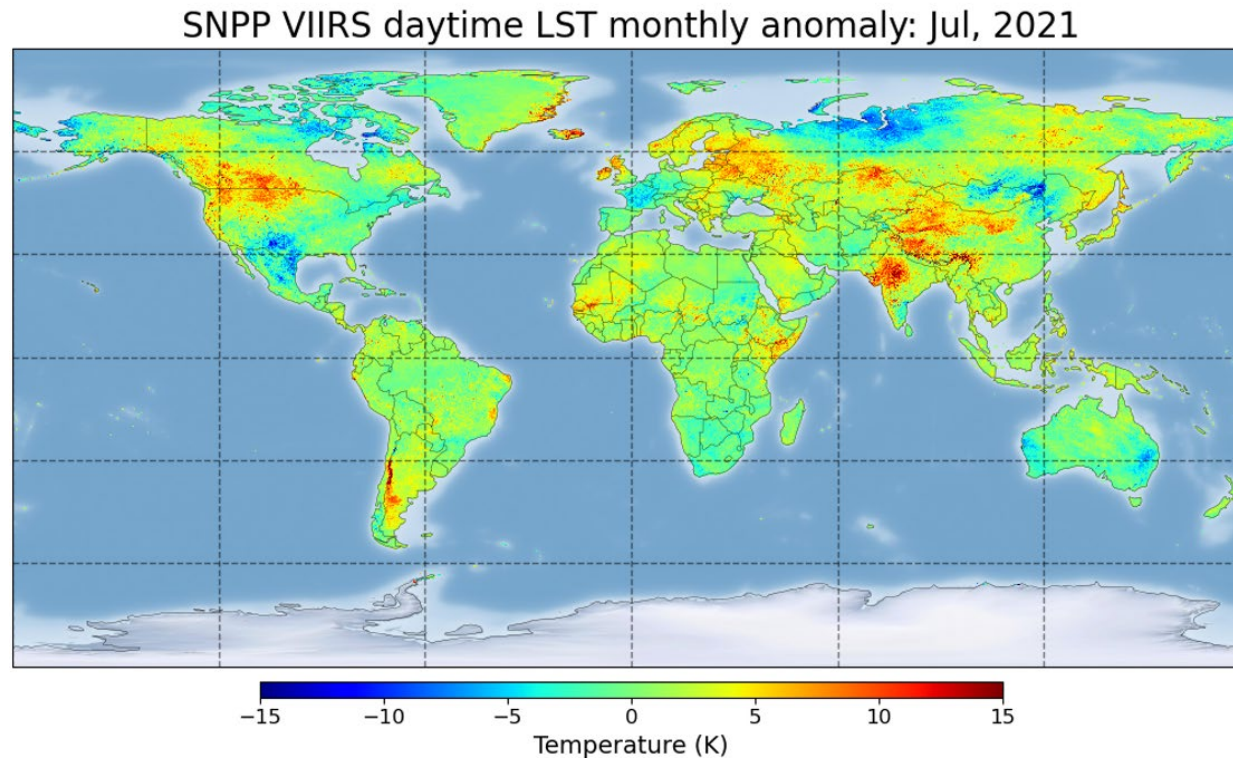**NOAA JPSS Monthly Program Office**

AMP/STAR
FY21 TTA

Lihang Zhou, DPMS Deputy
Bonnie Reed, Algorithm Sustainment Lead
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& JPSS STAR Program Manager

September, 2021

Land surface temperature anomaly

SNPP VIIRS daytime LST monthly anomaly: Jul, 2021

Temperature (K)

The Land Product Development (LPD) Team has started reporting the global monthly LST anomaly experimentally since June 2021. In this month (July of 2021), LST is warmer than the past five-year LST mean, particularly in the areas including Western US and Canada, Qinghai-Tibet plateau China, Northern states of India, Greenland, and central Europe. The LST variation in the month is lower than the average (of the past five-year data) globally; it is particularly true for the North America Region.

Highlights from the Science Teams (August)

Observations of hurricane IDA from ATMS and VIIRS sensor data record (SDR) data via the ICVS monitoring system
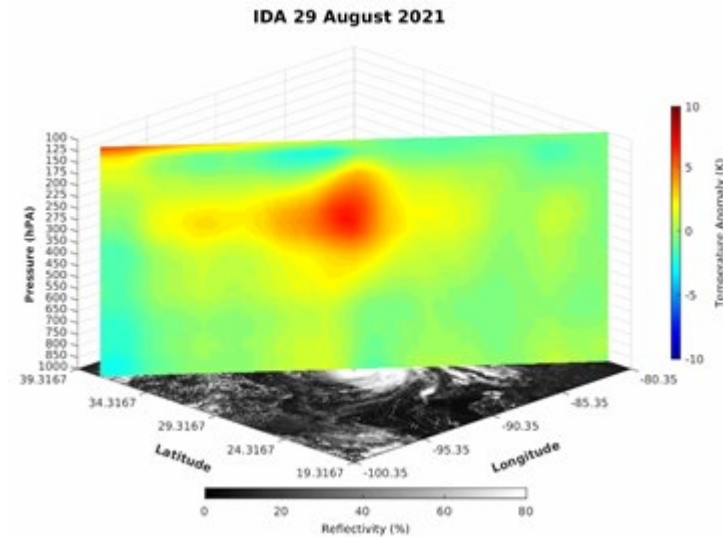
Combining the satellite SDR data from the VIIRS and ATMS instruments onboard NOAA-20, the ICVS monitoring system continues to monitor the active hurricanes over the Atlantic and the Eastern Pacific this hurricane season. Recently, the hurricane IDA landed in Louisiana on August 29, 2021 with strong wind and heavy rain. The images in the following figure are the NOAA-20 VIIRS True Color RGB in the left panel and the daytime 3D animation of ATMS temperature anomaly in the right panel for hurricane IDA. Particularly, upper level warm core intensification on the day of the landfall is observed, demonstrating high quality of NOAA-20 ATMS SDR data.

Highlights from the Science Teams (August)

New Aviation oriented JPSS Cloud website.
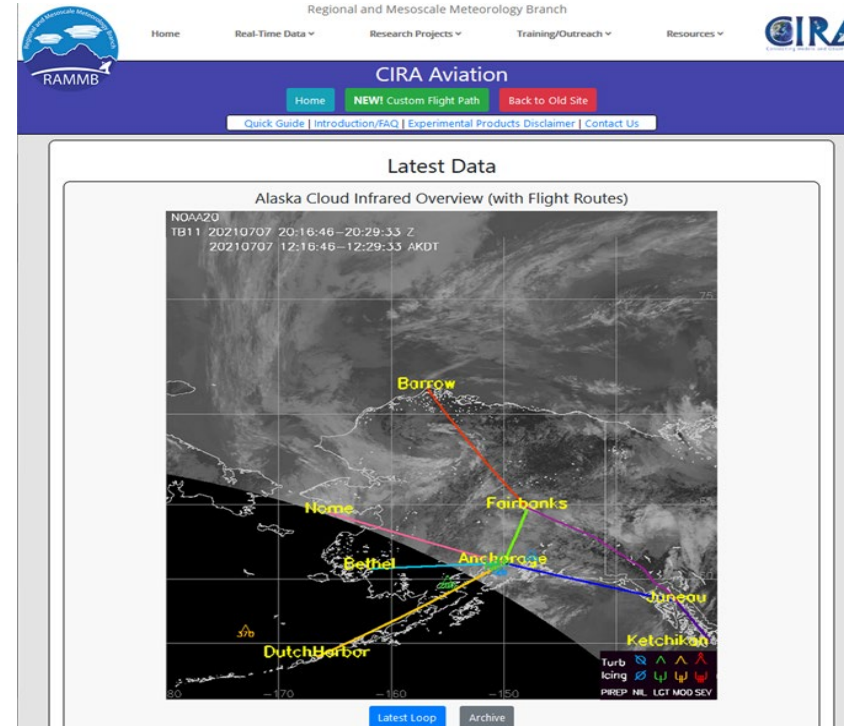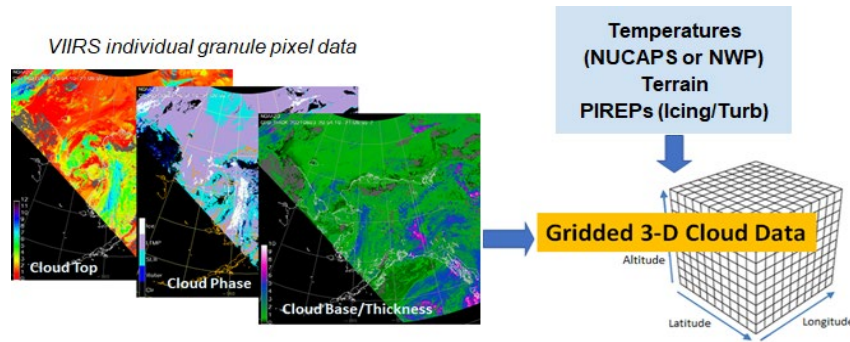
A new aviation website has been developed with a user-interactive interface to create random cross-sections of JPSS cloud products along flight routes in Alaska. Multiple 2D cloud products, terrain, temperatures (NUCAPS/NWP), and Pilot Reports (icing/turbulence) are combined into one gridded 3D cloud field (16-bit integers in NetCDF) for the new website and for future AWIPS-2 implementation. This effort was spearheaded by CIRA scientists and introduced at the Aviation Initiative meeting in June 2021. User-engaged product evaluation will continue during the Alaska Cloud Demonstration project. The website can be accessed at the following location: https://io.cira.colostate.edu/aviation/

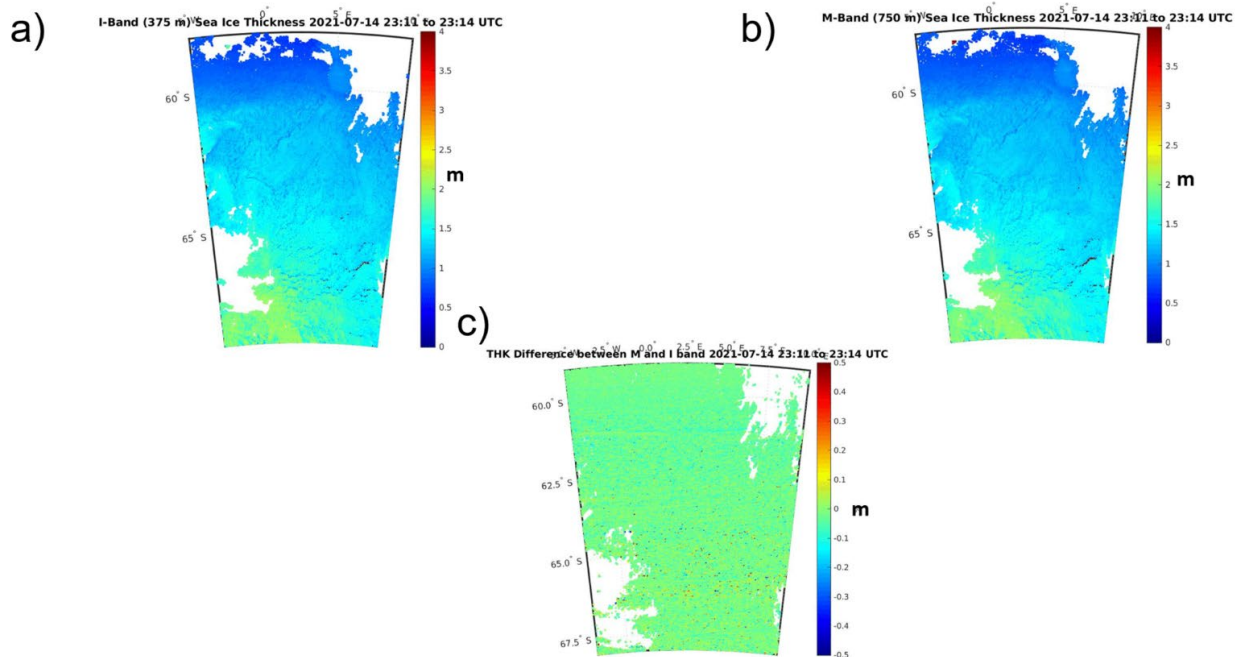**I-Band Ice Thickness product regularly produced**

Figure : 14 Jul 2021, 2311-2314 UTC Ice thicknesses from a) I-band (375-m), b) M-band (750-m) and c) differences (M-band – I-band) over the eastern Antarctic, King Hakoon Sea VII.

The Cryosphere team is now routinely producing ice thickness at image-band resolution (350 m) from VIIRS data on SNPPThe main input of the ice thickness product is ice surface temperature (IST). The M-band IST utilizes dual bands (M15 and M16 at 11 and 12 μm), while I-band IST uses a single band (I5 ~11 μm), as VIIRS does not have a 12 μm I-band. The absolute mean difference between the M-band and I-band Ice thickness over this scene is 2.87 cm with the average difference of -1.48 cm; M-band thickness is slightly lower than I-band over the scene. However, in the vicinity of leads the I-band product has lower ice thicknesses. The I-band ice thickness captures more leads (ice fractures) and detail in the vicinity of the leads for its higher spatial resolution. In summary, the I-band ice thickness agrees with the M-band ice thickness remarkably well and reveals more spatial features.
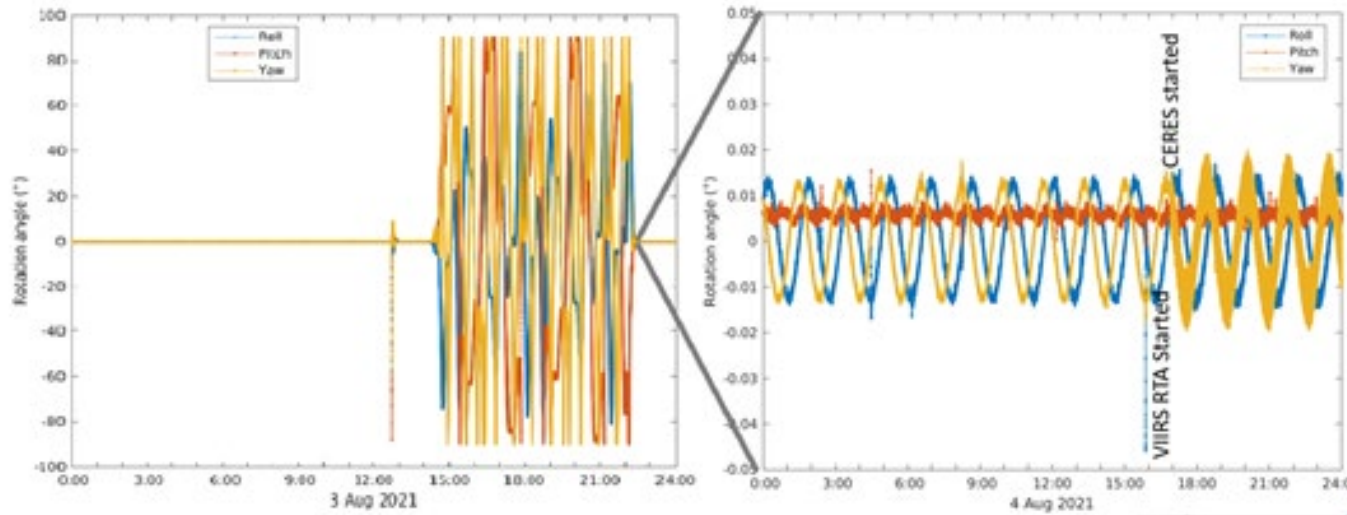
SNPP outage recovery efforts

Figure 1. Suomi NPP Spacecraft attitude monitoring indicating the timeline of the anomaly on August 3 (left), and instrument reactivation on August 4, 2021 (source: https://ncc.nesdis.noaa.gov/VIIRS/SpacecraftAttitudeMonitoring.php)

STAR instrument calibration science teams provided mission critical support to the recovery of instruments on Suomi NPP. ATMS and VIIRS were recovered as of August 5 after intensive calibration/validation by the STAR team (~24 hours after the instruments were reactivated). This dedicated effort enabled the NOAA ESPC to resume distributing ATMS and VIIRS products through PDA at 21:00 UTC on August 5, 2021. At the time of this report on August 6, all channels of ATMS, and VIIRS reflective solar and infrared channels are fully recovered. On the other hand, the Day/Night Band of VIIRS recovered with increased noise and striping, which can be improved with further calibration during the new moon and operationalized later in August. The recovery effort continues for CrIS and OMPS which are expected to recover by early next week.

