AMP/STAR FY20 TTA

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

October 9, 2020

Highlights from the Science Teams

VIIRS I-band Active Fire Product transitions to operations

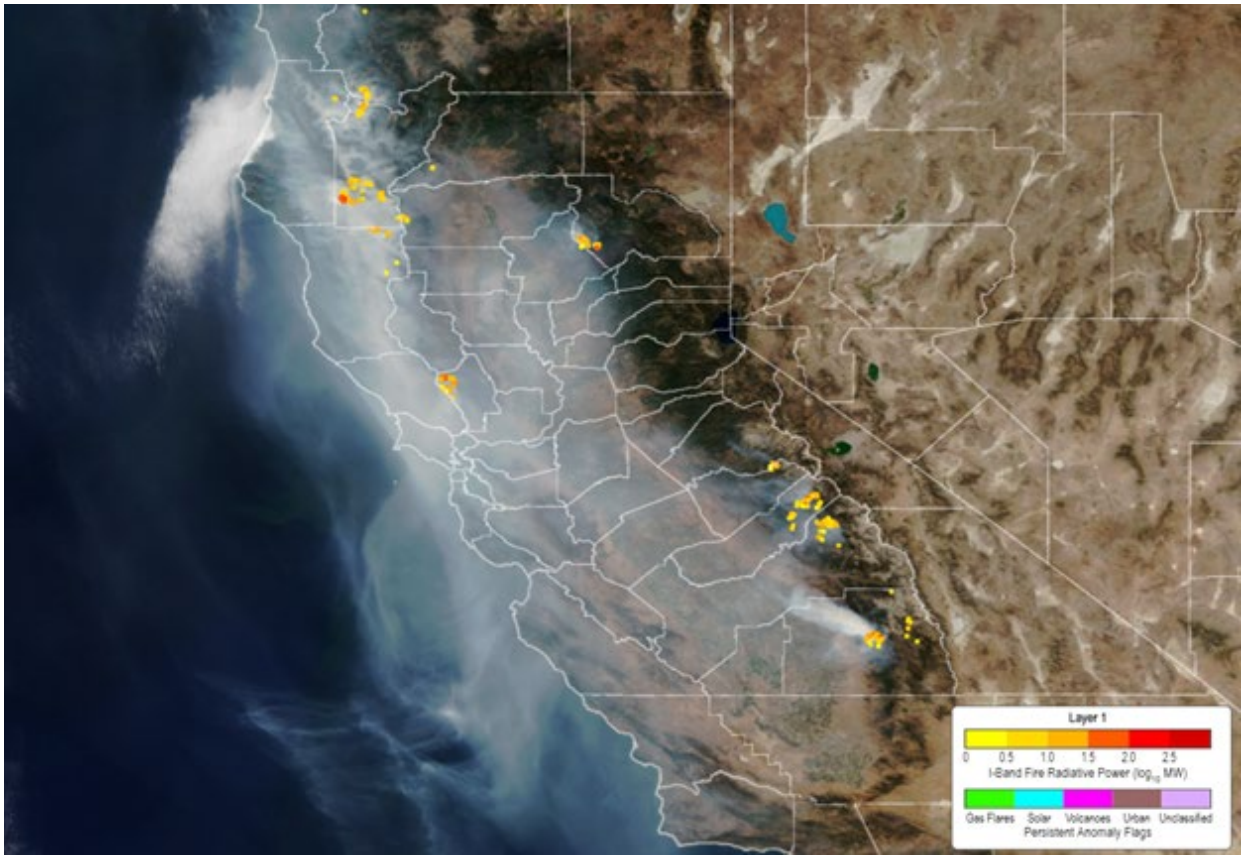


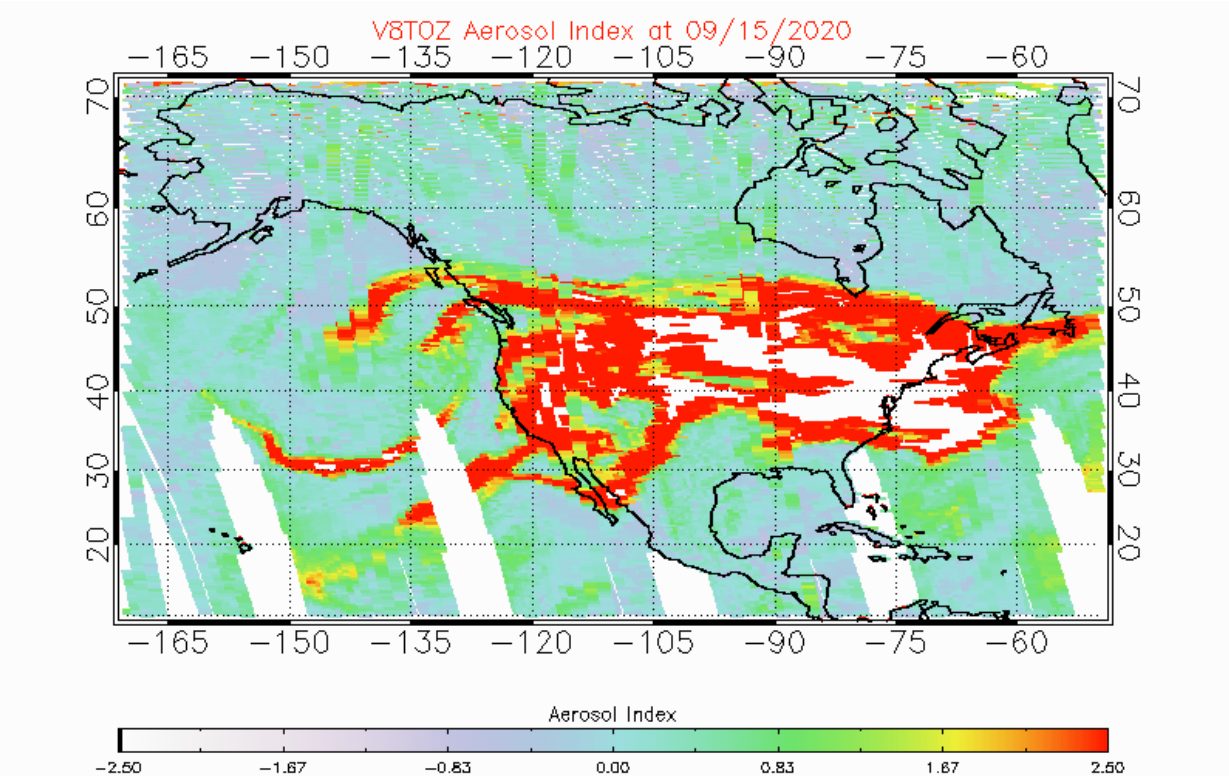
Figure. I-Band Fire Radiative Power overlaid on VIIRS True Color imagery from JSTAR Mapper

The 375 m VIIRS I-band Active Fire product transitioned to NDE operations on September 30, 2020. The product includes hot spot detections at three confidence levels, corresponding fire radiative power (FRP) retrievals, and a full classification of each VIIRS I-band pixel into clear land, water and cloud categories. The product takes advantage of the highest I-band spatial resolution of measurements available from VIIRS, while using radiometric measurements from the dedicated VIIRS 750m "fire" band M13 for FRP retrievals.

After a transitional period, this product will eventually fully replace the current baseline 750m M-band product in NDE operations.

Highlights from the Science Teams

Smoke blankets continental United States



Large wildfires broke out in northern California, Oregon, and Washington, burning hundreds of thousands of acres.

The smoke from these fires initially covered the West Coast in a thick layer of smoke that affected air quality at ground level.

Eventually the smoke was lofted into the upper troposphere, where the jet stream advected it over the eastern US. This caused hazy skies and brilliant sunsets over that area for several days. The smoke eventually reached as far as northern Europe.

Several JPSS instruments measure smoke aerosols, including VIIRS, and OMPS. The OMPS Aerosol index for September 15 is shown at right show very high smoke levels over much of the US.

Highlights from the Science Teams

JPSS sees two tropical-like cyclones impacting Europe

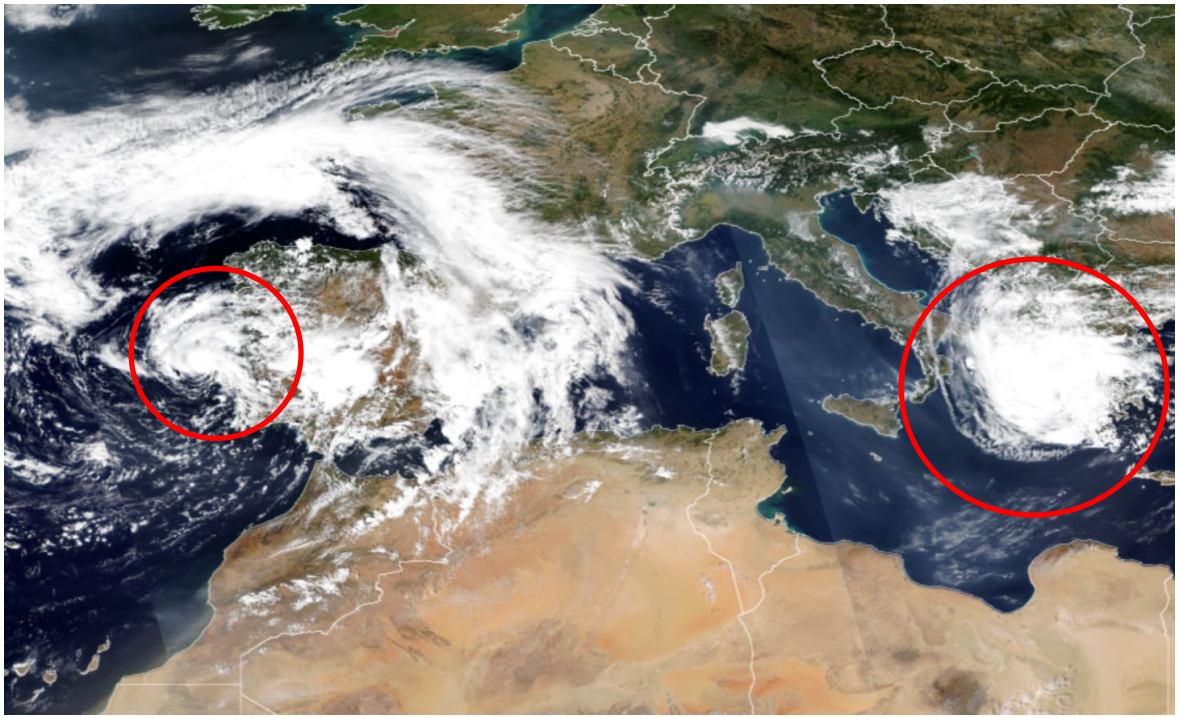


Figure. NOAA-20 VIIRS True Color imagery from 18 Sep 2020 showing tropical cyclones impacting Europe.

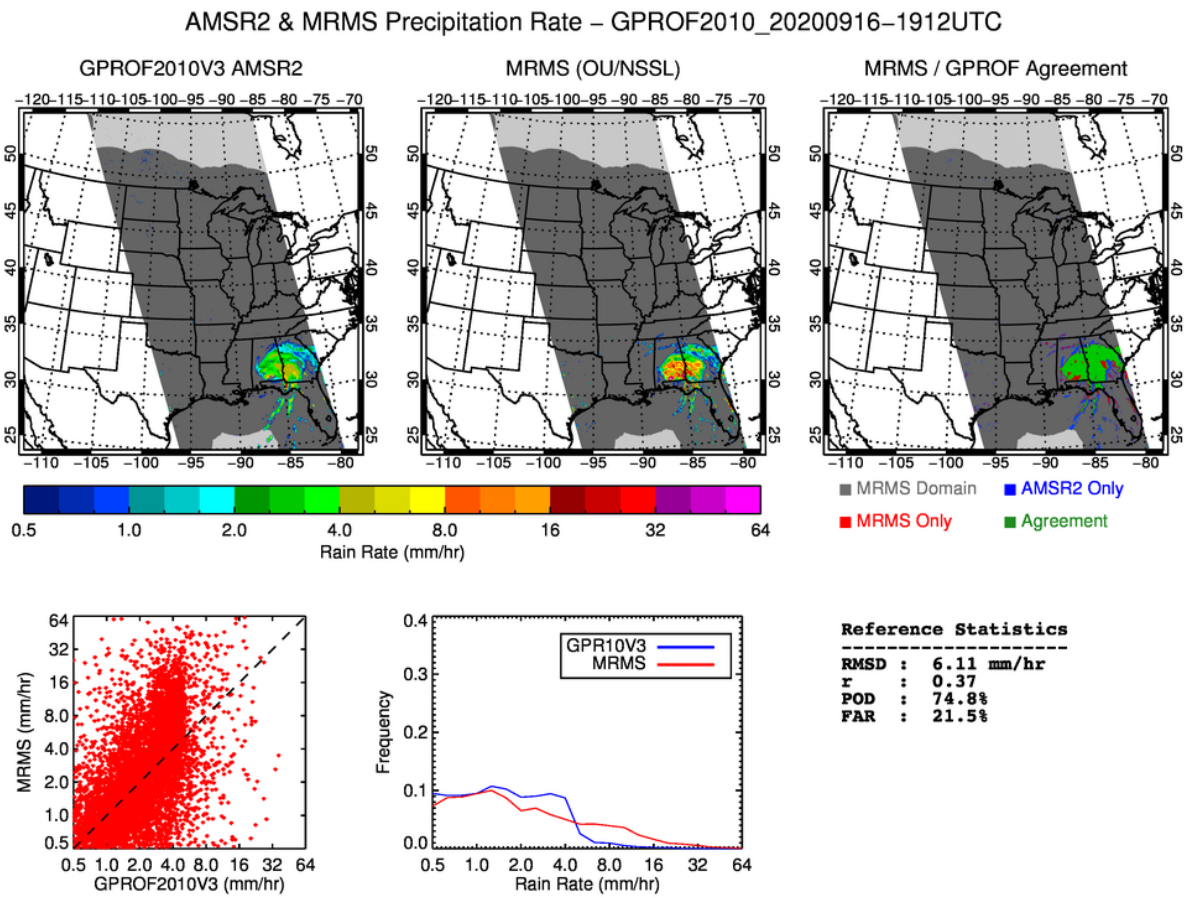
The 2020 Atlantic Hurricane season was already a record breaker by mid-September, with an unusually high number of named storms. It took an even stranger turn, when a an extratropical low pressure system off the coast of Portugal made the transition to become Tropical Storm Alpha. This was the first verified impact on continental Europe of a tropical storm.

At the same time, a low pressure in the Adriatic Sea had also acquired tropical characteristics and became a rare Medicane named Ianos.

JPSS, which provides global coverage twice daily, from each of its two satellites was able to capture both of these landfalling storms.

Highlights from the Science Teams

GCOM-W AMSR2 instrument measures extreme rain in Hurricane Sally



The 2020 Atlantic Hurricane season has featured a record number of US mainland landfalls (10) from named tropical systems.

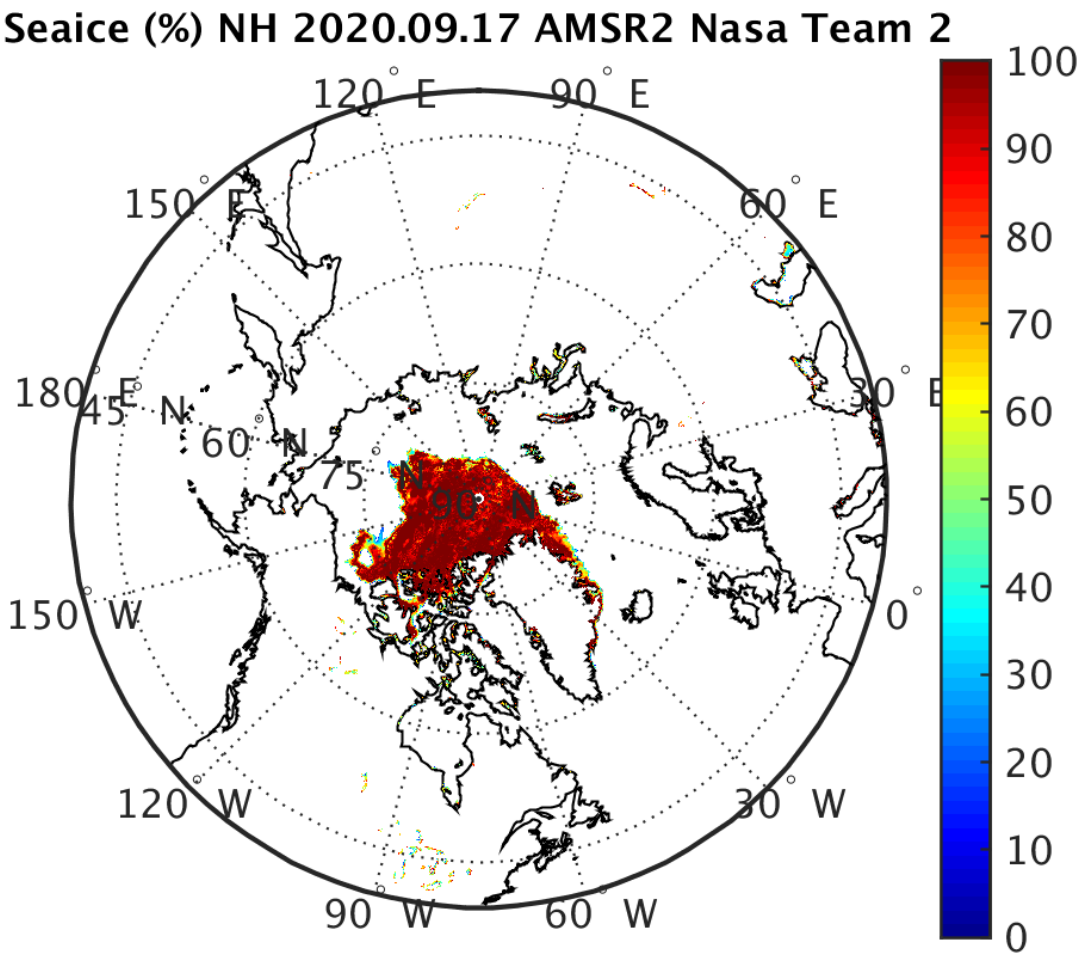
Among those was Hurricane Sally, which formed off of the east coast of Florida before moving northwest towards Pensacola, Florida.

The storm was relatively slow moving and dumped large quantities of rain on Alabama, the Florida Panhandle, and Georgia.

AMSR2 measured this high rainfall rate. The maps and graphs at left compare the satellite derived rates to those from the ground radar based MRMS. The two are in good agreement.

Highlights from the Science Teams

Near record low Arctic sea ice extent observed with AMSR2



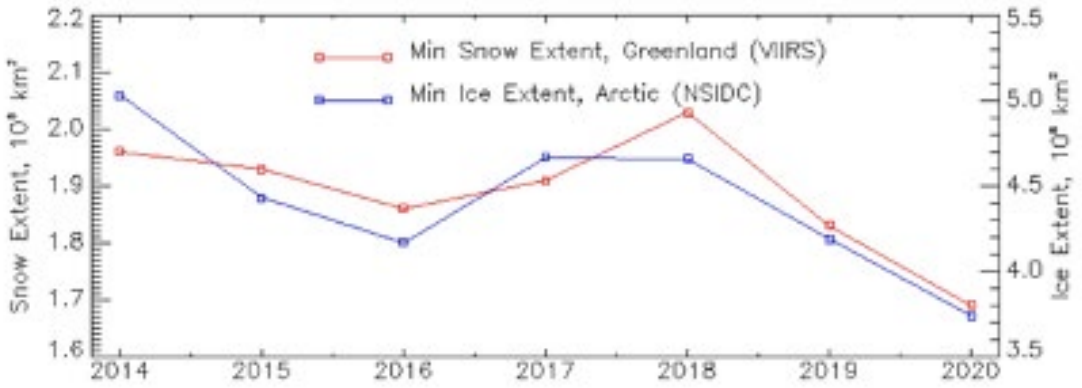
Sea ice extent has been declining for most of the near 40 year period during which satellite data has provided accurate measurements.

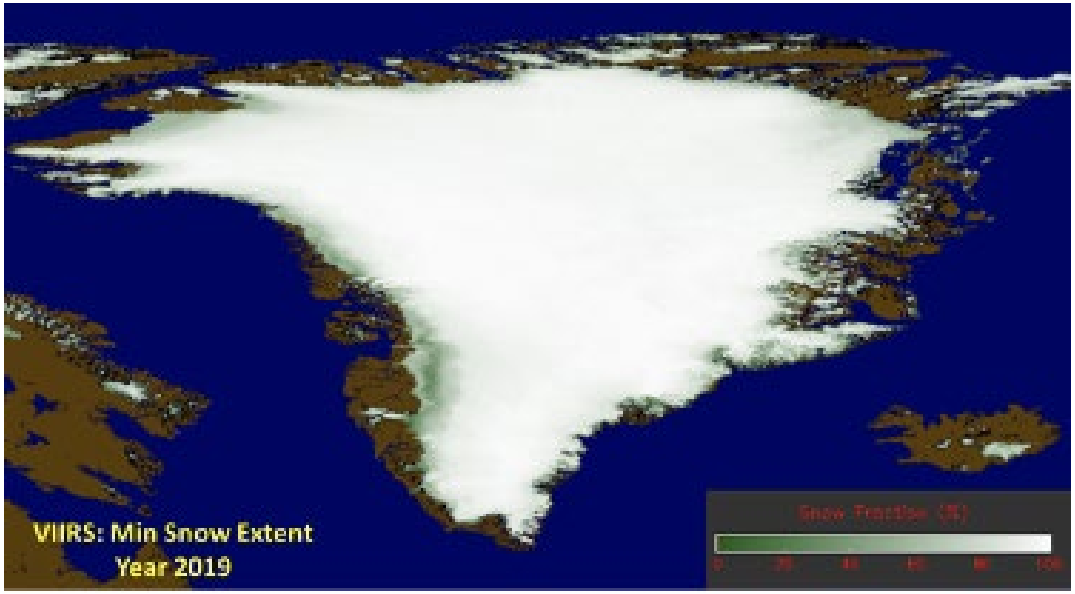
This year was no exception. Sea ice in the Arctic Ocean reached the 2nd lowest annual minimum level on record (higher only than 2012). The microwave instrument AMSR2 provides a good source of measurement of sea ice extent.

The map at left show the minimum sea ice extent with large amount of melting north of Alaska, Russia, and Europe.

Highlights from the Science Teams

VIIRS-derived yearly minimum snow extent over Greenland correlates well with yearly minimum ice extent in the Arctic





The cryosphere team processed VIIRS-based daily gridded snow fraction maps for the last seven summer seasons (2014 to 2020) to estimate year-to-year changes of the minimum snow extent in Greenland.

Although the overall relative range of change of the snow extent (equal to about 17%) is noticeably smaller than the range of change of the minimum ice extent (~26%), the two parameters are obviously well correlated. Correlation between the two environmental parameters indicates that similar physical processes may affect their year-to year changes. It also suggests that VIIRS retrievals of snow cover properties are accurate, robust and consistent over time and thus may provide a valuable input to climate change studies.

