output from the I-band product is observed and needs to be taken into account in emission models.

Surface Reflectance

January, 2021

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

- The science team is engaged in discussions with the VIIRS SDR team and the NASA Land Science Team on the implications of the observed calibration differences for shortwave bands between Suomi NPP and NOAA-20 VIIRS

Overall Status:

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

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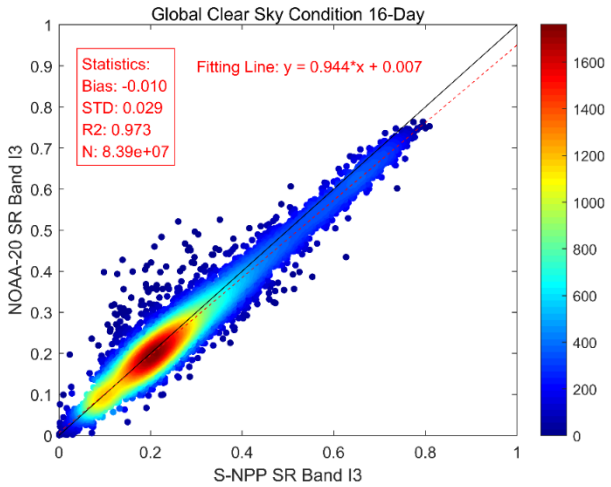
Issues/Risks:

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	Jan-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		
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		

Highlights:



Suomi NPP vs. NOAA-20 VIIRS I3 Surface Reflectance for February 6-21, 2020, based on 16-day averages of global gridded data. The biases are due to calibration differences. The science community has expressed concerns regarding data compatibility and continuity between the two sensors. Figure from the NOAA-20 Validated Maturity Review presentation.

Surface Type

January, 2021

Accomplishments / Events:

- STAR-UMD VIIRS Surface Type team has downloaded and processed S-NPP and NOAA-20 VIIRS granule surface reflectance data acquired in January 2021.
- EMC scientists expressed interests in VIIRS-based data products on vegetation structure. To address their needs, the surface type team has:
  - Developed an approach for deriving such products using VIIRS data and Lidar measurements from NASA's GEDI mission
  - Produced CONUS-wide products on key forest attributes including tree height, fractional tree cover, etc.
  - Summarized the results in a journal article for peer review.

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

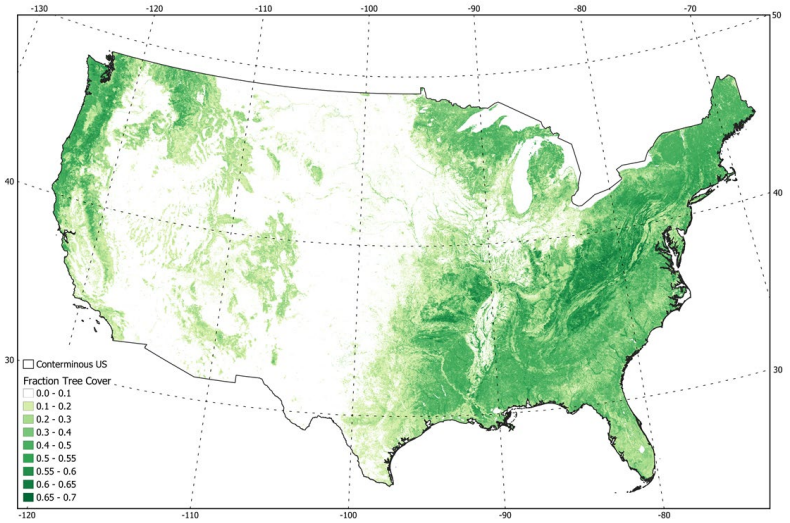
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/24/20	
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	Jan-21		10/1/20: SCR
Deliver AST-2019 to NDE	Sep-21	Sep-21		
Annual performance report	Sep-21	Sep-21		

Highlights:

A prototype fractional tree cover product derived using VIIRS data and Lidar measurements from NASA's GEDI mission (Rishmawi et al., in revision).



Land Surface Temperature

January, 2021

Accomplishments / Events:

- Updated a script for the BSRN in-situ data download.
- Updated the code for ground validation by combining the data obtained from long term monitoring system with different formats.
- Conducted the VIIRS LST validation using ground measurements from SURFRAD, BSRN and ARM (slide 2, 3 & 4)
- Investigated the BSRN sites with respect to the data availability, data latency, and site characteristics and selected 12 sites for the long term monitoring (slide 5) .
- Prepared the FY21 LST proposal and budget plan for CISESS submission
- Started to prepare the manuscript for the book chapter on 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			

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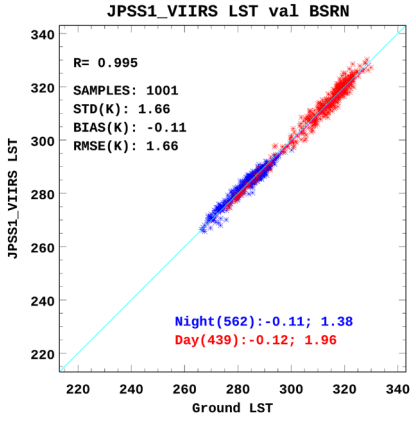
Issues/Risks:

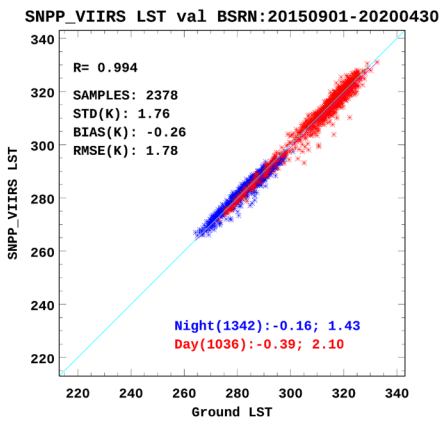
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
CalVal report on current SNPP and N-20 Product	Dec-20	Dec-20	Dec-20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/31/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates, ASSISTT delivery)	Jan-21	Jan-21		10/1/20: SCR
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		

Highlights:

VIIRS LST validation over BSRN sites

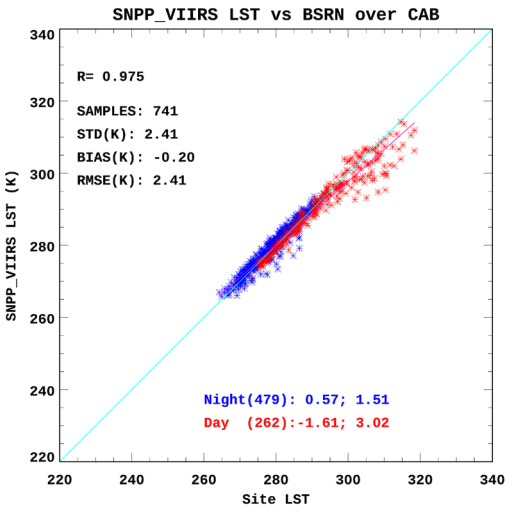


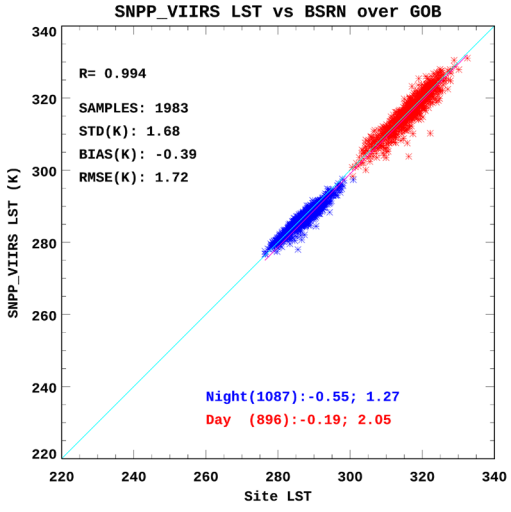
For the time period from Jan. 2018 to April 2020