The Suomi NPP Spacecraft anomaly occurred on August 3, 2021, shortly after the satellite mission control attempted a star catalog update to the spacecraft. The spacecraft entered sun-pointing mode as shown in our spacecraft attitude monitoring. All instruments went into safe hold mode till the spacecraft anomaly was resolved on August 4. The instruments were then reactivated.

Accomplishments

- Delivery Algorithm Packages (DAPs) - Mission Unique Products:
  - 8/31/2021: OMPS SDR team submitted "Updated JPSS-2 OMPS SDRs Pre-launch Characterization Report" to DPMS/JSTAR
  - 9/08/2021: OMPS SDR team submitted "J2 OMPS NM high resolution risk preliminary analysis report" to DPMS/JSTAR

- DAPs – Enterprise Products:
  - 8/04/2021: OMPS-NP v4r1 J01/NPP/J02 Patch DAP delivered to NDE (Patch DAP to address issue with scripts. Also includes update to valid range for variables in output files)
  - 8/23/2021: MiRS team delivered v11.6 & 11.8 science code patch to ASSISTT
  - STAR OMPS SDR, EDR and ASSISTT teams worked on the OMPS EDR NDE process issue: Patch DAPs to work with IDPS Block 2.3 Mx4 generated OMPS TC SDRs and Geolocation files for Version 3 V8TOz and V8Pro:
    - 8/17/2021: OMPS SDR/EDR team delivered V8TOZ Patch DAP to ASSISTT
    - 8/19/2021: ASSISTT team delivered V8TOZ Patch DAP to NDE
    - 8/20/2021: OMPS EDR team delivered V8Pro Patch DAP to ASSISTT
    - 8/25/2021: ASSISTT team delivered V8Pro Patch DAP to NDE
  - Active fire team delivered an updated version of the code to identify persistent anomalies to the CSPP development team (for integration and testing)
  - 8/17/2021: Final ACSPO SST CCAP (for MetOp-B/C) delivered to Cloud. Documentations (SMM, EUM, & ATBD) were delivered on 9/3/2021
  - 9/03/2021: HEAP CCAP (for MetOp-B/C) delivered to Cloud
  - 9/14/2021: STAR delivered VIIRS Flood Mapping DAP to NDE (Final DAP for VFM)

- IDPS Builds Checkouts / JPSS-2 Pre-Launch Testing events:
  - 8/03/2021: JSTAR submitted Mx4 SOL review/checkout report to DPMS/RTN/OSPO
  - 8/19/2021: JSTAR submitted Mx4 I&T review/checkout report to DPMS/RTN/OSPO
  - 8/24/2021: JSTAR participated JPSS-2 pre-launch testing event JCT2a-DSE, check and confirm IDPS generated J2 data format. Provided ATMS, and VIIRS teams' reports to DPMS/RTN

Accomplishments – JPSS Cal Val Supports

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

S-NPP	Weekly OMPS TC/NP Dark Table Updates	08/03/21, 08/10/21, 08/17/21, 08/24/21, 08/31/21
NOAA-20	Weekly OMPS TC/NP Dark Table Updates	08/03/21, 08/10/21, 08/17/21, 08/24/21, 08/31/21
S-NPP	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	08/03/21, 08/17/21, 08/31/21
NOAA-20	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	08/10/21, 08/24/21
S-NPP	Monthly VIIRS LUT Update of DNB Offsets and Gains	08/11/21
NOAA-20	Monthly VIIRS LUT Update of DNB Offsets and Gains	08/17/21

- 8/3-12/2021: JSTAR SDR teams worked on the S-NPP data Recovery

- DNB Winds: The CIMSS polar winds team is now routinely producing Day Night Band (DNB) Atmospheric Motion Vectors (AMVs) for S-NPP

- I-band Ice Thickness: The Cryosphere team is now routinely producing ice thickness at image-band resolution (350 m) from VIIRS data on S-NPP. The I-band ice thickness agrees with the M-band ice thickness remarkably well and reveals more spatial features

- The CIRA team updated the new aviation website (https://io.cira.colostate.edu/aviation) for user-selective cloud cross-sections based on initial evaluations by key users supporting the JPSS Aviation Initiative/AK Cloud Demo

- JSTAR Code/LUT/Product Deliveries:

  DAP to DPMS:
  - May-22: Final launch-ready JPSS-2 PCT/MM-coef DAP (ATMS & CrIS)
  - May-22: Final launch-ready JPSS-2 LUTs/MM-coef DAP (VIIRS & OMPS)
  - Sep-22: NOAA-20 NCC LUT update (VIIRS Imagery)

  NOAA-20/JPSS-2 Algorithm DAP to NDE/CoastWatch:
  - Sep-21: Initial/Final SST J2 DAP (include NPP/N20 updates, ACSPO 2.80)
  - Oct-21: Initial/Final Vegetation Health J2 DAP (include NPP/N20 updates)
  - Oct-21: Final J2 DAP (Active Fires, Surface Reflectance, NUCAPS)
  - Nov-21: Final J2 Super DAP (Clouds, Aerosol, Volcanic Ash, Cryosphere, VPW, LST, LSA)
  - Nov-21: Final NVPS J2 DAP (VI & GVF)
  - Nov-21: Final OMPS Ozone V8TOz DAP
  - Dec-21: Final OMPS Ozone V8Pro DAP
  - Dec-21: Global Gridded LST/LSA DAP
  - Jan-22: Final MiRS J2 DAP (include SFR)
  - Dec-21: J2-ready Ocean Color DAP to CoastWatch
  - Jun-22: J2-ready Ocean Color DAP to Cloud (NCCF)

FY21 STAR JPSS Milestones

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Algorithm Updates DAPs				
CrIS: Initial J2 PCT DAP	Oct-20	Oct-20	10/16/20 02/08/21 (re-delivery, B2.3 Mx0)	
ATMS: Final J2 PCT/MM-coef DAP	Sep-21	May-22	All SDR J2 MM-coef updates pending on J2 instrument alignment measurement summary report from flight team, which may available to STAR by mid- to-late-September, 2021	
CrIS: Final J2 PCT/MM-coef DAP	Jul-21	May-22		
VIIRS: Final J2 Launch-ready LUTs/MM-coef DAP	Sep-21	May-22		
OMPS: Initial J2 Launch-ready LUTs DAP (combined code & LUT DAPs, ADR9095 & ADR9501)	Jan-21	Mar-21	03/10/21	12/28/20 DAP to ASSISTT
Imagery: N20 NCC LUT update DAP	Jul-21	Sep-22	NCC Banding Anomaly, ASF tool update	
Initial J2 ready DAP (include NPP/N20 updates), Clouds/Aerosol/VolcanicAsh/Cryosphere/LST/LSA/VPW	Jan-21	Mar-21	04/01/21 (to NDE) 05/26/21 (to CSPP)	downstream data testing
Initial J2 ready Active Fires DAP (include NPP/N20 updates, I–Band)	Jun-21	Jun-21	06/24/20	J2 I-Band AF
Surface Reflectance: Initial J2 ready DAP	Jan-21	Apr-21	04/19/21 (to NDE) 04/22/21 (to CSPP)	downstream data testing
NVPS (VI & GVF): Initial J2 ready DAP	Feb-21	Apr-21	04/19/21	Data testing
Vegetation Health: Initial J2 ready/final N20 DAP	Apr-21	Oct-21		Initial/Final combined
SST: Initial J2 ready DAP (ACSPO 2.80)	Apr-21	Sep-21		Initial/Final combined
NUCAPS: Initial J2 ready DAP	Apr-21	Apr-21	02/26/21 04/13/21 patch delivery 04/27/21 (to CSPP)	
MiRS & SFR: Initial J2 ready DAP	Mar-21	May-21	05/18/21 (v11.6, to NDE) 06/11/21 (v11.6, to CSPP)	documentation update
OMPS Ozone V8Pro: Initial J2 ready DAP	Dec-20	Dec-20	12/31/20 04/15/21 patch delivery **08/04/21 patch delivery** **08/25/21 patch DAP**	
OMPS Ozone V8TOz: Initial J2 ready DAP	Mar-21	May-21	05/27/21 **08/19/21 patch DAP**	11/25/20 DAP to ASSISTT

FY21 STAR JPSS Milestones

Milestones	Original Date	Forecast Date	Actual Date	Variance Explanation
Algorithm Cal/Val/LTM				
J2/Enterprise Cal/Val Plan - final delivery (all SDR/EDR) Updated Cal/Val plans (address DPMS review comments)	Dec-20	Dec-20	12/31/20 04/30/21	
GCOM: AMSR-3 Cal/Val Plan - draft delivery	Sep-21	Oct-21		CAC renewal issue
Updated JPSS-2 OMPS SDRs Pre-launch Characterization Report	May-21	Aug-21	08/31/21	
JCT2 - Data System Event (SDR teams, test/run through RDRs from JCT2-DSE, generate J2 SDRs)	Aug-21	Aug-21	**08/24/21**	
NUCAPS CO2 Full Validated Maturity (N20 & NPP)	Dec-20	Dec-20	12/17/20	
N20 OMPS NP EDR (V8Pro) Full Validated Maturity	May-21	May-21	05/27/21	Dry run: 05/12/21
Transition of reprocessed SNPP SDR data to CLASS/NCEI	Sep-21	Sep-21		
Support JPSS-2 ICVS-LTM Test Readiness Review	Sep-21	Sep-21		ICVS Beta for JCT2a-DSE
ICVS-J2 prototype Website (ready for JCT-3 test run)	Sep-21	Sep-21		
Maintain / expand existing EDR LTM web pages and mappers	Sep-21	Sep-21		
Delivery of JPSS Product Monitoring Phase 9 DAP to OSPO	Sep-21	Sep-21		
AST-2020 (VIIRS Annual Surface Type)	Sep-21	Sep-21		

FY21 STAR JPSS Milestones

Milestones	Original Date	Forecast Date	Actual Completion Date
Operational/Program Support			
S-NPP: Weekly OMPS TC/NP Dark Table Updates	Weekly	Weekly	10/06/20, 10/13/20, 10/20/20, 10/27/20, 11/03/20, 11/10/20, 11/17/20, 11/24/20, 12/01/20, 12/08/20, 12/15/20, 12/22/20, 01/05/21, 01/12/21, 01/19/21, 01/26/21, 02/02/21, 02/09/21, 02/16/21, 02/23/21, 03/02/21, 03/09/21, 03/16/21, 03/23/21, 03/30/21, 04/06/21, 04/13/21, 04/20/21, 04/27/21, 05/04/21, 05/11/21, 05/18/21, 05/25/21, 06/02/21, 06/08/21, 06/15/21, 06/22/21, 06/29/21, 07/06/21, 07/13/21, 07/20/21, 07/27/21, **08/03/21, 08/10/21, 08/17/21, 08/24/21, 08/31/21, 09/07/21, 09/14/21**
S-NPP: Bi-Weekly OMPS NP Wavelength & Solar Flux	Bi-Weekly	Bi-Weekly	10/06/20, 10/20/20, 11/03/20, 11/17/20, 12/01/20, 12/15/20, 01/12/21, 01/26/21, 02/09/21, 02/23/21, 03/16/21, 03/30/21, 04/13/21, 04/27/21, 05/12/21, 05/25/21, 06/08/21, 06/22/21, 07/06/21, 07/20/21, **08/03/21, 08/17/21, 08/31/21, 09/14/21**
S-NPP: Monthly VIIRS LUT update of DNB Offsets and Gains	Monthly	Monthly	10/21/20, 11/24/20, 12/22/20, 01/19/21, 02/17/21, 03/23/21, 04/20/21, 05/18/21, 06/16/21, 07/20/21, **08/11/21, 09/14/21**
NOAA-20: Weekly OMPS TC/NP Dark Table Updates	Weekly	Weekly	10/06/20, 10/13/20, 10/20/20, 10/27/20, 11/03/20, 11/10/20, 11/17/20, 11/24/20, 12/01/20, 12/08/20, 12/15/20, 12/22/20, 01/05/21, 01/12/21, 01/19/21, 01/26/21, 02/02/21, 02/09/21, 02/16/21, 02/23/21, 03/02/21, 03/09/21, 03/16/21, 03/23/21, 03/30/21, 04/06/21, 04/13/21, 04/20/21, 04/27/21, 05/04/21, 05/11/21, 05/18/21, 05/25/21, 06/02/21, 06/08/21, 06/15/21, 06/22/21, 06/29/21, 07/06/21, 07/13/21, 07/20/21, 07/27/21, **08/03/21, 08/10/21, 08/17/21, 08/24/21, 08/31/21, 09/07/21, 09/14/21**
NOAA-20: Bi-Weekly OMPS NP Wavelength & Solar Flux	Bi-Weekly	Bi-Weekly	10/13/20, 10/27/20, 11/10/20, 11/24/20, 12/08/20, 12/22/20, 01/05/21, 01/19/21, 02/02/21, 02/16/21, 03/02/21, 03/23/21, 04/06/21, 04/20/21, 05/04/21, 05/18/21, 06/02/21, 06/15/21, 06/29/21, 07/13/21, 07/27/21, **08/10/21, 08/24/21, 09/07/21**
NOAA-20: Monthly VIIRS LUT update of DNB Offsets and Gains	Monthly	Monthly	10/21/20, 11/24/20, 12/22/20, 01/19/21, 02/17/21, 03/23/21, 04/20/21, 05/18/21, 06/16/21, 07/20/21, **08/17/21, 09/14/21**
Block 2.3 Mx builds I&T deploy regression data review/checkout (Nov-20 Mx0; Mar-21 Mx1; May-21 Mx2; Jul-21 Mx3; **Aug-21 Mx4**)	Sep-21	Sep-21	11/24/20 Mx0 I&T review/checkout report; 12/10/20 updated Mx0 I&T review/checkout report 02/26/21: Mx1 SOL review/checkout report; 03/11/21: Mx1 I&T review/checkout report 05/20/21: Mx2 I&T review/checkout report 06/16/21: Mx3 SOL review/checkout report 07/08/2021: Mx3 I&T review/checkout report **08/03/2021: Mx4 SOL review/checkout report; 08/19/21: Mx4 I&T review/checkout report**
Parallel OPS support	Dec-20 Jan-21	Dec-20 Jan-21	11/6/2020 - 12/4/2020: daily POC support, weekly/monthly DAP deliveries (to both OPS & Cloud); 1/11/2021 – 1/21/2021 daily reportts
Verification of cloud implementation	Dec-20	Dec-20	11/06/20 - 12/04/20 daily reports 12/10/20 Mx0 I&T review/checkout report

STAR JPSS Schedule: TTA Milestones

FY21 JSTAR Number of Completed Milestones

Color code:

    Green: **Completed Milestones**

    Gray: **Non-FY21 Milestones**

ATMS SDR

Accomplishments / Events:

- Finished JPSS-3 ATMS instrument thermal vacuum (TVAC) test data analysis at CP-Mid, CP-Low, and CP-High levels. Results indicate that JPSS-3 ATMS channel NEdTs meet the requirements with margins. The striping index is also comparable to JPSS-2 and NOAA-20. The channel correlation shows a improvement from JPSS-2 and NOAA-20. However, the thermal gradients observed in JPSS-2 ATMS TVAC test are also shown in JPSS-3 TVAC data. Further investigation is still ongoing to estimate how much impact, even they could be very small, the thermal gradients may cause to the analysis accuracy.
- Analyzed ATMS engineer design unit (EDU) NGSysTE TVAC test data and evaluate its performance to support JPSS satellite gap filling discussion. Provided heritage AMSU/MHS and JPSS ATMS averaged cross equatorial time prediction until year of 2024 to estimate the satellite drifting. Compared ATMS EDU NEDT (equivalent to AMSU) to that of on-orbit AMSU/MHS aboard NOAA-19, Metop-a/b, and S-NPP to demonstrate ATMS EDU performance.
- Discussed the JPSS-4 ATMS waivers and provided comments to NASA flight team
- Kept updating ATMS SDR User's Guide document
- Published the ATMS science data quality journal article paper in Remote Sensor

Overall Status:

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

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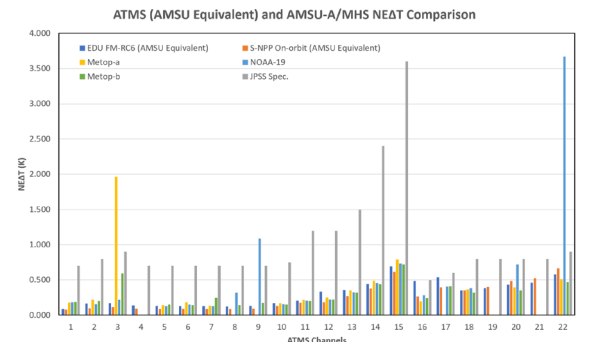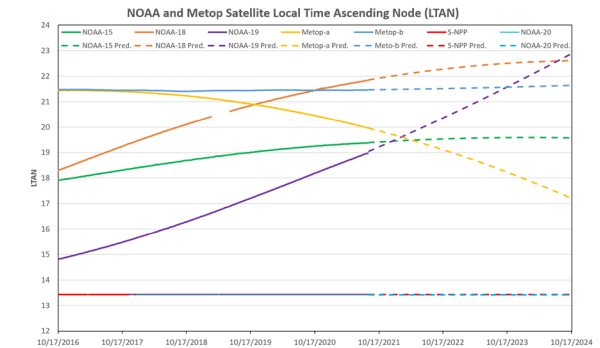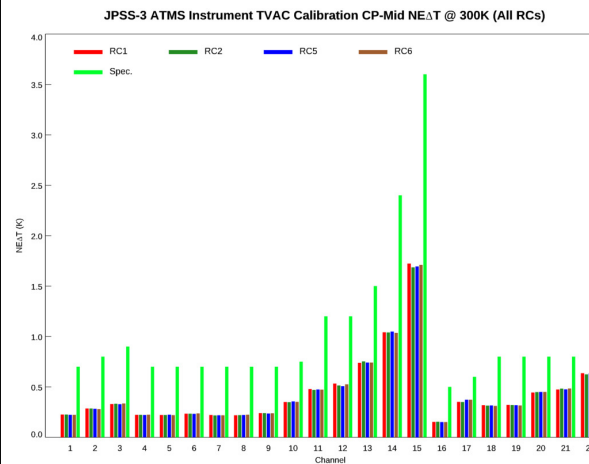4. Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/31/20	
Updated Cal/Val plan (DPMS comments)			04/30/21	
Initial J2 PCT update: re-delivery			02/05/21	
JCT2 - Data System Event	Aug-21	Aug-21	08/24/21	
Update ATMS TDR antenna pattern correction coefficients to improve SDR data quality	Jun-21	Jun-21	6/30/21	
Evaluate JPSS-2 ATMS spacecraft pre-launch testing data	Sep-21	Sep-21		
Support NASA SNPP ATMS scan motor current anomaly analysis	May-21	May-21	12/31/20	
Reprocess NPP/NOAA-20 ATMS science data using latest calibration algorithm	Sep-21	Sep-21		
Annual ATMS TDR/SDR performance report	Sep-21	Sep-21		
Parallel OPS support	Dec-20	Dec-20	Dec-20 Jan-21	11/6-12/4/20 1/11-21/21
Verification of cloud implementation	Dec-20	Dec-20	Dec-20	Report
IDPS Mx build I&T deploy support:				
Block 2.3 Mx builds I&T deploy regression data review/checkout (**Nov-20 Mx0**; **Mar-21 Mx1**; **May-21 Mx2**; **Jul-21 Mx3**; **Aug-21 Mx4**)	Sep-21	Sep-21	11/09/20 Mx0 I&T 02/16/21 Mx1 SOL 03/03/21 Mx1 I&T 05/17/21 Mx2 I&T 07/06/21 Mx3 I&T **08/12/21: Mx4 I&T**	Report

Highlights:

JPSS-3 ATMS instrument TVAC NEDT at CP-Mid

JPSS-3 ATMS Instrument TVAC Calibration CP-Mid NEΔT @ 300K (All RCs)

NOAA and Metop Satellite Local Time Ascending Node (LTAN)

ATMS (AMSU Equivalent) and AMSU-A/MHS NEΔT Comparison

CrIS SDR

Accomplishments / Events:

- On 3 August 3, 2021 the S-NPP spacecraft entered safe mode following a Sun-Point anomaly. The CrIS sensor, along with all other sensors onboard, stopped producing science data. The CrIS sensor was recovered on August 4, 2021 beginning an intensive calibration and validation period to demonstrate the consistency and quality of the CrIS SDR data (**Fig. 1**). The anomaly was declared resolved on August 9, 2021, and data distribution to users via PDA resumed.
- A test dataset of CrIS principal component scores (PCS) generated using sets of basis vectors derived from a training dataset with reduced noise shows good reconstruction of the observed CrIS radiances (**Fig. 2**). The training dataset is denoised by averaging regionally and computing an individual basis for each geographic region. This approach is a candidate for the development of a CrIS PCS product.
- Following the switch to Side-1 in July 2021, the geolocation accuracy of the S-NPP CrIS SDR data was slightly degraded with respect to the Side-2 performance. Optimized geolocation mapping angles for Side-1 were computed using three days of data. A proposed engineering packet (EP) v42 was prepared, and a test dataset was generated for validation. With the updated geolocation mapping parameters, the S-NPP CrIS geolocation uncertainty is within 250 m for all fields of regard (**Fig. 3**). Validation documentation was prepared to move forward with the operational implementation of EP v42 (**Fig. 4**).
- The eleventh instance of the NOAA-20 CrIS MWIR FOV 5 noise anomaly concluded on August 23, 2021 with noise levels returning to nominal values. During the period of elevated noise, diagnostic mode data from MWIR FOV 5 were collected on August 16, 2021. MWIR FOV 5 science data were unavailable during the collection period. The diagnostic mode data are currently being analyzed for clues about the root cause of the intermittent noise anomalies.

Overall Status:

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

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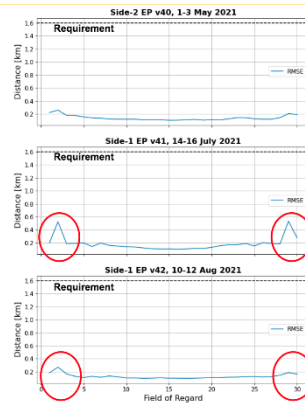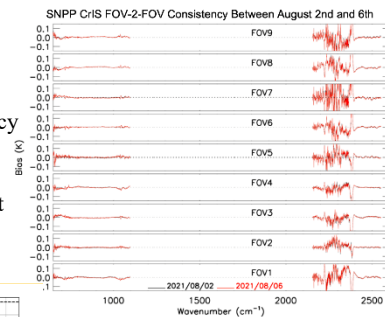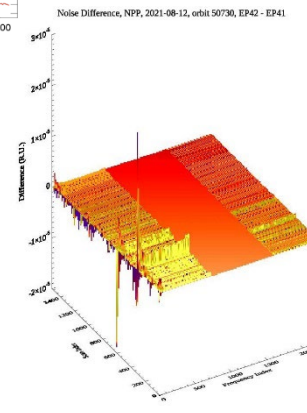
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/23/20	
Updated Cal/Val plan (DPMD comments)			04/27/21	
Initial J2 PCT update based on pre-launch test data and other changes	Oct-20	Oct-20	10/16/20	
Initial J2 PCT update: re-delivery			02/08/21	
Verification of operational CrIS SDR data at FSR after the termination of NSR data			11/06/20	
S-NPP CrIS Side-1 SDR Product at Provisional Maturity Level			07/21/21	
JCT2 - Data System Event	Aug-21	Aug-21	08/24/21	
Inter-sensor comparison: S-NPP and NOAA-20 CrIS SDR data against other IR observations, including MetOp/IASI, AQUA/AIRS and GOES/ABI	Sep-21	Sep-21		Report
Annual CrIS SDR performance report	Sep-21	Sep-21		
Parallel OPS support	Dec-20	Dec-20	Dec-20 Jan-21	11/6-12/4/20 1/11-21/21
Verification of cloud implementation	Dec-20	Dec-20	Dec-20	Report
IDPS Mx build I&T deploy support:				
Block 2.3 Mx builds I&T deploy regression data review/checkout (**Nov-20 Mx0**; **Mar-21 Mx1**; **May-21 Mx2**; **Jul-21 Mx3**; **Aug-21 Mx4**)	Sep-21	Sep-21	11/23/20 Mx0 I&T 02/24/21 Mx1 SOL 03/08/21 Mx1 I&T 05/19/21 Mx2 I&T 07/07/21 Mx3 I&T **08/17/21 Mx4 I&T**	Report

Highlights:

(1) Radiometric consistency of the S-NPP SDR data before (black) and after (red) the S-NPP Sun-Point anomaly.

(2) The very small SWIR residuals at 2500 cm-1 for radiances reconstructed from CrIS PCS using a reduced noise basis.

(3) Comparison of three S-NPP CrIS geolocation mapping parameters: Side-2 EPv40, Side-1 EPv41, and the proposed Side-2 EPv42 which reduces the geolocation uncertainty to within 250 m for all FORs.
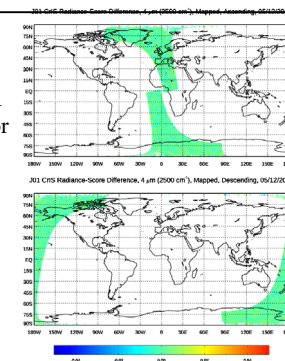
(4) Validation that the SDR generated with the proposed EPv42 produces noise comparable to the operational SDR using EPv41 for both the LWIR and SWIR bands.

VIIRS SDR

Accomplishments / Events:

- Supported VIIRS recovery from the Suomi NPP safe-mode/sun-pointing anomaly on 8/3/2021: monitored return of instrument temperatures to nominal, analyzed RSB and TEB radiometric calibration changes, evaluated quality of VIIRS SDR products, analyzed DNB electronics offset changes and updated the DN0 LUT accordingly to reduce image striping
- Created and delivered for deployment in the IDPS operations updated NOAA-20 and Suomi NPP DNB offset and gain ratios LUTs generated using the new moon calibration data from August 8, 2021
- Delivered checkout report for Block 2.3 Mx4 I&T Deploy Regression
- Analyzed JPSS-2 VIIRS RDR and SDR products generated by IDPS during JCT-2A DSE and reported analysis results: confirmed that the initial pre-launch VIIRS SDR LUTs are deployed in IDPS
- After requesting a temporary IDPS I&T subscription on GRAVITE, verified that the updated Suomi NPP DNB Moon Illumination LUT is ready for the IDPS ops for the next 10 years

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:

Degraded DNB data after recovery
Aug. 8 (~8:04 UTC)

Improved DNB data after LUT update
Aug. 13 (~8:11 UTC)

Restored nighttime DNB image quality after the new-moon based updated LUTs were deployed in the IDPS operations around 16:39 UTC on August 12, 2021

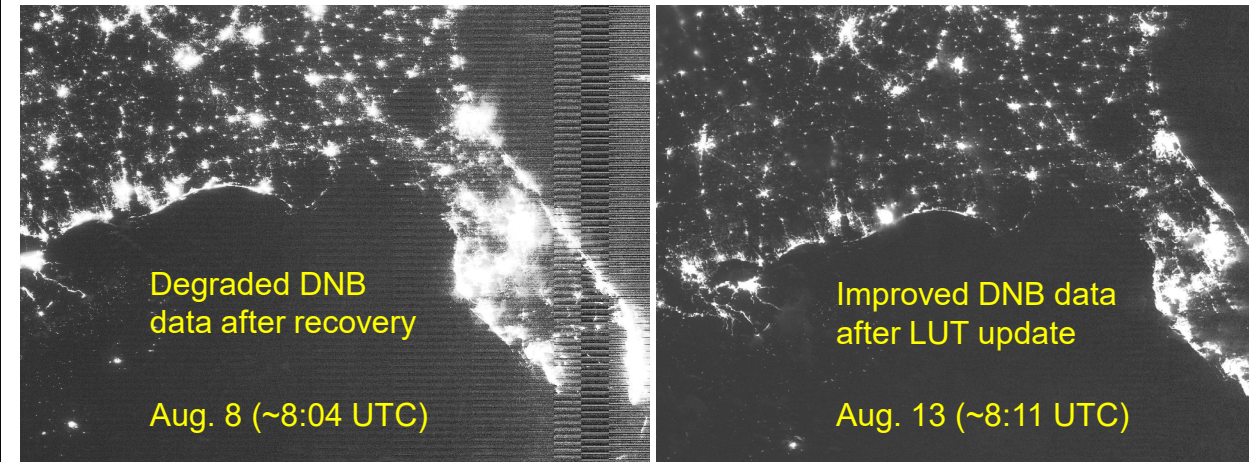| Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/23/20	
Updated Cal/Val plan (address DPMS comments)			04/28/21	
Initial J2 LUTs: re-delivery			02/10/21	
JCT2 - Data System Event	Aug-21	Aug-21	08/24/21	
Cal/Val tool testing/upgrade in the cloud computing environment	Sep-21	Sep-21		
Generate Science Quality (SQv2.0) Suomi NPP VIIRS SDR from 2017 onward to meet user needs (COVID-19, TROPOMI)	Dec-20	Jan-21	01/31/21	Hardware failure/repair
Initial NOAA-20 VIIRS recalibration & reprocessing	Sep-21	Sep-21		
Cross-calibration and monitoring between NOAA-20 and SNPP VIIRS	Sep-21	Sep-21		
Annual VIIRS SDR performance report	Sep-21	Sep-21		
N20 DNB LGS-GAINS LUT #6 update (ADR9526)			01/28/21	
N20 VIIRS Post-VIGMU Geolocation LUTs Update (ADR9599)			06/28/21	
S-NPP VIIRS-RSBAUTOCAL-DNB-MOON-ILLUMINATION-LUT Update (ADR9578)			07/23/21	
VIIRS LUT update of DNB Offsets and Gains	Monthly	Monthly	On schedule	NPP & N20
Parallel OPS support	Dec-20	Dec-20	Dec-20 Jan-21	11/6-12/4/20 1/11-21/21
Verification of cloud implementation	Dec-20	Dec-20	Dec-20	Report
IDPS Mx build I&T deploy support:				
Block 2.3 Mx builds I&T deploy regression data review/checkout (**Nov-20 Mx0; Mar-21 Mx1; May-21 Mx2; Jul-21 Mx3; Aug-21 Mx4**)	Sep-21	Sep-21	11/20/20 Mx0 I&T 02/17/21 Mx1 SOL 03/08/21 Mx1 I&T 05/14/21 Mx2 I&T 07/02/21 Mx3 I&T 07/15/21 Mx4 SOL **08/12/21 Mx4 I&T**	Report