Accomplishments

- Delivery Algorithm Packages (DAPs) - Mission Unique Products:
  - 9/14/2020: ATMS SDR team delivered DAP (ADR9393/CCR5198, JPSS-2 ATMS PCT Initial Submission) to ASSISTT
  - 9/30/2020: ASSISTT team delivered ATMS DAP (ADR9393/CCR5198, J2 ATMS PCT Initial Submission) to DPMS
  - 9/8/2020: CrIS SDR team delivered DAP (ADR8820/CCR5199, CrIS Optimal thresholds for spike detection and correction algorithm, Enable spike dectetion) to ASSISTT team
  - 9/25/2020: ASSISTT team delivered CrIS SDR DAP (ADR8820/CCR5199, CrIS Optimal thresholds for spike detection and correction algorithm, Enable spike dectetion) to DPMS AIT
  - 9/22/2020: CrIS SDR team delivered DAP (ADR9415/CCR5213, CrIS J2 Sensor Characteristic PCT) to ASSISTT team
  - 9/30/2020: ASSISTT team re-delivered VIIRS J2 initial DAP (ADR8821/CCR5114, 44 J2 LUT files) to DPMS AIT
  - 8/31/2020: OMPS SDR team delivered DAP (ADR9095/CCR5172, high resolution OMPS NM SDR) to ASSISTT team
  - 9/29/2020: ASSISTT team delivered OMPS DAP (ADR9095/CCR5172, high resolution OMPS NM SDR) to DPMS AIT

- DAPs – Enterprise Products:
  - 9/14/2020: I-Band Active Fires Patch DAP (fixed the issue that occurs when input granules start/end times straddle the 2359 UTC - 0000 UTC time of day; and production rules updated for PersistentWaterRef files) delivered to NDE. This updated DAP went to operations on 9/30/2020 (NDE Build 2.0.25)
  - 9/18/2020: JPSSRR V2R3 Patch DAP delivered to NDE (zero second timestamp bug fix)
  - 10/1/2020: JPSSRR Super DAP V3R0 (includes JRR & VPW, initial J2 DAP & NPP/N20 updates) delivered to OSPO for SCR (software code review)
  - 9/28/2020: 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

- IDPS Builds Checkouts:
  - STAR submitted Report for Block 2.3 Mx0 SOL deploy regression review/checkout to DPMS/RTN/OSPO on 9/28/2020

Accomplishments – JPSS Cal Val Supports

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

S-NPP	Weekly OMPS TC/NP Dark Table Updates	09/01/20, 09/08/20, 09/15/20, 09/22/20, 09/29/20
NOAA-20	Weekly OMPS TC/NP Dark Table Updates	09/01/20, 09/08/20, 09/15/20, 09/22/20, 09/29/20
S-NPP	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	09/08/20, 09/22/20
NOAA-20	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	09/02/20, 09/15/20, 09/29/20
S-NPP	Monthly VIIRS LUT Update of DNB Offsets and Gains	09/23/20
NOAA-20	Monthly VIIRS LUT Update of DNB Offsets and Gains	09/23/20

- 9/03/2020: I-Band Active Fires Operational Readiness Review (ORR)
- 9/16/2020: SPSRB Brief on Declaring "VIIRS I-Band Active Fires" Operational
- 9/30/2020: I-Band Active Fires Operational (NDE Build 2.0.25)

- 9/15/2020: EDR Algorithm Update Reviews for JPSS-2
  - MiRS
  - SFR (Snow Fall Rate)
  - NUCAPS
- 9/28/2020: Algorithm Update Reviews for JPSS-2: Delta OMPS SDR
- ***Algorithm Update Reviews for JPSS-2 All Complete***

- 9/17/2020: September 2020 NOAA-20 Calibration/Validation Maturity Review
  - Validated Maturity Review for: GST (Global Gridded Surface Type)

- 10/7/2020: Land team submitted NOAA-20/S-NPP VIIRS L3 Global Gridded Validation Reports for:
  - Land Surface Temperature
  - Surface Albedo

Upcoming Cal/Val Maturity Reviews

- December, 2020 Maturity Review:
  - Full Validated Maturity:
    NUCAPS CO_2 product (S-NPP & NOAA-20)

- 2021 Maturity Review (TBD, ~Q2FY21):
  - Full Validated Maturity:
    OMPS NP Ozone EDR (V8Pro)

Upcoming Milestones/Deliveries

- JSTAR Code/LUT/Product Deliveries:

  DAP to DPES:
  - Oct-20: Initial J2 PCT to DPMS AIT (CrIS SDR. Sep-20 delivered to ASSISTT)
  - Jan-21: Initial J2 LUTs (OMPS SDR. Dec-20 to ASSISTT; Jan-21 to DPMS)

  NOAA-20 Algorithm DAP to NDE/CoastWatch:
  - Oct-20: Initial J2 DAP (JRR/VPW/LST/LSA, include NPP/N20 updates)
  - Oct-20: Initial J2 DAP (Surface Reflectance, include NPP/N20 updates)
  - Nov-20: Initial J2 DAP (SST/NUCAPS/MiRS, include NPP/N20 updates)
  - Dec-20: Initial J2 DAP (VI/GVF/Ozone, include NPP/N20 updates)
  - Dec-20: Vegetation Health – Final N20 DAP, and initial J2 DAP
  - Dec-20: Ocean Color – Final N20 DAP, and initial J2 DAP

FY20 STAR JPSS Milestones

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Algorithm Updates DAPs				
OMPS DAP: Remove VIIRS SnowIce and QST tile dependency (ADR8550)	Oct-19	Oct-19	10/28/19	
OMPS: J2 pre-launch sensor characterization report	Dec-19	Aug-20	08/14/20	Need NASA sharepoint access permission
ATMS: J2 pre-launch sensor characterization report	May-20	Aug-20	08/13/20	PSR changed
CrIS: J2 pre-launch sensor characterization report	May-20	Jul-20	07/30/20	PSR changed
J2 pre-launch Algorithm Updates Review - SDRs and Imagery	Jun-20	Jun-20	06/16/20 09/28/20: Delta OMPS SDR	
J2 pre-launch Algorithms/PCT/LUT packages - SDRs and Imagery	Aug-20	Dec-20	08/11/20 VIIRS LUTs 09/29/20 OMPS Algo 09/30/20 ATMS PCT	PSR changed
OMPS: High resolution SDR implementation (12km x 10km OMPS TC, ADR9095)	Aug-20	Sep-20	08/31/20 to ASSISTT 09/29/20 to DPMS AIT	
Imagery: All 16 M–bands as Imagery EDRs	Sep-21	Sep-21	RTN will work on this	Work_under_PCR
N20 NUCAPS final DAP to NDE	Nov-19	Nov-19	11/01/19	
N20 Vegetation Health final DAP to NDE	Mar-20	Dec-20		With init J2 DAP To ASSISTT: Jul-20
I-band Active Fires DAP to NDE	Mar-20	Jun-20	06/24/20	With init J2 DAP Need J2 test data
J2 pre-launch Algorithm Updates Review - EDRs	Sep-20	Sep-20	07/21/20: Part A 08/18/20: Part B 09/15/20: Part C	
Initial J2-ready EDR DAPs (include NPP/N20 updates)	Sep-20	Dec-20	06/24/20: Active Fires	10/1/20: JRR DAP to OSPO for SCR
AST-2019 (VIIRS Annual Surface Type)	Sep-20	Sep-20	09/28/20	

FY20 STAR JPSS Milestones

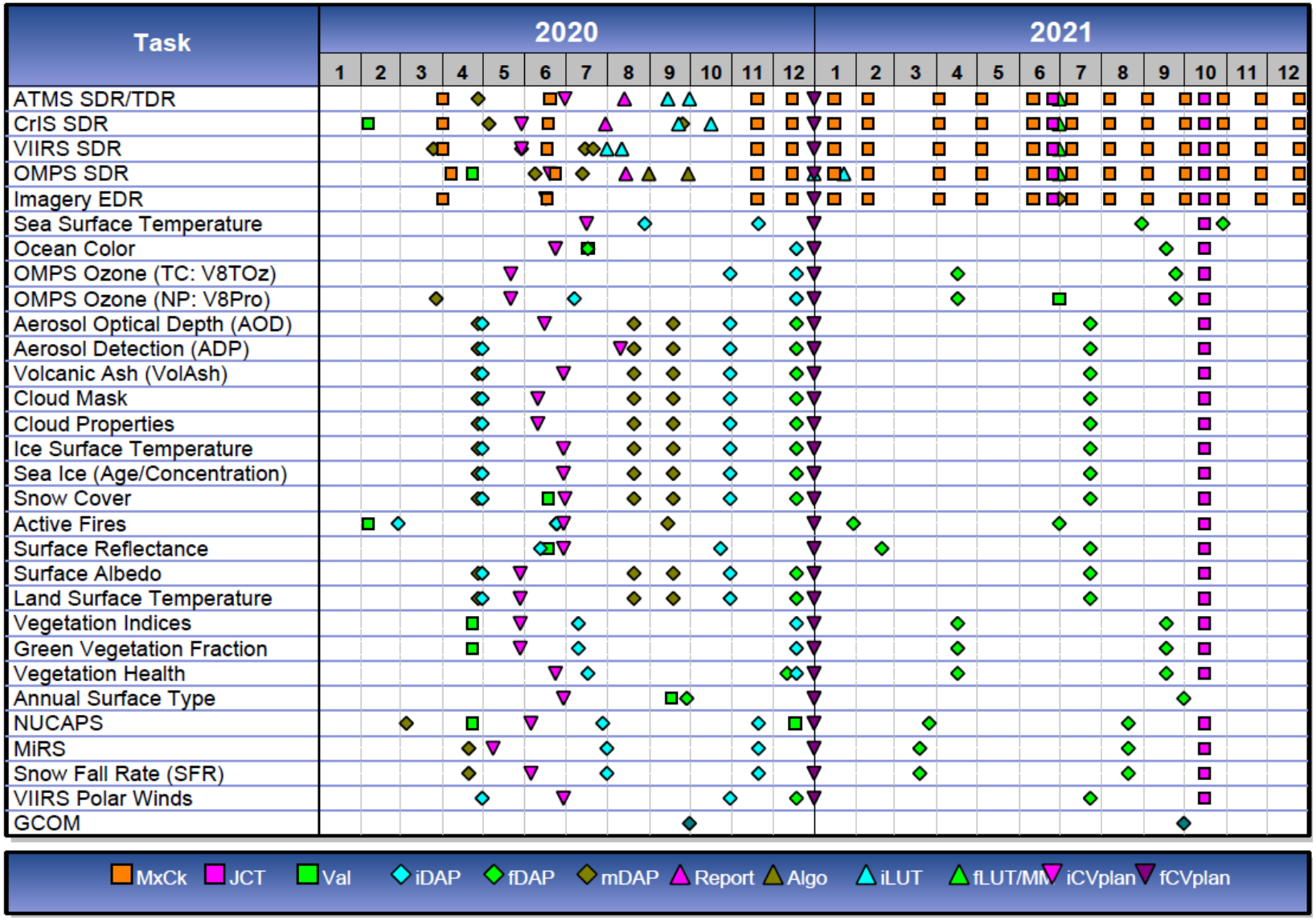
Milestones	Original Date	Forecast Date	Actual Date	Variance Explanation
Algorithm Cal/Val				
J2 Cal Val Plans - Draft Delivery (all SDR/EDR products)	Jun-20	Jun-20	06/30/20	
N20 NUCAPS Full Validated Maturity (all NUCAPS products except CH4 & CO2)	Oct-19	Oct-19	10/28/19	
N20 Land Surface Temperature Full Validated Maturity	Nov-19	Nov-19	11/21/19	
N20 Surface Albedo Full Validated Maturity	Nov-19	Nov-19	11/21/19	
N20 OMPS NP SDR Full Validated Maturity	Jan-20	Apr-20	04/23/20	
N20 OMPS NP EDR (V8Pro) Full Validated Maturity	Jan-20	Jun-21		More Complex characterization effort than expected
N20 M-band and I-Band Active Fires Full Validated Maturity	Jan-20	Jan-20	02/06/20	Combined Jan/Feb review
N20 Green Vegetation Fraction Full Validated Maturity	Feb-20	Apr-20	04/23/20	
N20 Vegetation Index Full Validated Maturity	Feb-20	Apr-20	04/23/20	
NUCAPS CH4 Full Validated Maturity (N20 & NPP)	Feb-20	Apr-20	04/23/20	
NPP side-2 CrIs SDR Full Validated Maturity	Feb-20	Feb-20	02/06/20	
N20 Surface reflectance Full Validated Maturity	Apr-20	Jun-20	06/18/20	
N20 Snow Cover Full Validated Maturity	Apr-20	Jun-20	06/18/20	
N20 Ocean Color Full Validated Maturity	Jun-20	Jul-20	07/17/20	
N20 Surface Type Full Validated Maturity	Sep-20	Sep-20	09/17/20	

FY20 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	10/01/19, 10/08/19, 10/16/19, 10/22/19, 10/29/19, 11/05/19, 11/13/19, 11/19/19, 11/26/19, 12/03/19, 12/11/19, 12/17/19, 12/30/19, 01/07/20, 01/14/20, 01/22/20, 01/28/20, 02/04/20, 02/11/20, 02/18/20, 02/25/20, 03/03/20, 03/10/20, 03/17/20, 03/24/20, 03/31/20, 04/07/20, 04/14/20, 04/21/20, 04/28/20, 05/05/20, 05/12/20, 05/19/20, 05/27/20, 06/02/20, 06/09/20, 06/16/20, 06/23/20, 06/30/20, 07/07/20, 07/14/20, 07/21/20, 07/28/20, 08/04/20, 08/11/20, 08/18/20, 08/25/20, 09/01/20, 09/08/20, 09/15/20, 09/22/20, 09/29/20	
S-NPP: Bi-Weekly OMPS NP Wavelength & Solar Flux	Bi-Weekly	Bi-Weekly	10/08/19, 10/22/19, 11/05/19, 11/19/19, 12/03/19, 12/17/19, 12/30/19, 01/14/20, 01/28/20, 02/11/20, 02/25/20, 03/10/20, 03/24/2, 04/07/20, 04/21/20, 05/05/20, 05/19/20, 06/02/20, 06/16/20, 06/30/20, 07/14/20, 07/28/20, 08/11/20, 08/25/20, 09/08/20, 09/22/20	
S-NPP: Monthly VIIRS LUT update of DNB Offsets and Gains	Monthly	Monthly	10/08/19, 11/05/19, 12/10/19, 01/07/20 (Jan), 01/28/20 (Feb), 03/03/20, 04/01/20, 05/05/20, 06/30/20, 07/28/20, 08/26/20, 09/23/20	
S-NPP: Monthly VIIRS Stray Light LUT Update	Monthly	Monthly	10/08/19, 11/06/19, 12/10/19, 01/07/20 (Jan), 01/29/20 (Feb), 02/12/20 (Feb updated), 03/03/20, 04/01/20	Re-use LUT after 12 months. The 12th NPP LUT will be Apr-20
NOAA-20: Weekly OMPS TC/NP Dark Table Updates	Weekly	Weekly	10/01/19, 10/08/19, 10/16/19, 10/22/19, 10/29/19, 11/05/19, 11/13/19, 11/19/19, 11/26/19, 12/03/19, 12/11/19, 12/17/19, 12/30/19, 01/07/20, 01/14/20, 01/22/20, 01/28/20, 02/04/20, 02/11/20, 02/18/20, 02/25/20, 03/03/20, 03/10/20, 03/17/20, 03/24/20, 03/31/20, 04/07/20, 04/14/20, 04/21/20, 04/28/20, 05/05/20, 05/12/20, 05/19/20, 05/27/20, 06/02/20, 06/09/20, 06/16/20, 06/23/20, 06/30/20, 07/07/20, 07/14/20, 07/21/20, 07/28/20, 08/04/20, 08/11/20, 08/18/20, 08/25/20, 09/01/20, 09/08/20, 09/15/20, 09/22/20, 09/29/20	
NOAA-20: Bi-Weekly OMPS NP Wavelength & Solar Flux	Bi-Weekly	Bi-Weekly	10/01/19, 10/16/19, 10/29/19, 11/13/19, 11/26/19, 12/11/19, 01/07/20, 01/22/20, 02/04/20, 02/18/20, 03/03/20, 03/17/20, 03/31/20, 04/14/20, 04/28/20, 05/12/20, 05/27/20, 06/09/20, 06/23/20, 07/07/20, 07/21/20, 08/04/20, 08/21/20 (out-of-cycle CCR-5026), 09/02/20, 09/15/20, 09/29/20	
NOAA-20: Monthly VIIRS LUT update of DNB Offsets and Gains	Monthly	Monthly	10/08/19, 11/05/19, 12/10/19, 01/07/20 (Jan), 01/28/20 (Feb), 03/03/20, 04/01/20, 05/05/20, 06/30/20, 07/28/20, 08/26/20, 09/23/20	
NOAA-20: Monthly VIIRS Stray Light LUT Update	Monthly	Monthly	10/08/19, 11/06/19, 12/10/19	Re-use LUT after 12 months. The 12th N20 LUT will be Dec-19
Monthly quad-chart report (all SDR/EDR products)	Monthly	Monthly	10/31/19, 11/30/19, 12/31/19, 01/31/20, 02/29/20, 03/31/20, 04/30/20, 05/31/20, 06/30/20, 07/31/20, 08/31/20. 09/30/20	
IDPS Mx build SOL and I&T deploy regression verfication review (bl2.1-Mx8/bl2.2-Mx0/1)	Nov-19 Mar-20 Jun-20	Nov-19 Mar-20 Jun-20	Block 2.1 Mx8 I&T report: 11/13/2019 Block 2.2 Mx0 SOL report: 02/14/2020 Block 2.2 Mx0 I&T report: 04/07/2020 Block 2.2 Mx1 SOL report: 05/22/2020 Block 2.2 Mx1 I&T report: 06/24/2020	
IDPS Cloud Implementation Verification (Based on Nov 2020 TTO)	Sep-20	Dec-20		B2.3 Mx0 TTO: Dec-20

STAR JPSS Schedule

STAR JPSS Schedule: TTA Milestones



Color code:

Green: **Completed Milestones**

Gray: **Non-FY20 Milestones**

ATMS SDR

September, 2020

Accomplishments / Events:

- Generated the first version of JPSS-2 ATMS Processing Coefficients Table (PCT) and validated PCT using both S-NPP and NOAA-20 science RDR data with modified parameters
- Prepare the PCT submission package, including document, auxiliary data, and ADL patches, to ASSISTT for third party verification
- Verify IDPS Block 2.3 Mx0 ATMS SOL data to ensure the lunar intrusion correction code/PCT updates are implemented correctly.
- Set up JPSS VPN/Cloud account and attend JPSS DPMS cloud ADA migration training to prepared for IDPS data verification in future
- Create NOAA-20 vs. S-NPP ATMS science data inter-sensor cross calibration trending modules
- Finish updating JPSS-2 ATMS pre-launch TVAC data evaluation tools and revisit both JPSS-1 and S-NPP ATMS pre-launch TVAC data to improve the analysis quality
- Keep updating ATMS SDR ATBD and Users' Guide documents
- Attend IEEE TGRS 2020 virtual meeting and present ATMS SDR related findings

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.*

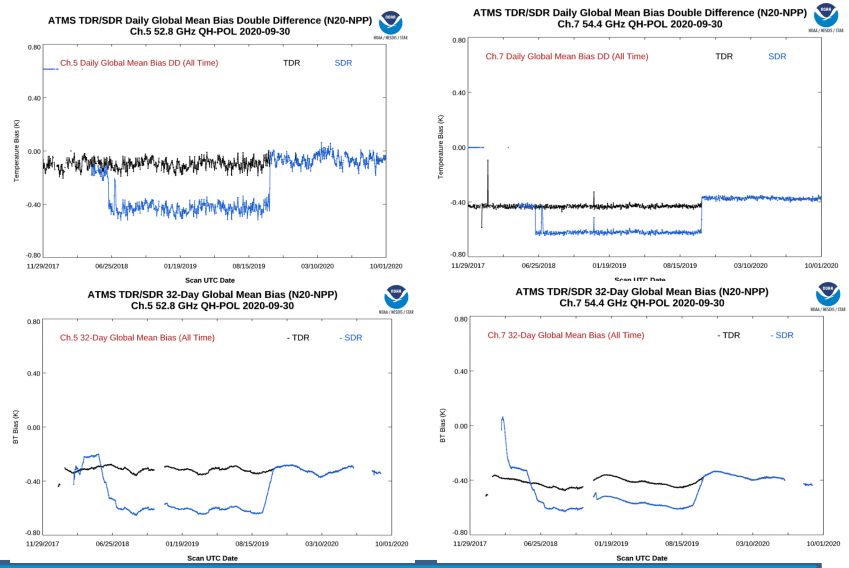
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 pre-launch test data (TVAC) review/analyze	Apr-20	Apr-20	Apr-20	TVAC: Dec-19
J2 pre-launch evaluation tools development	Sep-20	Sep-20	Sep-20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/30/20	
Pre-launch sensor characterization report	Jun-20	Aug-20	08/13/20	PSR + 3m
Algorithm update based on pre-launch test data and other changes (e.g. APID, sampling frequency, FSW, and RDR)	Sep-20	Sep-20	Not needed	PSR + 6m
PCT update based on pre-launch test data and other changes	Sep-20	Sep-20	09/30/20	PSR + 6m 8/26/20: DRAT
Algorithm Updates Review	Jun-20	Jun-20	06/16/20	
J2 SDR data (based on TVAC) available for EDRs	Apr-20	Apr-20	03/25/20	Proxy Data
ATMS TDR/SDR discrepancy between ADL and IDPS over lunar intrusion regions (ADR 9035)	Sep-20	Sep-20	04/27/20	
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	Sep-20	
Annual ATMS TDR/SDR performance report	Feb-20	Feb-20	Feb-20	
Verification of cloud implementation	Sep-20	Q1 FY21		B2.3 TTO
IDPS Mx build I&T deploy regression support:				
BL2.1 Mx 8 I&T ATMS data review/checkout	Nov-19	Nov-19	11/13/19	
BL2.2 Mx 0 I&T ATMS data review/checkout	Apr-20	Apr-20	04/01/20	
BL2.2 Mx 1 I&T ATMS data review/checkout	Jun-20	Jun-20	06/19/20	

Highlights:

NOAA-20 vs. S-NPP ATMS inter-sensor bias through RTM O-B double difference (upper) and 32-day mean direct comparison



CrIS SDR

September, 2020

Accomplishments / Events:

- The NOAA-20 CrIS instrument has shown four events of noise increase at MWIR FOV5 since September 2019 (**Fig 1**). This anomaly seems to be associated with the effect of accumulation of electric charge within the instrument readout-integrated-circuit (ROIC) and amplifiers circuitry. The performance is being closely monitored
- Made progress on the ADL code change to the FCE algorithm **(Fig. 2)**. An option for enabling it operationally includes a new quality flag in QF4 and a new parameter in the PCT LUT table. The results show that the new quality flag and the PCT parameter work properly as expected.
- Prepared and delivered package to turn on CrIS Spike Detection and Correction Algorithm based on IDPS Block 2.2 Mx1 (ADR 8820, CCR 5199). Demonstrated that the optimal thresholds for Spike Detection and Correction Algorithm were found using IDPS Block 2.1 Mx8. The new thresholds significantly reduced the false alarm cases.
- Delivered a package for JPSS-2 CrIS PCT initial submission (ADR 9415) for IDPS J2 testing on September 22, 2020. Since there is no J2 CrIS RDR data available, at this time, it was decided to rename the J2 CrIS PCT/AUX files as J1, using J1 RDR data in IDPS Block 2.2 Mx1, and deliver the files with J2 name. This would help to perform the testing of the initial J2 CrIS PCT/AUX files.
- Due to the recent recovery of the SNPP CrIS instrument and the high quality of the CrIS calibrated observations, CrIS observations from the SNPP and NOAA-20 CrIS instruments have been assimilated by NWP centers during the 2020 Hurricane season **(Fig 3)**. Having CrIS observations in the same orbit, and separated by 50 minutes, provides continuity, redundancy and enhance critical capabilities needed for weather forecasting and environmental monitoring.