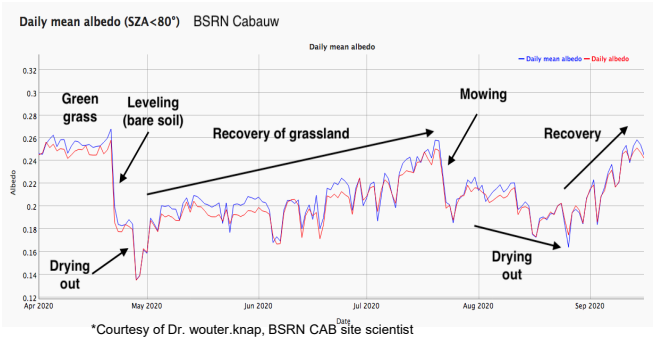


For the time period from Sep. 2015 to April 2020

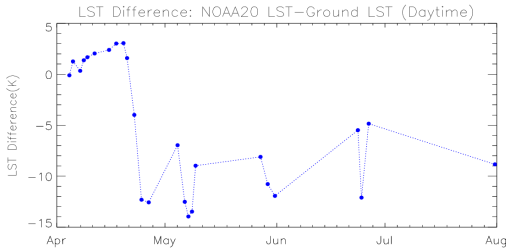
VIIRS LST VALIDATION OVER BSRN sites

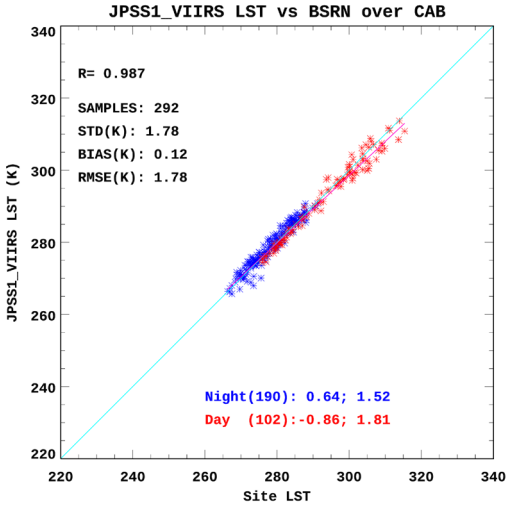


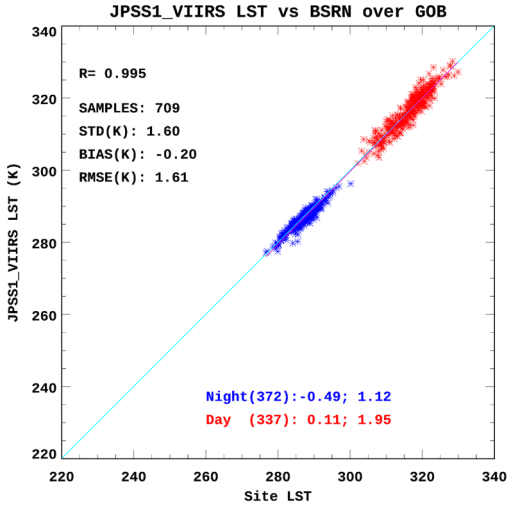




*Courtesy of Dr. wouter.knap, BSRN CAB site scientist

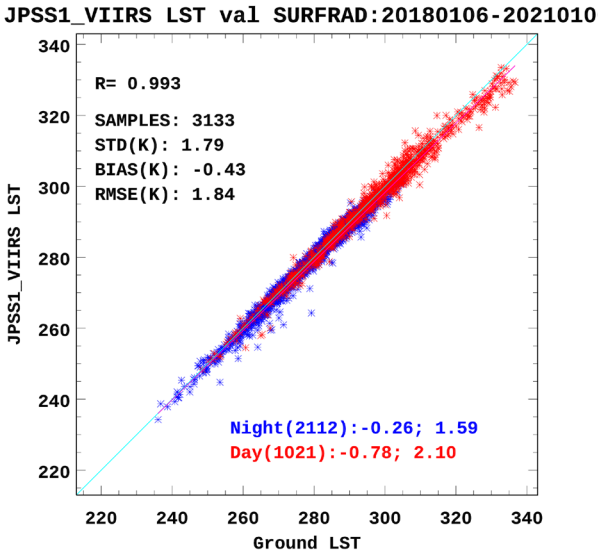


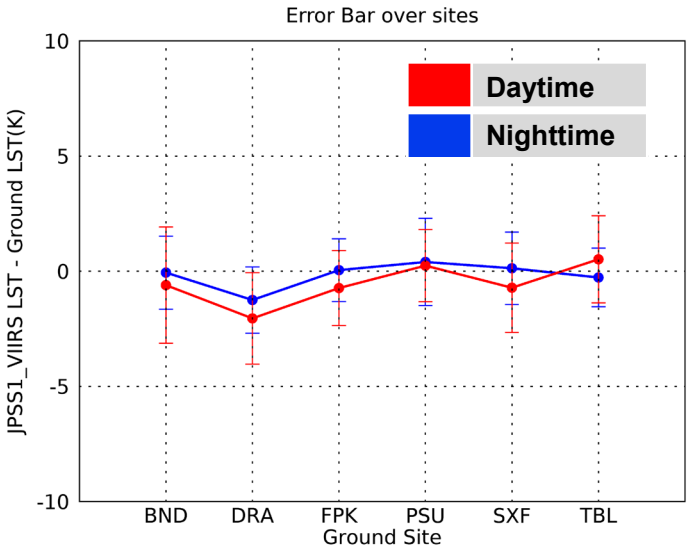


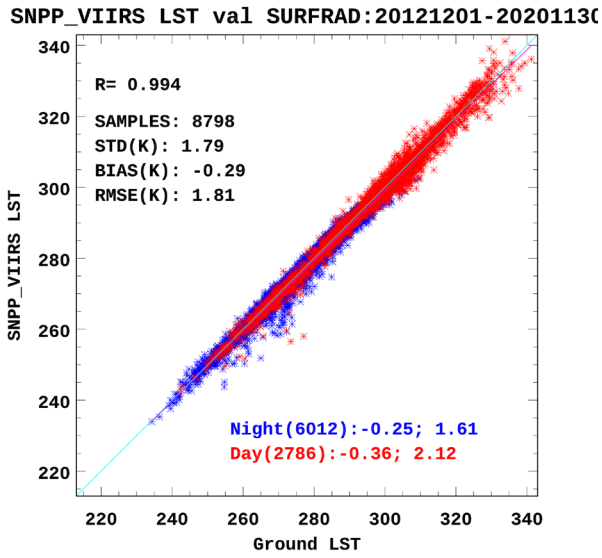


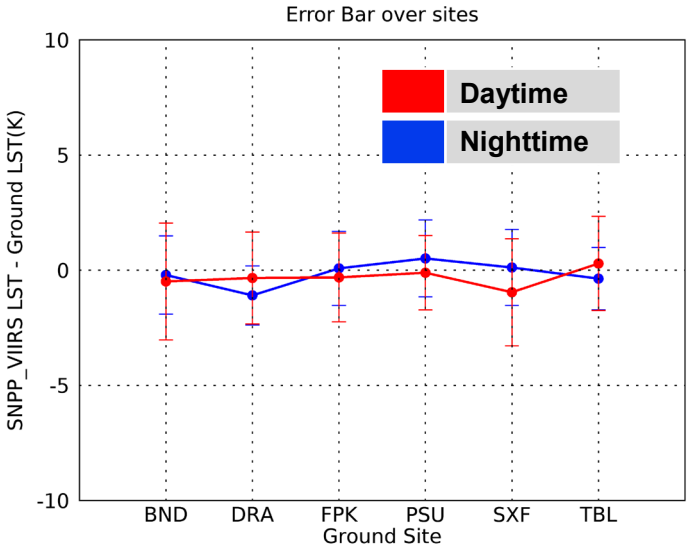
- The validation results of SNPP VIIRS LST are for the time period from Sep. 2015 to Oct. 2020
- The validation results of NOAA20 VIIRS LST are for the time period from Jan. 2018 to Oct. 2020.
- The daytime LST underestimation over CAB site is attributed to the onsite management conducted in 2020(as shown in top right). Due to the barren soil included in the field of view of the ground instrument, the observed in-situ LST does not represent the satellite LST well which measures temperature over grassland surrounding the site. So the matchups after May 2020 is removed in the validation for NOAA20 VIIRS LST.
- The satellite LST agrees well with the ground LST over GOB site.

VIIRS LST VALIDATION OVER SURFRAD



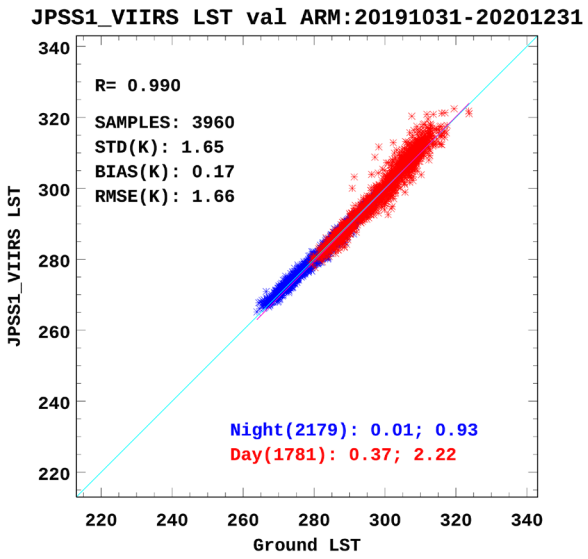


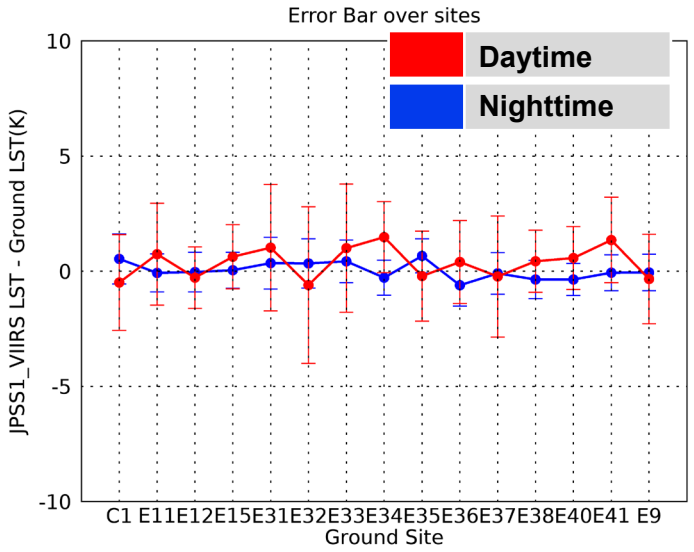


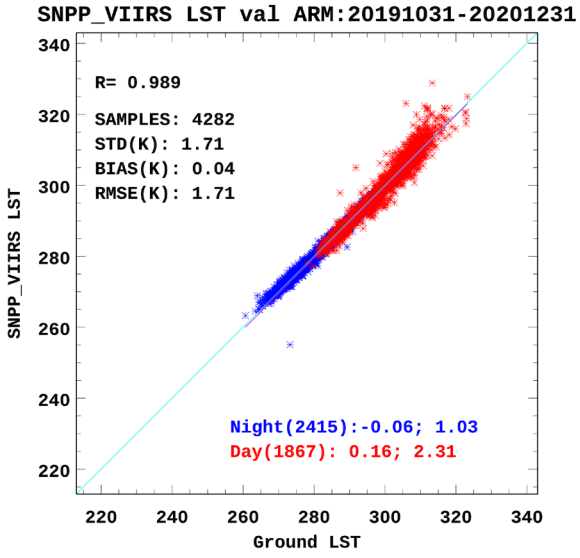


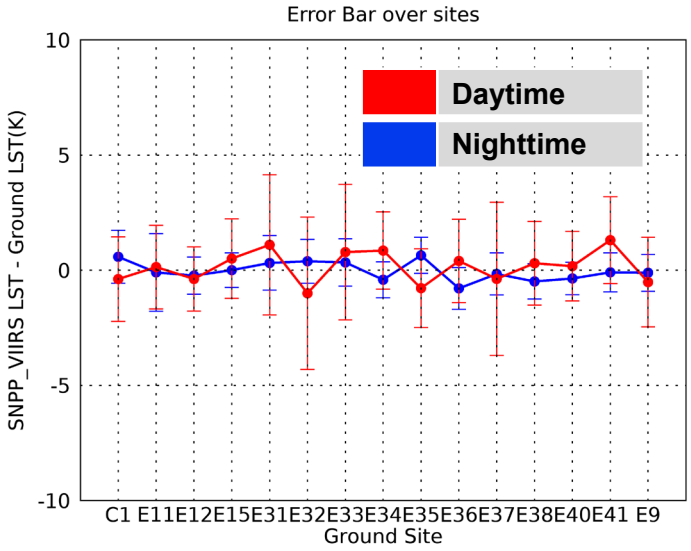
- Six sites from SURFRAD were selected to provide the reference ground LST.
- Three years of data was used for NOAA20 VIIRS LST validation from Jan. 2018 to Jan. 2021;
- Eight years of data was used for SNPP VIIRS LST validation from Dec. 2012 to Nov. 2020.
- The results indicate an overall good agreement between satellite LST and ground LST. The performance varies over sites and day/night conditions with nighttime LST outperforming the daytime LST.
- LST underestimation is observed over some sites e.g. DRA at Desert Rock, NV.