Accomplishments / Events:

- Delivered OMPS weekly Dark tables and NP solar irradiance bi-weekly LUTs.
- Delivered the updated J2 OMPS instrument pre-launch characterization report.
- Successfully completed the SNPP OMPS NM/NP SDR data quality recovery assessment for re-operation by conducting intensive Cal/Val analyses.
- Analyzed reprocessed SNPP OMPS NM/NP SR data and compared with operational and previously reprocessed data, demonstrating high consistency (see next slide for graph).
- Significantly contributed to path forward of J2 OMPS MX4, by developing a new Python script resizing SNPP and NOAA-20 data to avoid OMPS EDR processing failure in MX4.
- Completed the code for SNPP/NOAA-20 OMPS NM/NP dark and solar flux operational processing. An additional test is in running towards replacing NASA processing dark LUT.
- Completed the initial version of J2 OMPS NM backup resolution LUTs.
- Recovered the NASA autoCal for L1A and L1B data processing for NOAA-20.
- Standardized the calculation of OMPS NP/NM SDR data SNR (90% completion).
- Presented a briefing about 2 OMPS Nadir Profilers SDR x-sensor comparison at the 2021

Overall Status:

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

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

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/18/20	
Updated Cal/Val plan (address DPMS comments)			04/29/21	
Updated JPSS-2 OMPS SDRs Pre-launch Characterization Report	May-21	Aug-21	08/31/21	
Launch-ready J2 LUTs (initial delivery), to ASSISTT	Dec-20	Dec-20	12/28/20	To ASSISTT
Launch-ready J2 LUTs (initial delivery), to DPMS	Jan-21	Mar-21	03/10/21	B2.3 Mx0 TTO
J2 NM/NP dark and solar raw flux processing package preparation	Sep-21	Sep-21		
J2 NM backup spatial resolution code development	Sep-21	Sep-21		
JCT2 - Data System Event	Aug-21	Aug-21	N/A	No OMPS SDR data
OMPS RDR to Level 1B processing code in preparation for J2	Sep-21	Sep-21		
NOAA-20 OMPS NP In-Band Stray Light (ADR9309)	Mar-21	Mar-21	02/08/21	1/14/21 to ASSISTT
SNPP/NOAA-20 NM off-nadir geolocation error correction LUTs (ADR9361)	Mar-21	Apr-21	04/16/21 (to ASSISTT) 04/30/21 (to DPMS)	NM FAM LUTs might include nadir geolocation adjustment due to a possible corner issue. Then, NP geolocation should be adjusted too.
Annual OMPS SDR performance report	Sep-21	Sep-21		
Weekly updates darks for NM and NP (NPP & N20)	Weekly	Weekly	on schedule	
Bi-weekly update NP Wavelength and solar flux (SNPP & N20)	Bi-Weekly	Bi-Weekly	on schedule	
Parallel OPS support	Dec-20	Dec-20	Dec-20 Jan-21	11/6-12/4/20 1/11-21/21
Verification of cloud implementation	Dec-20	Dec-20	Dec-20	Report
IDPS Mx build I&T deploy support:				
Block 2.3 Mx builds I&T deploy regression data review/checkout (**Nov-20** Mx0; **Mar-21** Mx1; **May-21** Mx2; **Jul-21** Mx3; **Aug-21** Mx4)	Sep-21	Sep-21	11/20/20 Mx0 I&T 02/24/21 Mx1 SOL 03/08/21 Mx1 I&T 05/19/21 Mx2 I&T 06/15/21 Mx3 SOL 07/07/21 Mx3 I&T **08/02/21 Mx4 SOL 08/18/21 Mx4 I&T**	Report

SNPP OMPS Recovery Assessment
Left Panel--Time Series of OMPS NP Wavelength Shifts; Right Panel: Geolocation Accuracy Stability
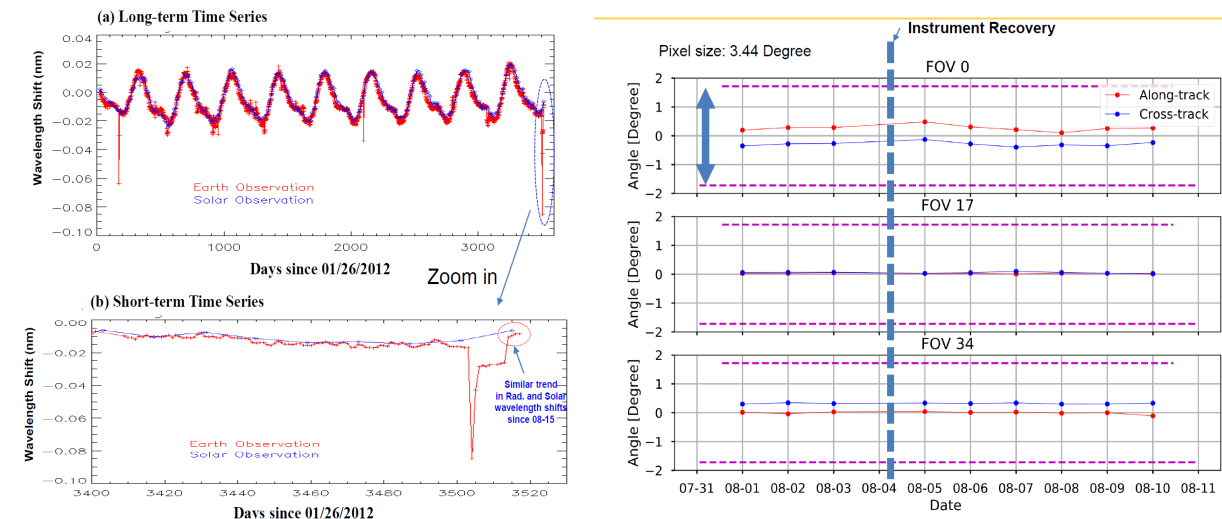

Figure Left panel: SNPP OMPS NP wavelength shift time series for long-term in (a) and short-term in (b), where the day number is calculated against 26 January 2012. SNPP OMPS NM geolocation error trend against VIIRS geolocation before and after the recovery on August 4, 2021. Right panel: SNPP OMPS NM geolocation accuracy agrees well with VIIRS geolocations before and after the recovery.
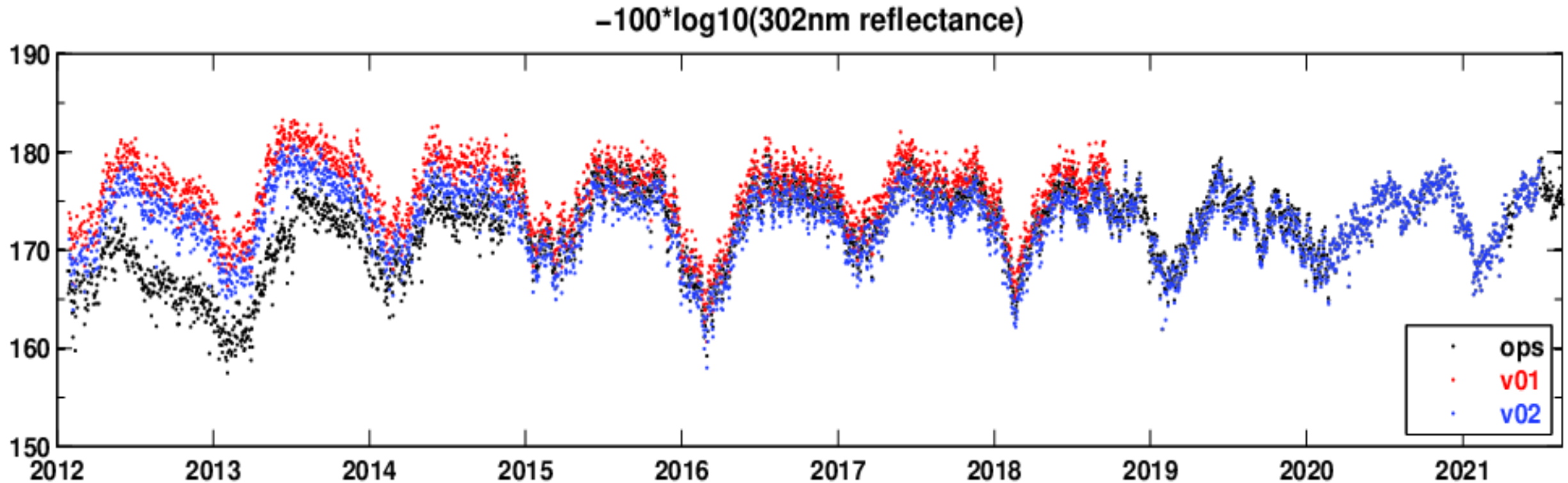
Figure Daily N-value [-100 log10(Normalized Radiance)] time series for SNPP OMPS Nadir Mapper (NM) data at 302 nm over the tropical region (20^0S-20^0N). In the figure, 'OPS' denotes the operational OMPS SDR data, while both 'v1' and 'v2' are for the previously (in 2019) and newly (2021) reprocessed data respectively. Compared with 'v1'-reprocessed data, 'v2' OMPS SDR data include the following major updates: 1) use biweekly solar look-up tables (LUTs) for OMPS NP to capture the impact of yearly instrument temperature cycle on data wavelength shift; 2) correct dark coding errors for OMPS NM; 3) use an updated straylight table; 4) implement a new empirical OMPS Nadir Mapper Field Angle Map (FAM) LUT to correct nadir off-geolocation errors. Compared with both Ops and v1-reprocessed data, the newly reprocessed OMPS SDR data demonstrate more consistent quality since the launch.

SDR Reprocessing

Accomplishments / Events:

– Discussion is ongoing to finalize the implementation details in CLASS for the transition of the reprocessed SNPP SDR data.

– Finalized the NPP SDR/TDR CLASS Family Description with the assistance of ATMS, CrIS, VIIRS and OMPS SDR teams.

– The final check of the V2 SNPP OMPS SDR reprocessing is ongoing.

– Preparation of the reprocessed CrIS-V2 is completed. (Highlights)

– Preparation of the reprocessed VIIRS and OMPS-V2 data for the official transition is ongoing. (Highlights)

– The test transition of the reprocessed SDRs from STAR to CLASS is scheduled in September 2021.

– Operational transition of the reprocessed SDRs will likely start in October 2021.

Overall Status:

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

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

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Reprocessing of N20 CrIS for 2018-04-01 to 2019-06-23	Nov-20	Nov-20	Nov-20	
Extend SNPP VIIRS reprocessing to 2020	Dec-20	Jan-21	Jan-21	The short delay was caused by one hard drive on UMD server Bamboo was down in Dec. 2020
ECM reprocessing for 2018-04-01 to 2020-03-11	Dec-20	Jan-21	Jan-21	Same as above
Present validation results on the reprocessed S-NPP SDR data at the AMS Meeting	Jan-21	Jan-21	Jan-21	
Transition of SNPP RDR and reprocessed SDR data to CLOUD	Jun-21	Jun-21	May-21	
Complete planning and testing on transition of S-NPP reprocessed SDR data to CLASS	Sep-21	Sep-21		
Deliver preliminary evaluation results on radiometric stability of reprocessed CrIS SDR data	Sep-21	Sep-22		
Transition of reprocessed SNPP SDR data to CLASS/NCEI	Sep-21	Sep-23		

Highlights:

Readiness for the Operational Transition

Instrument	Version	Start Time	End Time	Total Data Size (TB)	Completion Status
ATMS	V1	11/08/2011	03/08/2017	0.85	100%
ATMS	V2	11/08/2011	10/15/2019	1.26	100%
CrIS (NSR)	V2	02/20/2012	01/29/2020	68.36	100%
CrIS (FSR)	V2	12/04/2014	01/29/2020	74.46	100%
OMPS/TC	V1	01/30/2012	09/30/2018	1.20	100%
OMPS/NP	V1	01/25/2012	03/08/2017	0.13	100%
OMPS/TC	V2	01/30/2012	06/30/2021	1.70	90%
OMPS/NP	V2	01/25/2012	06/30/2021	0.25	1%

Accomplishments / Events:

- Provided near real time S-NPP spacecraft and instrument status and data quality monitoring report to support S-NPP recovery activities after instrument safe hold mode. An example is given in the figure.
- Closely monitored the NOAA-20 CrIS MWIR FOV5 performance and report the NEDN anomaly between August 16 and 23.
- Started checking JPSS-2 JCT2a data to verify the data format using ICVS modules, which have been updated to support JPSS-2 data processing.
- Completed ICVS testbed prototype design by integrating ICVS ATMS monitoring modules with SDR calibration algorithm updating/testing packages, such as ADL or ARTS.
- Finished developing Python toolkit to check VIIRS and OMPS reprocessing SDR data quality.
- Generated 3D animation for hurricane IDA that landed on August 29, 2021.
- Modified hurricane 3D warm core animation demonstration package to illustrate Northern American heat dome event in 2021 using ATMS SDR data only
- Introduced git version control package in STAR radiance team meeting and demonstrated the application of git in ICVS LTM module development
- Held meeting to clarify the ICVS team role in the development and maintenance of ICVS-GSICS portal.