Overall Status:

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

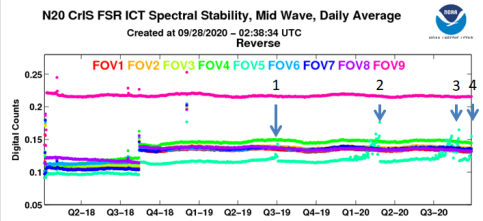
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

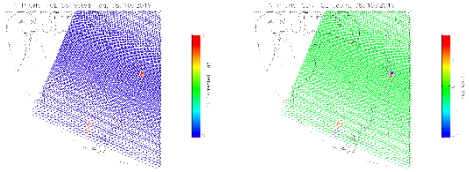
The GST contractor, Yong Chen, leaved the CrIS Team on September 27, 2020. The Team is re-organizing to cover the large experience and the support that Yong provided to the CrIS Team in the CrIS Cal/Val activities.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
NPP (side-2) Validated Maturity	Feb-20	Feb-20	02/06/20	Prov + 6m
J2 pre-launch test data (TVAC) review/analyze	Apr-20	Apr-20	Apr-20	TVAC: Jan-20
J2 pre-launch evaluation tools development	Sep-20	Sep-20	Jul-20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	05/29/20	
Pre-launch sensor characterization report	Jul-20	Jul-20	07/30/20	PSR + 3m
Algorithm update based on pre-launch test data and other changes (e.g. APID, sampling frequency, FSW, and RDR)	Oct-20	Oct-20	Not needed	PSR + 6m
PCT update based on pre-launch test data and other changes	Oct-20	Oct-20	10/16/20	PSR + 6m 9/16/20: DRAT
Algorithm Updates Review	Jun-20	Jun-20	06/16/20	
J2 SDR data (based on TVAC) available for EDRs	Apr-20	Apr-20	03/26/20	Proxy Data
Update Quality flag and threshold for Spike Detection algorithm (ADR8820)	Aug-20	Sep-20	09/25/20	8/26/20: DRAT
Optimize/update FCE detection and correction algorithm	Aug-20	Aug-20	05/05/20	
Turn off Truncated Spectrum CrIS Data (ADR8761)	Sep-20	Oct-20	FY21	5/1/20 CCR Approved
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	Sep-20	
Annual CrIS SDR performance report	Feb-20	Feb-20	02/26/20	
Verification of cloud implementation	Sep-20	Q1 FY21		B2.3 TTO
IDPS Mx build I&T deploy regression support:				
BL2.1 Mx 8 I&T CrIS data review/checkout	Nov-19	Nov-19	11/12/19	
BL2.2 Mx 0 I&T CrIS data review/checkout	Apr-20	Apr-20	04/01/20	
BL2.2 Mx 1 I&T CrIS data review/checkout	Jun-20	Jun-20	06/18/20	

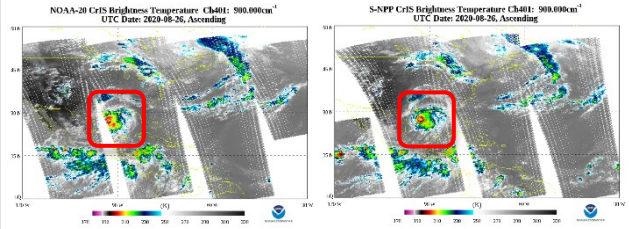
Highlights:



(1) Four detected MWIR FOV5 Noise increase anomaly events occurring on NOAA-20/CrIS since September 2019. Noise meets the requirements. Daily monitoring is in progress.



(2) (left) FCE_CORRECT flag indicating the Earth scene FCEs were corrected successfully (red pixels), (right) FCE count was recorded correctly in the SDR product for both positive and negative fringe count shifts.



(3) Combination of CrIS observations from NOAA-20 (left) and S-NPP (right) at 900 cm^{-1} during the development of the tropical cyclone Laura, on August 26, 2020, improves temporal and spatial coverage.

VIIRS SDR

September, 2020

Accomplishments / Events:

- Completed checkout of IDPS Block 2.3 Release Mx0 using NOAA-20 and S-NPP VIIRS SDR radiometric and geolocation products generated on the SOL system in the Cloud that confirmed correct implementation of the VIGMU code change: reported findings to the STAR JPSS project and recommended deployment of the updated code on the IDPS I&T system
- 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 9/17/2020
- Supported STAR/GRAVITE/AIT Cloud Migration Working Group in preparations for the IDPS and ADA transitions to the Amazon Cloud

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			

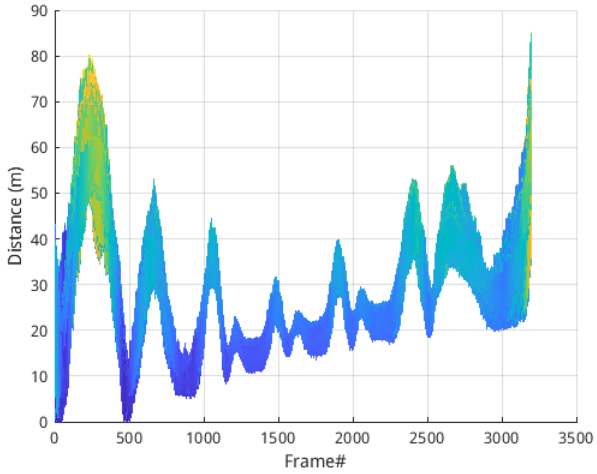
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

none

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 pre-launch test data (TVAC) review/analyze	Jan-20	Jan-20	01/31/20	
J2 pre-launch evaluation tools development	Sep-20	Sep-20	09/30/20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	05/29/20	
Launch-ready LUTs (initial delivery)	Aug-20	Aug-20	08/11/20	
Algorithm Updates Review	Jun-20	Jun-20	06/16/20	
Simulated J2 SDR data available for EDRs	Jan-20	Jan-20	01/31/20	
DAP: Lunar contamination (code & LUT updates, ADR9032/CCR5165)	Jun-20	Aug-20	08/21/20	
S-NPP VIIRS Geolocation LUTs Update (ADR9254)			03/25/20	
DAP (ADR9171/CCR4846, VIIRS SDR Geolocation Algorithm Correction)			05/29/20	
DAP (ADR9340/CCR5113, NOAA-20 VIIRS RSBAUTOCAL LUTs Update)			07/15/20	
NOAA-20 and S-NPP cross-calibration/ comparison	Sep-20	Sep-20	09/30/20	
Annual VIIRS SDR performance report	Feb-20	Feb-20	02/28/20	
Verification of cloud implementation	Sep-20	Q1 FY21		B2.3 TTO
IDPS Mx build I&T deploy regression support:				
BL2.1 Mx8 I&T VIIRS data review/checkout	Nov-19	Nov-19	11/06/19	
BL2.2 Mx0 I&T VIIRS data review/checkout	Apr-20	Apr-20	04/01/20	
BL2.2 Mx1 I&T VIIRS data review/checkout	Jun-20	Jun-20	06/17/20	

Highlights:



VIIRS SDR geolocation changes expected for the M-bands after the VIGMU deployment in IDPS Block 2.3 Mx0 shown for the 10:54 UTC granule from 9/14/2020: the up to 80-90 m changes are smaller than ~10% of the M-band pixel size and are expected to improve VIIRS geolocation accuracy

OMPS SDR

September, 2020

Accomplishments / Events:

- Delivered the J2 OMPS SDR code package to the DPMS via the ASSISTT team, which includes the J2 NM SDR high resolution code along with 47 LUTs applicable for SNPP, NOAA-20 NM/NP SDR, and J2 NM/NP. It can be used as an evaluation tool to produce NOAA-20 SDR data with low and high resolutions.
- Completed the JPSS Delta Review for the J2 OMPS NM SDR algorithm.
- Delivered SNPP/NOAA-20 OMPS weekly Dark tables and NP solar irradiance bi-weekly LUTs to GRAVITE
- Verified the LUTs to re-process NOAA-20 OMPS NM/NP to support a urgent action from management
- Compared NOAA-20 NM SDR data with two spatial resolutions to assess impacts of high resolution on radiance and dark.

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:

1- EDR team requested additional analysis to better understand difference between SNPP and NOAA-20 as part of validation review – review completed 4/23/20, 3 months delayed compared to plan - DRs generated and need to be resolved – resources diverted so lower priority milestones had schedule slip.
2- Unable to access OMPS TVAC data – working with AMP to resolve (this issue is resolved)

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity: OMPS-NP	Jan-20	Apr-20	04/23/20	See Issues/Risks
J2 pre-launch test data (TVAC) review/analyze	Apr-20	Aug-20	08/14/20	
J2 pre-launch evaluation tools development (Updated ADL-OMPS package for J2)	Sep-20	Sep-20	09/29/20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/19/20	
Pre-launch sensor characterization report	Dec-19	Aug-20	08/14/20	See Issues/Risks
Algorithm update based on pre-launch test data and other changes (e.g. APID, sampling frequency, FSW, and RDR)	Aug-20	Sep-20	09/29/20	10x10 km TC 8/31 to ASSISTT
Launch-ready LUTs (initial delivery)	Aug-20	Jan-21		7 LUTs done
Algorithm Updates Review	Jun-20	Jun-20	06/16/20	
J2 SDR data (based on TVAC) available for EDRs	Apr-20	Jun-20	05/22/20	See Issues/Risks
Remove VIIRS Snowlce and QST tile dependency (ADR8550/CCR4589)	Oct-19	Oct-19	10/28/19	8/1/19 to ASSISTT
ADR9172/CCR5018, Error in OMPS Nadir Mapper Dark Count Correction			06/08/20	
ADR9066/CCR5026, N20 OMPS-NP SDR Wavelength Scale Accuracy			07/13/20	
High resolution SDR implementation (10km x 10km OMPS TC)	Aug-20	Sep-20	09/29/20	8/31 to ASSISTT
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	May-20	Support NOAA-20 NP Validated
Annual OMPS SDR performance report	Feb-20	Feb-20	Feb-20	
Verification of cloud implementation	Sep-20	Q1 FY21		B2.3 TTO
IDPS Mx build I&T deploy regression support:				
BL2.1 Mx 8 I&T OMPS data review/checkout	Nov-19	Nov-19	11/12/19	
BL2.2 Mx 0 I&T OMPS data review/checkout	Apr-20	Apr-20	04/07/20	
BL2.2 Mx 1 I&T OMPS data review/checkout	Jul-20	Jul-20	06/23/20	

Highlights:

High and Low Resolution NOAA-20 NM EV Nadir View Radiance

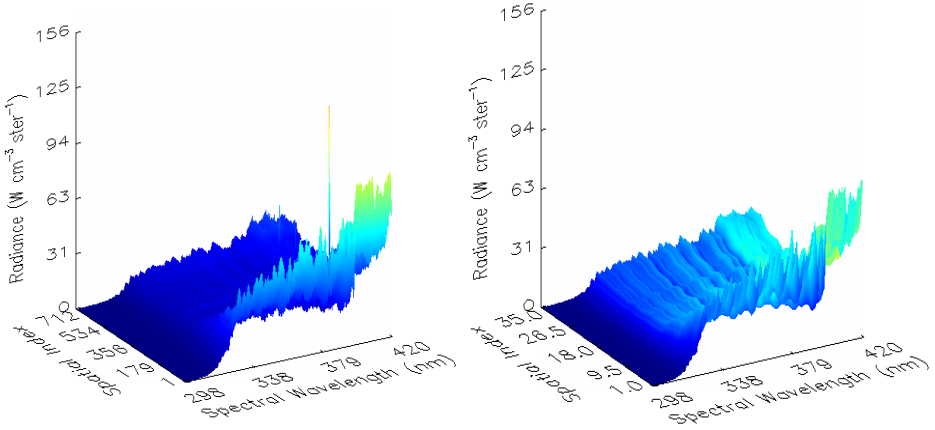


Figure Comparison of NOAA-20 NM Earth view radiance at nadir with two spatial resolutions on May 09, 2020. (a) 17 km x 5 km. (b) 17 km x 50 km

SDR Reprocessing

September, 2020

Accomplishments / Events:

- "The Reprocessing Suomi NPP Satellite Observations" has been published at Remote Sensing, 2020, 12, 2891, doi:103390/rs12182891 (highlights)
- Provided the information for transition of the reprocessed SNPP SDR data at ftp://jlrdata.umd.edu/pub/SNPP_Reprocessing to Cloud requested by the COVID-19 study (CEOS ACC, Shobha)
- Joined the discussions with JPSS program office and NCEI/CLASS and coordinated with NCEI/CLASS to resume the transition of the reprocessed SNPP data to NCEI/CLASS
- Completed SNPP CrIS V2 SDR reprocessing
- Extending the reprocessing of SNPP VIIRS data to 2019 is ongoing

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Development of VIIRS reprocessed data dissemination interface	Sep-20	Sep-20	Feb-20	
Optimize SDR reprocessing package	Sep-20	Sep-20	Jul-20	
Evaluation of impact of reprocessed VIIRS SDR data on cloud mask product	Sep-20	Sep-20	Dec-19	
Finish V2 SNPP CrIS reprocessing	Sep-20	Sep-20	Sept-20	
Develop reprocessing data website	Sep-20	Sep-20	Jul-20	
Analyze the quality of reprocessed data in a journal paper	Sep-20	Sep-20	Jul-20	
Readme for reprocessed SNPP ATMS, CrIS, OMPS and VIIRS data	Sep-20	Sep-20	Aug-20	
Extend SNPP VIIRS reprocessing to 2019	Sep-20	Mar-21		
Transition of the reprocessed SNPP SDR data to CLOUD	Dec-20	Dec-20		
Transition of the reprocessed SNPP SDR data to CLASS/NCEI	Sept-21	Sep-21		

Overall Status:

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

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

Issues/Risks:

None

Highlights: "The Reprocessed Suomi NPP Satellite Observations" published at Remote Sensing, 2020, 12, 2891

remote sensing

MDPI

Article

The Reprocessed Suomi NPP Satellite Observations

Cheng-Zhi Zou [1,*], Lihang Zhou [2], Lin Lin [3], Ninghai Sun [4], Yong Chen [4], Lawrence E. Flynn [1], Bin Zhang [3], Changyong Cao [1], Flavio Iturbide-Sanchez [1], Trevor Beck [1], Banghua Yan [1], Satya Kalluri [1], Yan Bai [3], Slawomir Blonski [4], Taeyoung Choi [4], Murty Divakarla [5], Yalong Gu [4], Xianjun Hao [6], Wei Li [3], Ding Liang [4], Jianguo Niu [5], Xi Shao [3], Larrabee Strow [7], David C. Tobin [8], Denis Tremblay [4], Sirish Uprety [3], Wenhui Wang [3], Hui Xu [3], Hu Yang [3] and Mitchell D. Goldberg [2]

1 Center for Satellite Applications and Research, NOAA/NESDIS, College Park, MD 20740, USA; Lawrence.E.Flynn@noaa.gov (L.E.F.); Changyong.Cao@noaa.gov (C.C.); Flavio.Iturbide@noaa.gov (F.I.-S.); Trevor.Beck@noaa.gov (T.B.); Banghua.Yan@noaa.gov (B.Y.); Satya.Kalluri@noaa.gov (S.K.)
2 Joint Polar Satellite System, NOAA/NESDIS, Lanham, MD 20706, USA; Lihang.Zhou@noaa.gov (L.Z.); Mitch.Goldberg@noaa.gov (M.D.G.)
3 ESSIC/CISESS, University of Maryland, College Park, MD 20740, USA; Lin.Lin@noaa.gov (L.L.); Bin.Zhang@noaa.gov (B.Z.); Yan.Bai@noaa.gov (Y.B.); wli12346@umd.edu (W.L.); Xi.Shao@noaa.gov (X.S.); Sirish.Uprety@noaa.gov (S.U.); Wenhui.Wang@noaa.gov (W.W.); huixu@umd.edu (H.X.); huyang@umd.edu (H.Y.)
4 Global Science and Technology, College Park, MD 20740, USA; Ninghai.Sun@noaa.gov (N.S.); Yong.Chen@noaa.gov (Y.C.); Slawomir.Blonski@noaa.gov (S.B.); Taeyoung.Choi@noaa.gov (T.C.); Yalong.Gu@noaa.gov (Y.G.); Ding.Liang@noaa.gov (D.L.); Denis.Tremblay@noaa.gov (D.T.)
5 I. M. Systems Group, Inc., College Park, MD 20740, USA; Murty.Divakarla@noaa.gov (M.D.); Jianguo.Niu@noaa.gov (J.N.)
6 Global Environment and Natural Resources Institute/Environmental Science and Technology Center, George Mason University, Fairfax, VA 22030, USA; Xianjun.Hao@noaa.gov
7 Department of Physics, University of Maryland Baltimore County, Baltimore, MD 21250, USA; strow@umbc.edu
8 Space Science and Engineering Center, University of Wisconsin-Madison, Madison, WI 53715, USA; Dave.Tobin@ssec.wisc.edu
* Correspondence: Cheng-Zhi.Zou@noaa.gov

Received: 31 July 2020; Accepted: 3 September 2020; Published: 6 September 2020

check for updates

ICVS

September, 2020

Accomplishments / Events:

- Updated the ICVS interactive sensor performance/health status and science data quality trending plots to include additional key parameters at https://www.star.nesdis.noaa.gov/icvs-beta/index_icvs_vector.php
- Developed ICVS sensor performance and science data quality long term statistic calculation matrix (https://www.star.nesdis.noaa.gov/icvs-beta/metrics.php) (spacecraft performance parameters are to be added)
- Developed a new flag identifying OMPS south Atlantic anomaly (SAA) region near real time monitoring module and transition the package to ICVS operation
- Kept monitoring and analyzed NOAA-20 CrIS MWIR FOV5 and LWIR FOV2 anomaly events
- Completed the module monitoring OMPS NP geolocation error against NM geolocation

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:

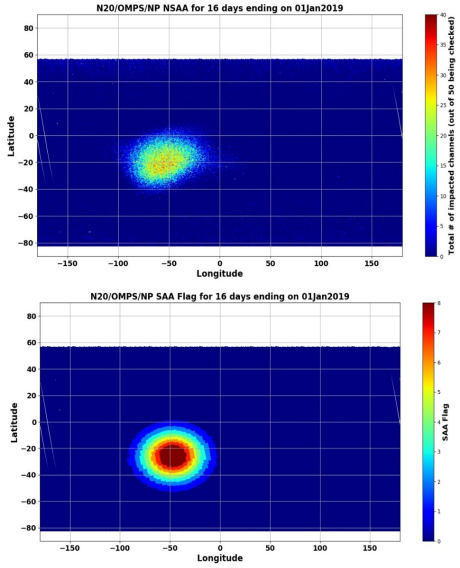
Large ICVS Intersensor task relatively new and original schedule overly optimistic, pushed back ICVS interactive module task schedule due to resource constraints; ICVS-reprocessing tool prototype is removed from the scope of the project

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
• ICVS Intersensor web site beta version (e.g., direct, CRTM, 3rd instrument as transfer)	Dec-19	Jun-20	Jun-20	
• ICVS-J2 prototype beta version using J1 as proxy data	Dec-19	Dec-20		Lower priority
• ICVS interactive modules (via beta ICVS-Vector web page)	Mar-20	Sep-20	Aug-20	
• ICVS upgrade (if new servers are ready)	Sep-20	Sep-20	Aug-20	
• VIIRS cloud mask module improvement using AI-based cloud detection algorithm: An article about the algorithm was published led by X. Liang (B. Yan and N. Sun are co-authors)	Mar-20	Sep-20	Aug-20	The improved algorithm code needs testing
• Develop a LEO-GEO GSICS portal final version	Ma-20	Apr-20	Apr-20	
• ICVS intersensor web site improvement	Jun-20	Jul-20	Jul-20	ABI sub-satellite point location issue
• ICVS Module improvements (each instrument on both SNPP and NOAA-20) (QCs and other improvements)	Jun-20	Jun-20	Jun-20	
• ICVS modules for each instrument and SDR data lifetime performance assessment (the ICVS product matrix) • OMPS geolocation error monitoring module	Jun-20	Sep-20	Sept-20	
JPSS-ICVS System Standardization and ICVS Annual Performance Review	Feb-20	Feb-20	Feb-20	

Highlights: Significantly contribute to STAR SDR Teams

ICVS Interactive Web Long-term Statistic Trending Products

ICVS OMPS-NP SAA monitoring based on SDR data (upper) and from QF (lower)



VIIRS Imagery

September, 2020

Accomplishments / Events:

- **VIIRS NOAA-20 DNB-to-NCC LUT update:** Continue to work on LUT tool, extracting **DNB statistics** behind smoothed LUT values. Need to determine why significant changes around day/night terminator are occurring compared to operational LUT.
- **Generated new Imagery product loops and case study blogs.**
- **VIIRS Imagery continues to be automatically captured and displayed online:** See image provided in lower-right.
- Updates to **SLIDER** (updated/new imagery and products, as well as SLIDER display options, moving between satellites/views)
- **Monthly and Quarterly reports to StAR leadership include JPSS/VIIRS Imagery activities.**
- **JPSS Imagery Team milestones gathered and entered into StAR FY21 milestone sheet!**

Overall Status:

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

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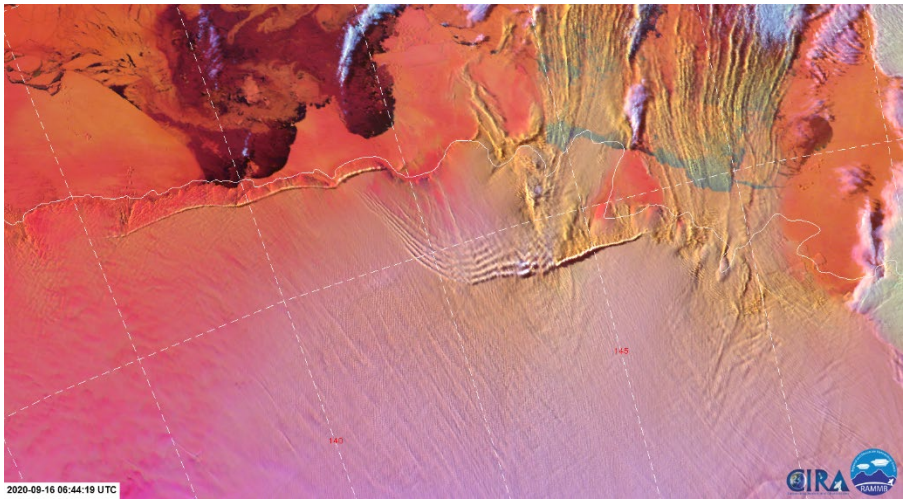
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20	Sep-20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/16/20	
Algorithm Updates Review	Jun-20	Jun-20	06/16/20	
N20 NCC LUT update	Sep-20	Jun-21		ASF tool update
All 16 M–bands as Imagery EDRs	Sep-21	Sep-21	RTN	Work-under-pcr
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	Sep-20	
Cal/Val visualization tool development/improvement (increase Polar SLIDER storage for longer archive and more imagery/combo products with multiple satellites)	Sep-20	Sep-20	Sep-20	
Annual VIIRS Imagery performance report	Feb-20	Feb-20	Feb-20	
Verification of cloud implementation	Sep-20	Q1 FY21		B2.3 TTO
IDPS Mx build I&T deploy regression support:				
BL2.1 Mx 8 I&T ATMS data review/checkout	Nov-19	Nov-19	11/12/19	
BL2.2 Mx 0 I&T ATMS data review/checkout	Apr-20	Apr-20	04/01/20	
BL2.2 Mx 1 I&T ATMS data review/checkout	Jun-20	Jun-20	06/17/20	

Highlights: Image of the Month



VIIRS day fog- RGB image, showing a tidal bore type wave over Antarctica, from 16 September 2020 (Image courtesy of C. Seaman via CIRA's SLIDER realtime display of VIIRS imagery and image products.)