VIIRS LST VALIDATION OVER ARM







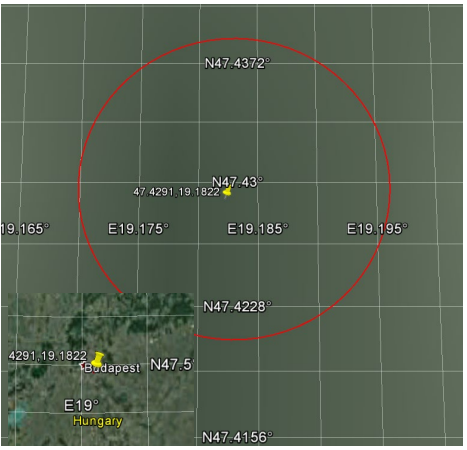


- 15 sites from ARM were selected to provide the reference ground LST.
- The validation covers the time period from Oct. 2019 to Dec. 2020.
- The results indicate an overall good agreement between satellite LST and ground LST particularly at nighttime with a bias close to 0 and STD of 1K.
- Outliers were observed from both daytime and nighttime matchups which is attributed to the cloud residue or the seasonal site characteristic.
- The performance varies over sites. LST overestimation is observed over couple of sites e.g. E31, E34, E41 etc.

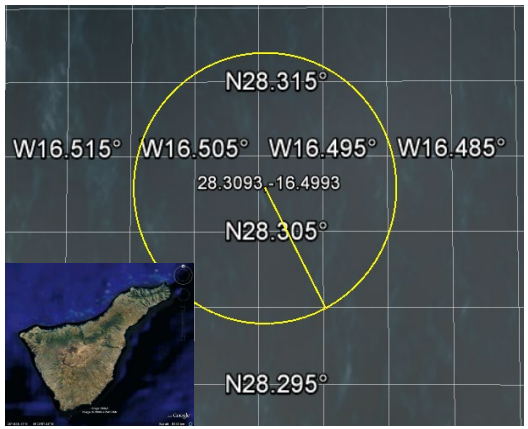
Details on Selected BSRN sites

Station full name	Abbreviation	Location	Latitude	Longitude	Elevation	Surface type	Topography type	Rural/Urban II	First dataset in archive	Upward fluxes (in LR)
Budapest-Lorinc	BUD	Hungary, Budapest	47.4291	19.1822	139.1	grass	flat	rural	6/1/2019	LR0300
Cabauw	CAB	Netherlands	51.9711	4.9267	0	grass	flat	rural	12/1/2005	LR0300
Concordia Station, Dome C	DOM	Antarctica	-75.1	123.383	3233	glacier, accumulation area	flat	rural	1/1/2006	LR0300
Gobabeb	GOB	Namibia, Namib Desert	-23.561	15.042	407	desert gravel	flat	rural	5/15/2012	LR0300
Georg von Neumayer	GVN	Antarctica, Dronning Maud Land	-70.65	-8.25	42	iceshelf	flat	rural	1/1/1992	LR0300
Izaña	IZA	Spain, Tenerife	28.3093	-16.4993	2372.9	rock	mountain top	rural	3/1/2009	LR0300
Ny-Ålesund	NYA	Norway, Spitsbergen	78.925	11.93	11	tundra	mountain valley	rural	8/1/1992	LR0300
Payerne	PAY	Switzerland	46.815	6.944	491	cultivated	hilly	rural	9/1/1992	LR0300,LR3010,LR3030
Selegua, Mexico Solarimetric Station	SEL	Mexico	15.784	-91.9902	602	grass	flat	rural	1/1/2020	LR0300
Syowa	SYO	Antarctica	-69.005	39.589	18	sea ice	hilly	rural	1/1/1994	LR0300
Tateno	TAT	Japan	36.0581	140.1258	25	grass	flat	urban	2/1/1996	LR0300
Toravere	TOR	Estonia	58.254	26.462	70	grass	flat	rural	1/1/1999	LR0300

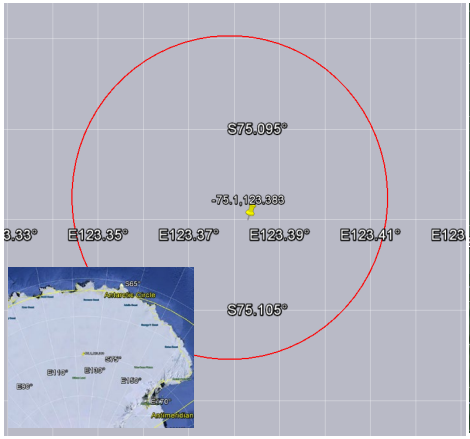
BUD site



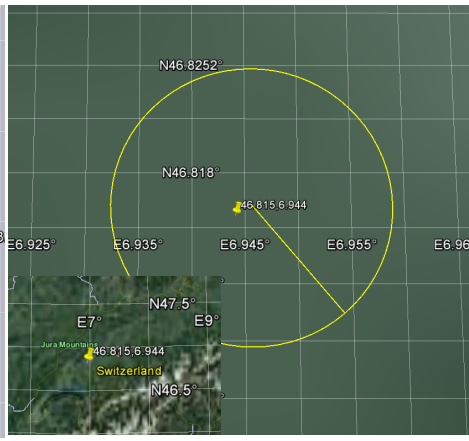
IZA site



DOM site



PAY site



Surface Albedo

January, 2021

Accomplishments / Events:

- Generated an initial version of VIIRS BRDF as basement for future improvement after solving many issues/questions in the input surface reflectance data.
- Proposed the VIIRS BRDF improvement possible directions
- Checked the albedo monitoring result and confirmed the large angle (i.e. SZA>60 or VZA>60) retrieval results have comparable result with small SZA (i.e. SZA<=60 and VZA<=60) results; however, the snow LUT still needs update to better reflect the surface anisotropy (***Slide #2-4***)
- Checked the J2 LUTs (***Slide #5***)
- Prepared the FY21 proposal for VIIRS surface albedo
- Responded to user inquiry of the VIIRS albedo access

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
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	Jan-21		10/1/20: SCR
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		

Highlights:

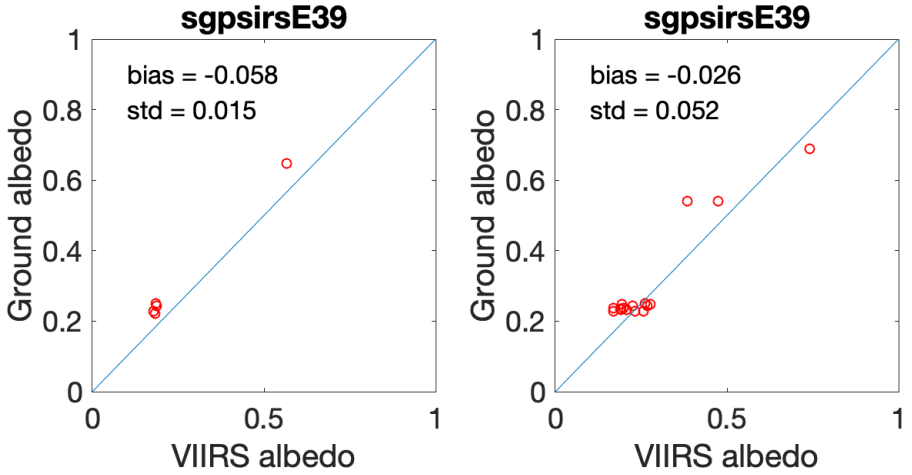


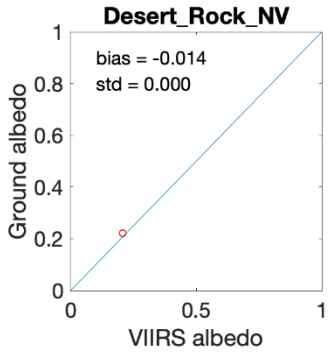
Figure: Comparison between (left figure) small-angle retrievals ("best") and (right figure) large-angle retrievals ("good") in recent one month with ground measurements

VIIRS albedo monitoring with SURFRAD and ARM

Jan, 2021

Background:

- The VIIRS albedo shows very limited high-quality matchups recently.



For instance, during the week of 20201228~20210103, there was **only 1 high-quality data pairs** in JPSS1 VIIRS over SURFRAD and ARM-SGP reported in LTM

*Figure Comparisons between high-quality (**small-angle**) matchup during 20201228~20210103.*

- Criteria for high-quality: Clear-sky, direct retrieval, zenith angles<60 degrees
- **It was found that most clear-sky satellite retrievals were screened due to the large zenith angles (VZA>60º or SZA>60º), which is beyond the best performance range of LUTs**

Hypothesis and conclusions:

- The large-angle retrievals in direct algorithm have similar accuracy as the small-angle retrievals

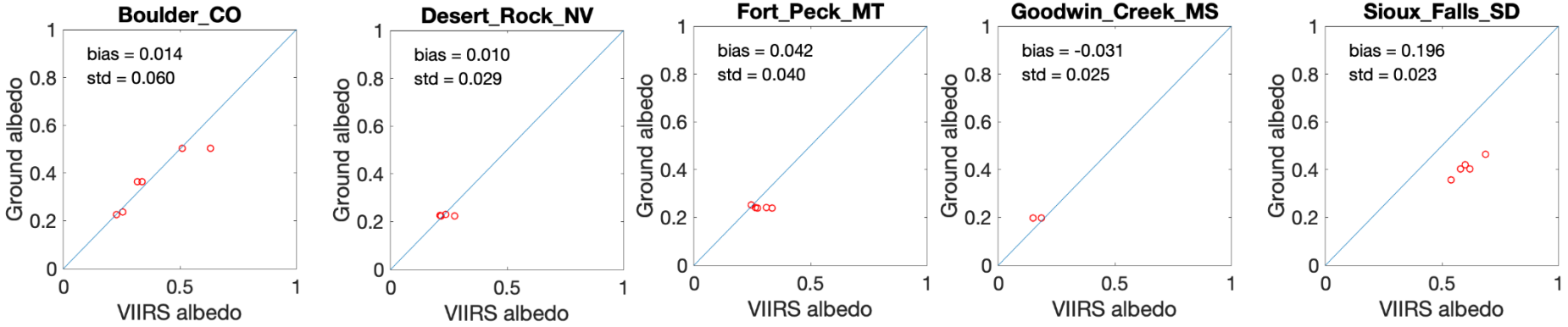


*Figure Comparisons between **large-angle** matchup during 20201228~20210103, which are not included in the LTM as they were regarded as degraded*

VIIRS albedo monitoring with SURFRAD and ARM

Jan, 2021

➢ **Further analysis:**

- The data period is extended to compare small-angle and large-angle retrievals performance