Overall Status:

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

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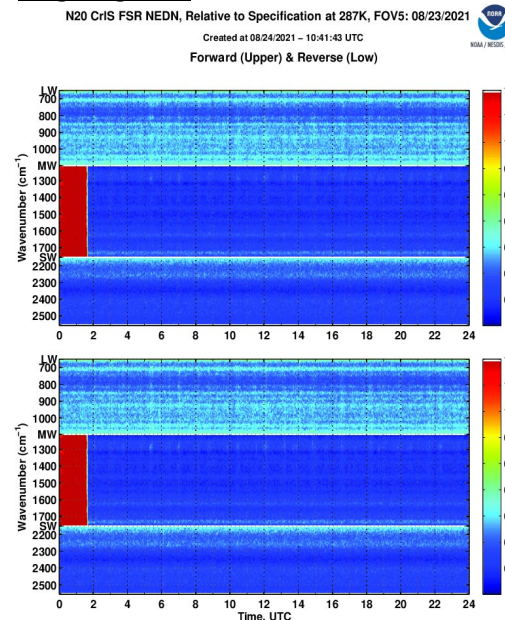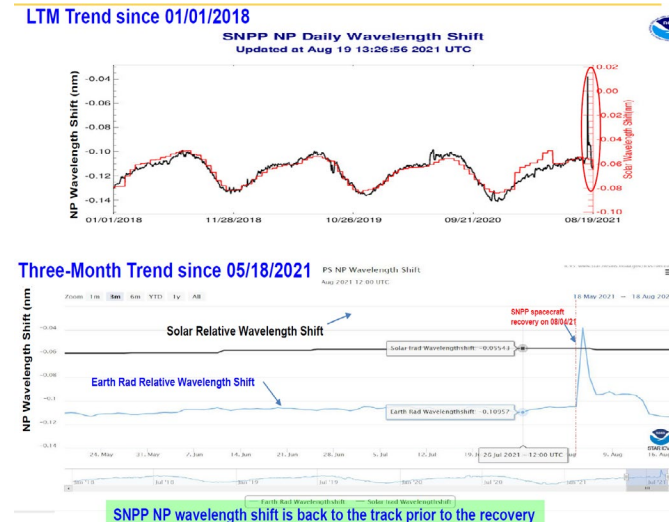
Issues/Risks:

None

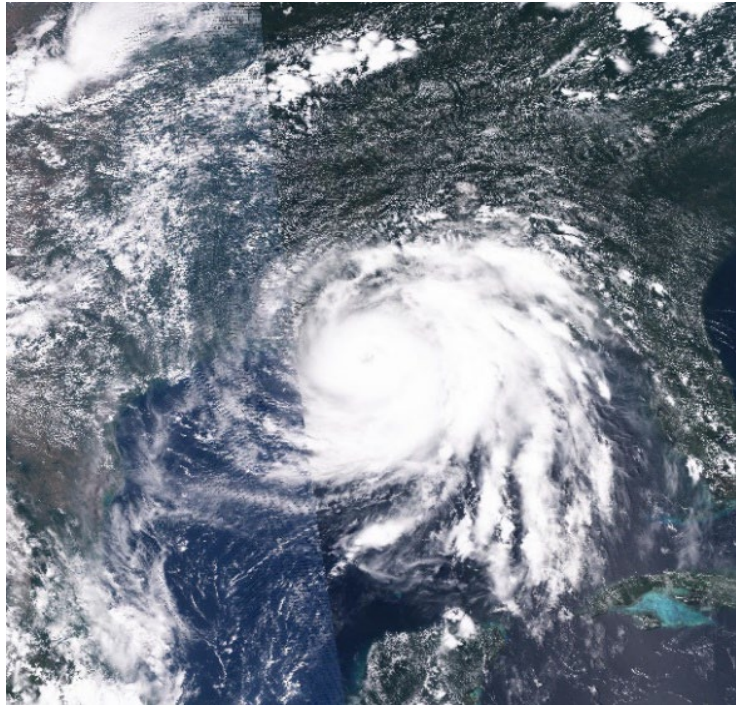| Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Develop JPSS-2 ICVS prototype RDR portion (beta) (SNPP or N20 as proxy)	Jan-21	Jan-21	Jan-21	
Develop JPSS-2 ICVS prototype SDR portion (beta)	Apr-21	Apr-21	Apr-21	
Develop ICVS-Vector code prototype (beta)	Jun-21	Jun-21	Jun-21	
Develop ICVS anomaly impact watch (AWP) portal prototype (beta)	Jul-21	Jul-21	Jul-21	
Develop ICVS testbed code (beta)	Aug-21	Aug-21	Aug-21	
Support JPSS-2 ICVS-LTM Test Readiness Review	Sep-21	Sep-21		ICVS Beta for JCT2a-DSE
Implement the Git repository for ICVS (beta)	Set-21	Set-21		
Promote the ICVS top product matrices for operation	Sep-21	Sep-21		
Maintenance and update of SNPP/NOAA-20 ICVS monitoring tool	Sep-21	Sep-21		Daily as needed
Provide Instrument Performance Weekly, Monthly, Quarterly and Annual Reports	Sep-21	Sep-21		Monthly, quarterly and annual
Support SDR Team, NASA Flight Project, and OSPO Anomaly Analysis	Sep-21	Sep-21		Ad hoc

Highlights:

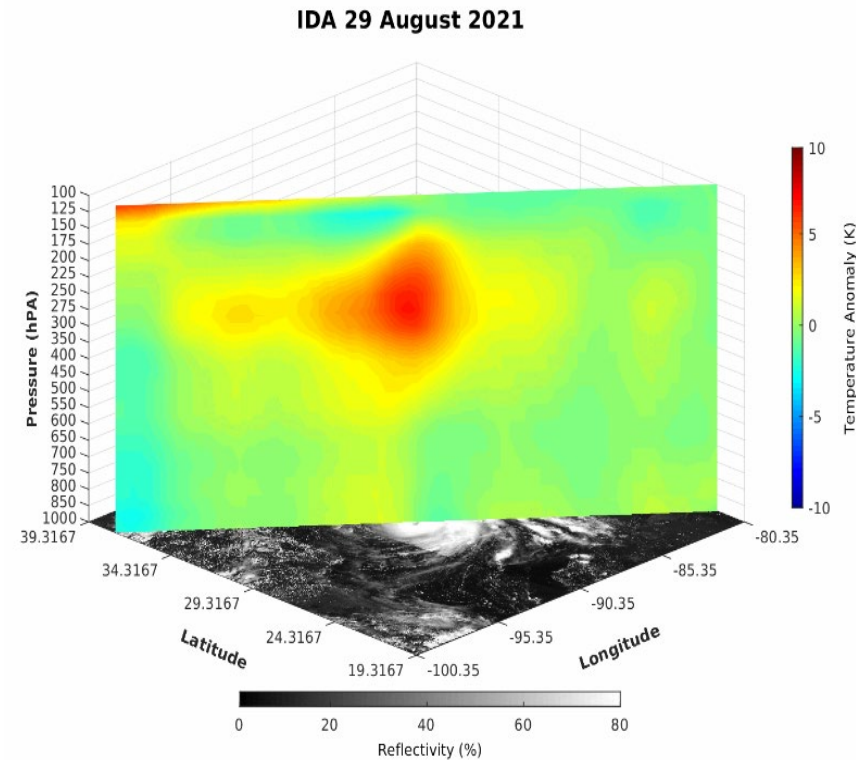### Significantly contribute to STAR SDR Teams

N20 CrIS FSR NEDN, Relative to Specification at 287K, FOV5: 08/23/2021
Created at 08/24/2021 – 10:41:43 UTC
Forward (Upper) & Reverse (Low)

Support to SNPP Instrument SDR Operation Recovery Assessment: OMPS NP Wavelength Shift Trend

LTM Trend since 01/01/2018

SNPP NP Daily Wavelength Shift
Updated at Aug 19 13:26:56 2021 UTC

Three-Month Trend since 05/18/2021

SNPP NP wavelength shift is back to the track prior to the recovery

(a) True Color RGB

(b) Daytime 3-D Animation

Figure The NOAA-20 VIIRS True Color RGB in (a) and daytime 3D animation cross-section of ATMS temperature anomaly in (b) for the hurricane IDA that landed in Louisiana on August 29, 2021 with strong wind and heavy rain, demonstrating high quality of NOAA-20 ATMS and VIIRS SDR data.

VIIRS Imagery

Accomplishments / Events:

- **Two VIIRS updates** will become operational in the Mx4 build, effective 9 Sep 2021:
  - **NCC banding anomaly fix** affecting otherwise homogenous Arctic scenes.
  - **All 16 M-band EDR Imagery** for the first time in 10 years of VIIRS imagery!
- **EDR Imagery appears ok** after the 3-4 August VIIRS safe hold shutdown of S-NPP. DNB and NCC Imagery took a while to recover from noise/striping, until a new moon LUT update.
- The Imagery Team is drafting abstracts for manuscripts to be submitted to a *Remote Sensing* special issue "VIIRS 2011–2021: Ten Years of Success in Earth Observations"
- The Imagery Team is involved in discussions about DQTTs and DQNs which have been turned off for J1/NOAA-20 and are only being used for S-NPP VIIRS.
- EDR Imagery for the Block 2.3 Mx 4 I&T Deploy Regression data was checked for STAR.
- Reminder: **Bill Line** – will be the new StAR Imagery Team Lead when Hillger retires in Dec 2021. Be sure to include him in Team Lead correspondence and meeting notices.

Overall Status:

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

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

Issues/Risks:

Code-change solution for NCC banding over Antarctica and Greenland for both NPP and J01 will be followed thru into operations.

| Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/22/20	
Updated Cal/Val plan (address DPMS review comments)			04/22/21	
DAP (ADR9466/CCR5415 VIIRS NCC Banding Anomaly) to DPMS			05/12/21	
N20 NCC LUT update DAP	Jun-21	Dec-21		To ASSISTT
N20 NCC LUT update DAP	Jul-21	Dec-21		To DPMS
Images of the Month to STAR JPSS Program/website and interesting Imagery to Social Media	Monthly	Monthly	ongoing	
Annual VIIRS Imagery performance report	Sep-21	Sep-21		Report
Verification of cloud implementation	Dec-20	Dec-20	Dec-20	Report
IDPS Mx build I&T deploy regression support:				
Block 2.3 Mx builds I&T deploy regression data review/checkout (**Nov-20 Mx0; Mar-21 Mx1; May-21 Mx2; Jul-21 Mx3; Aug-21 Mx4**)	Sep-21	Sep-21	11/15/20 Mx0 I&T 02/17/21 Mx1 SOL 03/05/21 Mx1 I&T 05/18/21 Mx2 I&T 06/09/21 Mx3 SOL 07/06/21 Mx3 I&T 07/20/21 Mx4 SOL **08/18/21 Mx4 I&T**	

Highlights:
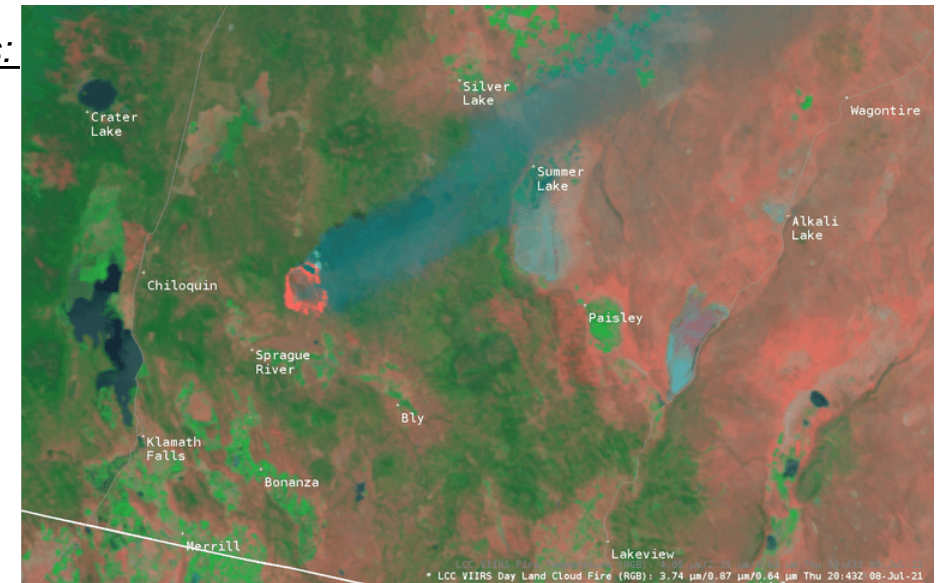
Figure: Day Land Cloud Fire RGB for the Bootleg Fire (Oregon) showing the spread of the fire between 8 and 11 July 2021 (Courtesy of VIIRS Imagery Team)

Accomplishments / Events:

- The ECM team Added a filter to ECM2 phase calc to remove ring of water phase pixels surrounding ice cloud - this issues bothers AMVs and is also seen in the Enterprise phase.
- The CIRA team updated the new aviation website for user-selective cloud cross-sections based on initial evaluations by key users supporting the JPSS Aviation Initiative/AK Cloud Demo. A new option for the manual entry of the ICAO codes was added, and PIREP symbols/locations were adjusted with minor bug corrections. NOAA-20 cross-section products were provided to Paul Suffern (NTSB) for an aircraft accident investigation which occurred near Fairbanks on 8/16. 8 passengers and one pilot were on board (a small airbus, Cessna) and no injuries were reported.
- Cloud Team is using VIIRS NASA files for ECM training/LUT creation. DNB NASA Lunar Reflectance is slightly different in comparison to DNB NOAA results. To bring NASA reflectances as close to the NOAA we used the Quadratic-Fit equation (Figure 1).

Overall Status:

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

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

Issues/Risks:

None

Milestones:
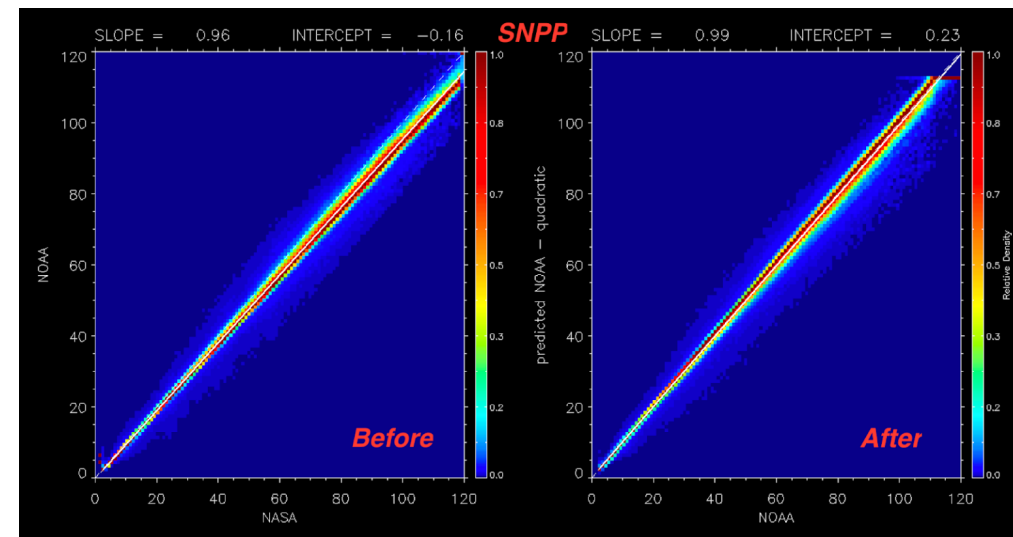
- **See next slides**

Highlights:

Figure 1. A scatter plot for a day (2019-03-21, 2019-080) of SNPP DNB Lunar reflectances between NASA (x-axis) and NOAA (y-axis). On the left is an original distribution, on the right is after the fix was implemented. This adjustment will be implemented for both satellites (SNPP and NOAA-20) for the next ECM LUT classifiers that will be using DNB information.