Clouds

September, 2020

Accomplishments / Events:

- The ECM team has processed a training dataset that will be used for the next code and Lookup table delivery for JPSS algorithms. This includes the addition of the Day Night Band.
- The Enterprise Cloud products are being used in Alaska as part of the JPSS Aviation Initiative. It began Sep.1, 2020 and will last 90 days for user feedback and product evaluation (Figure 1).
- The Cloud team continues to work on the Enterprise ATBDs
- Continued development on CCL Supercooled/Convective 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.*
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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 pre-launch test/proxy data review/analyze	Sep-20	Sep-20	Sep-20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/10/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Sep-20	Oct-20		10/1/20: SCR
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Algorithm update DAP to ASSISTT: ▪ Cloud Mask: Implement DNB hooks to bridge ▪ Cloud Phase/Type: Optimize cloud phase thresholds for NOAA-20 ▪ ACHA: Improving multilayer ACHA ▪ CBH: Leverage DCOMP nighttime COD (DNB) to improve performance over IR-only ▪ CCL: Include super-cooled and convective fraction ▪ DCOMP: Incorporate improved surface reflectance for DCOMP channels ▪ NCOMP: Extend NCOMP cloud optical depth range to include larger values	Apr-20	Apr-20	Apr-20	With initial J1 DAP
JRR v2.3 Patch DAP delivered to NDE			04/29/20 08/10/20 09/18/20	
Annual algorithms/products performance report	Feb-20	Feb-20	Feb-20	
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	Sep-20	
Cal/Val Visualization tool and LTM webpage development/improvement	Sep-20	Sep-20	Sep-20	
Support Alaska Demo and ESRL usage	Sep-20	Sep-20	Sep-20	

Highlights:

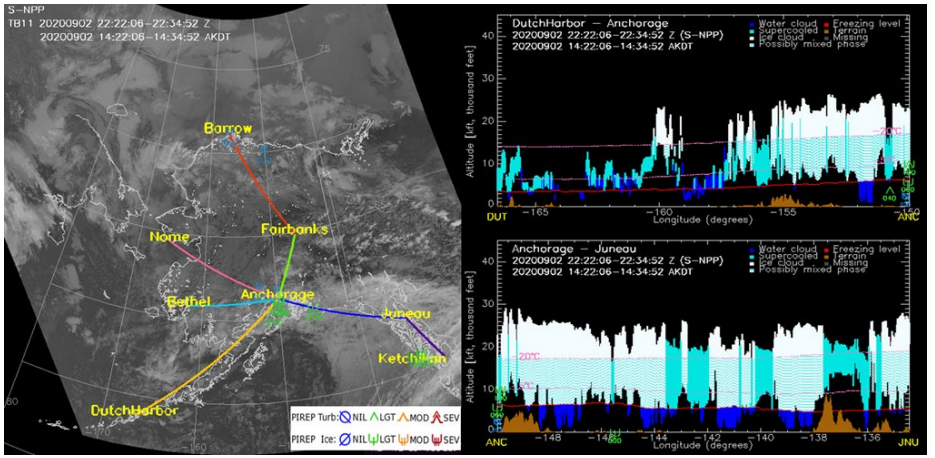


Figure 1. VIIRS IR image with selected flight paths over AK (left) and sample cloud vertical cross-sections (right) with PIREPs and NUCAPS temperature data. The products are available at http://rammb.cira.colostate.edu/ramsdis/online/npp_viirs_arctic_aviation.asp. The official JPSS Alaska Cloud Demonstration as part of the JPSS Aviation Initiative started from Sep.1, 2020 and will last 90 days for user feedback and product evaluation.

Aerosol

September, 2020

Accomplishments / Events:

- Aerosol team using SNPP+NOAA-20 VIIRS AOD to understand impact of recent CA/OR/WA Wildfires on air quality (see highlight)

Overall Status:

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

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

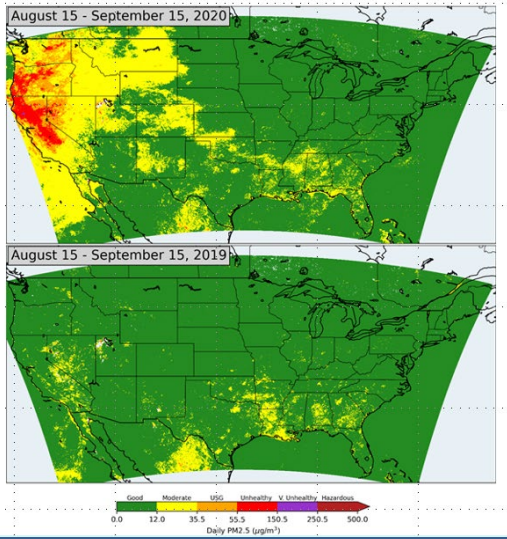
Issues/Risks:

No risks

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20	Sep-20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/15/20, 08/10/20	ADP Cal/Val more complexr than expected
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Sep-20	Oct-20		10/1/20: SCR
Algorithm Updates Review	Sep-20	Sep-20	08/18/20	08/18/20
Algorithm update DAP to ASSISTT: ▪ Re-derive surface reflectance (dark and bright land) relationships ▪ Update thresholds in internal tests of sea ice and heavy aerosol over water for NOAA-20 ▪ Fix issue with misidentification of bright surface. Retrieve AOD using dark-surface relationship ▪ ADP algorithm updates to improve correct detection and minimize false detection over high latitudes	Apr-20	Apr-20	Apr-20	With initial J2 DAP
JRR v2.3 Patch DAP delivered to NDE			04/29/20 08/10/20 09/18/20	
Annual algorithms/products performance report	Feb-20	Feb-20	Feb-20	
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	Sep-20	
Cal/Val visualization and LTM tool	Sep-20	Sep-20	Sep-20	

Highlights:

Impact of CA/OR/WA Wildfires: Surface PM2.5 Estimated from SNPP+NOAA-20 VIIRS AOD, 2020 vs 2019



- Because of fires and the need for information, we began running the new algorithm that derives PM2.5 using SNPP+NOAA-20 VIIRS AOD
- Figure shows mean PM2.5 due to fires leading to unsafe air quality compared to what it was in 2019

Volcanic Ash

September, 2020

Accomplishments / Events:

- Completed JSTAR project management review for volcanic ash EDR
- Advanced objectives of VOLCAT DACS and VOLCAT Cloud Pilot projects: First (of many) VOLCAT workflow components successfully demonstrated in the NESDIS Cloud
- Compared VOLCAT results from S-NPP and NOAA-20 (see highlight)
- Developed tools for validating VOLCAT volcanic radiative power
- Visualized J2 proxy data and found it to be unacceptable for meaningful algorithm testing

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.*

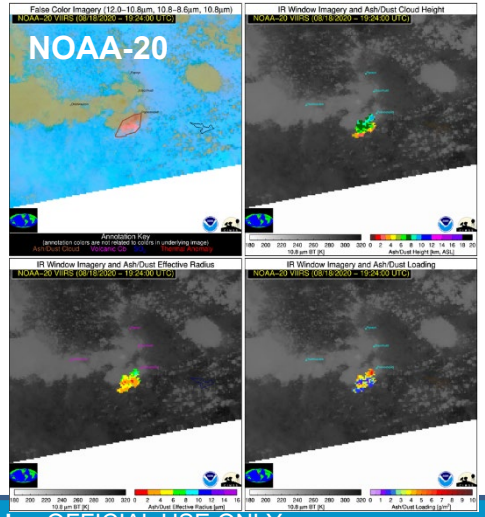
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20	Sep-20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/29/20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20		
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Sep-20	Oct-20		10/1/20: SCR
Final J2 ready DAP to NDE (include NPP/N20 updates)	Jul-21	Jul-21		DAP to ASSISTT: Dec-20
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Algorithm update DAP to ASSISTT: ▪ Refine thresholds and LUT's for S-NPP and NOAA-20 as needed	Apr-20	Apr-20	Apr-20	With initial J2 DAP
JRR v2.3 Patch DAP delivered to NDE			04/29/20 08/10/20 09/18/20	
Pursue algorithm enhancements, including eventual transition to VOLCAT	Sep-20	Sep-20	Sep-20	VOLCAT DACS project
Annual algorithms/products performance report	Feb-20	Feb-20	Feb-20	User Summit
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	Sep-20	
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20	Sep-20	

Highlights:

Volcanic clouds evolve rapidly, so we look for physically consistent cloud evolution in consecutive NOAA-20 and S-NPP overpasses. In this case (Popocatepetl, Mexico), the later overpass (S-NPP) shows a decrease in mass loading and effective radius with a much smaller decreases in height, as is expected for a dispersing ash emission.



Cryosphere

September, 2020

Accomplishments / Events:

- *Performed a comparison of ice surface temperature (IST) from VIIRS and the Microwave Integrated Retrieval System (MIRS). An ice concentration comparison is underway.*
- *Multi-year comparison of VIIRS and AMSR2 sea ice concentration shows that the two agree well at temperatures below about 267K, but the bias and RMS differences increase dramatically around the melting point.*
- *The NOAA AMSR-2 sea-ice concentration data stream is scheduled for NCEP Central Operations (NCO) operational implementation on 6 October 2020.*
- *VIIRS-derived yearly minimum snow extent over Greenland correlates well with yearly minimum ice extent in the Arctic. The team processed VIIRS-based daily gridded snow fraction maps for the last seven summer seasons (2014 to 2020) to estimate year-to-year changes of the minimum snow extent in Greenland.*

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
Validated Maturity: Snow Cover (Binary Map & Snow Cover Fraction)	Apr-20	Jun-20	06/18/20	CM LUT
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20	Sep-20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/28/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Sep-20	Oct-20		10/1/20: SCR
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Algorithm update DAP to ASSISTT: ▪ Add passive microwave filters to improve ice products ▪ Implement I-band ice products ▪ Evaluation of two Enterprise snow algorithms (VIIRS and ABI) and possible replacement	Apr-20	Apr-20	Apr-20	With initial J2 DAP
JRR v2.3 Patch DAP delivered to NDE			04/29/20 08/10/20 09/18/20	
Annual algorithms/products performance report	Feb-20	Feb-20	Feb-20	
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	Jun-20	
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20	Jan-20	

Highlights: Initiated study for mproved understanding of differences between VIIRS and MIRS Ice Surface Temperature retrievals

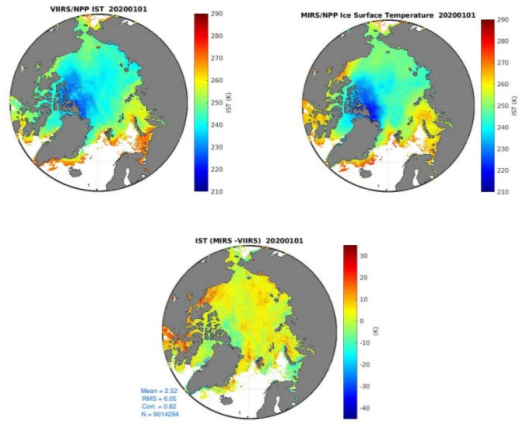


Figure: Ice Surface Temperature from VIIRS (upper left) and MIRS (upper right), and the IST difference (lower) on January 1, 2020.

Active Fires

September, 2020

Accomplishments / Events:

- Completed ORR and SPSRB Briefing for the VIIRS I-band product
- The VIIRS VIIRS I-band Active Fire product transitioned to NDE operations on September 30
- Worked with the CSPP team on the evaluation of data anomalies and a potential fix
- Worked with the SSEC RealEarth™ team on the inclusion of global VIIRS I-band product and identified SDR issue
- Provided support for VIIRS I-band impact assessment for the HRRR-smoke team for impact analysis
- Set up ftp link for Western US target area
- Restored STAR production of the experimental VIIRS I-band product after an unexpected SCDR data outage
- Provided material on VIIRS fires to JPSS Science Advisor for PMC briefing

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 (M-Band & I-Band)	Jan-20	Jan-20	02/06/20	Scheduled: 2/6/20
Initial/Final DAP (I-Band)	May-20	Jun-20	06/24/20	With initial J2 DAP
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20	Sep-20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/29/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	May-20	May-20	06/24/20	With I-Band DAP
I-Band Active Fires Patch DAP to NDE			09/14/20	
Algorithm Updates Review	Sep-20	Sep-20	08/18/20	08/18/20
Algorithm update DAP to ASSISTT: ▪ I-band algorithm improvements	Jun-20	Jun-20	Feb-20	
ATBD update	Dec-19	Jan-20	01/29/20 06/15/20	M-band I-Band
Annual algorithms/products performance report	Feb-20	Feb-20	Feb-20	
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	Sep-20	
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20	Sep-20	

Highlights:

An example of the NDE operational VIIRS I-band Active Fire product, showing clear land (green), clear water (blue) and fire hot spots (shades of red) in Australia. Suomi NPP 9/30/2020, 15:53 UTC.

Surface Reflectance

September, 2020

Accomplishments / Events:

- The surface reflectance team developed an approach to ensure that all pixels impacted by the NOAA-20 VIIRS I3 bad detector are properly assigned a missing value and flagged as invalid retrievals.

- The change, which affects less than 1.5% of the pixels, is implemented in the code package update that also includes readiness for the JPSS-2 satellite.

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		Delay in J2 initial DAP delivery

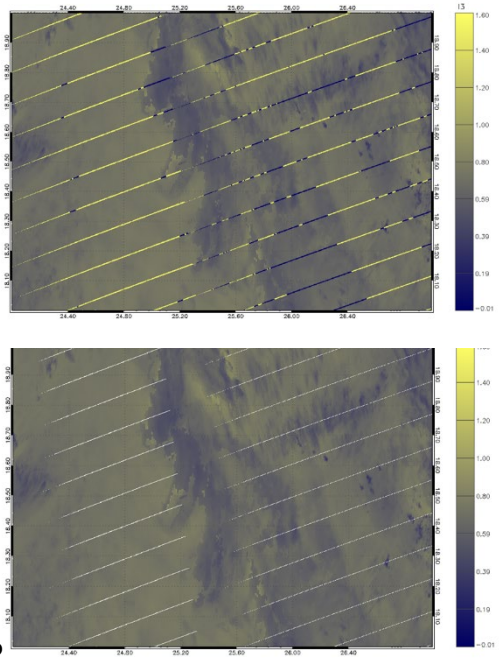
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks: J2 initial DAP delivery is now scheduled for August 2020. Low impact on schedule and performance.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity	Apr-20	Jun-20	06/18/20	
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20	Sep-20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/29/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Oct-20	Oct-20		
Algorithm Updates Review	Sep-20	Sep-20	08/18/20	08/18/20
Algorithm update DAP to ASSISTT: ▪ Update aerosol and cloud quality information and their use ▪ Possibly adjust of some retrieval LUTs ▪ Streamline internal processing code ▪ Make product content compatible with CEOS Analysis Ready Data for Land requirements	Jun-20	Jun-20	With initial J2 DAP No code delivery from team, instead work with ASSISTT team for N20 code fix for Iband3 & J2 capability	
Annual algorithms/products performance report	Feb-20	Feb-20	Feb-20	
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	Sep-20	
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20	Sep-20	

Highlights:

An example of NOAA-20 VIIRS I3 surface reflectance retrievals before (top) and after (bottom) of the code change, where spurious retrievals are replaced by missing values. The data are from the spatial window 18-19 N, 24-27 E on August 1, 2020 at 11:14 UTC and represent a case with higher-than-typical impact.



Mike Wilson, IMSG@STAR

Surface Type

September, 2020

Accomplishments / Events:

– STAR-UMD VIIRS Surface Type team has downloaded and processed S-NPP and NOAA-20 VIIRS granule surface reflectance data acquired in September 2020.

– The team has delivered the 2019 Global Surface Type (GST) product, which was produced using S-NPP and NOAA-20 data.

– The team has completed the Surface Type algorithm maturity review for NOAA-20 and demonstrated that NOAA-20 has reached validated maturity for surface type monitoring.

Overall Status:

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

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

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Provisional Maturity	Sep-20	Sep-20	09/17/20	
Validated Maturity	Sep-20	Sep-20	09/17/20	
Annual performance report	Feb-20	Feb-20	Feb-20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/29/20	
Algorithm Updates Review			07/21/20	
AST19 (Annual Surface Type):				
Collaborate with land teams on daily and monthly product gridding and compositing for NDE Enterprise Algorithm (SR/NDVI/EVI/Temperature)	Sep-20	Sep-20	Mar-20	Land team completed the effort early
Complete monthly composites of global gridded VIIRS data (9 land bands + thermal bands) for VIIRS AST19 based on 2019 VIIRS data	Aug-20	Aug-20	Mar-20	Completed early for each month of 2019
Generate VIIRS AST19 based on 2019 VIIRS data using SVM algorithm	Aug-20	Aug-20	Aug-20	
Comparison of AST19 with surface type validation data (Accuracy statistics of the new AST19 and LWM)	Sep-20	Sep-20	Sep-20	
Delivery of AST19 (available for users through STAR FTP)	Sep-20	Sep-20	09/28/20	
AST18 NDE delivery (ASSISTT)				
▪ Download AST18 from JSTAR web ▪ Chain-run to make sure the delivery works for the down-stream products ▪ Deliver AST18 DAP to NDE	Sep-20	Oct-20		With JRR DAP 10/1/20: SCR

Highlights:

Error matrix of the 2019 GST product derived using S-NPP and NOAA-20 data. This product has an overall accuracy of 78.0 ± 0.6%.

Map	Reference																	Total	U Acc.	P Acc.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17			
1	1.93	0	0.07	0.03	0.25	0.01	0.01	0.23	0.03	0.02	0	0	0	0.01	0	0	0.01	2.62	73.7±2.9	75.4±3.4
2	0	8.56	0	0.08	0.12	0	0	0.41	0.08	0.02	0.02	0.05	0	0.08	0	0	0	9.4	91.0±1.2	93.9±1.0
3	0.06	0	0.96	0	0.15	0	0.03	0.11	0	0	0.03	0	0	0	0	0	0	1.35	71.2±4.2	63.3±4.9
4	0	0	0.01	0.84	0.05	0	0	0.08	0.02	0	0	0	0	0.01	0	0	0	1.01	83.1±2.9	39.5±3.4
5	0.18	0.13	0.3	0.68	3.48	0.03	0	0.68	0.12	0.02	0.02	0	0	0.25	0	0	0.02	5.88	59.1±2.6	76.2±2.6
6	0	0	0	0	0	0.04	0	0	0	0	0	0	0	0	0	0	0	0.05	76.1±6.4	2.4±0.5
7	0.14	0	0.07	0.02	0.14	0.6	11.85	0.41	0.31	1.46	0.24	0.57	0	0.12	0	0.6	0.02	16.55	71.6±1.7	84.9±1.7
8	0.19	0.14	0.06	0.24	0.14	0.06	0.24	5.16	0.58	0.09	0.07	0.06	0.01	0.31	0	0	0.02	7.37	70.0±1.8	58.1±2.1
9	0	0.17	0.02	0.07	0.05	0.5	0.27	1.02	4.65	0.2	0.02	0.32	0	0.42	0	0	0	7.75	60.0±2.8	68.8±2.6
10	0.03	0	0.01	0.04	0.05	0.24	0.75	0.25	0.3	6.34	0	0.61	0.01	0.18	0	0.21	0.01	9.03	70.2±1.7	70.2±2.1
11	0.03	0	0	0	0.04	0	0.06	0.04	0.04	0.01	0.54	0	0	0	0	0	0	0.77	70.4±6.3	57.0±7.2
12	0.01	0.01	0	0.02	0.04	0.03	0.1	0.04	0.22	0.43	0.01	6.91	0.06	0.68	0	0	0.02	8.56	80.6±1.3	76.4±1.8
13	0	0	0	0	0	0	0.01	0.03	0	0.01	0	0.07	0.52	0.04	0	0	0	0.69	75.0±3.6	83.6±4.5
14	0	0.1	0.02	0.09	0.05	0.01	0.06	0.42	0.4	0.17	0	0.36	0.02	2.76	0	0.01	0	4.45	62.1±2.1	55.7±2.7
15	0	0	0	0	0	0	0.17	0	0	0	0	0	0	0	10.21	0	0	10.38	98.3±1.7	100.0±0.0
16	0	0	0	0	0	0	0.4	0	0	0.27	0	0.09	0	0.09	0	12.15	0	13	93.5±1.5	93.7±1.0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.13	1.13	100.0±0.0	91.5±3.1
Total	2.56	9.12	1.52	2.11	4.56	1.51	13.96	8.88	6.76	9.04	0.95	9.04	0.62	4.96	10.21	12.97	1.23			

Land Surface Temperature

September, 2020

Accomplishments / Events:

- Uncertainty estimation of the NCEP forecast total water vapor using different data source including NCEP reanalysis, ECMWF reanalysis , and radiosonde measurements. (slide 2,3,4 and 5)
- Visual check of the L3 VIIRS LST data
- L3 LST ground validation through the comparison with ground observations from multiple radiation networks (Highlights & slide 6)
- Inter-comparison between L3 NOAA20 and SNPP VIIRS LST (slide 7 &8)
- Cross comparison with gridded LST product from MODIS including MYD11A1, MYD21A1, and VNP21A1 LST products
- Summarized the validation work into a validation report
- Attended the NOAA Virtual Workshop Series: Agriculture on September 15 – 18, 2020

Overall Status:

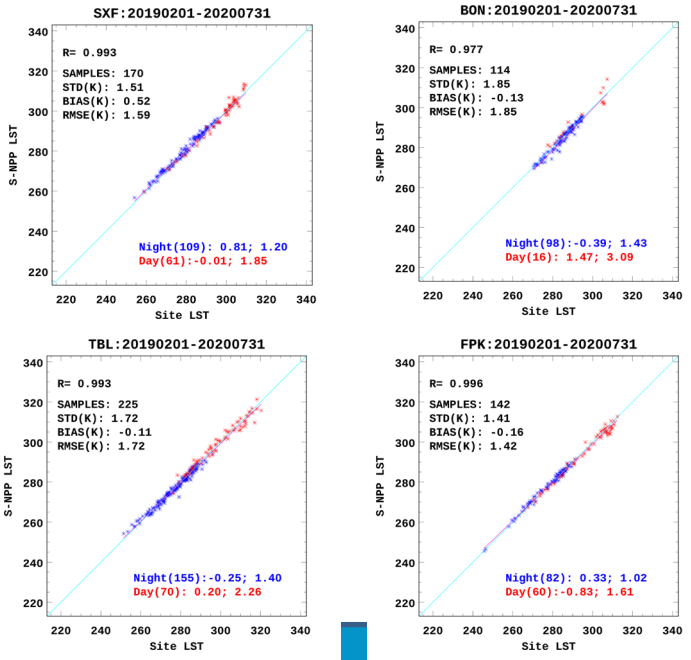
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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:

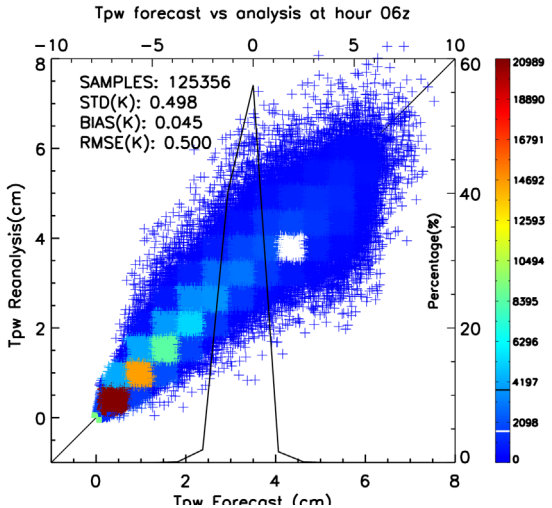
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity	Nov-19	Nov-19	11/21/19	
Validation of global gridded LST product	Sep-20	Sep-20	10/07/20	report
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20	Sep-20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	05/28/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Sep-20	Oct-20		10/1/20: SCR
Algorithm Updates Review	Sep-20	Sep-20	08/18/20	08/18/20
Algorithm update DAP to ASSISTT: ▪ Update of coefficients with better stratification for TPW ▪ Uncertainty study of the JPSS LST product ▪ Additional cloud filtering ▪ Improved emissivity dataset ▪ LUT update	Mar-20	Apr-20	Apr-20	
JRR v2.3 Patch DAP delivered to NDE			04/29/20 08/10/20 09/18/20	
Annual algorithms/products performance report	Feb-20	Feb-20	Feb-20	
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	Sep-20	
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20	Sep-20	

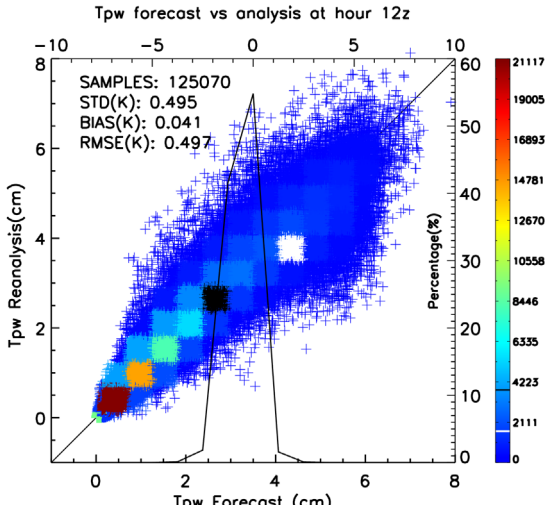
Highlights: L3 SNPP VIIRS LST validation with SURFRAD data

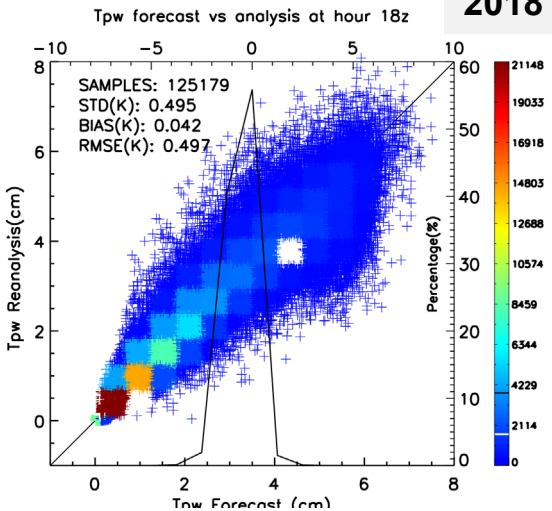


Forecast TPW vs NCEP Reanalysis TPW

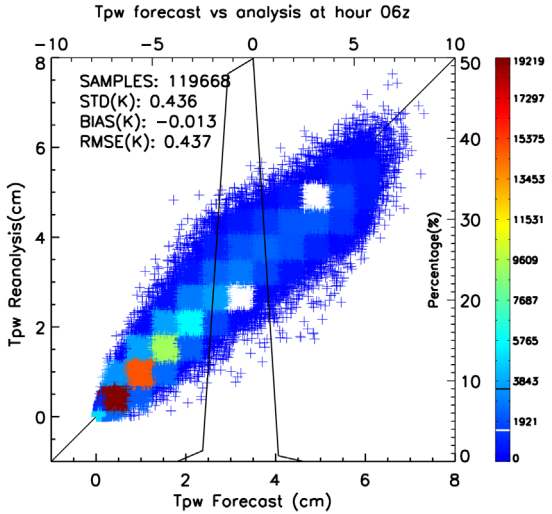
2018

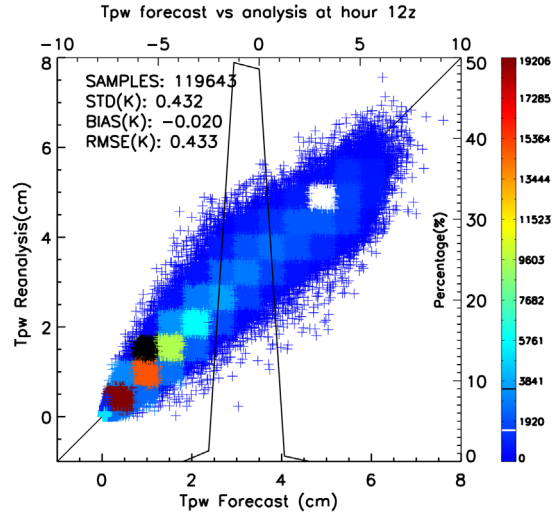


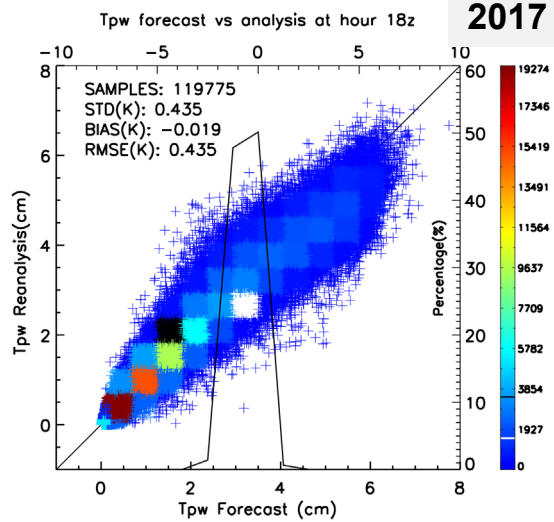




2017



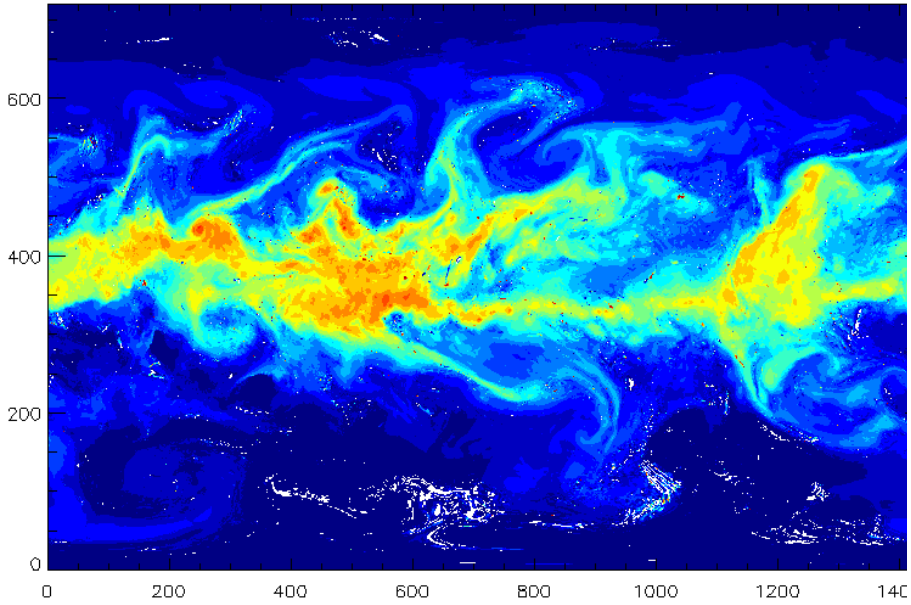




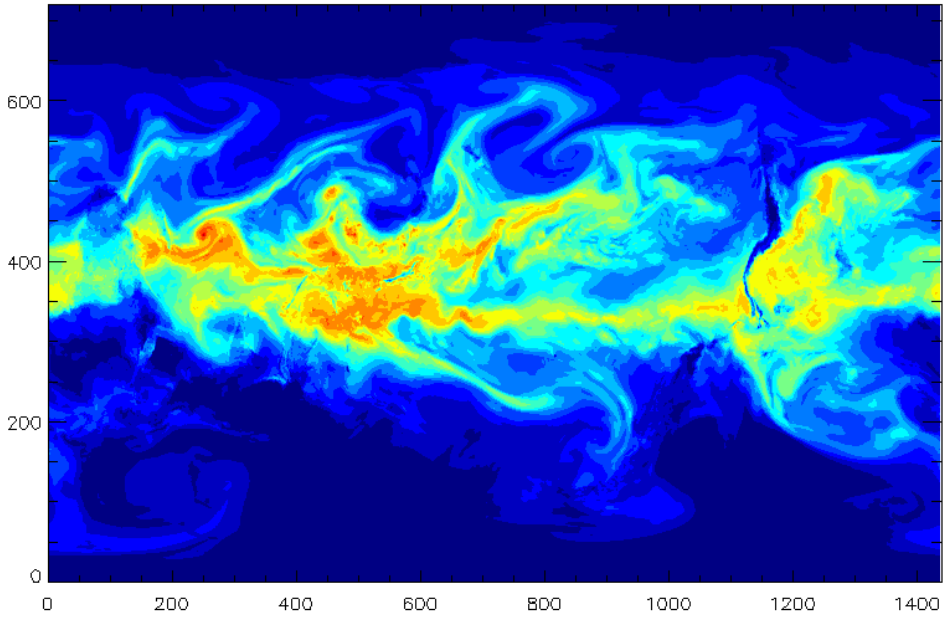
- TPW forecast error is assessed with NCEP reanalysis tpw data
- Three forecast hours 06z, 12z, and 18z were evaluated using forecast hour F06. The data in 2018 and 2017 were used in this study.
- The preliminary result indicates a small bias between analysis and forecast and RMSE less than 0.5 cm.

NCEP Reanalysis Tpw vs ECMWF reanalysis tpw

ERA5 TPW for 01/15/2018 12z



NCEP forecast TPW (0.25 degree resolution) 01/15/2018 12z



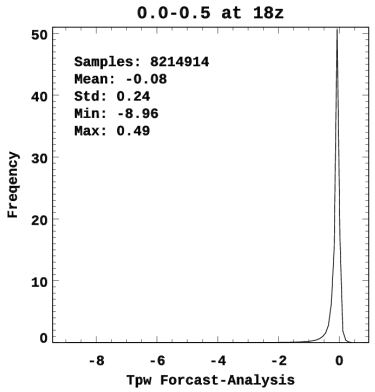
The PWV is calculated from the available specific humidity, pressure and temperature profiles:

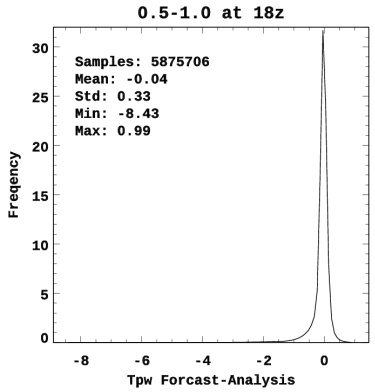
$$PWV = \frac{1}{\rho_w g} \int_{Ps}^{0} q(P)dP \qquad (1)$$

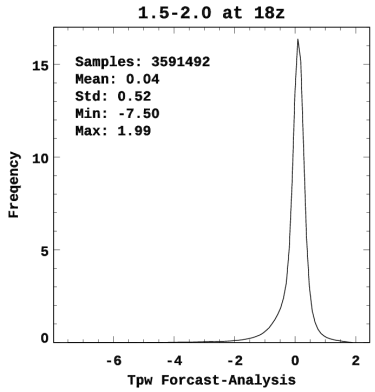
where ρ_w is the water density (1000 kgm^{-3}), g is the gravitational acceleration at the station model level altitude, $q(P)$ is the mixing ratio (g/kg) of water vapour.

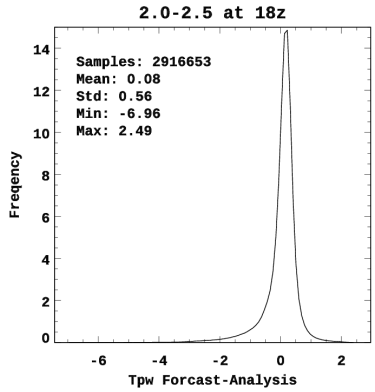
ERA5 of ECMWF reanalysis data was used to validate the NCEP forecast tpw.
The image comparison between ERA5 tpw and forecast tpw indicates an overall consistent tpw distribution.

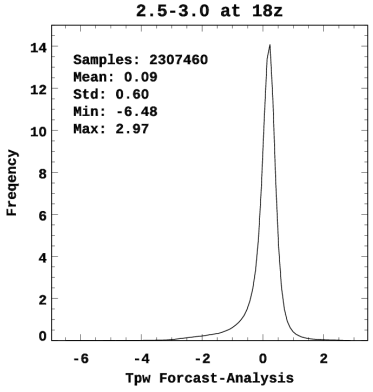
Forecast TPW vs tpw calculated from ECMWF reanalysis profile

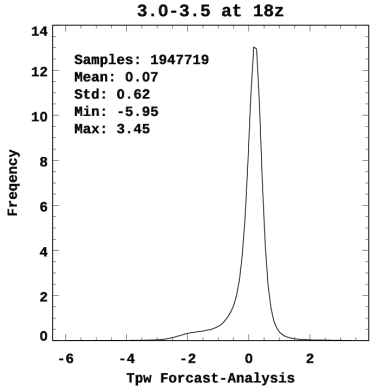


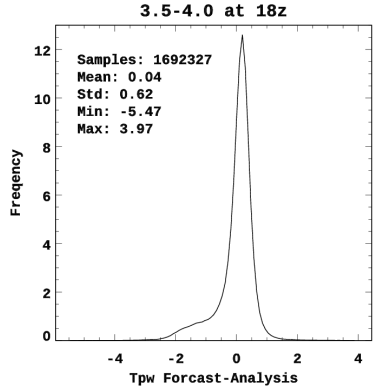


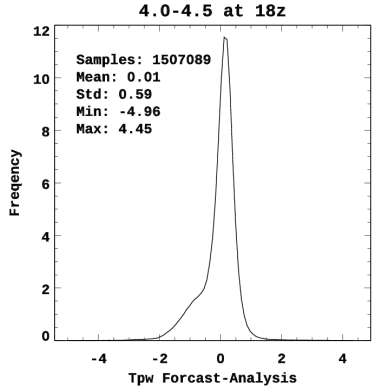






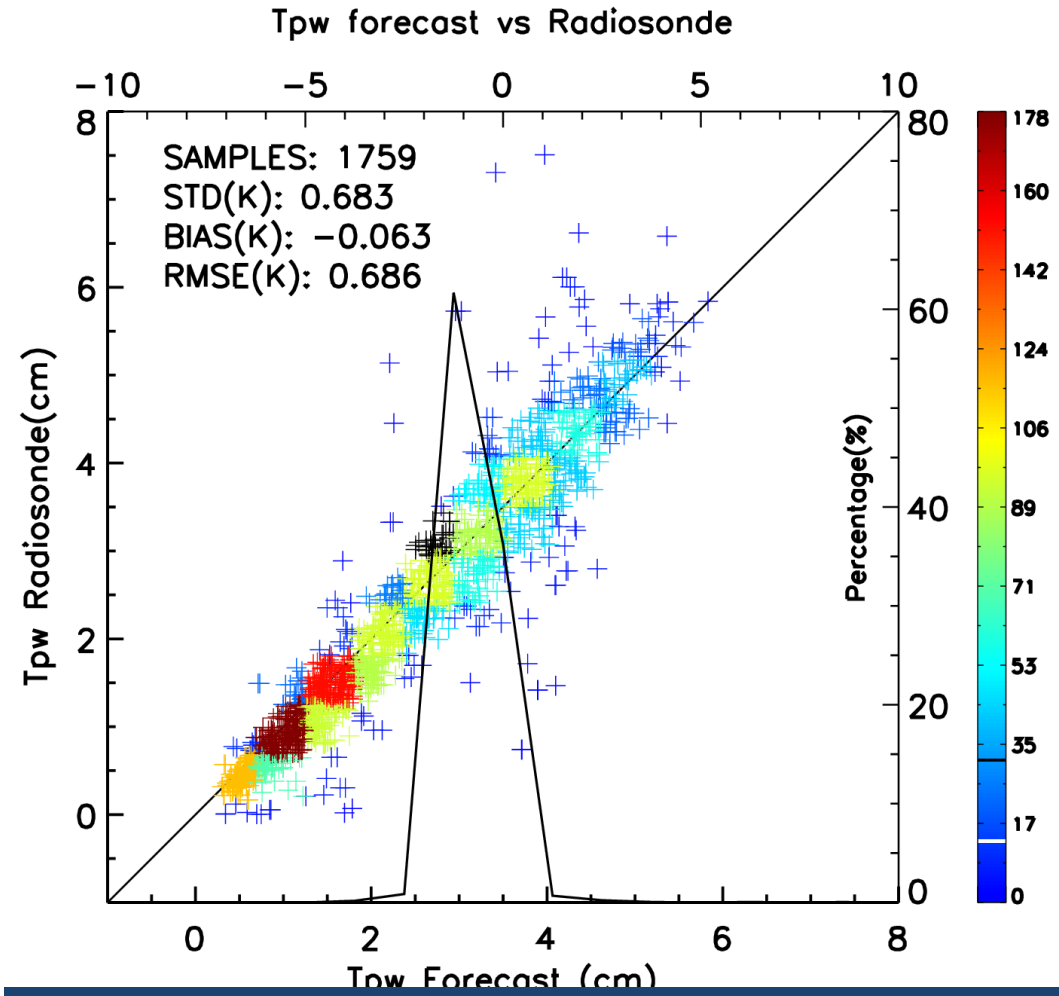






- ERA5 hourly reanalysis data for 2018 and 2017 were used as the data source.
- The NCEP forecast tpw is close to ECMWF with nearly zero bias and STD less than 0.6 cm. Outliers are observed from the tpw calculated from ECMWF reanalysis data.

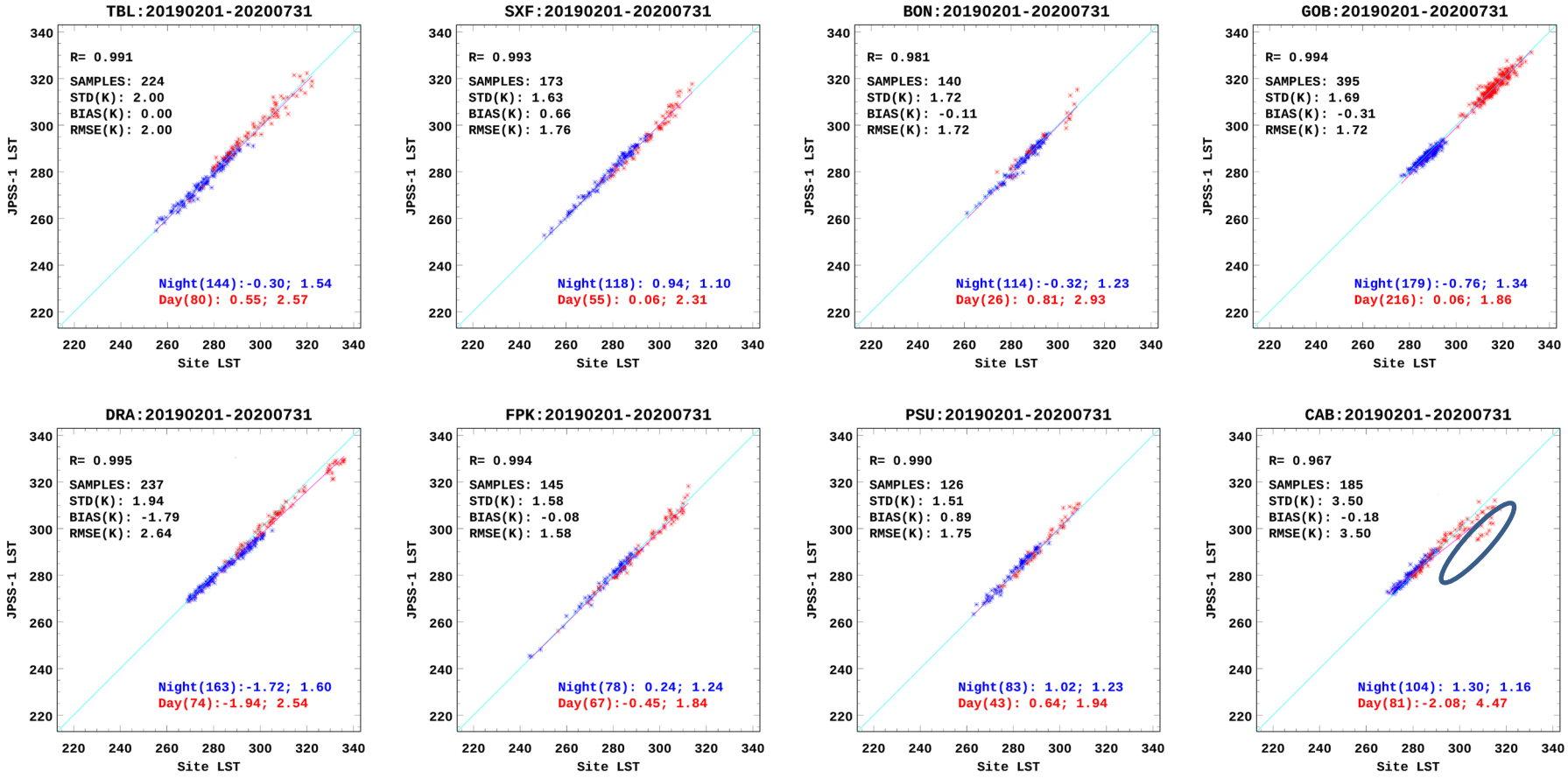
Forecast TPW vs Radiosonde TPW



- Overall nearly zero bias between radiosonde tpw and forecast tpw
- Some outliers were observed from the comparison results
- Two records with abnormally high tpw i.e. 23.56 and 11.4cm
- Two records with negative tpw value, which were removed in the scatter plot.