SURFRAD

ARM-SGP

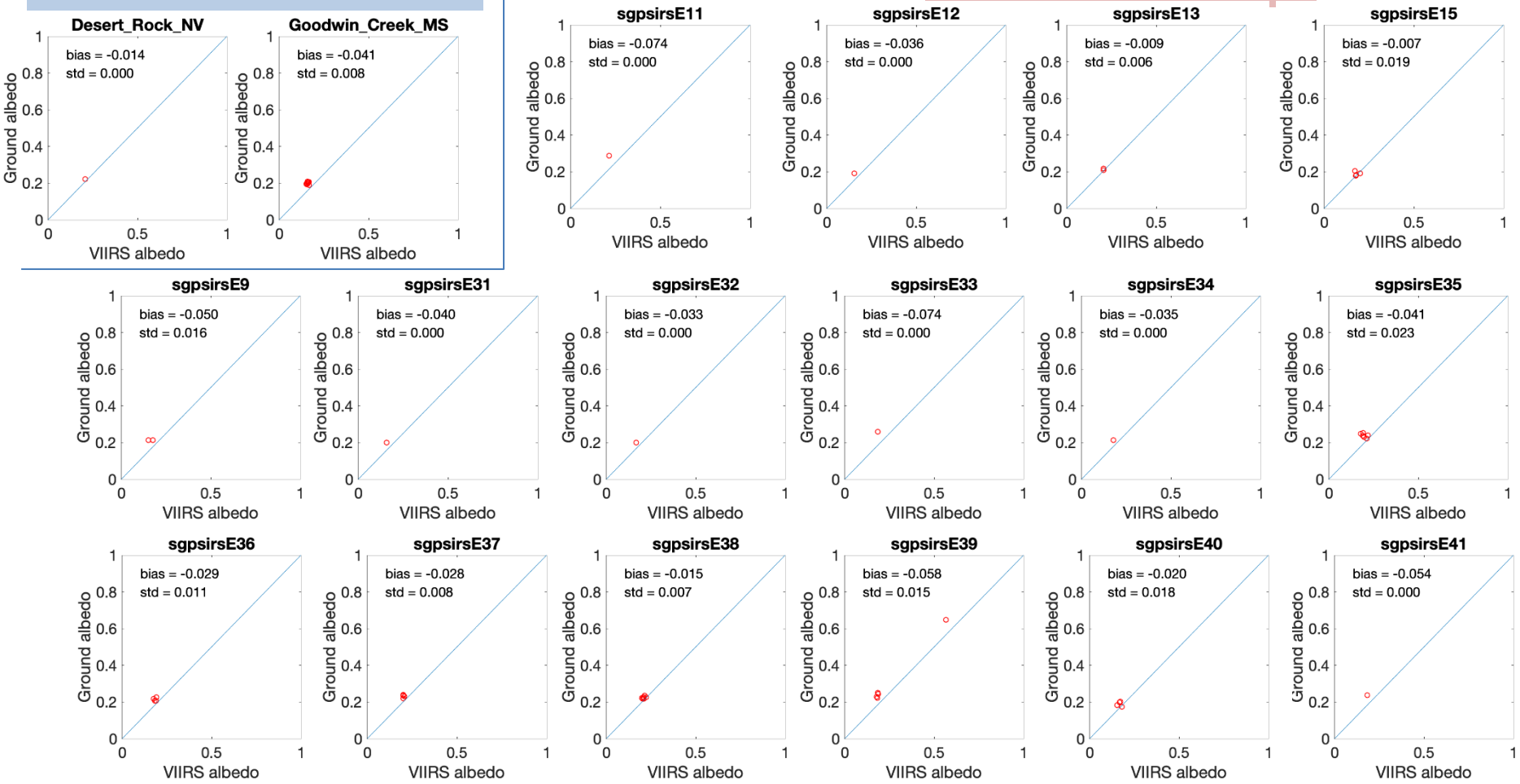


*Figure Comparisons between matchups with **small-angle** direct retrieval but with SZA<60 and VZA< 60 during 20201228~20210103. These matchups are not contained in LTM as they are regarded as degraded*

VIIRS albedo monitoring with SURFRAD and ARM

Jan, 2021

Hypothesis and conclusions:

- Large-angle and small-angle retrieval performance are comparable
- Only snow albedo LUT need to be improved to better reflect the surface anisotropy

SURFRAD

ARM-SGP

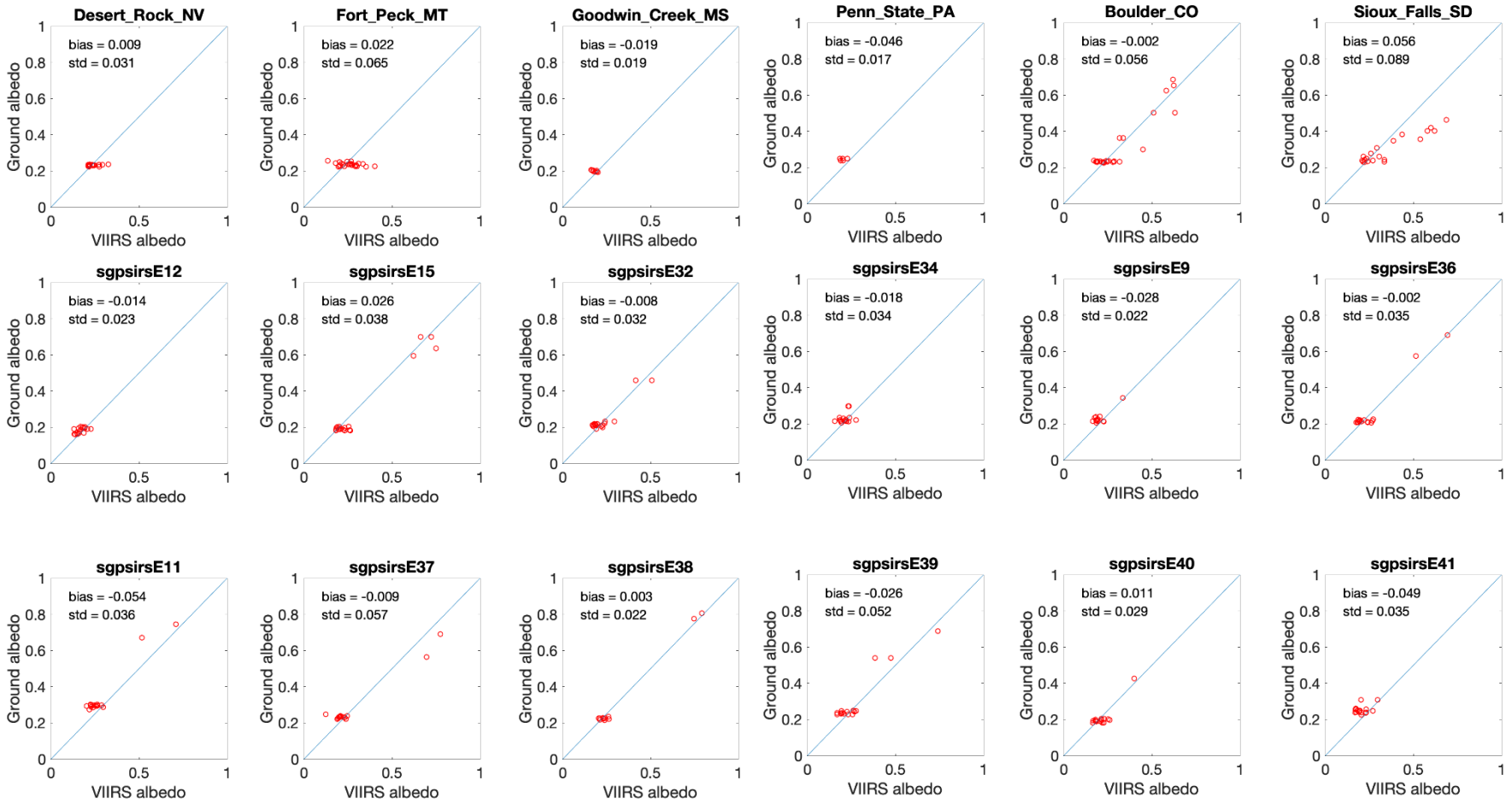
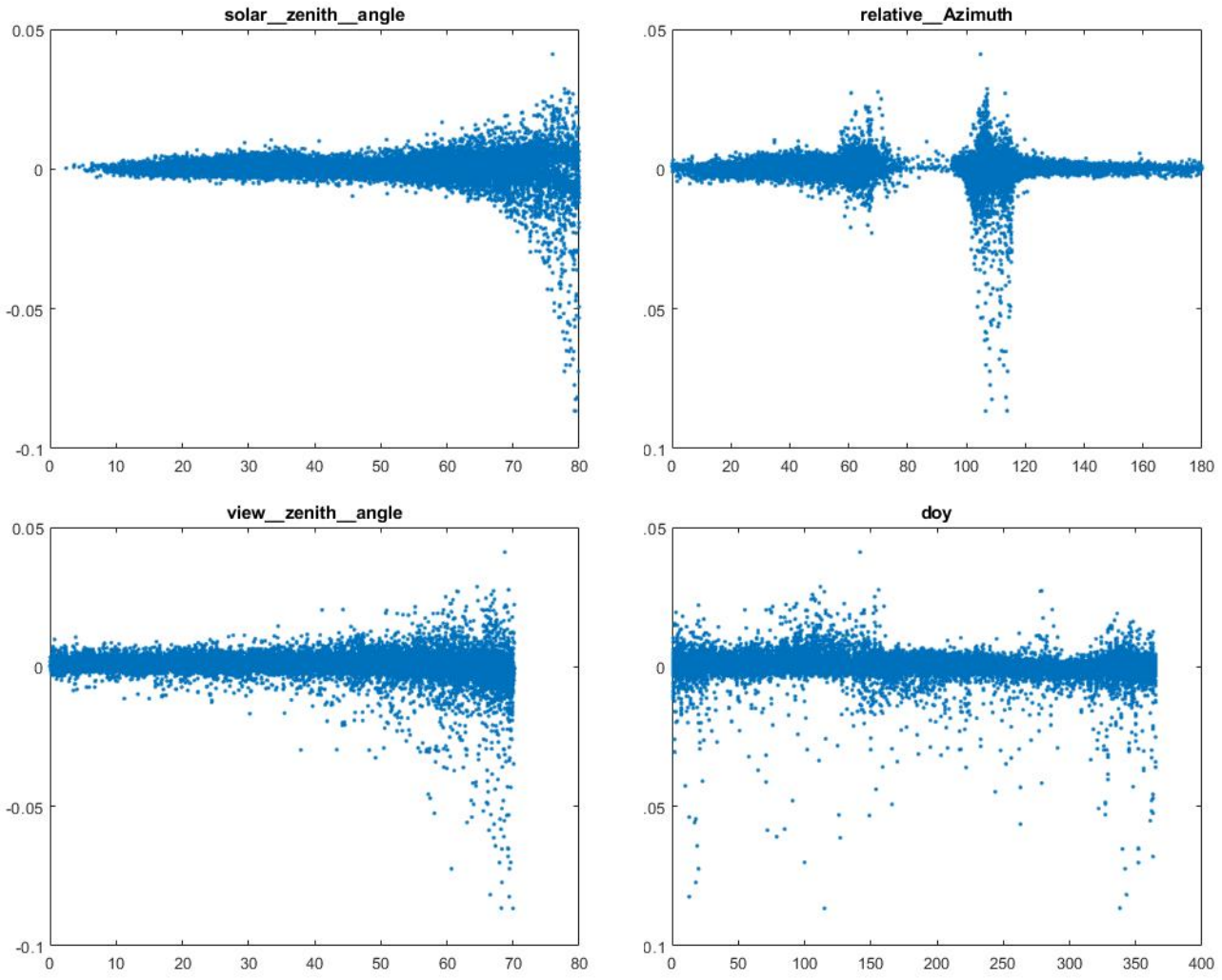


*Figure Comparisons between matchups with **large-angle** direct retrieval but with SZA>60 or VZA> 60 during 20201228~20210103. These matchups are not contained in LTM as they are regarded as degraded*

J2 LUT assessment

The J2 LUTs were tested on NPP data in 2013 for calculation and validation by comparison with NPP albedo itself.