Clouds (Cloud Mask)

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
JPSS-2 Schedule				
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/10/20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/21/20	
Updated Cal/Val plan (address DPMS review comments)			04/23/21	
Initial J1 ready DAP to ASSISTT	Apr-20	Apr-20	Apr-20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21	04/01/21	downstream data testing
Initial J2 ready DAP to CSPP			05/26/21	
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21	Mar-21	
Final J2 ready DAP to NDE (include NPP/N20 updates)	Nov-21	Nov-21		
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Algorithm Updates/Cal-Val Activities				
Add in DNB into ECM2 LUTs	Mar-21	Mar-21	Feb-21	
Work with NCEP on ASR assimilation. Adjust mask as necessary	Mar-21	Sep-21		ASR team did an evaluation of the current ECM and is waiting for SuperDAP for ECM2 testing.
Verify ECM LUT against J2 simulated data	Aug-21	Dec-21		No J2 simulated data has been provided to teams
Support Alaska Demo and ESRL usage and reviews	Aug-21	Aug-21		This is continuous interactions
Support consistency validation of products from CSPP	Sep-21	Sep-21		
Apply CALIPSO tools to NDE Mask with Lunar Ref	Sep-21	Sep-21	May-21	
Develop collaboration wtith OAR/ESRL/GML on use of RadFlux Cloud Fraction for Verification including high-latitude sites	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		
LTM: Implement a warning-based monitoring system	Sep-21	Sep-21		

Clouds (Cloud Phase/Type)

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
JPSS-2 Schedule				
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	07/29/20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/21/20	
Updated Cal/Val plan (address DPMS review comments)			04/23/21	
Initial J2 ready DAP to ASSISTT	Apr-20	Apr-20	Apr-20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21	04/01/21	downstream data testing
Initial J2 ready DAP to CSPP			05/26/21	
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21	Mar-21	
Final J2 ready DAP to NDE (include NPP/N20 updates)	Nov-21	Nov-21		
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Algorithm Updates/Cal-Val Activities				
Optimize cloud phase thresholds for NOAA-21 and maintain code consistency with GOES-R deliveries	Mar-21	Mar-21	Feb-21	To ASSISTT
Modify phase as needed based on height/winds interaction and development from GOES-R	Aug-21	Aug-21		This is ongoing interaction with each delivery
Support S-NPP and NOAA-20 EDR monitoring	Sep-21	Sep-21		
Support consistency validation of products from CSPP	Sep-21	Sep-21		Note, due to CSPP being transitioned to SAPF, CSPP will be taking this over for future checks and ensure the DAP deliveries are consistent
Annual algorithms/products performance report	Sep-21	Sep-21		
LTM: Implement a warning-based monitoring system	Sep-21	Sep-21		

Clouds (ACHA)

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
JPSS-2 Schedule				
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/10/20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/21/20	
Updated Cal/Val plan (address DPMS review comments)			04/27/21	
Initial J2 ready DAP to ASSISTT	Apr-20	Apr-20	Apr-20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21	04/01/21	downstream data testing
Initial J2 ready DAP to CSPP			05/26/21	
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21	Mar-21	
Final J2 ready DAP to NDE (include NPP/N20 updates)	Nov-21	Nov-21		
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Algorithm Updates/Cal-Val Activities				
Support NCEPs use for ASR assimilation	Mar-21	Mar-21	Mar-21	To ASSISTT
Continue improving multilayer ACHA by analysis of CALIPSO and AEOLUS lidars and extend to level of best fit of Polar Winds	Mar-21	Sep-21		This is an ongoing assessment requiring large subset of data. Task is on track
Extend the treatment of scattering to support 3.75 micron	Aug-21	Dec-21		This is an ongoing assessment requiring large subset of data. Task is on track
Continue working with FAA for them to use ACHA products	Sep-21	Sep-21		
Continue support of Alaska Demo CTH requests	Sep-21	Sep-21		
Support consistency validation of products from CSPP	Sep-21	Sep-21		Note, due to CSPP being transitioned to SAPF, CSPP will be taking this over for future checks and ensure the DAP deliveries are consistent
Annual algorithms/products performance report	Sep-21	Sep-21		
LTM: Implement a warning-based monitoring system	Sep-21	Sep-21		

Clouds (DCOMP)

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
JPSS-2 Schedule				
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/10/20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/21/20	
Updated Cal/Val plan (address DPMS review comments)			05/11/21	
Initial J2 ready DAP to ASSISTT	Apr-20	Apr-20	Apr-20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21	04/01/21	downstream data testing
Initial J2 ready DAP to CSPP			05/26/21	
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21	Mar-21	
Final J2 ready DAP to NDE (include NPP/N20 updates)	Nov-21	Nov-21		
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Algorithm Updates/Cal-Val Activities				
Develop a method that includes IR measurements to improve the performance of potentially thin clouds using ACHA technique	Aug-21	Dec-21		This is undergoing active development
Inter-sensor calibration studies by using visible reflectance and cloud optical thickness from GOES, JPSS and MODIS. Adjust VIIRS M5 and M7 as needed	Sep-21	Sep-21		
Develop collaboration with OAR/ESRL/GML on use of RadFlux Cloud Optical Depth for Verification	Sep-21	Sep-21		
~~Support Alaska Demo, primarily during AK rainy season~~	~~Sep-21~~	~~Sep-21~~		~~Developer was unable to participate this year~~
Consistency checks for day and night retrievals	Sep-21	Sep-21		
Support consistency validation of products from CSPP	Sep-21	Sep-21		Note, due to CSPP being transitioned to SAPF, CSPP will be taking this over for future checks and ensure the DAP deliveries are consistent
Annual algorithms/products performance report	Sep-21	Sep-21		
LTM: Implement a warning-based monitoring system	Sep-21	Sep-21		

Clouds (NCOMP)

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
JPSS-2 Schedule				
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	07/29/20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/21/20	
Updated Cal/Val plan (address DPMS review comments)			05/11/21	
Initial J2 ready DAP to ASSISTT	Apr-20	Apr-20	Apr-20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21	04/01/21	downstream data testing
Initial J2 ready DAP to CSPP			05/26/21	
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21	Mar-21	
Final J2 ready DAP to NDE (include NPP/N20 updates)	Nov-21	Nov-21		
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Algorithm Updates/Cal-Val Activities				
Extend NCOMP with JPSS-2 LUT	Jul-21	Jul-21	Jun-21	
Adding improved unit test tools to science code	Sep-21	Sep-21		
Consistency checks for day and night retrievals	Sep-21	Sep-21		
Support consistency validation of products from CSPP	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		
LTM: Implement a warning-based monitoring system	Sep-21	Sep-21		

Clouds (Cloud Base)

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
JPSS-2 Schedule				
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/10/20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/21/20	
Updated Cal/Val plan (address DPMS review comments)			04/23/21	
Initial J2 ready DAP to ASSISTT	Apr-20	Apr-20	Apr-20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21	04/01/21	downstream data testing
Initial J2 ready DAP to CSPP			05/26/21	
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21	Mar-21	
Final J2 ready DAP to NDE (include NPP/N20 updates)	Nov-21	Nov-21		
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Algorithm Updates/Cal-Val Activities				
Leverage GOES-RR to target characterization of overlapping cloud assess CBH performance for multi-layer cloud systems	Jun-21	Oct-21		Model dev and performance ready for VIIRS assessment Implementation to take several months
leverage DCOMP nighttime COD (DNB) to improve performance over IR-only	Sep-21	Sep-21	Feb-21	To ASSISTT
Validate products from SAPF and begin ARM data analysis to fill CALIOP/CloudSat void	Sep-21	Sep-21		
Support Alaska Demo and necessary reviews	Sep-21	Sep-21		
Support consistency validation of products from CSPP	Sep-21	Sep-21		Note, due to CSPP being transitioned to SAPF, CSPP will be taking this over for future checks and ensure the DAP deliveries are consistent
Annual algorithms/products performance report	Sep-21	Sep-21		
LTM: Implement a warning-based monitoring system	Sep-21	Sep-21		

Clouds (CCL)

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
JPSS-2 Schedule				
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	07/31/20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/21/20	
Updated Cal/Val plan (address DPMS review comments)			04/27/21	
Initial J2 ready DAP to ASSISTT	Apr-20	Apr-20	Apr-20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21	04/01/21	downstream data testing
Initial J2 ready DAP to CSPP			05/26/21	
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21	Mar-21	
Final J2 ready DAP to NDE (include NPP/N20 updates)	Nov-21	Nov-21		
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Algorithm Updates/Cal-Val Activities				
Include super-cooled and convective probability	Mar-21	Mar-21	Feb-21	To ASSISTT
Continue the visualization and demonstration of CCL for the Aviation Weather Center, with focus on Alaska Region and Hawaii	Sep-21	Sep-21		
Support Alaska Demo and necessary reviews	Sep-21	Sep-21		
Support consistency validation of products from CSPP	Sep-21	Sep-21		Note, due to CSPP being transitioned to SAPF, CSPP will be taking this over for future checks and ensure the DAP deliveries are consistent
Annual algorithms/products performance report	Sep-21	Sep-21		
LTM: Implement a warning-based monitoring system	Sep-21	Sep-21		

Aerosol

Accomplishments / Events:

- Reprocessing of aerosol detection product has started and is ongoing on the AWS Cloud. Arrangements are being made to distribute reprocessed AOD to users for assimilation studies. Time series analysis is being carried out to de-trend the AOD data for COVID-19 impact studies
- COVID-19 induced fingerprints of a new normal urban air quality in the United States paper has been published in JGR-Atmosphere by Kondragunta et al.
- The Level 3 gridded AOD products are all organized and streamlined with missing days backfilled and so forth.
- Conducted some aerosol detection product analysis for STAR-GML collaborative work. Provided SNPP and NOAA-20 VIIRS aerosol index data to GML for further analysis.
- Draft manuscript by Ciren and Kondragunta on special aerosol detection algorithm run using L1B from eMAS instrument on DC8 during FIREX-AQ field campaign has been completed. This work helped evaluate some of the pixel screening thresholds we use in the detection algorithm.

Overall Status:

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

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

Issues/Risks:

No risks

Highlights: Near real time SNPP + NOAA-20 VIIRS surface PM2.5 product aids operational forecasters with forecast guidance during extreme fires in August

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
JPSS-2 Schedule				
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/15/20	AOD
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	08/10/20	ADP
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/15/20	AOD
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/31/20	ADP
Updated Cal/Val plan (address DPMS review comments)			04/28/21	AOD
			05/10/21	ADP
Initial J2 ready DAP to ASSISTT	Apr-20	Apr-20	Apr-20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21	04/01/21	downstream testing
Initial J2 ready DAP to CSPP			05/26/21	
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21	Mar-21	
Final J2 ready DAP to NDE (include NPP/N20 updates)	Nov-21	Nov-21		
Algorithm Updates Review	Sep-20	Sep-20	08/18/20	
Algorithm Updates/Cal-Val Activities				
Details in next slides				

Daily (24-Hour Average) Fine Particles estimated from VIIRS Aerosol Optical Depth 16 Aug 2021

PM2.5 Air Quality Index (AQI)
Good | Moderate | USG | Unhealthy | V. Unhealthy | Hazardous

Aerosol (AOD & ADP) Milestones

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Algorithm Updates/Cal-Val Activities				
Aerosol Optical Depth (AOD):				
Update surface reflectance relationships using current functional relationship with extended S-NPP, NOAA-20 and AERONET data	May-21	May-21	May 2021	
Improve angular and seasonal representation of surface reflectance relationships	Jul-21	Jul-21	July 2021	
Update preliminary LUT and gas-absorption parameterization for J2 if needed	Sep-21	Sep-21		
Evaluate merged S-NPP/NOAA-20 AOD product	Jun-21	Jun-21	June 2021	
Evaluate gridded AOD products	Jul-21	Jul-21	July 2021	
Continue individual AOD product (S-NPP, NOAA-20) validation and cross-validation	Aug-21	Aug-21		
Maintain satellite-ground AOD matchups used for products evaluation	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		
Aerosol Detection (ADP):				
Improve dust detection over the vegetated surface	Jun-21	Jul-21	July 2021	
Develop surface type-dependent thresholds over land	Jun-21	Jun-21	June 2021	
Exploring the use of trace gases product from TROPOMI to separate smog from smoke	Jun-21	Jun-21	June 2021	
Exploratory research on an approach to combine CO/CO2 absorption bands with AAI to expand smoke detection for thick/brownish smoke plumes even over clouds	Sep-21	Sep-21		
Continue long-term validation of SNPP and NOAA-20 VIIRS ADP by comparisons with AERONET, CALIPSO, MISR, and IMPROVE	Jun-21	Jun-21	June 2021	
Exploring the angular dependence of ADP by combing NOAA-20 with SNPP	Jun-21	Aug-21	TBD	Work ongoing. Will be completed in August
Annual algorithms/products performance report	Sep-21	Sep-21		

Volcanic Ash

Accomplishments / Events:

- Demonstrated tailored agile processes, putting together lessons learned presentation for September
- Establishing experimental event driven VOLCAT/HYSPLIT workflow with OAR
- Participation in Science Innovation Strategic Planning
- Maintained and verified quality of S-NPP and NOAA-20 Volcanic Ash products (JPSS EDR and Volcat)

Overall Status:

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

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

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/15/20	
Updated Cal/Val plan (address DPMS review comments)			04/29/21	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21	04/01/21	downstream testing
Initial J2 ready DAP to CSPP			05/26/21	
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21	Mar-21	
Final J2 ready DAP to NDE (include NPP/N20 updates)	Nov-21	Nov-21		
Software and LUT updates in preparation for J2	Sep-21	Sep-21		
Refine thresholds and LUT's for S-NPP and NOAA-20 as needed	Sep-21	Sep-21		
Development activities that support transition to VOLCAT	Sep-21	Sep-21		
Routinely validate volcanic ash products	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		

Highlights: *Volcanic Ash height for "Do Not Fly" area identification*
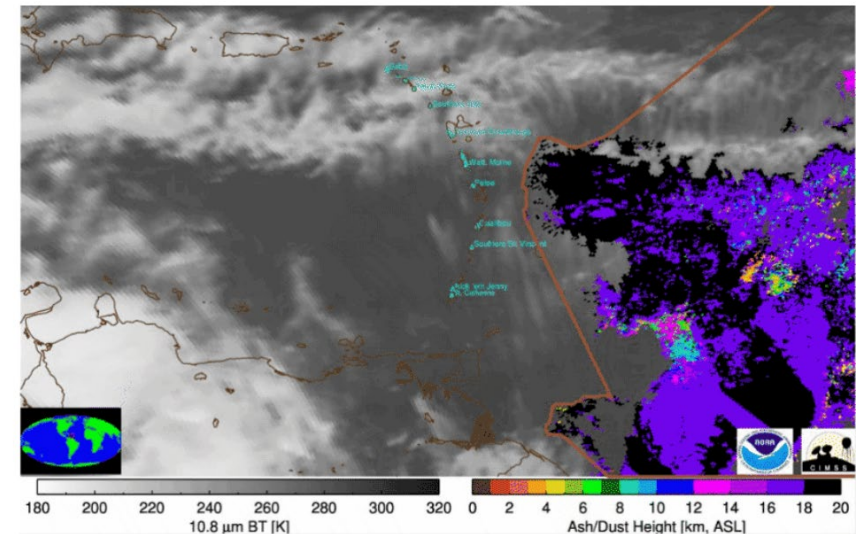
VOLCAT shows the evolution of ash height for an explosion from Soufrière St. Vincent that began 13 April. The rainbow colors indicate ash height and overlie the grayscale infrared imagery. ASL = above sea level; BT = brightness temperature. Credit: NOAA

Cryosphere

Accomplishments / Events:

NOAA Cross Line Office Sea Ice Workshop: NOAA held a three-day, cross-line office (LO), virtual workshop focused on sea ice, 30 August - 1 September 2021. The purpose of the workshop was to capture and document specific sea ice needs and requirements in order to enhance current forecasting services and collaboration among the NOAA LOs. Rick Spinrad, NOAA Administrator, gave the keynote address. Jeff Key, Sean Helfrich, Eric Bayler, and Yinghui Liu (STAR) participated. Helfrich, Bayler, and Key led breakout sessions and promoted the JPSS sea ice products. The workshop report will be available in November.

Validation of S-NPP VIIRS sea ice thickness product with IceSat-2 sea ice thickness product. The S-NPP VIIRS sea ice thickness product (v4.6) compared favorably to the ICESat-2 L4 Monthly Gridded Sea Ice Thickness, Version 1 product (see Highlight)

I-band Ice Thickness: The Cryosphere team is now routinely producing ice thickness at image-band resolution (350 m) from VIIRS data on S-NPP. The I-band ice thickness agrees with the M-band ice thickness remarkably well and reveals more spatial features. I-band ice thickness for NOAA-20 VIIRS is being implemented and will be available soon.

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/Comments
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/30/20	
Updated Cal/Val plan (address DPMS review comments)			04/28/21	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21	04/01/21	downstream testing
Initial J2 ready DAP to CSPP			05/26/21	
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21	Mar-21	
Final J2 ready DAP to NDE (include NPP/N20 updates)	Nov-21	Nov-21		
Preparation for JPSS-2	Sep-21	Sep-21		
Transition VIIRS Enterprise snow algorithms to operations for ABI	Mar-21	Mar-21	Mar-21	
Continued validation of NOAA-20 and S-NPP products: Product error assessments and improvements/updates	Sep-21	Sep-21		
Continuous monitoring of S-NPP and NOAA-20 products	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		

Highlights: S-NPP VIIRS Sea Ice Thickness compares favorably to IceSat2 Sea Ice Thickness.