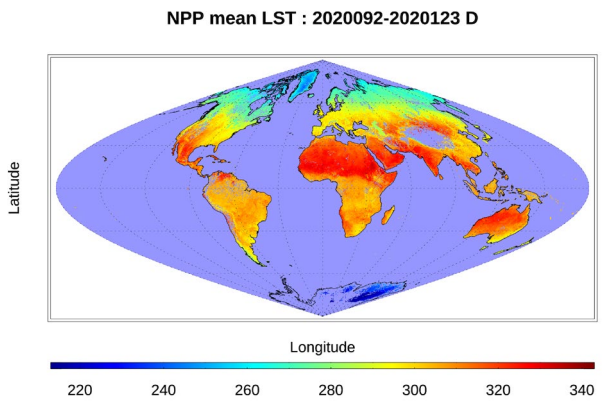
The radiosonde data is selected for GOES-R ABI radiance based validation
There are 19 sites in CONUS for the time period from April. 28 to July 26th, 2018
The pressure level varies for different site and observation time

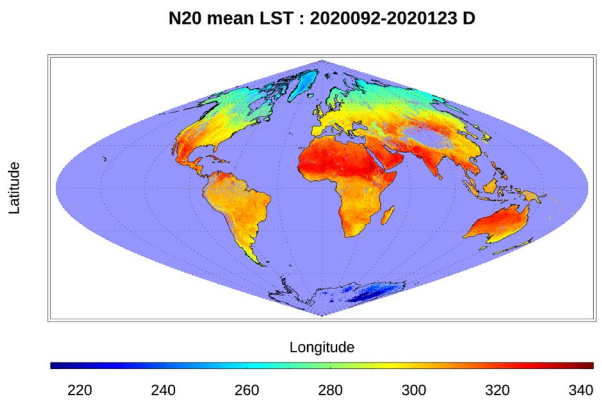
Ground validation results-L3 NOAA20 VIIRS LST

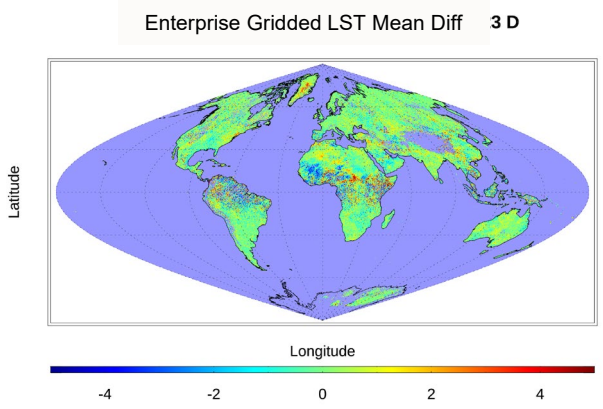


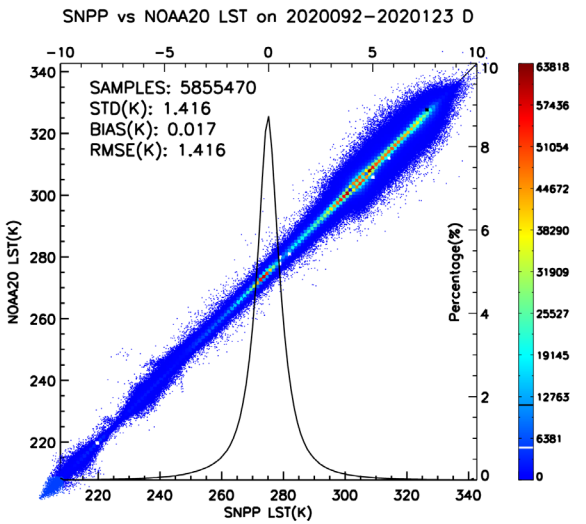
- Most recent data covering the time period from 02/01/2019 to 07/31/2020
- For both daytime and nighttime datasets
- In-situ data from 6 sites of SURFRAD and 2 sites of BSRN stations
- Results indicate close agreement between the VIIRS and the in-situ LSTs, with absolute bias less than 1 k and STD less than 2 K over most sites.

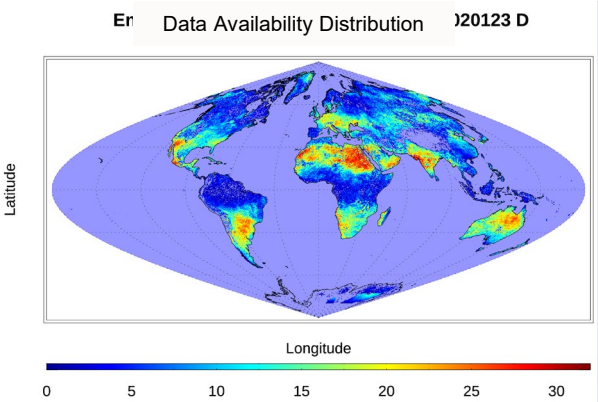
Inter-comparison-N20 LST and SNPP LST (Daytime)

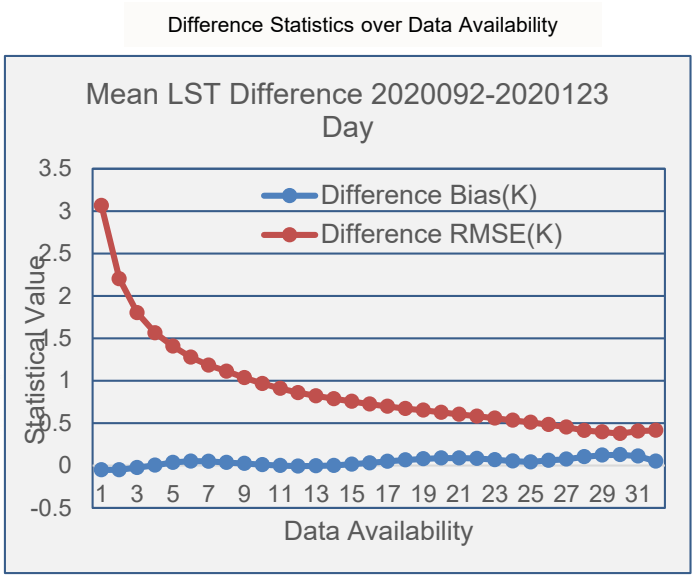






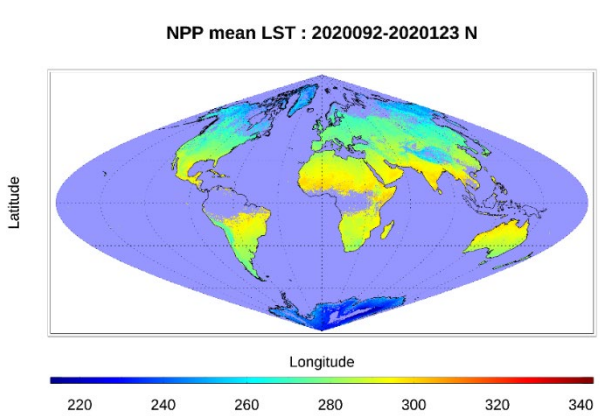


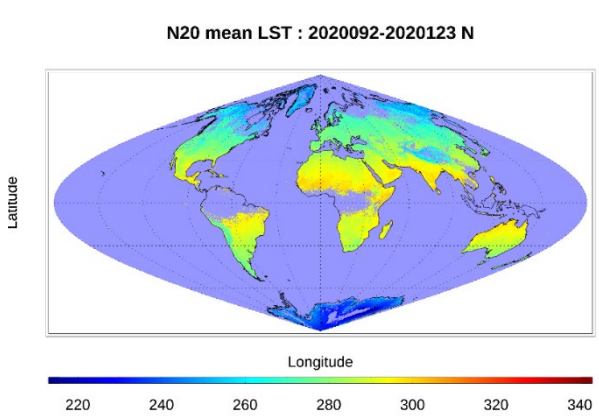


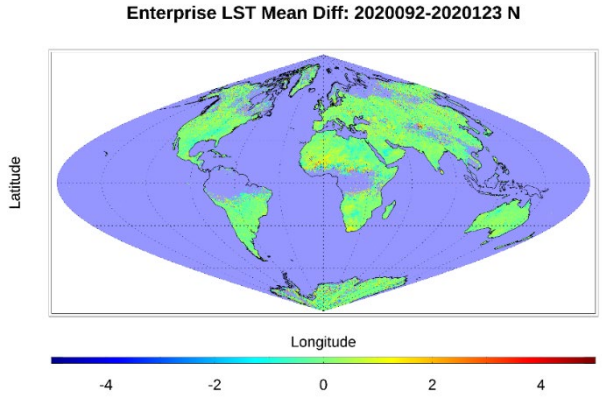


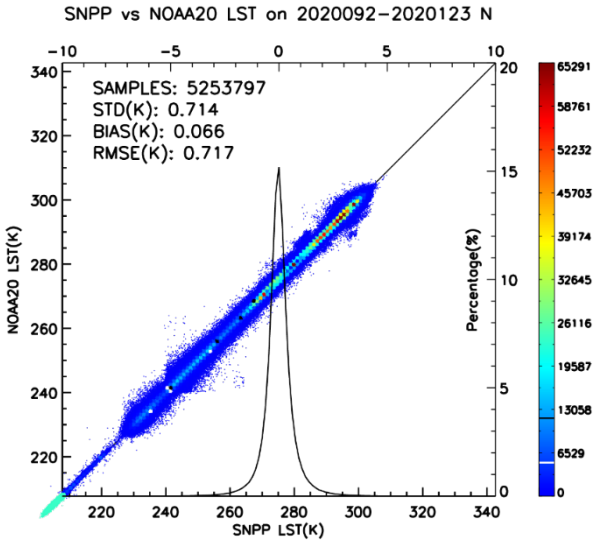
- SNPP and NOAA20 LST difference mean within an orbit cycle of 32-day
- Overall consistency observed with nearly no bias and the difference RMSE is 1.4 K. The LST difference is smaller in temperature below 300K.
- The statistics decreases with the data availability.

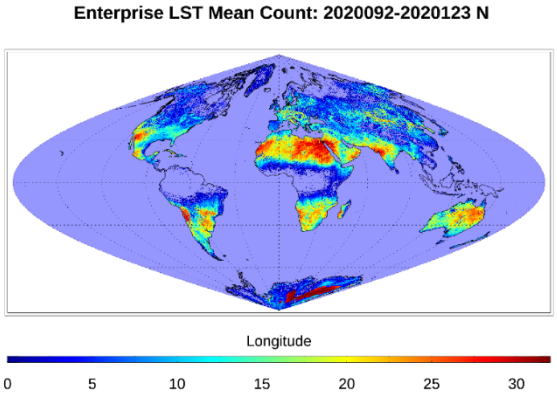
Inter-comparison-N20 LST and SNPP LST (Nighttime)

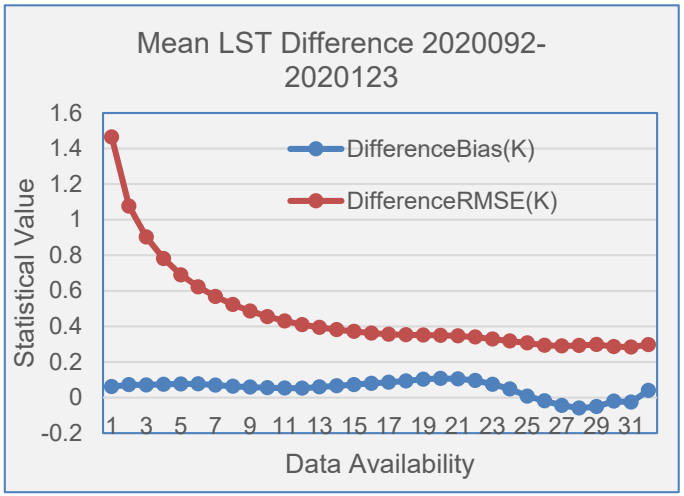












- SNPP and NOAA20 LST difference mean within an orbit cycle of 32-day
- SNPP and NOAA20 LST are overall consistent with nearly no bias and the difference RMSE is 0.7K.
- Low latitude LST are not available due to cloud.

Surface Albedo

September, 2020

Accomplishments / Events:

- Implemented the L3 LTM monitoring system, including the 1) in-situ validation using SURFRAD and ARM-SGP networks; 2) cross-comparison functions. The extra functions including 3) anomaly detection and 4) climatology update modules are on the way.
- Complete the L3 gridded albedo validation report.
- Updated the L2 LTM system, including 1) updating the cloud detection algorithm; 2) Added the ARM SGP stations; 3) Convert the in-situ data into a standard NETCDF format
- Responded to the consultant from operational team to solve an issue in system test, which is about the offline running fail, found to be related to missing of climatology data in specific tiles.
- Completed the VIIRS albedo manuscript and sent out for internal review.

Overall Status:

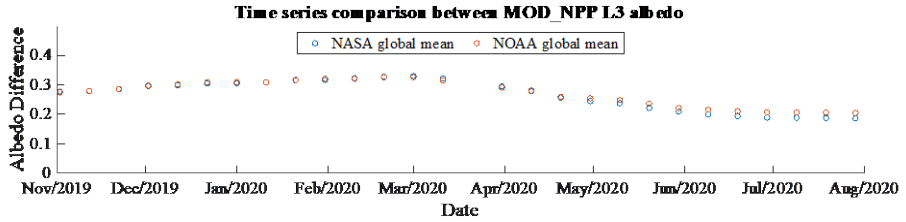
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

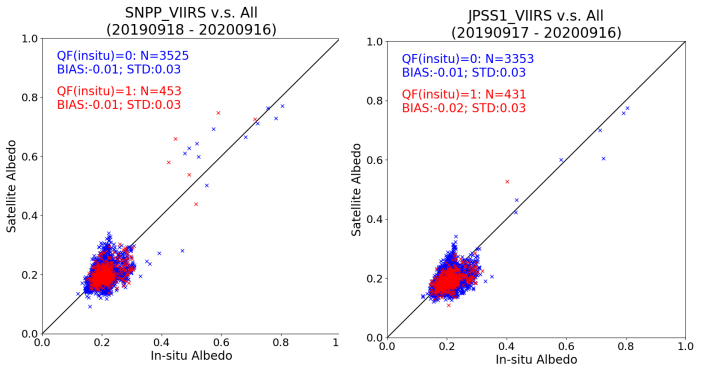
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity	Nov-19	Nov-19	11/21/19	
Validation of global gridded SURFALB product	Sep-20	Sep-20	10/07/20	report
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20	Sep-20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	05/28/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Sep-20	Oct-20		10/1/20: SCR
Algorithm Updates Review	Sep-20	Sep-20	08/18/20	08/18/20
Algorithm update DAP to ASSISTT: ▪ Improve the heterogeneity uncertainty analysis method ▪ Refining the 1-km climatology LSA	Mar-20	Apr-20	Apr-20	
Developing a blended albedo product	Sep-20	Sep-20	Feb-20	
JRR v2.3 Patch DAP delivered to NDE			04/29/20 08/10/20 09/18/20	
Annual algorithms/products performance report	Feb-20	Feb-20	Feb-20	
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	Sep-20	
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20	Sep-20	

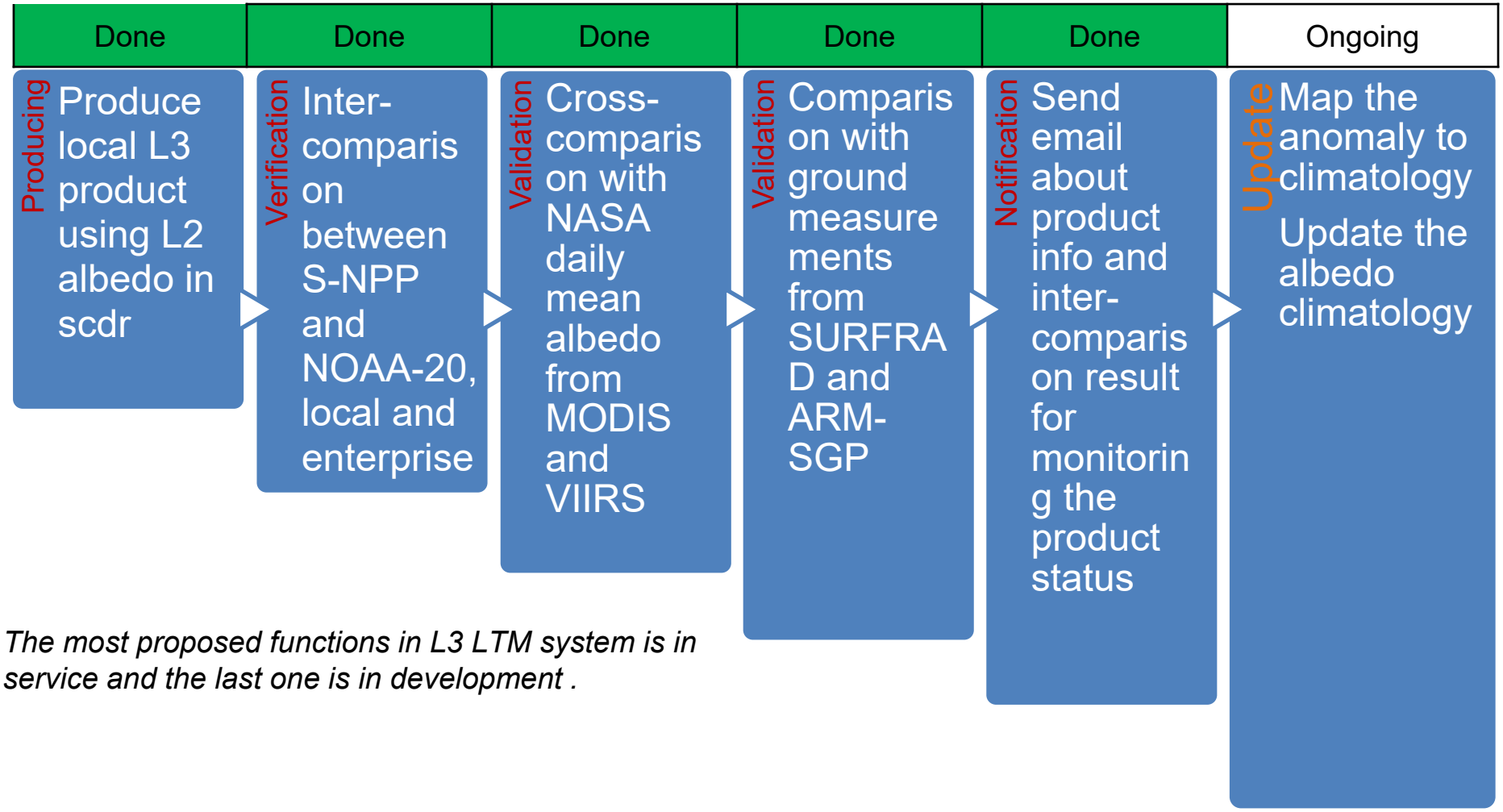
Highlights: NPP VIIRS albedo vs. MODIS albedo





VIIRS albedo vs. ground at SURFRAD and ARM SGP

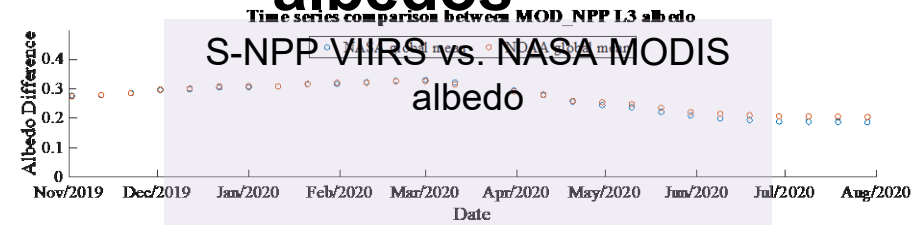
L3 Long-term monitoring function overview



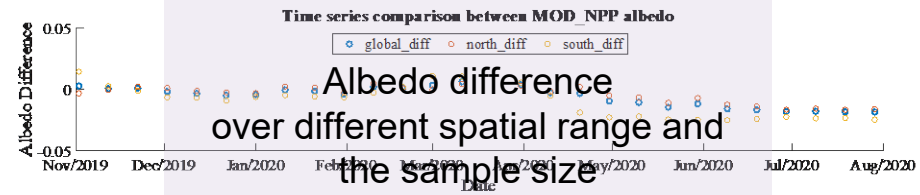
The most proposed functions in L3 LTM system is in service and the last one is in development .