- The overall result of J2 LUTs is comparable to NPP albedo.
- The difference between J2 and NPP albedo exists due to the spectral response difference, which is larger at large angle conditions.



NVPS
(Vegetation Index & Green Vegetation Fraction)

January, 2021

Accomplishments / Events:

- Performed evaluation of the latest delivered VI algorithm (VI-v2r1) data and the current experimental algorithm (VI-v2r2) data, against the operational VI algorithm (VI-v1r4) data
- Using the above VIs output as input for GVF production, and compared to the current operational GVF data.
- Updatethe VI ATBD and GVF detailed design charts; generate VI detailed design
- Produced NOAA-20 GVF data for Dec 2020 2020 at the STAR local computer

Overall Status:

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

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

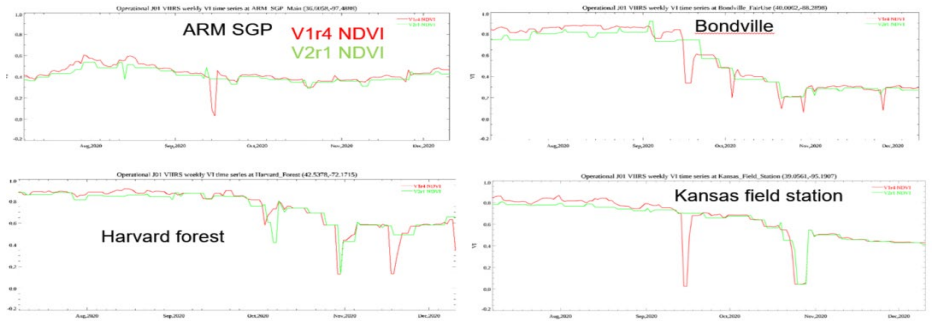
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Evaluation of 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		
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Feb-21	Feb-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		

Highlights:

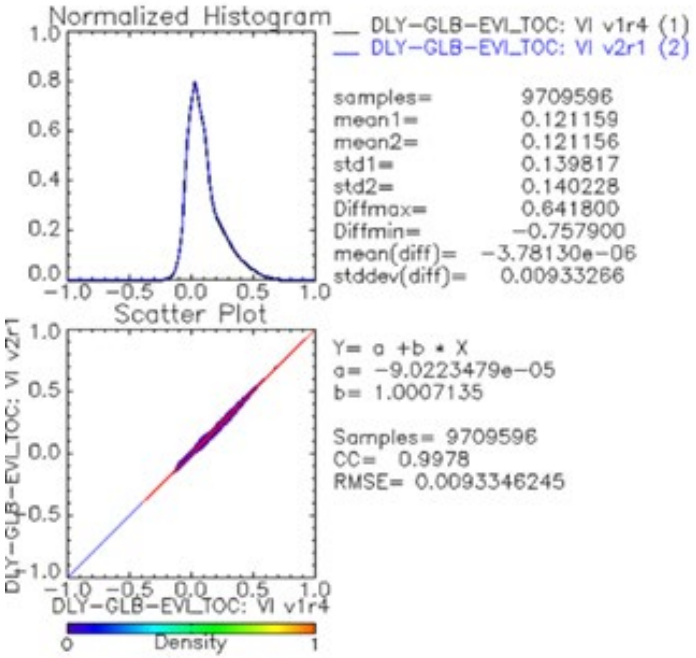
Global weekly NDVI time series comparison (V1r4 vs. V2r1)

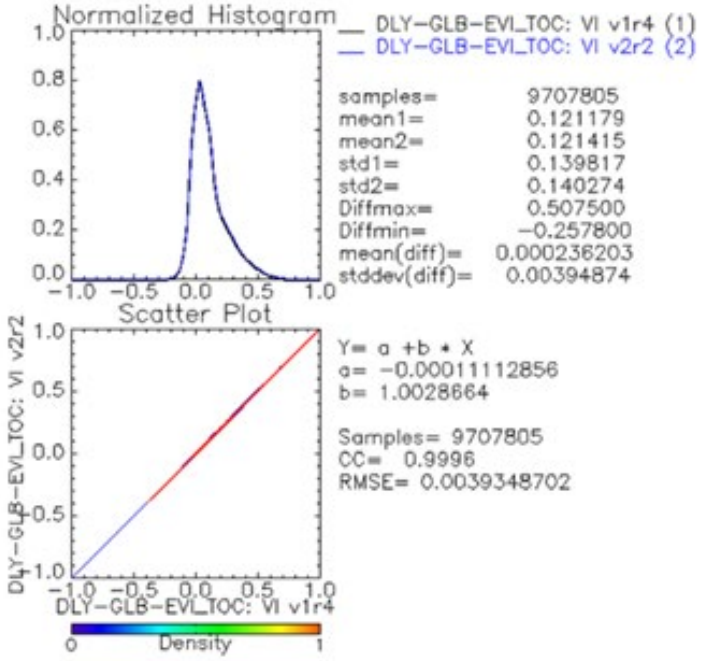


- VI v2r1 is less affected by cloud than VI v1r4 since cloud filter is used in aggregation in v2r1
- VI v1r4 is slightly higher than VI v2r1
- The VI difference is more evident in summer at vegetated sites
- The VI difference resulted from composite resolution (4km for v2r1 vs 0.33km for v1r4)

VI v2r1 and VI v2r2 vs VI v1r4 TOC EVI
NOAA-20 Observations, Daily, Nov 15, 2020

VI v1r4: Operational version
VI v2r1: In transition to operations
VI v2r2: Test version without aggregating being restricted to same swath only



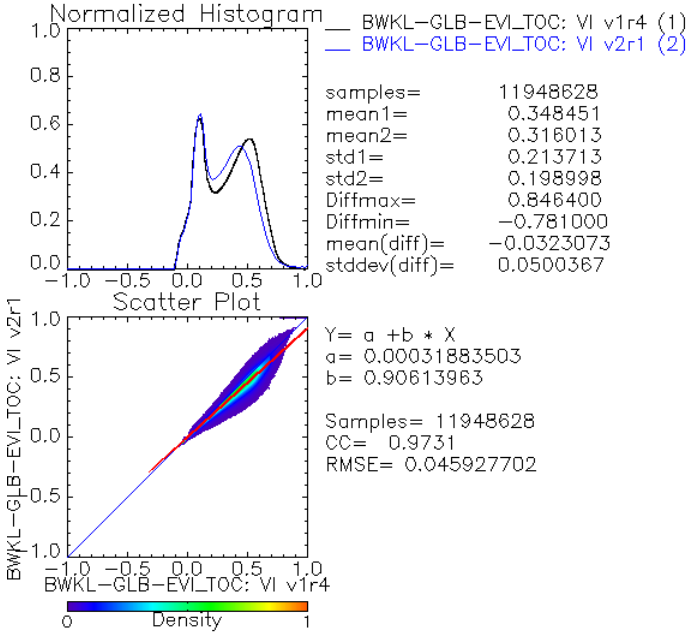


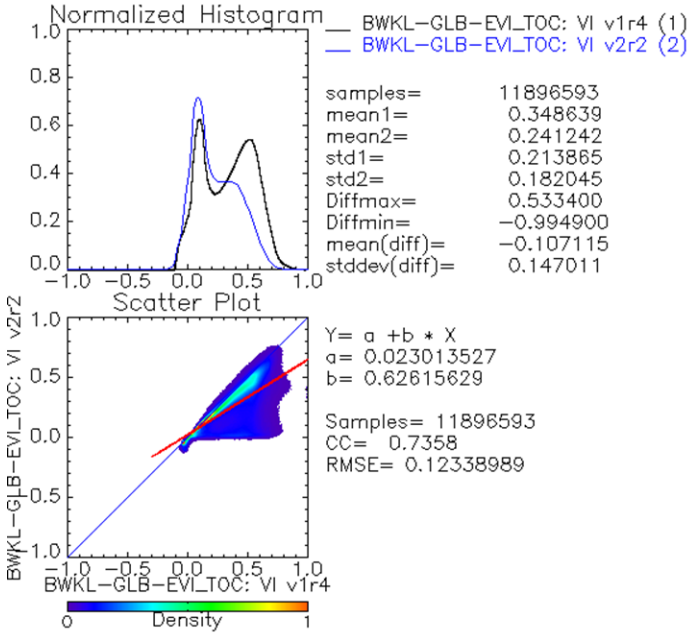
Conclusion:

- VI v2r1 and v2r2 are both similar to v1r4 for daily case

VI v2r1 and VI v2r2 vs VI v1r4 TOC EVI NOAA-20 Observations, Biweekly, 20200630-20200715

VI v1r4: Operational version
VI v2r1: In transition to operations
VI v2r2: Test version without aggregating being restricted to same swath only



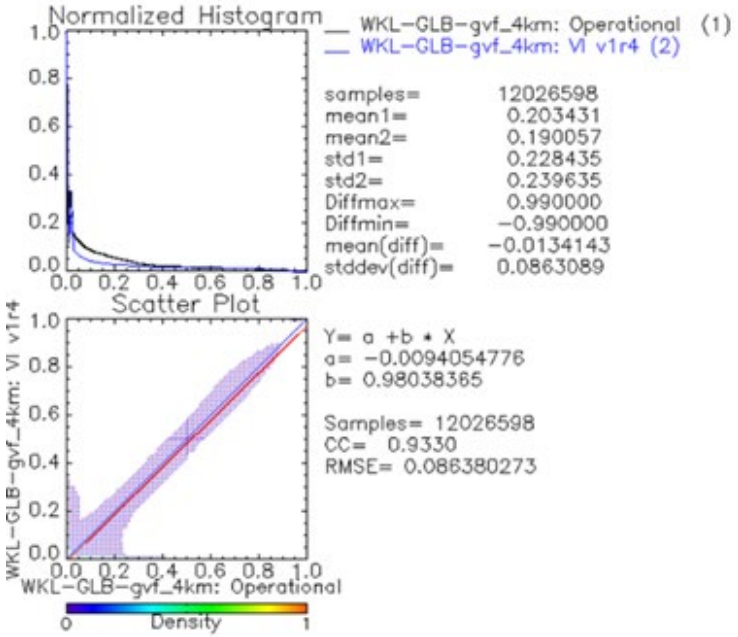


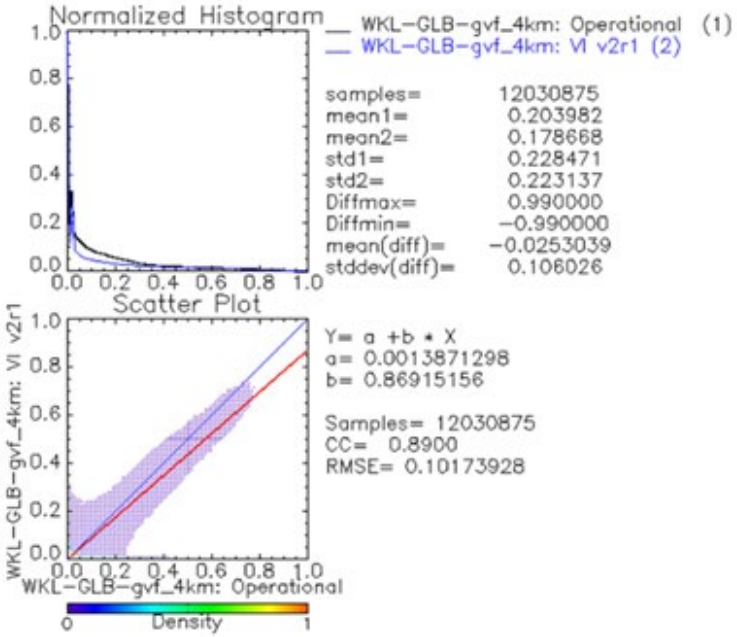
Conclusions:

- VI v2r1 and v2r2 both differ significantly from VI v1r4
- Differences are due to compositing scale differences because they are significant at weekly and biweekly scales but not daily

VI-v2r1-GVF and VI-v1r4-GVF vs Operational GVF NOAA-20 Observations from July 1 to Nov 15 of 2020

VI-v2r1-GVF: GVF generated from weekly v2r1 TOC EVI
VI-v1r4-GVF: GVF generated from weekly v1r4 TOC EVI
Operational GVF: GVF generated separately from VI





Conclusions:

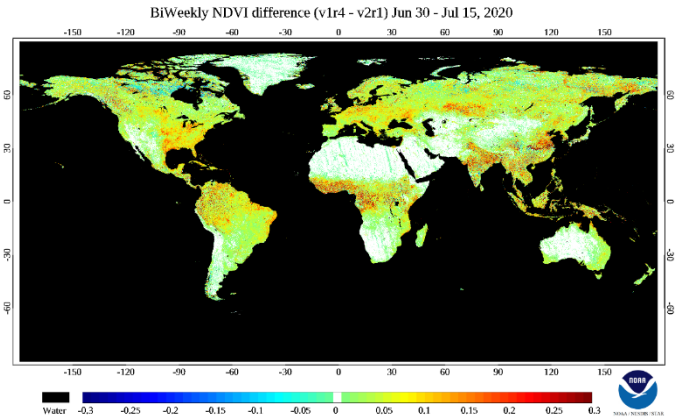
- Significant differences occur between operational GVF and GVF generated from either VI version
- Generation of GVF from operational VI cannot go forward without more testing and evaluation

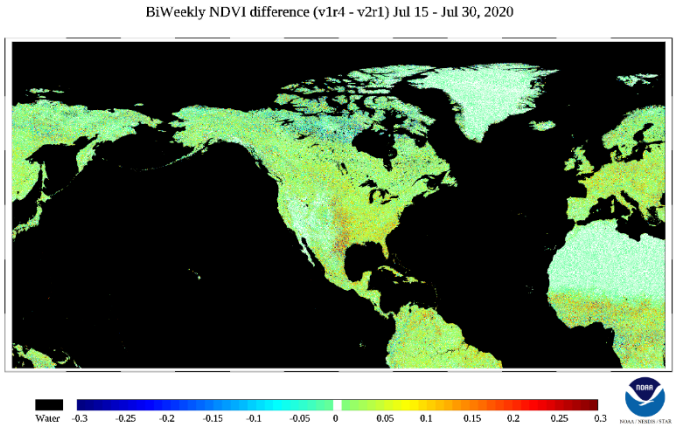
Evaluation of Biweekly v1r4-v2r1 VI difference

Global

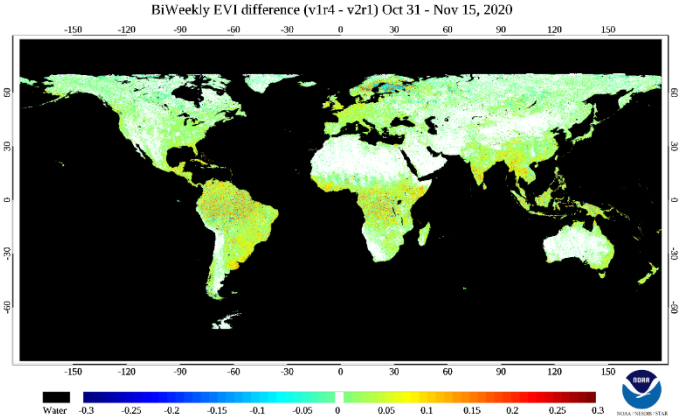
Regional

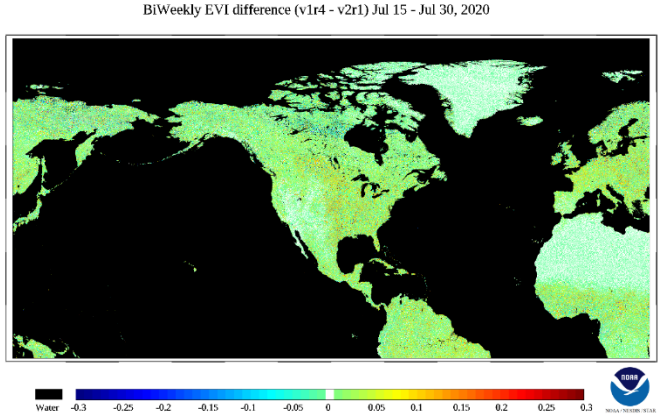
NDVI difference





EVI difference





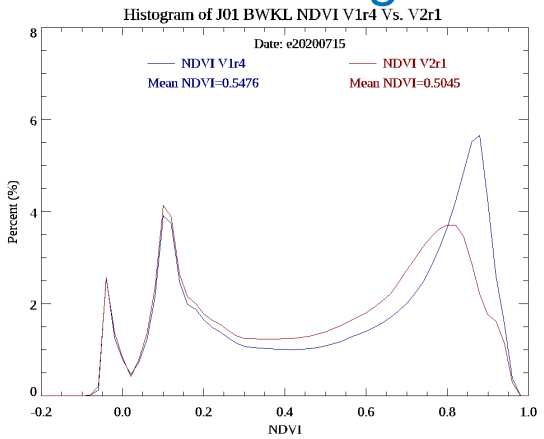
- Global VI difference (v1r4-v2r1) is higher than the regional VI difference
- Global VI difference (v1r4-v2r1) is high because of compositing at 0.036° resolution (v1r4 compositing at 0.003°)
- Regional VI difference (v1r4-v2r1) is relatively lower because of compositing at 0.009° resolution

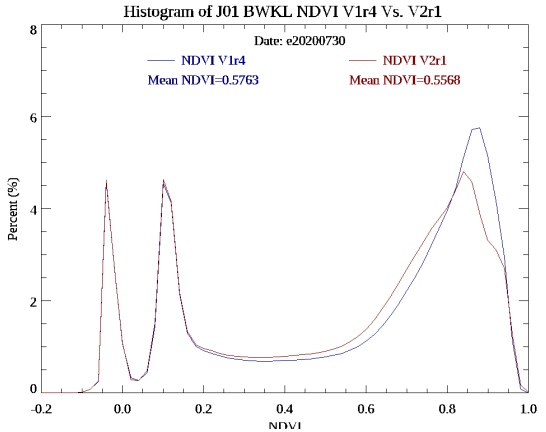
Biweekly VI histogram comparison (v1r4-v2r1)

Global VI histograms

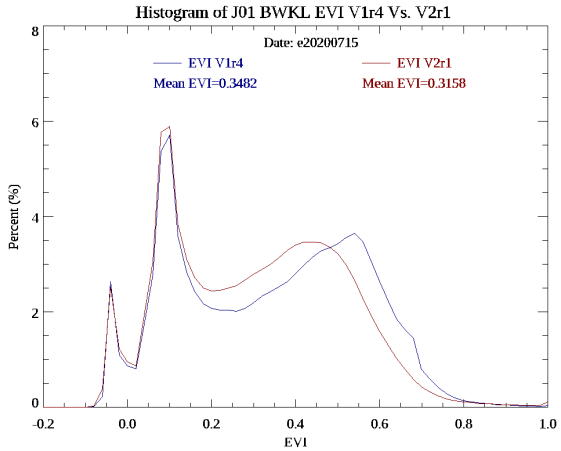
Regional VI histograms

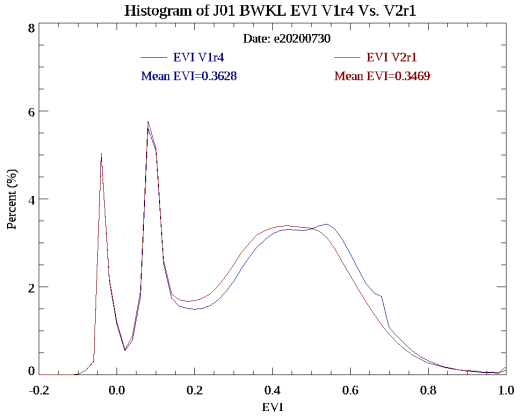
NDVI





EVI





- Global VI histograms have more difference (v1r4-v2r1) than the regional VI histograms
- Because the regional VI compositing resolution is closer to the v1r4 compositing resolution (0.003°)

Vegetation Health

January, 2021

Accomplishments / Events:

- Received reviewers' comments for the re-compositing approach manuscript by Wenze Yang, Felix Kogan, Wei Guo and Yong Chen from International Journal of Remote Sensing, which was a major revision. Revising the manuscript according to the comments (highlighted);
- Gathered a series of papers on vegetation health index and malaria, and read them one by one;
- Generated a series of data and figures of VIIRS/VHP-1 and -4, -16 km resolution products, covering January 2021;
- Replied to users on their queries about our product and website update, especially at the turn of a year.