More thin ice (< 1m) is estimated by the ICESat-2 product, but the peak ice thickness in both products is about 1.8m. The mean ice thickness for the ICESat-2 product for April 2020 was 1.76m, compared to 1.68m for S-NPP VIIRS. Standard deviations were 0.94m and 0.56m, respectively. The difference in sea ice thickness from the two products is shown in Figure 3. The products compare favorably, as the peak difference is near zero.
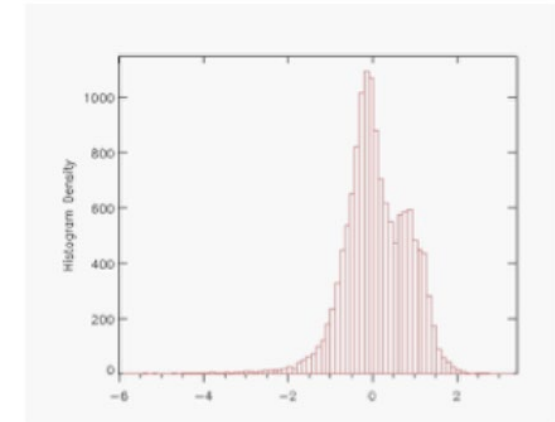
NPP-VIIRS ice thickness (m) minus ICESat-2 thickness (m) for April 2020.

Accomplishments / Events:

- The active fire team delivered an updated version of the code to identify persistent anomalies to the CSPP development team. If testing and integration is successful, the next version of the CSPP active fire software will include the persistent anomaly information in the output similar to that in the operational NDE product.
- The team worked on algorithm refinements to improve detection performance under heavy smoke and thin cloud cover conditions. Initial results show better detection of a real fire front, but also some spurious detections.

Overall Status:

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

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

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/30/20	
Updated Cal/Val plan (address DPMS review comments)			04/27/21	
Initial J2 Active Fires DAP (I-Band) to NDE			06/24/20	
Final J2 updates DAP to ASSISTT	Aug-21	Aug-21	Jun-21	
Final J2 Active Fires DAP to NDE	Oct-21	Oct-21		
I-band algorithm improvements	Sep-21	Sep-21		
J2 readiness and sensor performance evaluation	Sep-21	Sep-21		
ASSIST, NDE and DB integration and testing support	Sep-21	Sep-21		
Suomi NPP / NOAA-20 data analysis and feedback	Sep-21	Sep-21		
Persistent anomaly data files updates	Quarterly	Quarterly		
Annual algorithms/products performance report	Sep-21	Sep-21		
Active Fires Patch DAP to NDE			12/01/20	

Highlights: Improved detection under heavy smoke and thin cloud
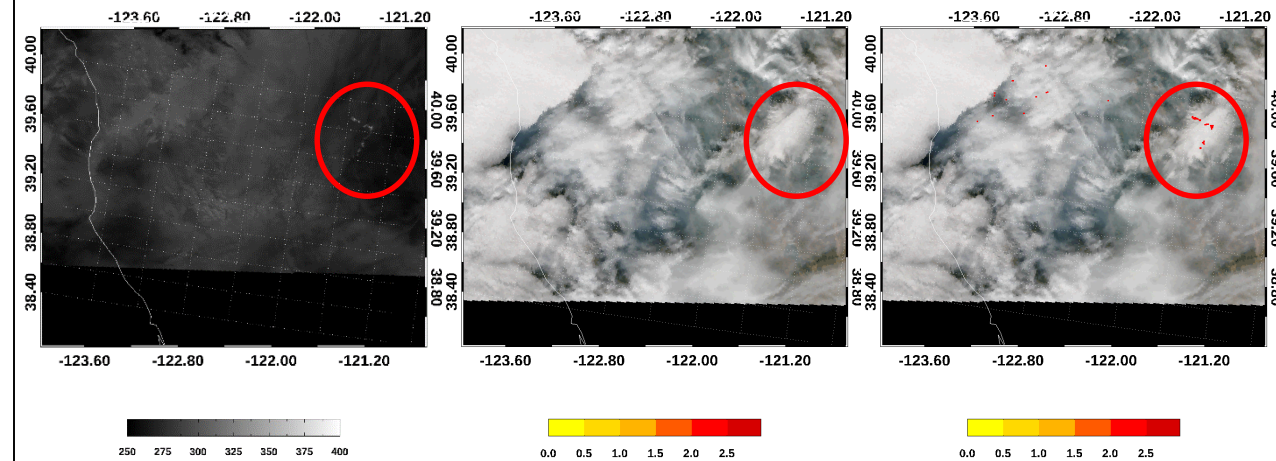
Suomi NPP VIIRS I-band data from November 13, 2018 at 21:36 UTC. Left: VIIRS I4 brightness temperature greyscale image, with the fire front clearly visible. Middle: current operational Fire Radiative Power product over a VIIRS RGM image (i.e. no detection); right: experimental FRP data (i.e. correct detection of the fire front; some spurious detections to the west).

Surface Type

Accomplishments / Events:

– STAR-UMD VIIRS Surface Type team has processed S-NPP and NOAA-20 VIIRS granule surface reflectance data acquired in August 2021.

– The team has produced the AST2020 product, which integrates the 2012-2019 climatology product, SVM classification of 2020 VIIRS observations, and several newly available 10M-30M global land cover and urban maps

– The 10M-30M global land cover products made it possible to improve the characterization of difficulty to map surface types such as urban and cropland (see highlights).

Overall Status:

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

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

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/24/20	
Updated Cal/Val plan (address DPMS review comments)			04/28/21	
AST2020 (Annual Surface Type):				
Complete monthly composites of global gridded VIIRS data (9 land bands + thermal bands) for VIIRS AST20 based on 2020 VIIRS data. Generate global annual classification metrics	May-21	May-21	May-21	
Generate VIIRS AST20 based on 2020 VIIRS data using SVM algorithm	Aug-21	Aug-21	Aug-21	
Comparison of AST20 with surface type validation data	Sep-21	Sep-21		
Delivery of AST20 (available for users through STAR FTP)	Sep-21	Sep-21		
AST DAP NDE delivery (ASSISTT, with JRR DAP)				
Deliver AST-2018 to NDE	Jan-21	Mar-21	04/01/21	10/1/20: SCR
Deliver AST-2019 to NDE	Nov-21	Nov-21		
Annual performance report	Sep-21	Sep-21		

Highlights:

Improved mapping of cropland (top row, yellow) and urban (bottom row, red) in the new AST2020 product as compared to the multi-year climatology product, which can be verified using high resolution Google Earth images (right).

Multi-year Climatology · AST 2020 · Google Earth Image

Surface Reflectance
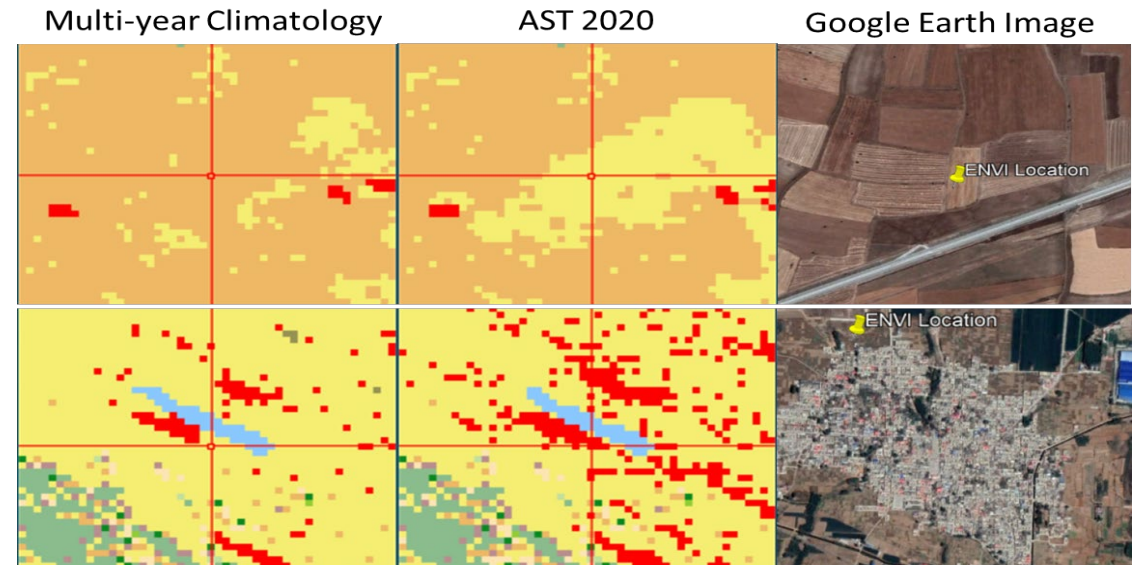
Accomplishments / Events:

- Applied VIIRS SR monitoring tool to routinely check the product, evaluating the impact of VIIRS outrage (August 3-4, 2021) on the SR product, check the data missing using the true color image, and compare the inter-comparison results before and after the outrage, and with long-term results as well.

- Investigated the aerosol model definition in the VIIRS AOD EDR product, and evaluate its impact in the SR AERONET validation.

- Completed the first version of AEROENT SR validation tool, and performed the validation for both SNPP and NOAA20 VIIRS SR product using 3 months global data.

- Analyzed the preliminary validation results (inter-comparison with VNP09, in-situ validation with AERONET) and summarized the SR product performance.

Overall Status:

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

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

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/30/20	
Updated Cal/Val plan (address DPMS review comments)			04/28/21	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Apr-21	04/19/21	downstream testing
Initial J2 ready DAP to CSPP			04/22/21	
Final J2 ready DAP to ASSISTT	May-21	May-21		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Oct-21	Oct-21		
NOAA-20 algorithm adjustments (I3 bad detector)	May-21	May-21	04/19/21	
Algorithm testing and updates (ECM, QF)	Sep-21	Sep-21		
ASSIST integration and testing support of updated code delivery	Sep-21	Sep-21		
Continuing LTM and extension to NOAA SR products	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		

Highlights:
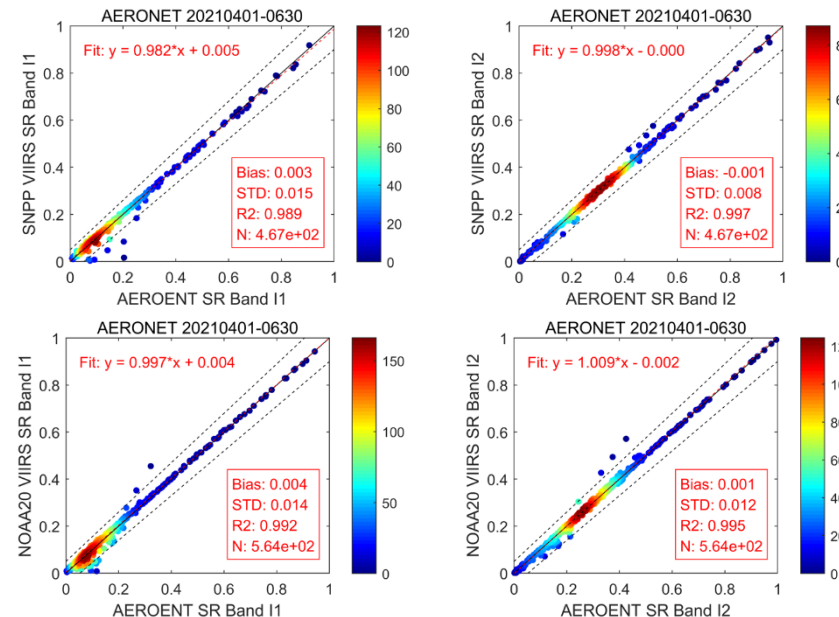
- SNPP and NOAA-20 SR product (I1 and I2 bands) validation results at AERONET
- The results show both SNPP and NOAA20 SR have good agreements with AERONET SR, particular for the longer wavelength bands.
- Most bands meet the requirement (0.05 + 0.05*r), Blue bands (M1-M3) have larger uncertainty due to sensitivity to aerosol.

■ VIIRS Outrage Impact Evaluation
- The monitoring tool of daily true color image is used to check the SR data missing due to the outrage event.
- The inter-comparison tool is used to evaluation the SR performance before and after the outrage. three groups (3-day before and after outrage data at BELMANIP2 sites as well as 3-month long term data) data are employed to do the inter-comparison with VNP09GA SR product.
- The results shows a little bit worse agreements for some bands after the outrage, but overall, the impact is limited.
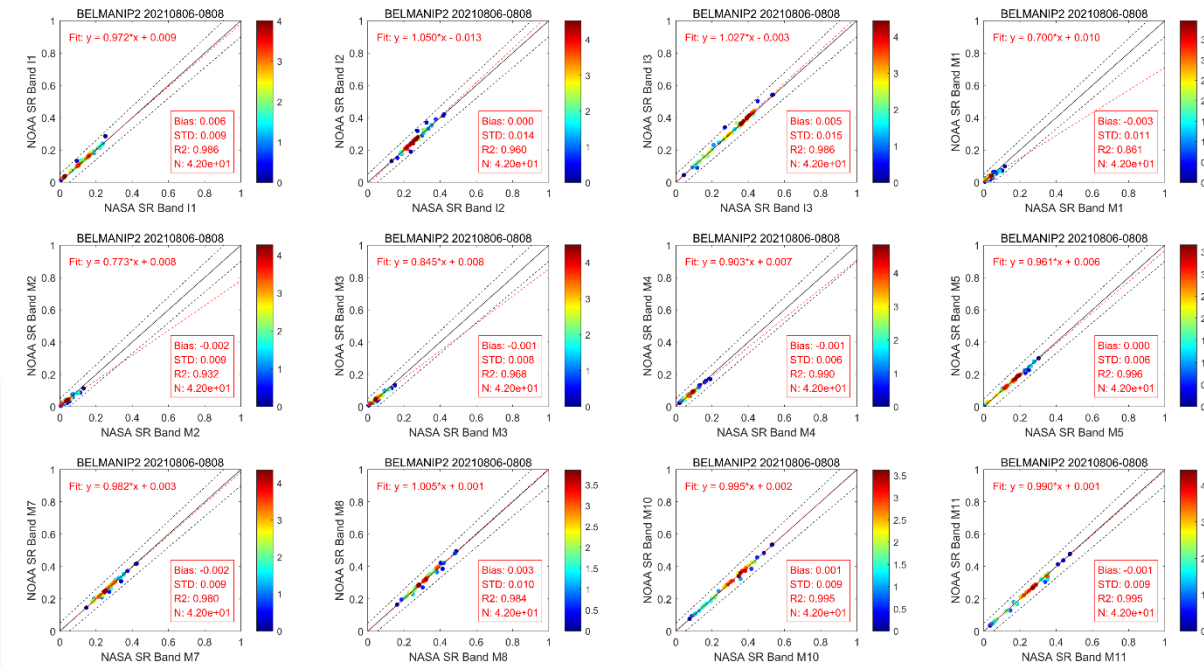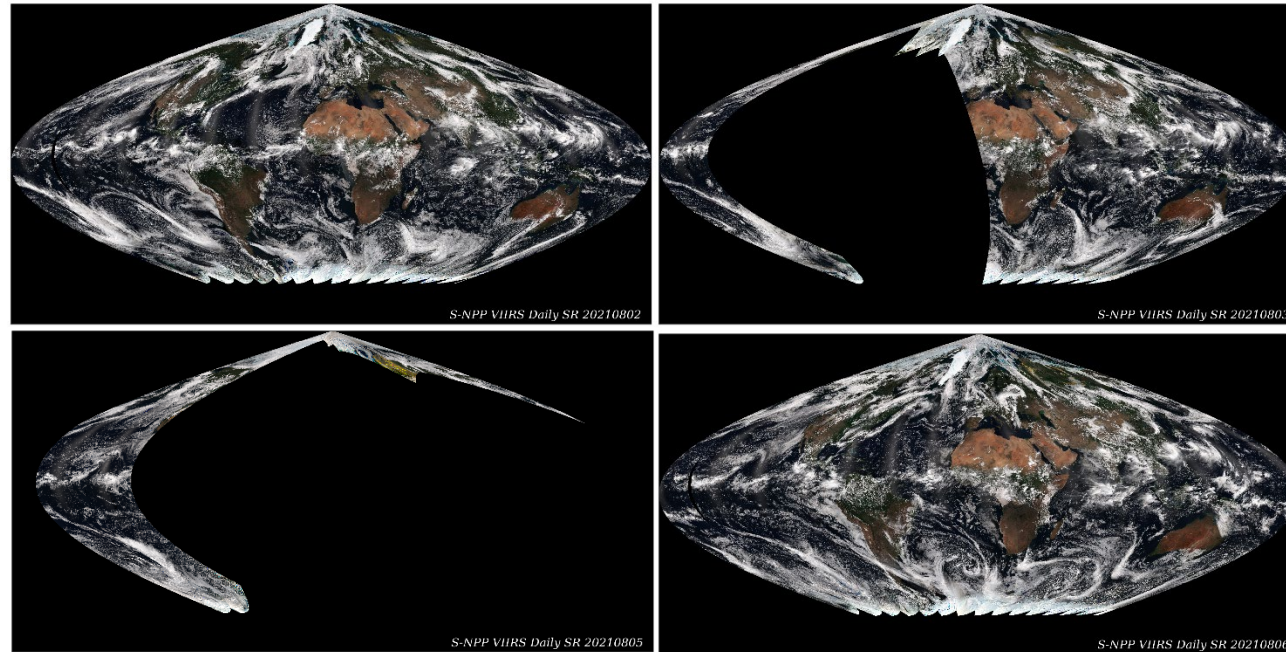
Post-Outrage datasets are three days' data after the outrage event (August 6-8)
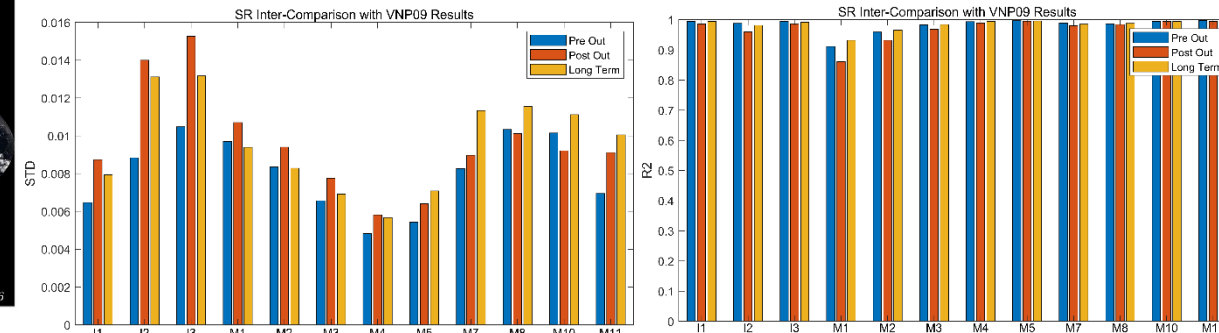
According to the true color images from the VIIRS SR Monitoring tool, there are significant data missing on August 3rd and 5th, there are no data from SCDR for August 4th, from August 6th, the data are back to normal visually.