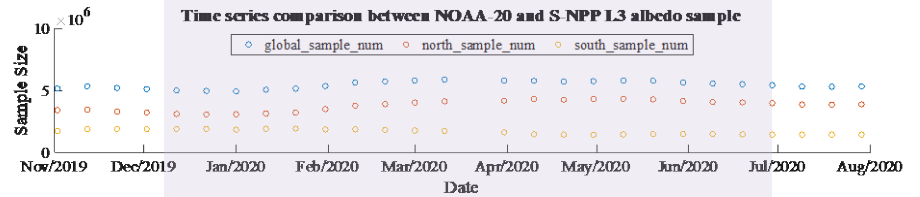
Cross-comparison between NOAA and NASA albedos

S-NPP VIIRS vs. NASA MODIS albedo

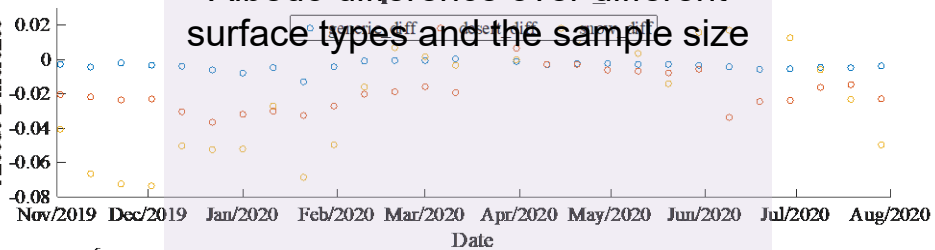


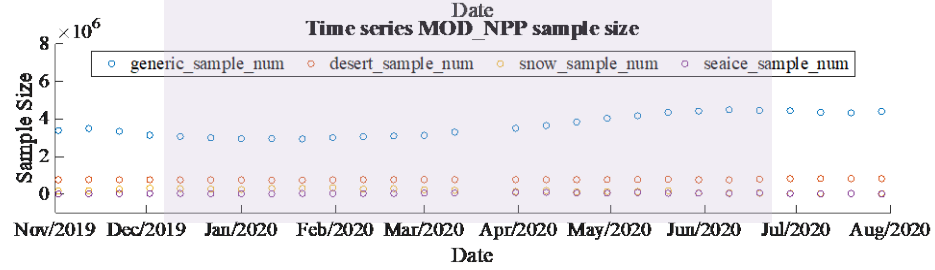
Albedo difference over different spatial range and the sample size



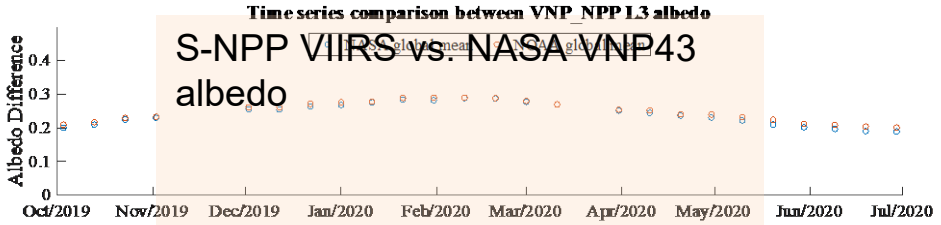


Albedo difference over different surface types and the sample size

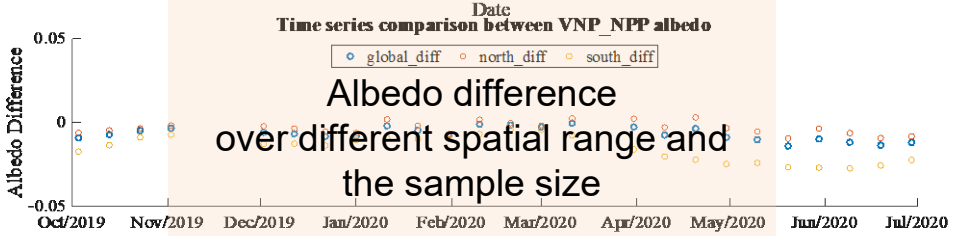


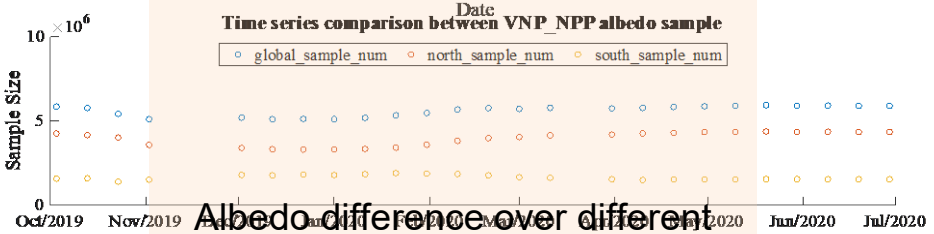


S-NPP VIIRS vs. NASA VNP43 albedo

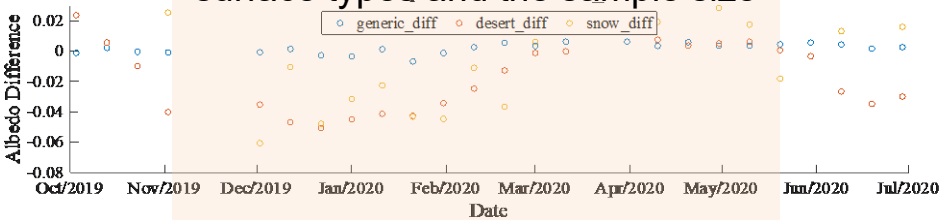


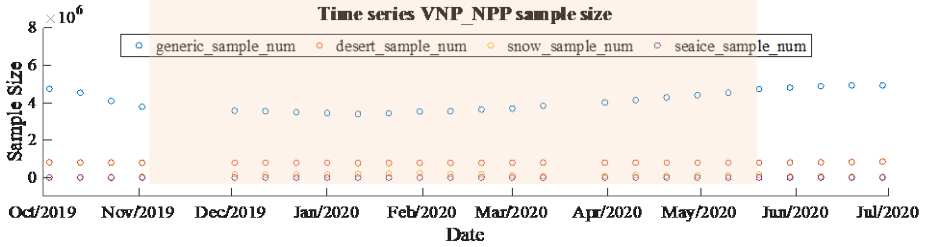
Albedo difference over different spatial range and the sample size





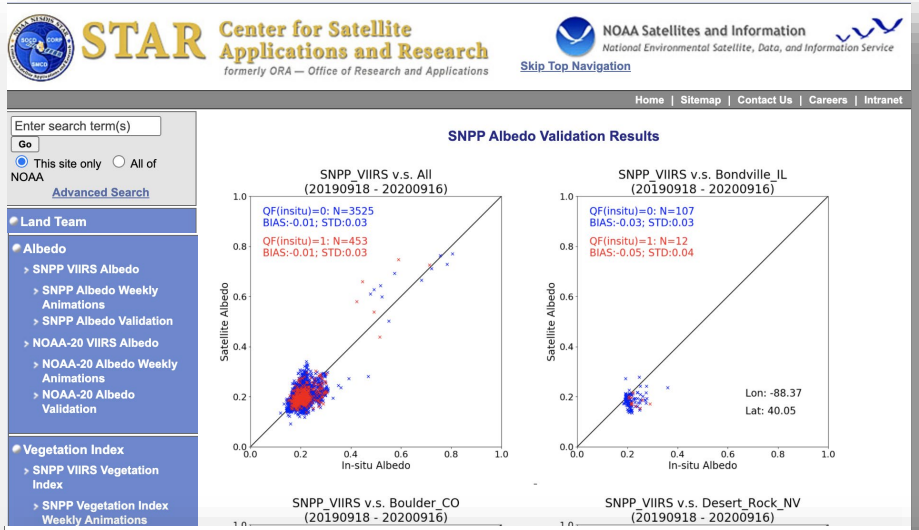
Albedo difference over different surface types and the sample size





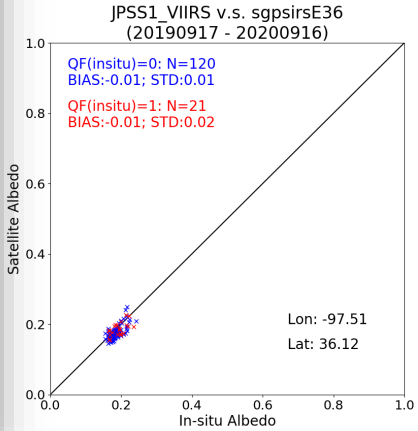
Updated LTM system and imported ARM-SGP validation

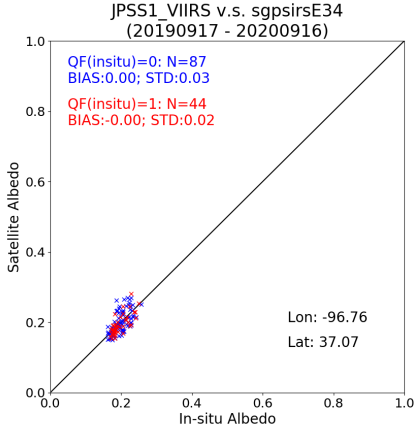
https://www.star.nesdis.noaa.gov/smcd/emb/land/snpp_lsa_validation.php



ARM-SGP

The L2 LTM system is upgraded to improve the 1) ground albedo data quality through cloud detection algorithm update; 2) adding the ARM-SGP stations for validation.





NVPS
(Vegetation Index & Green Vegetation Fraction)

September, 2020

Accomplishments / Events:

- VI v2r1 regression test between the ASSISTT run and local run was conducted. Regression test was passed.
- NPP vs. NOAA20 evaluation for VI and GVF products to be completed by the end of September.
- Updated NDE Vegetation Products System (NVPS) External User Manual version 4.0.

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.*

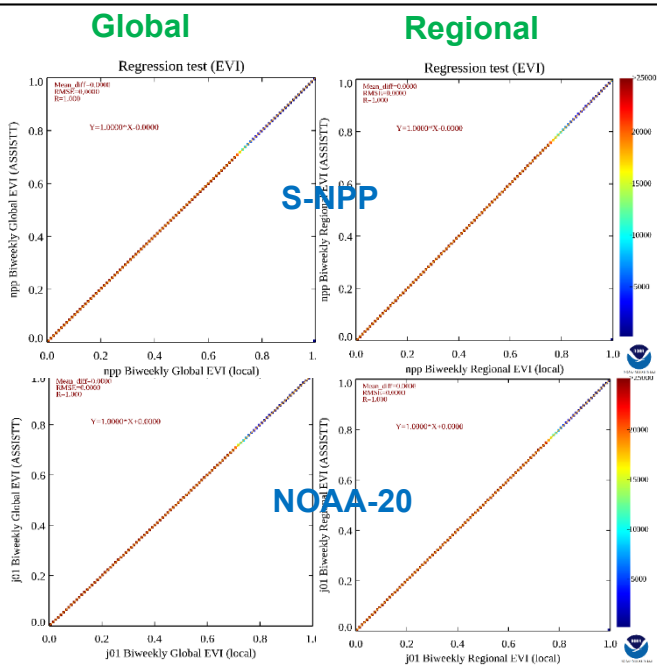
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity	Feb-20	Apr-20	04/23/20	Combine review
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20	Sep-20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	05/28/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Dec-20	Dec-20		
Algorithm Updates Review	Sep-20	Sep-20	08/18/20	08/18/20
Algorithm update DAP to ASSISTT: ▪ NVPS algorithms optimization and improvement (to reduce the process time) ▪ Sensitivity analysis of the GVF/VI gridding algorithms	Jul-20	Jul-20	07/10/20	
Annual algorithms/products performance report	Feb-20	Feb-20	Feb-20	
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	Sep-20	
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20	Sep-20	
Deep-dive analysis for the anomaly watch	Sep-20	Sep-20	Sep-20	

Highlights:

A successful run of regression test at ASSISTT shows exact data matched of the VI results to the local run; testing period, Apr 1-16, 2020.



Updated NDE Vegetation Products System (NVPS) External User Manual version 4.0

NDE Vegetation Products System (NVPS) External User Manual was updated to reflect the changes in VI algorithm of Version v2r1

Three major changes are made:

1. The VI algorithm description section was rewrote
2. The VI qualify flags were re-designed
3. VI data quality assessment was added

VI v2r1 regression test (1)

Data for comparison
- Local run VI data (Apr 1-16, 2020)
- ASSISTT run VI data (Apr 1-16, 2020)

Both dataset include
- 2 satellite (J01, NPP)
- 3 composite periods (daily, weekly, biweekly)
- 2 coverages (global, regional)
- Each file has 13 variables (3 VIs, 5 reflectances, 3 angles, 2 QFs)

Each day: 2×3 ×2 ×13=156 pairs of datasets (scatter plots)

16 days of daily, weekly and biweekly VI data are compared

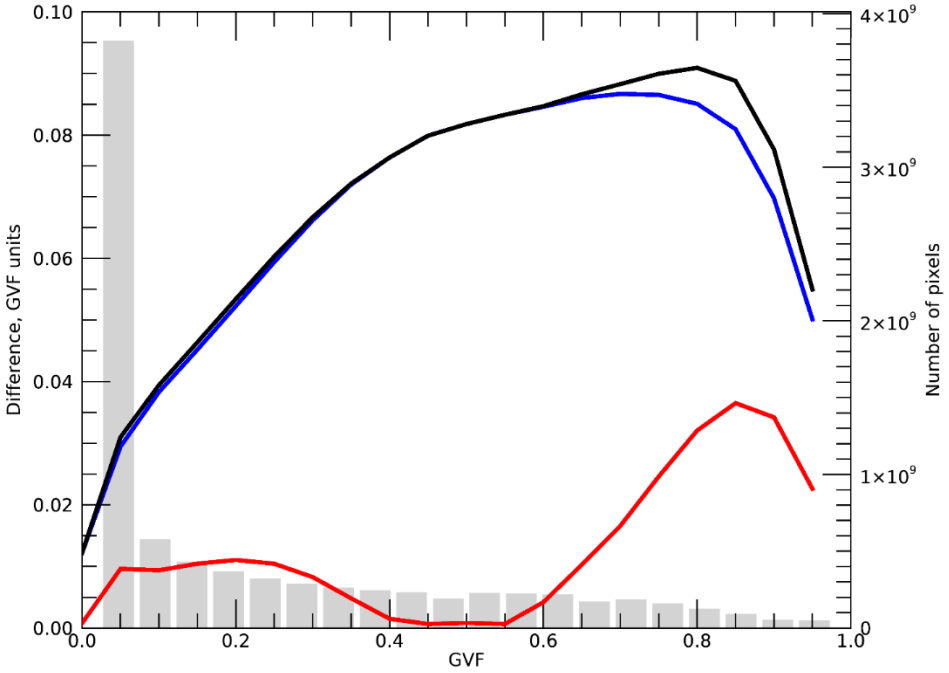
All 13 variables are showed for the case of J01 biweekly global VI

Only EVI scatter plot is showed as an example for other cases

NPP vs. NOAA20 comparison

- Document is being prepared describing NPP vs. NOAA20 comparisons for VI and GVF products
- Global statistical analysis of NPP vs. NOAA20 for all VI products and individual site comparisons for GVF were conducted as part of NOAA20 VI/ GVF validated maturity review
- Global statistical analysis of NPP vs. NOAA20 for GVF will also be included in the summary document.
  - Individual day comparisons demonstrate GVF bias usually < 1% and RMS difference of around 5%
  - Differences are greater during the first several days of the GVF time series due to lower amounts of data available to the smoothing algorithm. This indicates that historical data should be kept for use in case of an interruption to GVF production
  - Further analyses are being conducted to see how much of these differences can be attributed to orbital shifts, by comparing 16 day and 32 day average GVF between NPP and NOAA20
- NPP vs. NOAA20 comparisons show good consistency between the two satellites, as expected due to the satellites being in similar orbits and data coming from VIIRS instruments with the same design
- The observed consistency between the NPP and NOAA20 vegetation products indicate that generating combined NPP/NOAA20 products should be possible and may add value

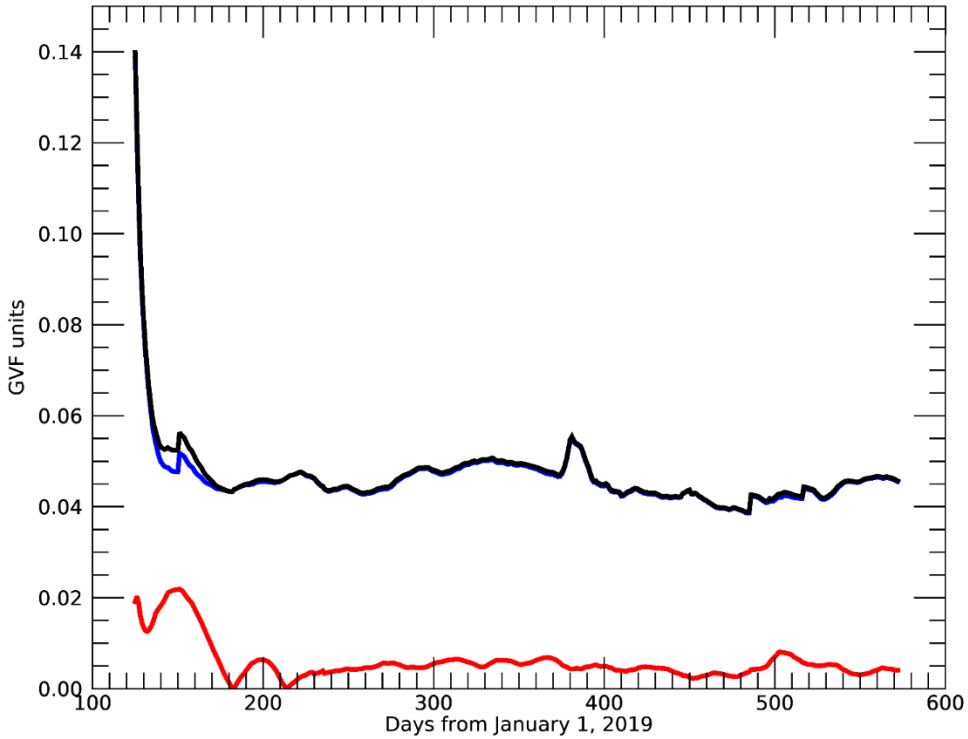
NPP vs. NOAA20 statistics, stratified by GVF value



Bias
Standard deviation
RMS difference

Gray bars show number of pixels in each of 20 bins.

NPP vs. NOAA20 GVF statistics time series



Bias
Standard deviation
RMS difference

Vegetation Health

September, 2020

Accomplishments / Events:

- Restored crontab jobs, which was totally stopped due to system update;
- Tested five versions of Locust-VH figures;
- Updated monthly and weekly locust maps, especially for some missing cases;
- Investigated storage for disaster recovery;
- Surveyed several climate indices, such as ENSO, IOD, and SAM, and correlated with VH indices, focusing on Australia and Kenya (highlighted);
- Generated a series of data and figures of VIIRS/VHP-1 and -4, -16 km resolution products, covering September 2020.

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			

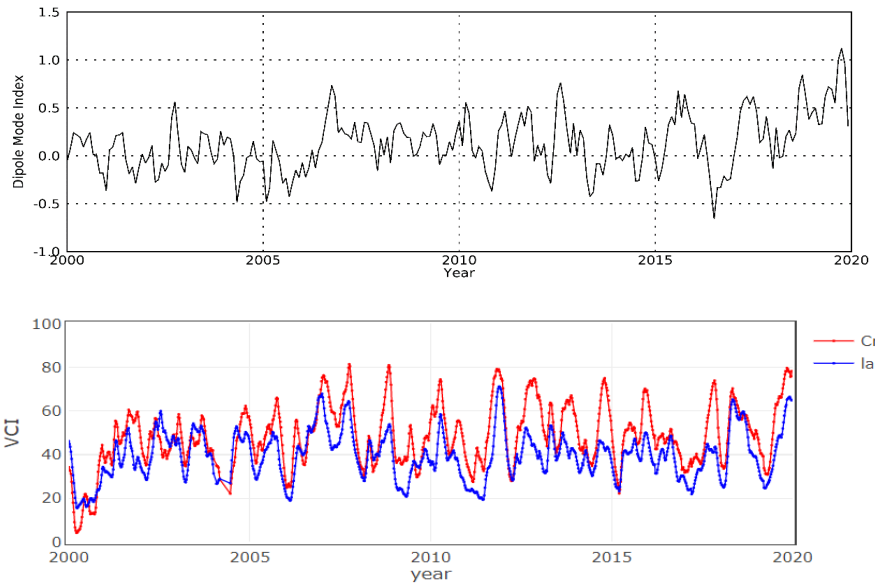
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
N20 Final DAP (to NDE)	Dec-20	Dec-20		Combine with initial J2 ready DAP
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20	Sep-20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/23/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Dec-20	Dec-20		With final N20
Algorithm Updates Review	Sep-20	Sep-20	08/18/20	08/18/20
Algorithm update DAP to ASSISTT: ▪ Algorithm updates/improvements	Jul-20	Jul-20	Jul-20	With initial J2 & final N20 DAP
Annual algorithms/products performance report	Feb-20	Feb-20	Feb-20	
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	Sep-20	
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20	Jun-20	

Highlights: Time Series of DMI and VCI over Australia



Ocean Color

September, 2020

Accomplishments / Events:

Routinely producing global ocean color products from VIIRS SNPP and NOAA-20.

Continued the work for the improvement of the MSL12 ocean color data processing system.

Continued the work for the improvement of the OCView tool and ocean color product routine data monitoring system functions well.

Worked on Linux-6 to Linux-7 issues/problems and IT computer reboot issues.

New buoy (M270) was deployed for Moby on September 6th, replacing M269 which had been in the water for an extended period of time. Team is currently evaluating the quality of M270 data before posting on Coastwatch.

Made progress for self-shading instrument corrections in water (see highlight)

Overall Status:

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

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	Jun-20	Jul-20	07/17/20	Complex N20 SDR analysis
Updated N20 DAP to CoastWatch	Nov-20	Nov-20	07/17/20	
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20	Sep-20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/23/20	
Initial J2 ready DAP delivery (include NPP/N20 updates)	Dec-20	Dec-20		
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Improve the merged VIIRS OC data from SNPP and NOAA-20	Sep-20	Sep-20		
Vicarious calibration for VIIRS-NOAA-20 using MOBY in situ data	Jun-20	Jun-20	04/17/20	
Complete the Sixth VIIRS ocean color dedicated cruise	Apr-20		cancelled	Due to the virus
Complete the fifth VIIRS cruise report and in situ data analyses (e.g., improve in situ data quality)	Oct-20	Oct-20		
Routine ocean color data production for both NRT and science quality data streams	Sep-20	Sep-20	Sep-20	
Annual algorithms/products performance report	Feb-20	Feb-20	Feb-20	
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	Sep-20	
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20	Sep-20	

Highlights: Progress on methodology to correct for instrument self shading for the in water measurements.

The figure shows the shadowing correction for two wavelengths. Over most geometries the shadow factor is within 2% of 1 (1 means no shadow), but certain geometries (buoy between collector and sun, sun directly overhead) the shadow can become more significant. Team is finishing a paper describing this correction and the uncertainties associated with the correction, and team will work on implementing the correction into the data stream (along with stating measurement uncertainty).

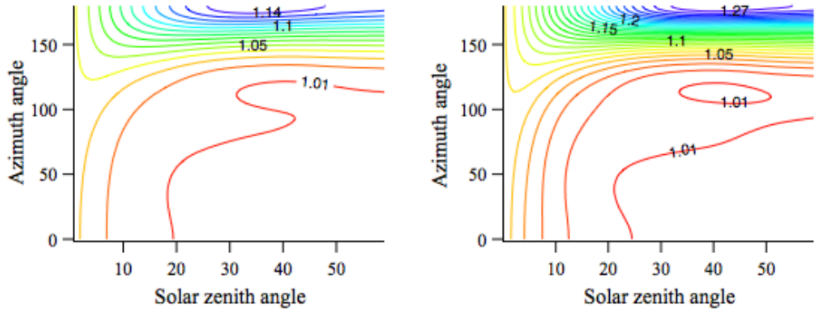


Figure: Shadow correction for two wavelengths, 440 and 560 nm. Azimuth is between the direction the arm is pointing and the solar direction, 180 degrees is when the main buoy is between the collector and the sun.

Sea Surface Temperature

September, 2020

Accomplishments / Events:

– ACSPO 2.80 (J2-ready + VIIRS thermal fronts + L3S-PM VIIRS code) delivered to ASSISTT in late Aug, one month ahead of schedule. ASSISTT delivery to NDE is planned in Nov'20.