Overall Status:

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

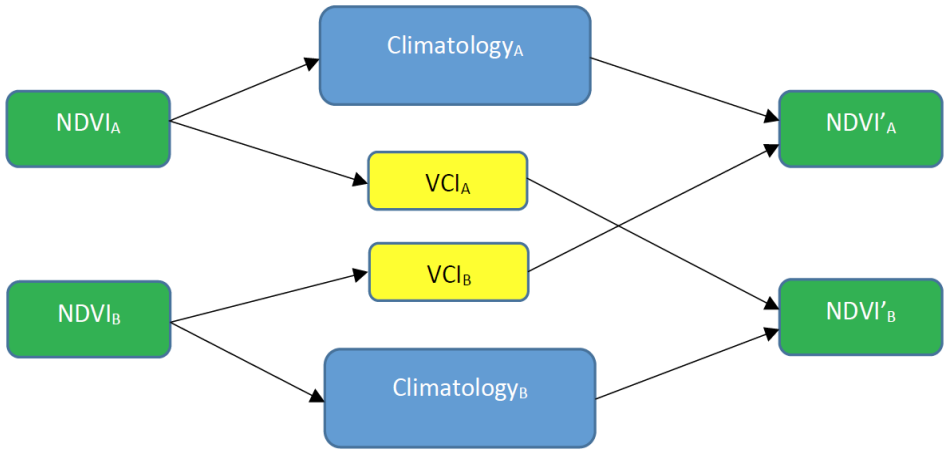
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
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		
NDVImax/min & BTmax/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		

Highlights: Schematic Concept in the Revising Paper



Ocean Color

January, 2021

Accomplishments / Events:

1) Completed Cal/Val Plan Update
2) Made WavCIS AeroNET-OC sensor (SeaPRISM) calibration and platform updates
3) Continued SNPP and N20 (NOAA MSL12) performance monitoring at MOBY and Venise (see Highlight)
4) Continued September 2021 NOAA CalVal cruise preparation and support.

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
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	01/19/21	
Initial J2 ready DAP delivery (include NPP/N20 updates) to CW	Dec-20	Dec-20		
Initial J2 ready DAP delivery to OSPO (from ASSISTT)	Jun-21	Jun-21		
Final J2 ready DAP delivery (include NPP/N20 updates) to CW	Sep-21	Sep-21		
Final J2 ready DAP delivery to OSPO (from ASSISTT)	Dec-21	Dec-21		
Complete MSL12 v1.40 preparation and implementation	Jun-21	Jun-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		
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		

Match-up data to under-stand data quality for Ocean Color

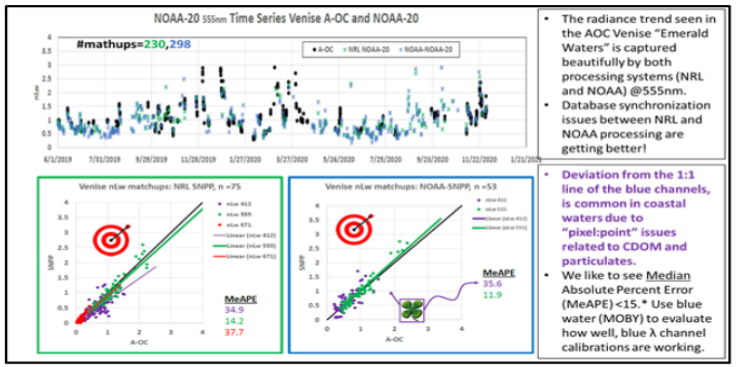


Figure 1: *(Top) Time Series plot showing matchups between Venise SeaPRISM and NRL and NOAA MSL12 SNPP NOAA 20 nLw at 555nm. Satellite and insitu trend are very similar. NRL matchup database for APS and NOAA processed data is getting better with most issues resolved. (Bottom) Scatter plots showing traditional spectral nLw matchups and statistics for NRL APS (left) and NOAA MLS12 (right) SNPP vs. Venice AOC – slight deviation of blue channels (purple) from 1:1 line (black) common due to coastal water properties and environmental variability. Green channels perform very well (<15% MeAPE) for both processing systems in the emerald waters of the Northern Adriatic. Blue channels are better evaluated in blue waters (MOBY or cruises).*

Sea Surface Temperature

January, 2020

Accomplishments / Events:

- STAR SST Team continues production of two gridded super-collated products from two low-Earth Orbiting (L3S-LEO) series of satellites: 2 JPSS VIIRSs (L3S-PM) and 3 Metop-First Generation AVHRR FRAC (L3S-AM), in best effort mode
- Pending SPSRB approval for push of L3S-LEO products to PDA, STAR SST Team distributes products to users via CoastWatch web side, and CDN network to NCEP tanks. NOS WCOFS Team continues product testing and evaluation
- SST Team continues monitoring the L3S-LEO in near-real time, in SST Quality Monitor (SQUAM www.star.nesdis.noaa.gov/socd/sst/squam/) and ACSPO Regional Monitor for SST (ARMS www.star.nesdis.noaa.gov/socd/sst/arms/). Example monitoring in ARMS is shown below.
- The super-collated products consistently shows improved coverage and superior performance statistics wrt in situ data
- Waiting for the SPSRB meeting to approve push to PDA, to begin distributing to a wider group of users, and to archive with PO.DAAC and 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			

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.*

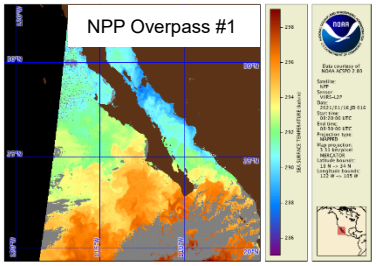
Issues/Risks:

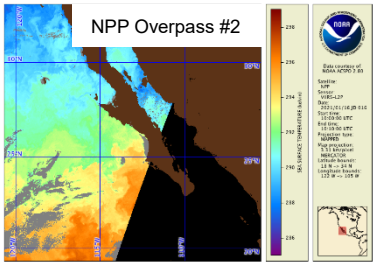
None

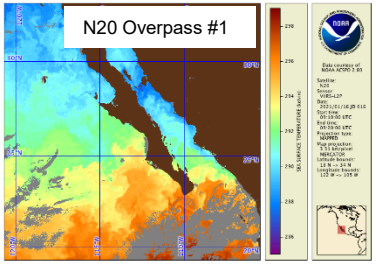
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/15/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Apr-21	Apr-21		ACSPO 2.80
Final J2 ready DAP to ASSISTT	Aug-21	Aug-21		ACSPO 2.90
Final J2 ready DAP to NDE (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, *i*Quam, 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		

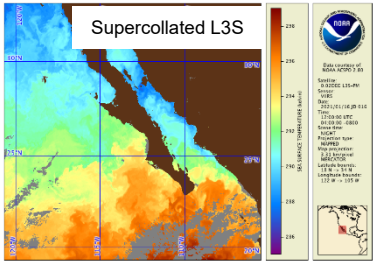
Highlights:

ACSPO Global 0.02º Gridded Super-collated L3S-LEO: Best effort production, monitoring, and distribution to users continues









VIIRS Polar Winds

January, 2021

Accomplishments / Events:

- VIIRS shortwave infrared (SWIR) winds are now routinely generated at CIMSS using the M11 (2.2 μm) band. Using a SWIR band provides greater contrast between liquid clouds and the underlying snow/ice surface, which are both bright in the visible and may have similar temperatures in the infrared.

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	12/30/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Jan-21		10/1/20: SCR
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		

Highlights: ***Polar Winds Using VIIRS SWIR bands now available from CIMSS***

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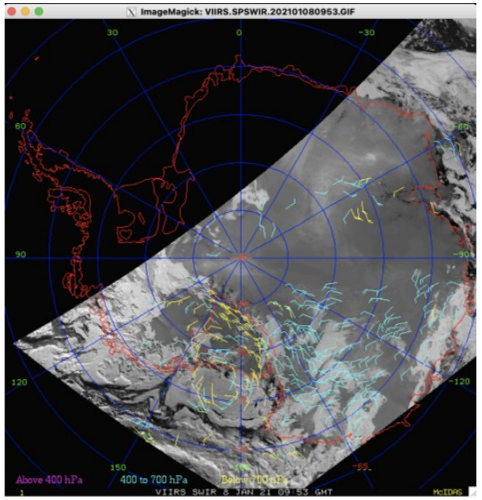


Figure : VIIRS SWIR winds over Antarctica at 09:53 UTC on 8 January 2021.

NUCAPS Products

January, 2021

Accomplishments / Events

NUCAPS CO2 validated maturity review : The review panel recommended that the NUCAPS CO2 product be designated at Validated Maturity pending completion of the action for quantitative OCO-2 comparisons. To this effect, the NUCAPS team accomplished evaluation of NUCAPS CO2 with OCO-2, and results of evaluation show very good correlation between NUCAPS and OCO-2 total column CO2. Based on the review panel suggestions, the NUCAPS team laid out plans for routine evaluation of trace gas products, and S-NPP mission-long reprocessing.

NUCAPS team continued collaborations with NOAA-GML on (a) trace gas products validations with GML measurements, and (b) Ozone and water vapor validations.

Team members finalized the OLR paper for routing through STAR review panel approval process, submitted paper “Utility of Satellite Retrievals of Atmospheric Profiles in Detecting and Monitoring Severe Weather Events at NOAA” for publication in Bulletin of the American Meteorological Society (BAMS).

Team members presented two oral and one poster presentations at the AMS-2021 virtual conference held January 10-15, 2021. Team members also submitted a 4-page paper for IGARSS-2021.

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		
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

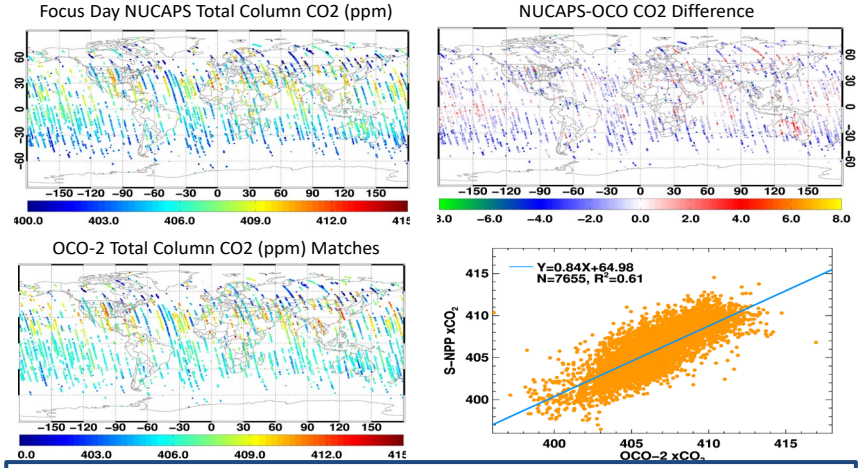


Figure: NUCAPS (v3.0) CO2 vs. OCO-2. Compiled 11 focus days of S-NPP NUCAPS and OCO-2 CO2 matches for a quantitative evaluation. Results of evaluation show very good correlation between NUCAPS CO2 and OCO-2 total column CO2

MiRS Products

January, 2021

Accomplishments / Events:

- **Two presentations were made at the AMS 2021 Annual Meeting**:
  - Talk: Zhou et al. "Development of A Machine Learning-Based Radiometric Bias Correction for NOAA's Microwave Integrated Retrieval System (MiRS)"
  - Poster: Lee et al. "Preparation of MetOp-SG A1 Microwave Sounder Proxy Data and Testing with the NOAA Microwave Integrated Retrieval System"
- **Hurricane Laura T Soundings**: A study of MiRS sounding performance during Hurricane Laura (August 2020) is underway. Comparisons of operational vs. an experimental version of MiRS show that the experimental version is generally able to capture the warm core anomaly and overall T profile more accurately. Work is continuing. See highlights.

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			

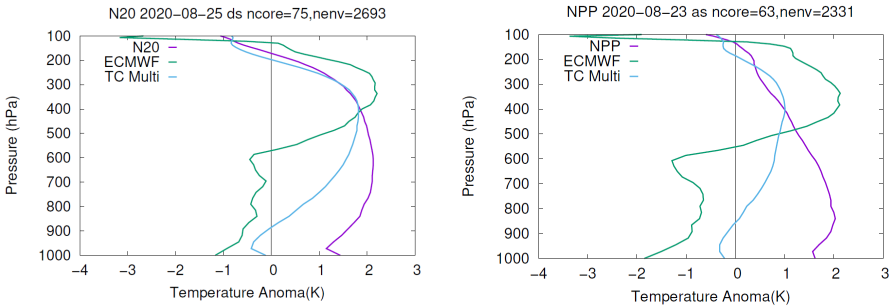
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/21/20	
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		

Highlights:



Comparison MiRS operational (purple), MiRS experimental (cyan), and ECMWF (green) temperature anomaly for two overpasses of Hurricane Laura from N20 (left) and SNPP (right).

Snowfall Rate

January, 2021

Accomplishments / Events:

- The SFR team reprocessed data from the last eight months of 2020 for five satellites, NOAA-20, S-NPP, NOAA-19, Metop-B, and Metop-C. The data was delivered to NCEP/CPC CMORPH group in support of their evaluation of the new CMORPH2 pole-to-pole global blended precipitation analysis product. A total of four years of SFR data for the five satellites has been reprocessed and delivered to CMORPH so far.
- A new technique is being developed to initialize ice water path (IWP) for the 1DVAR in the SFR algorithm. Preliminary results show significant improvement in accuracy especially for intense snowfall (Highlights section). A weekly report has been submitted about this development.
- The SFR team is also further developing the GPM GMI and DMSP F16-F18 SSMIS SFR algorithms and will include them in the unified processing system once complete. The development is based on the recent advances made with the ATMS SFR algorithms. The four satellites drastically improve the temporal coverage of the SFR and the radar-satellite merged product mSFR.

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			

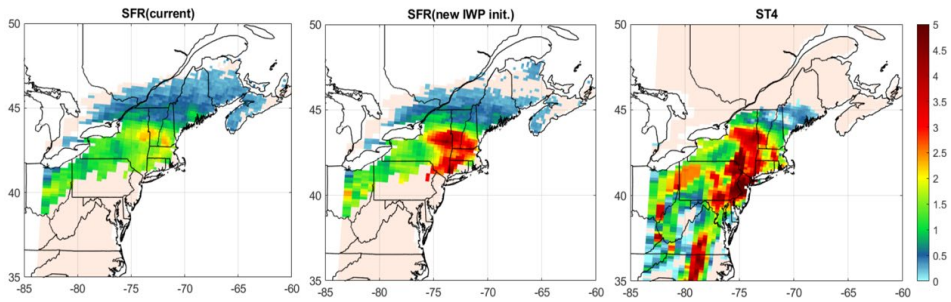
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

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	
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: New development significantly improves SFR retrieval for intense snowfall



Snowstorm on January 20, 2019. Left: current NOAA-20 SFR at 6:26 UTC, middle: the same as left but SFR is retrieved with the new IWP FG, right: Stage IV hourly precipitation at 7 UTC.

OMPS Ozone

January, 2021

Accomplishments / Events:

- Delivered Updated Cal/Val Plan
- Investigated impact of latest GFS version update
- Reviewed changes related to solar intrusion correction for NOAA-20 SDR

Overall Status:

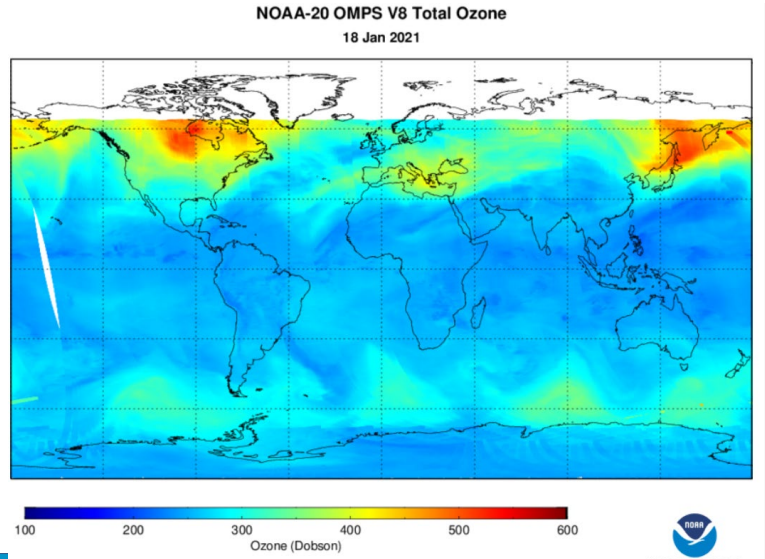
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule			X		Ozone Profile agreement between S-NPP and NOAA-20 is elusive.

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
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)	Ma-21	Mar-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				
Details in next slides				

Highlights: Example of recent Ozone product from JSTAR Long Term Monitoring



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	
Complete work with NDE to resolve two OMPS V2Lmb issues -- Latency / TIme Out and Ancillary File errors.	Feb-21	
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	

GCOM-W1 Products

January, 2021

Accomplishments / Events:

- Participated in JAXA GCOM-W1 PI meeting (virtually)
- Held meeting with OSPO and ASSISTT for planned GAASP updates in FY21.
- Continued product O&M
- Work continues on testing algorithm updates for SSW and RR, which are on track and to be completed by March 2021

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.*

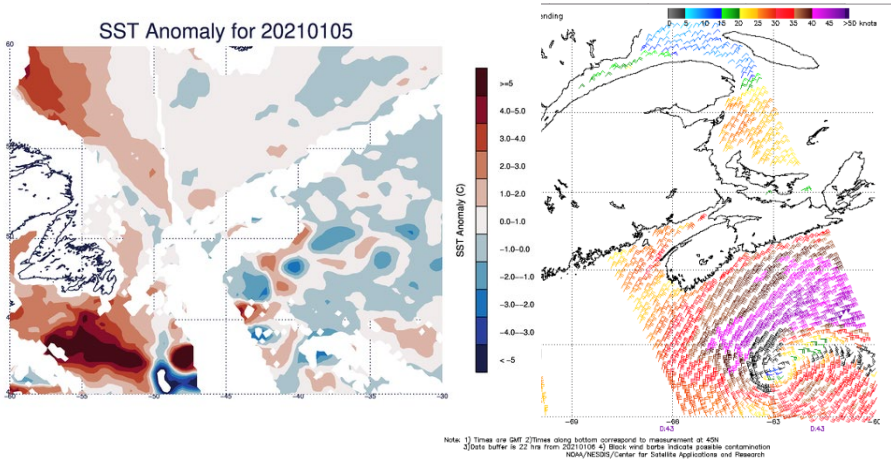
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
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:

SST anomaly plot from AMSR2-2 depicting a region with SSTs running about 3-4 degrees above normal. This was supporting a quasi-stationary low in the region that appeared to be trying to undergo subtropical transition



NOAA Products Validation System (NPROVS) and Environmental Data Record (EDR) Long Term Monitoring (LTM)

January, 2021

Accomplishments / Events:

- NPROVS staff continue to monitor changes in NUCAPS operational soundings associated with the pending implementation of NUCAPS (v3) which is scheduled to replace the existing operational v2.5 (Feb/March time frame) **(Highlight).**
- Paper entitled "Accuracy of Vaisala RS41 and RS92 Upper Tropospheric Humidity Compared to Satellite Hyperspectral Infrared Measurements (Sun et al) accepted for publication in Journal of Remote Sensing, Special Edition **(Highlight)**
- Task team was initiated to manage the utilization of recently procured 75TB disc space to maintain ongoing storage of satellite SDR (CrIS / ATMS) for collocated NOAA-20 and GRUAN Radiosondes from JPSS dedicated radiosonde program
- Reprocessing of NPROVS collocation archive was required due to a series of intermittent data set disruptions (radiosonde and satellite) during Q4, FY20

Overall Status:

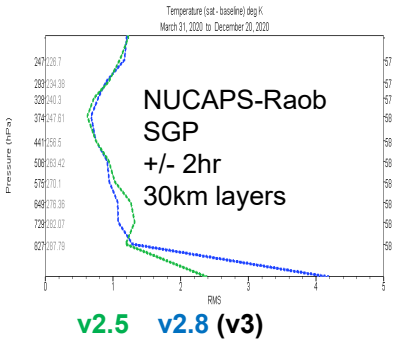
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

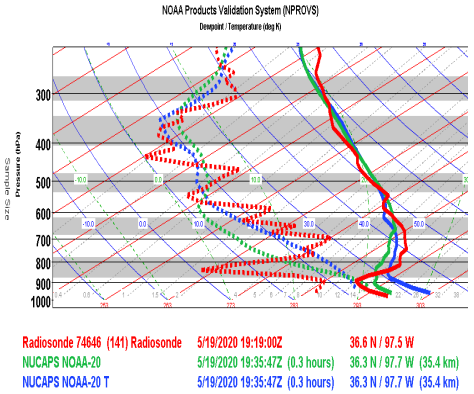
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks: None

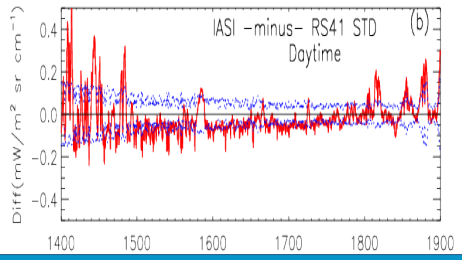
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
LTM				
Maintain / expand existing EDR LTM web pages and mappers	Aug-21	Aug-21		
NPROVS				
Support NUCAPS / MiRS EDR soundings for NPP, NOAA-20 and MetOp-C; COSMIC-2, ...	Aug-21	Aug-21		
Manage JPSS dedicated radiosonde 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:





Vertical RMS statistics (left) and individual collocated observations (right) reflect current Operation (v2.5) and Test (v2.8) differences at JPSS dedicated radiosonde program site at SGP (CONUS) critical for NWS AWIPS-2 users; investigation continues.



*Differences (**Red**) between calibrated (from MetOp) and calculated (from RS41 Radiosonde) IASI spectra show agreement within 95% confidence interval (**Blue**) demonstrating utility for satellite sensor monitoring; calculated spectra based on Line-by-Line Radiative Transfer Model and radiosonde from GRUAN site at Lauder, NZ within 1-hr of MetOp overpass*