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.*

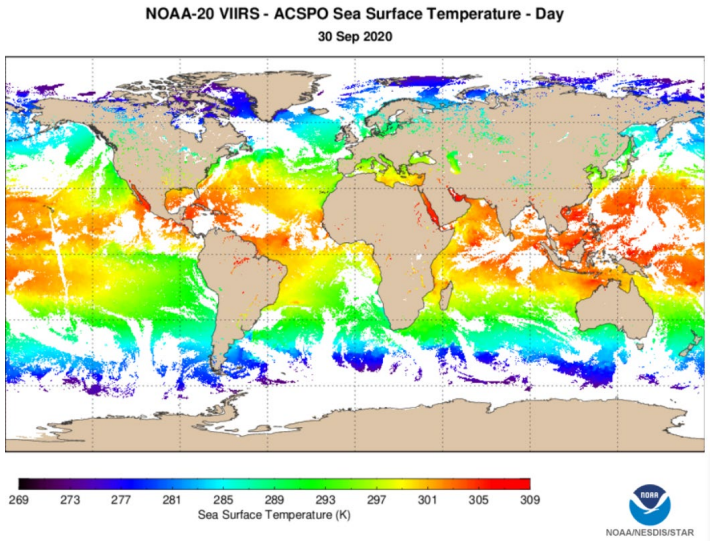
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Updated DAP (ACSPO 2.80, implement thermal fronts. improvements to support data fusion, J2 readiness) to ASSISTT	Aug-20	Aug-20	08/28/20	With initial J2 DAP
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20	Aug-20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	07/16/20	
Initial J2 ready DAP from ASSISTT to NDE (include NPP/N20 updates)	Nov-20	Nov-20		With ACSPO 2.80
Algorithm Updates Review	Sep-20	Sep-20	08/18/20	08/18/20
Complete VIIRS RAN2 archival with PO.DAAC & NCEI	Aug-20	Aug-20	Jul 2020	
Annual algorithms/products performance report	Feb-20	Feb-20	Feb 2020	
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	Jul 2020	
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20	Sep-20	
Maintain SQUAM/iQuam/ARMS. Resolve anomalies	Sep-20	Sep-20	Sep-20	

Highlights:

NOAA-20 SST as seen from JSTAR Long Term Monitoring System, New Fiscal Year Eve



VIIRS Polar Winds

September, 2020

Accomplishments / Events:

- Progress studying quality control in VIIRS tandem winds

Overall Status:

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

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 pre-launch test/proxy data review/analyze	Sep-20	Sep-20	Sep-20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/28/20	
Initial J2 ready DAP to ASSISTT	Apr-20	Apr-20	Apr-20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Sep-20	Oct-20		10/1/20: SCR
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Wind product updates/improvements: continue routine generation of combined S-NPP/NOAA-20 global winds	Sep-20	Sep-20	Aug-20	
Annual algorithms/products performance report	Feb-20	Feb-20	Feb-20	
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	Jan-20	
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20	Jan-20	

Highlights:

Improved tandem polar wind Quality Control understanding:

Figure 1 (top) – Histogram shows Mode near 0 for difference between proxy for actuals and VIIRS tandem winds

Figure 2 (bottom) –

Scatterchart shows that single Quality Index is not predictive of final quality – more work is needed

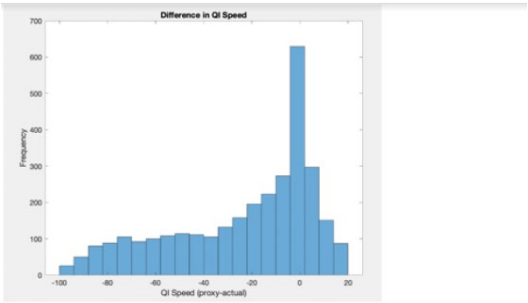


Figure 1: Histogram of differences between the Proxy and Actual QI Speed, for high quality winds with a Actual QI Final > 80.

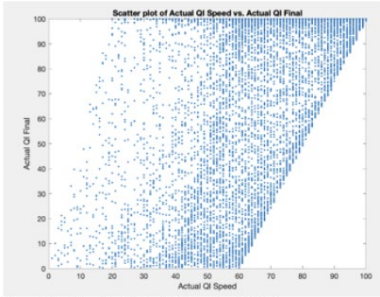


Figure 2: Scatter plot of Actual QI Speed vs QI Final.

NUCAPS Products

September, 2020

Accomplishments / Events

The NUCAPS team presented JPSS-2 algorithm updates to the JPSS Program office (9/15) and the presentation was well received.

NUCAPS retrievals of CO2 using JPSS and N20 are tested and the results are reasonable.

The initial validation of NUCAPS OLR data products are completed, further revision of the code was conducted.

Continued work in numerous areas - SO2 flag into the NUCAPS operations and validation plans, averaging kernels, SNO retrievals, IR-only retrieval optimization, implementation of Ammonia product retrieval, and collaborative support activities with the STAR SDR teams as well as NOAA-GML

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			

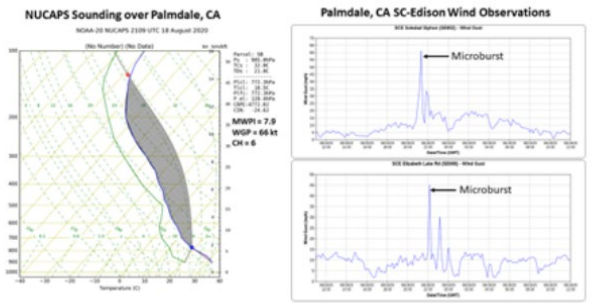
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity: CH4 (S-NPP & NOAA-20)	Feb-20	Apr-20	04/23/20	Combine review
Provisional Maturity: CO2 (S-NPP & NOAA-20)	Feb-20	Apr-20	04/23/20	Combine review
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20	07/28/20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/05/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Nov-20	Nov-20		ASSISTT
Algorithm Updates Review	Sep-20	Sep-20	09/15/20	09/15/20
Algorithm update DAP to ASSISTT: ▪ Optimization of CO related look up tables ▪ Improve NOAA-20 CH4/CO2 algorithms ▪ J2 HEAP algorithm	Jul-20	Jul-20	07/28/20	With initial J2 DAP
Validation against NUCAPS SNPP trace gas EDRs, other instruments (MOPITT, AIRS, IASI) and in situ measurements (TCCON, ATom, WE-CAN, KORUS)	Sep-20	Sep-20	Apr-20	Oct. Publication covers this
Annual algorithms/products performance report	Feb-20	Feb-20	Feb-20	
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	Oct-20	Oct. Publication
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20	Sep-20	LTM Team
Peer reviewed paper on NUCAPS HEAP cal/val	Sep-20	Sep-20	Oct-20	Oct. Publication

Highlights

NUCAPS Soundings product shows recent microbursts



NUCAPS sounding over Palmdale, CA: During the afternoon of 18 August 2020, clusters of intense thunderstorms developed over the San Gabriel Mountains, in which an isolated storm cell generated a severe microburst near Palmdale, CA.

MiRS Products

September, 2020

Accomplishments / Events:

- The latest MiRS software package (v11.6) was delivered to the UW/SSEC for integration into the direct broadcast software system CSPP. The package has now been fully integrated and cross-compared with STAR outputs, and is being released as CSPP_MIRS 2.4.
- Testing with a neural network based radiometric bias correction for ATMS continues. Application of a regression post-processor appears to improve the initial neural network bias prediction for channel 1 (see highlights). Other channels are currently being tested.
- N20-SNPP intercomparisons and LTM visualizations sent in separate ppt package.

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:

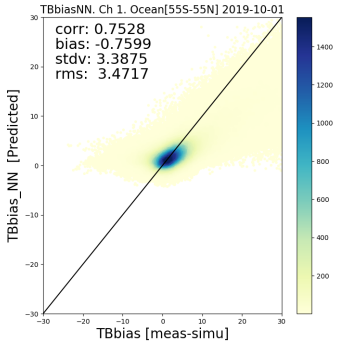
None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20	Jul-20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	05/08/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Nov-20	Nov-20		MiRS v11.6
Algorithm Updates Review	Sep-20	Sep-20	09/15/20	09/15/20
Algorithm update DAP to ASSISTT: ▪ Optimize MiRS for NOAA-20 and SNPP ▪ SFR integration; Algorithm test and verification	Jul-20	Jul-20	07/31/20	With initial J2 DAP MiRS v11.6
MiRS v11.5 DAP to OSPO/NDE/ASSISTT			04/20/20	
MiRS v11.6 DAP to CSPP			Aug-20	
Annual algorithms/products performance report	Feb-20	Feb-20	Feb-20	
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	Aug-20	
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20	Sep-20	

Highlights:

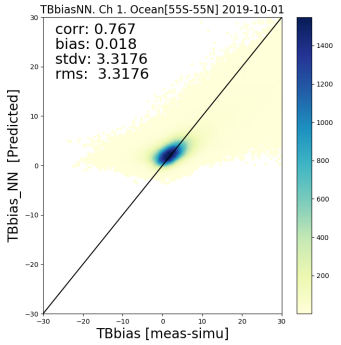
Regression post-processing of initial neural network bias correction improves difference with true bias.

TBbias_pred = TBbias_NN
Inputs: lat, angle, TB(CH1-4)



delta = a_1*TBobs_CH1+b

TBbias_pred = TBbias_NN – delta



Snowfall Rate

September, 2020

Accomplishments / Events:

- The SFR team conducted an intercomparison study for NOAA-20 and S-NPP SFR. The results were reported in an entry to the October 2 JSTAR Weekly.
- An early season snowstorm hit several western states on September 8-9. The SFR product captured the progress of the storm with a series of satellites. Jorel Torres (CIRA) made an animation from the AWIPS-like SFR images generated by NASA SPoRT:

http://cics.umd.edu/~hmeng/SFR/nesdis-snowfall-rate-animation.gif

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			

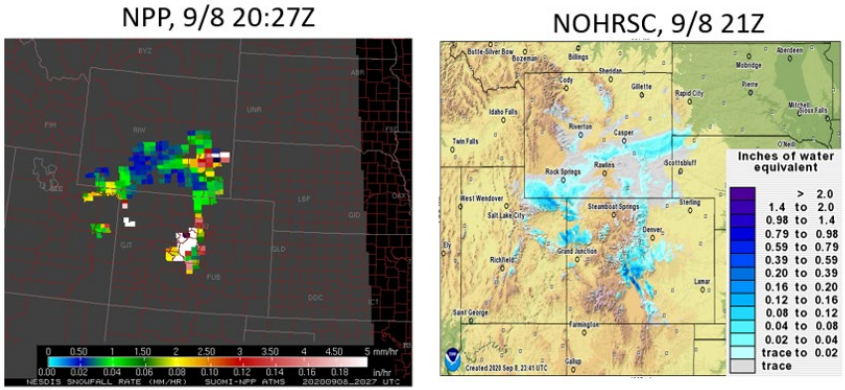
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Annual algorithms/products performance report	Feb-20	Feb-20	Feb-20	
Enhance the calibration method to mitigate existing issues including reducing non-convergence rate	May-20	May-20	May-20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/06/20	
Deliver updated SFR package to MiRS team	Jun-20	Jun-20	7/10/20	Extensive bias correction study for six satellites
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20	Sep-20	
Initial J2 ready DAP to ASSISTT	Jul-20	Jul-20	07/31/20	MiRS delivery
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Nov-20	Nov-20		ASSISTT delivery
Algorithm Updates Review	Sep-20	Sep-20	09/15/20	09/15/20
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	Sep-20	
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20	Sep-20	

Highlights: SFR captures early season storm



Left: S-NPP SFR from Sept 8, 20:27Z; right: the corresponding National Operational Hydrologic Remote Sensing Center (NOHRSC) modeled hourly snowfall at 21Z.

OMPS Ozone

September, 2020

Accomplishments / Events:

Dry run for Semi-Validated Review for OMPS V8Pro EDR Validated. Working with JPSS management to establish path forward. SDR Team will implement correction for Solar In-Band Stray Light contamination.

DAP for V8PRo with better forward model fidelity and J02 adaptations moving from ASSISTT to NDE.

Preparing V8TOS (LFSO2) algorithms to match V8TOz refinements for J02. Both algorithms will be delivered to ASSISTT in a single DAP.

All three contractors took three weeks of vacation due to 1880 hour rule.

Overall Status:

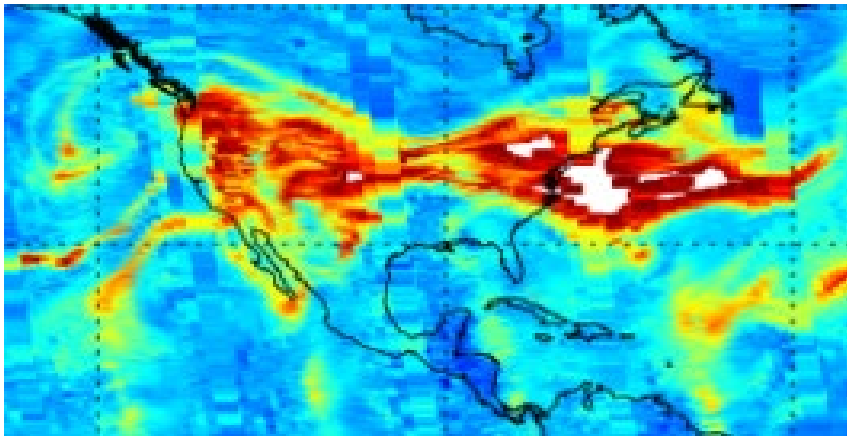
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule			X		# SDR Schedule, code change

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: V8Pro	Jan-20	Q2 FY21		Bandpass differences
Limb SDR and EDR to operations	Feb-20	Jun-20	06/16/20	NDE errors
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20	Sep-20	
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	05/21/20	
Initial J2 ready DAP to ASSISTT	Jul-20	Oct-20	7/7/20 V8Pro	With NPP/N20 updates
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Dec-20	Dec-20		
Algorithm Updates Review	Sep-20	Sep-20	08/18/20	08/18/20
RT Tables with Wavelengths, Bandpasses	Jul-20	Jul-20	07/07/20	SDR Bandpass
V8TOz with Cloud top optical centroid algorithm	Aug-20	Apr-21		Priorities
Annual algorithms / products performance report	Feb-20	Feb-20	Feb-20	
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20	Sep-20	
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20	Sep-20	

Highlights: The Ultraviolet Absorbing Aerosol Index values from the total ozone retrieval product for the Ozone Mapping and Profiler Suite track the progress of large amount smoke as they are transported away from fires in California. Figure for September 16, 2020



GCOM-W1 Products

September, 2020

Accomplishments / Events:

- AMSR2 sea ice concentration scheduled for NCO operations. The NOAA AMSR-2 sea-ice concentration data stream is scheduled for NCEP Central Operations (NCO) operational implementation on 6 October 2020.
- The rain rate product provided an excellent depiction of Hurricane Sally as it made landfall along the gulf coast on Sept. 16.
- The NOAA AMSR2 sea ice concentration product provides an excellent depiction of Arctic sea ice melt north of Alaska from July to September. This year Arctic sea ice extent is very low, approaching but not quite reaching the 2012 record minimum. There is extensive open water across the Arctic
- Daily composites of VIIRS (Enterprise) and AMSR2 Sea Ice Concentration (SIC) differences were compared in terms of the VIIRS Ice Surface Temperature (IST) starting from 1 February 2018 through 30 June 2020. The results show that AMSR2 SIC is consistently 1-2% less than VIIRS from 230 to 269 K. However, at about 270 K the bias rises significantly and becomes slightly positive, at around 2% in the 270-272 K temperature range. As IST approaches melting and beyond there is a precipitous decrease in the bias. This indicates that VIIRS SIC is consistently higher than AMSR2 in melting environments.

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
Annual report on AMSR2 algorithms and data products performance	Feb-20	Jun-20	Feb-20 Jun-20	Feb-20: SJASTM Jun-20: Report
Algorithm Cal/Val	Sep-20	Sep-20	Aug-20	
Algorithm improvement/updates implemented in new DAP for NDE	Sep-20	Sep-20	Sep-20	
Complete reprocessing of entire mission dataset of AMSR2	Sep-20	Sep-20	Mar-20	

Highlights:

AMSR2 sea ice concentration (SIC) ready for NOAA's first data assimilating ocean model! Transition of SIC to NCEP Operations scheduled for 6 October, just in time for transition of the Real-Time Ocean Forecast System – Data Assimilation (RTOFS-DA) transition to operations scheduled for November 2020.

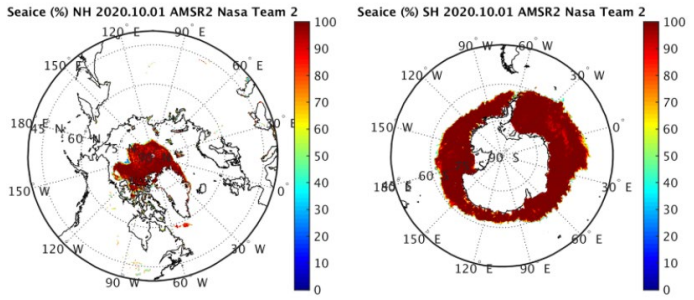


Figure: AMSR2 sea ice concentration on 1 October 2020 for the Arctic (left) and Antarctic (right).

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

September 2020

Accomplishments / Events:

- Maintained daily NPROVS, extended periods in August were reprocessed to fill in data gaps (hardware related)
- Latest NUCAPS v2.7/2.8 "Test" (HEAP) data was reviewed; routine monitoring hindered by Test data stream disruptions
- Access of newly available GRUAN Radiosonde (RS41) and integration into 1) NPROVS and 2)Radiosonde Inter-comparison VALidation (RIVAL) deliverable continued
- Case study was done comparing NUCAPS and MiRS to Dropsondes associated with Hurricane Laura **(Highlight)**
- AEROSE field campaign results were generated and included in upcoming JRS special edition (Kuciauskas (NRL) etal.) **(Highlight)**
- Radiosonde Upper Troposphere Humidity Assessments draft paper finalized and reviewed by STAR for JRS Special edition (Sun etal)
- EDR LTM team developed a new calendar based website for improved tracking of missing image products on a daily basis

IDAS	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
LTM				
Maintain / expand existing EDR LTM web pages and mappers and provide monthly reports	Sep-20	Sep-20	Sep-20	
NPROVS				
Provide COSMIC (C2) geophysical profiles (T, H20) assessment	June 20	June 20	June 20	
Facilitate and provide assessment report supporting R2O transition of NUCAPS for v2.5.2 (Q3).	June 20	June 20	June 2020	

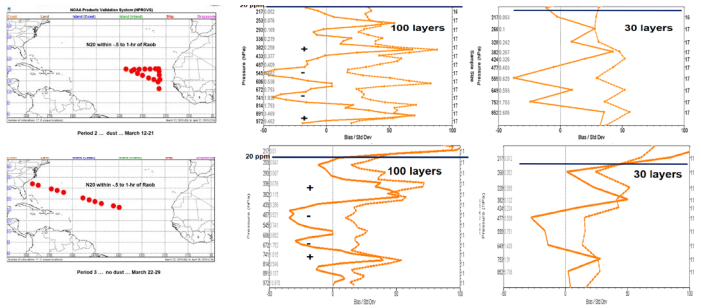
Overall Status:

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

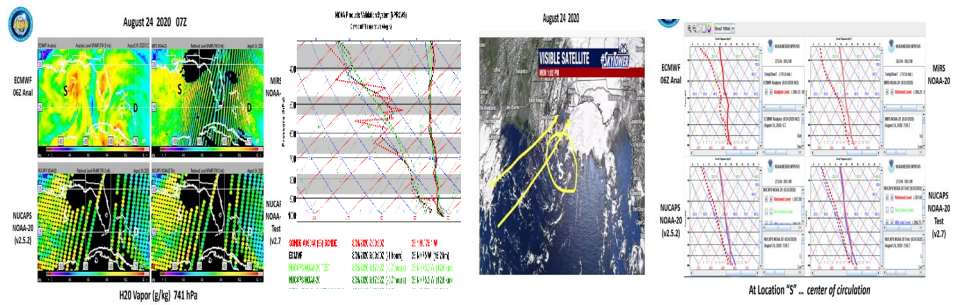
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Highlights:

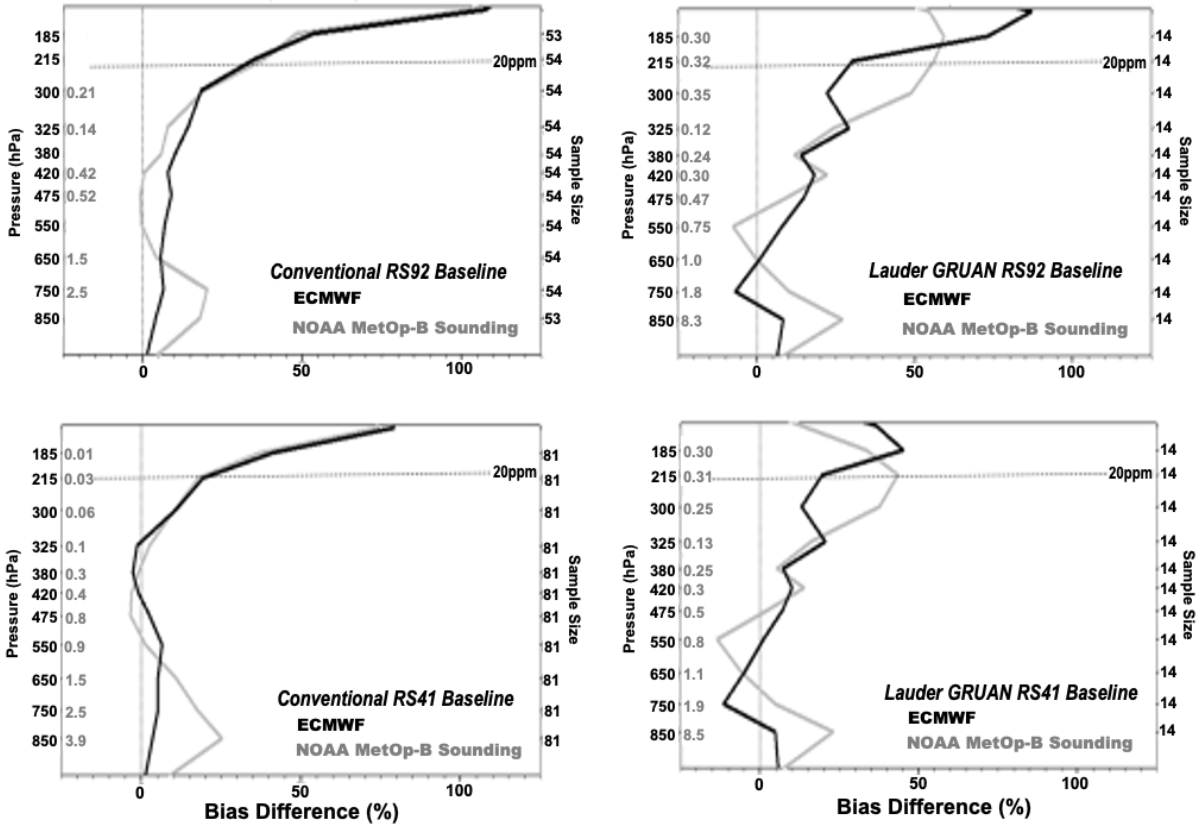
JPSS Targets NUCAPS Soundings During 2020 AEROSE Campaign



Collocated AEROSE Radiosonde (JPSS funded) and NUCAPS soundings at NOAA-20 overpass inside (top) and outside (bottom) the SAL dust plume show overall similar vertical structure for H20 vapor but elevated differences (bias, standard deviation) inside the SAL; statistics at 30-layers (1.5km resolution) appear more consistent with sensor (CrIS) vertical sensitivity than at 100-layer (500m vertical resolution)



NPROVS targeting of NUCAPS, MiRS and ECMWF Analysis sounding fields (left) collocated with dropsondes (D) show good agreement (2nd from left). However, of particular interest are collocated soundings (S) associated with the relatively cloud-free circulation center (2nd from right) of Hurricane Laura on October 24th that are shown in the rightmost panel (ECMWF (up left), MiRS (up right), NUCAPS Test (low right) and NUCAPS Oper (low left)). Such capability for targeting can provide valuable support for NWS (AWIPS-2) users and associated case studies.


Pressure (hPa)
185
215
300
325
380
420
475
550
650
750
850
0.21
0.14
0.42
0.52
1.5
2.5
20ppm
Sample Size
53
54
54
54
54
54
54
54
54
54
53
0
50
100
Conventional RS92 Baseline
ECMWF
NOAA MetOp-B Sounding
0.30
0.32
0.35
0.12
0.24
0.30
0.47
0.75
1.0
1.8
8.3
14
Lauder GRUAN RS92 Baseline
0.01
0.03
0.06
0.1
0.3
0.4
0.8
0.9
1.5
2.5
3.9
81
Conventional RS41 Baseline
0.31
0.25
0.13
0.25
0.3
0.5
0.8
1.1
1.9
8.5
Lauder GRUAN RS41 Baseline
Bias Difference (%)