- For the STD, I bands, M1-M3, post outrage are larger than pre outrage and long term, M5-M11 are close to long term values.
- For the R2, similar as STD, I bands, M1-M3, post ones are a little bit worse, M5-M11 are very close

- ■ VIIRS SR validation at AERONET
- • The matchup tool to select the valid AERONET measurements along with the inversions, then match with the VIIRS SDR and SR EDR subset (51*51 M band pixels).
- • The validation tool first atmospherically correct VIIRS TOA reflectance using the AEROENT in-situ data, and then evaluate the VIIRS SR product.
- • The AERONET sites are globally distributed as figure shows bellow.
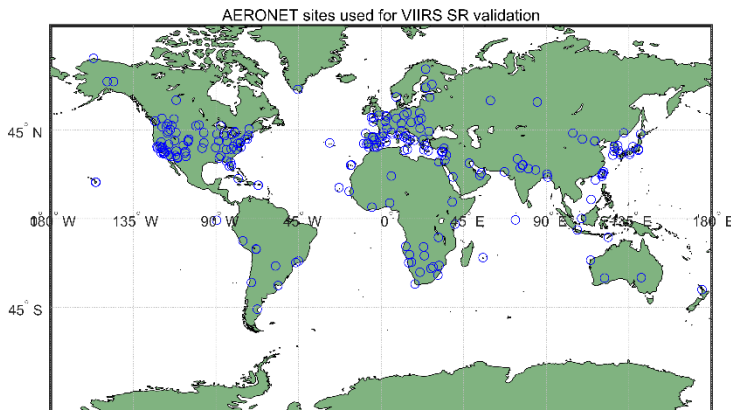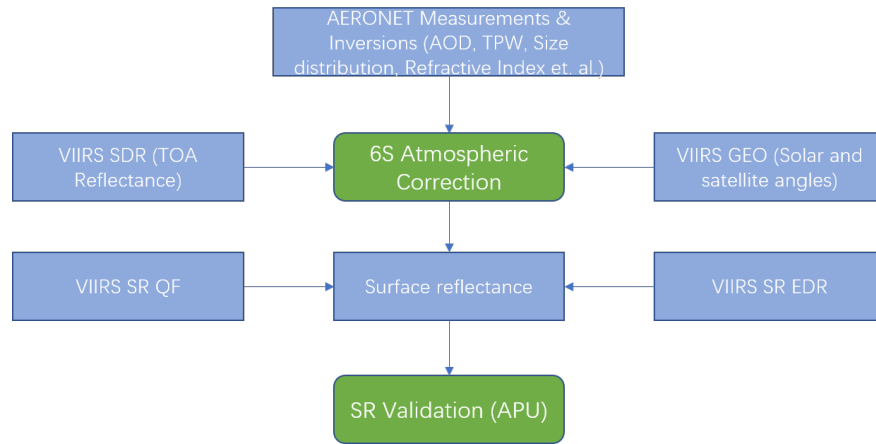
The location of AERONET sites used in the SR validation.

Land Surface Temperature
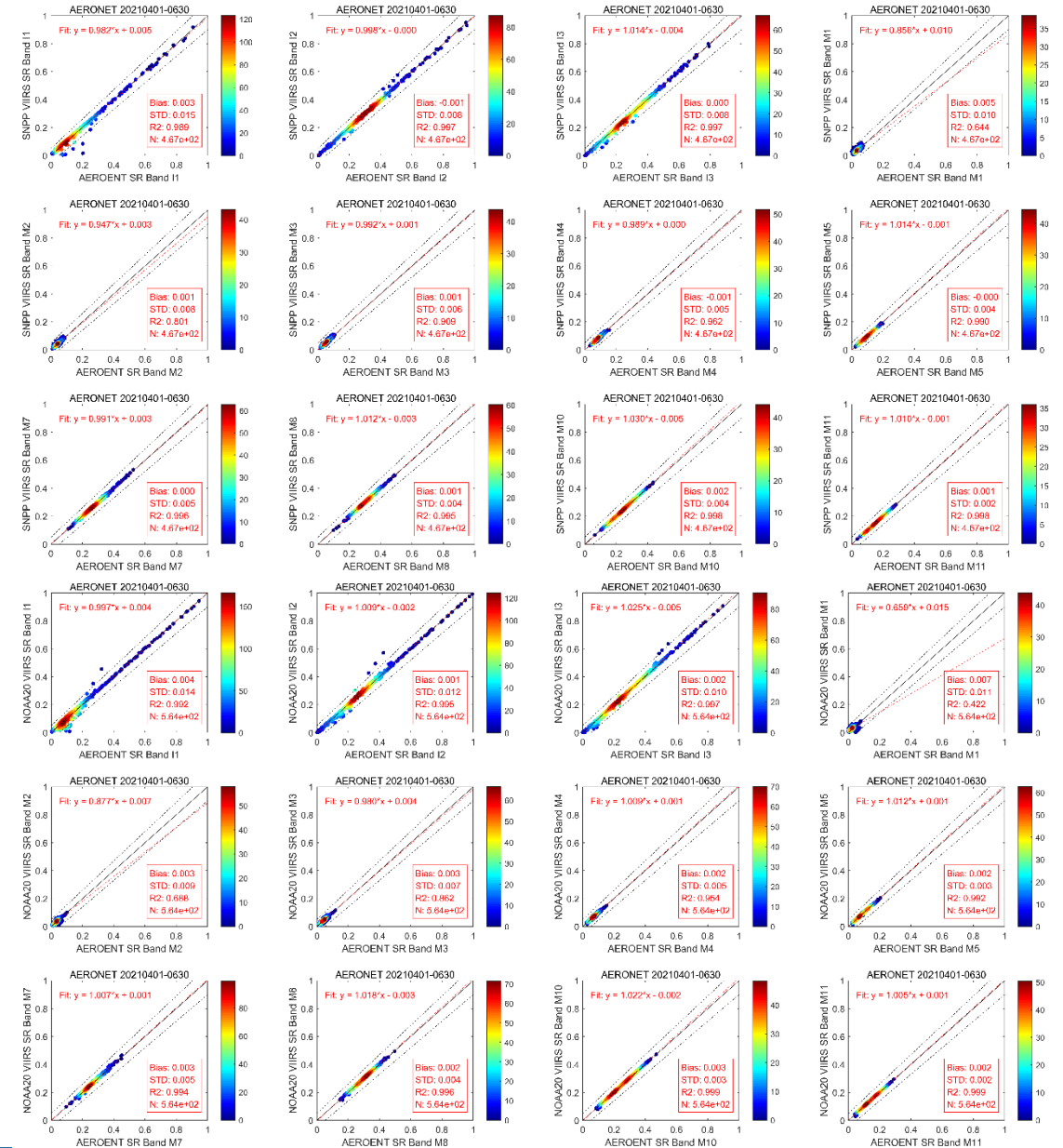
Accomplishments / Events:

- Revised the webpage contents for STAR LST webpage update
- Conducted the test for uncertainty contribution from Ts interpolation and emissivity interpolation using profiles at nighttime (slide 2)
- Submitted the monthly LST anomaly report for July.
- Updated the L3 VIIRS LST validation results against ground measurements from SURFRAD, ARM and BSRN. Investigated the overestimation observed in the ARM validation. (slide 3-5)
- Investigated the L3 VIIRS LST DAP integration from ASSISTT team (highlight).
- Built up the second version simulation database to improve the algorithm performance under high temperature condition. The test is ongoing. (slide 6)

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
CalVal report on current SNPP and N-20 Product	Dec-20	Dec-20	Dec-20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/31/20	
Updated Cal/Val plan (address DPMS review comments)			04/28/21	
Initial J2 ready DAP to NDE (include NPP/N20 updates, ASSISTT delivery)	Jan-21	Mar-21	04/01/21	downstream testing
Initial J2 ready DAP to CSPP			05/26/21	
Final J2 ready DAP to ASSISTT	Mar-21	May-21	May-21	
Experimental error estimate dataset	May-21	May-21	May-21	
Validation and improvement of L3 LST product	Jul-21	Jul-21	May 21	Delivered together with J2 ready DAP
Annual algorithms/products performance report	Aug-21	Aug-21		The report will be presented to the JPSS annual meeting in Oct.
Validation tool update; Validation with extended data set	Sep-21	Sep-21		
Routine Validation of L2 LST & gridded LST products	Sep-21	Sep-21		
Final J2 ready DAP to NDE (include NPP/N20 updates, ASSISTT delivery)	Nov-21	Nov-21		

Highlights:

L3 VIIRS LST DAP verification

LST Difference Image (Test-Ops) on 20210129 Day

20210129:Day

SAMPLES: 33350363
STD(K): 0.000
BIAS(K): 0.000
RMSE(K): 0.000
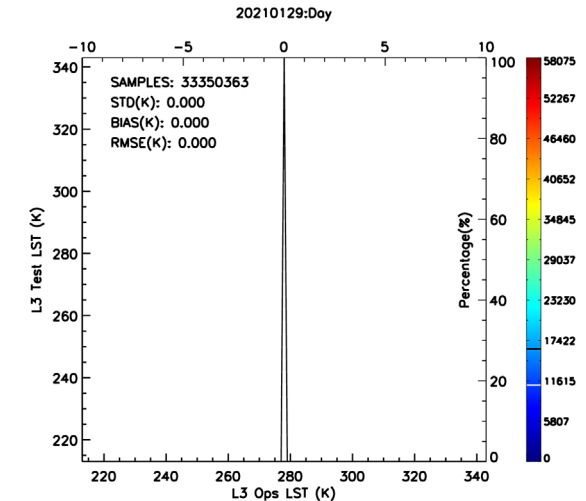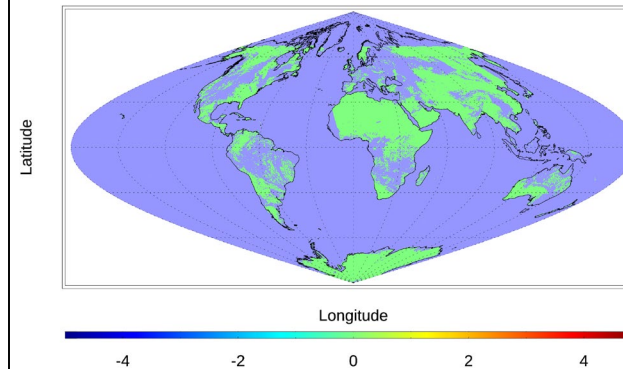
The comparison was performed between the ASSISTT implementation result and our local generation using the same input. The results are identical which indicates the successful implementation.
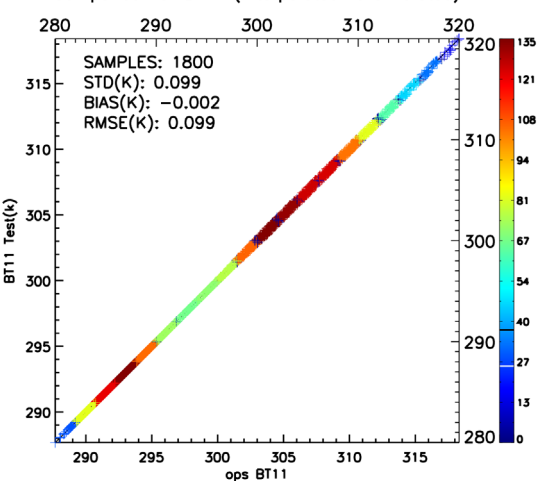
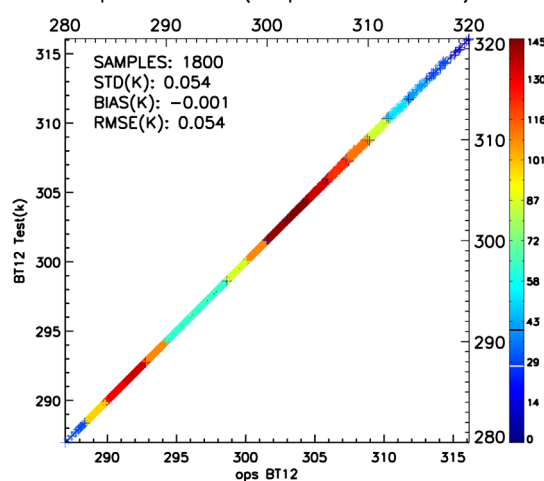**Emis interpolation**
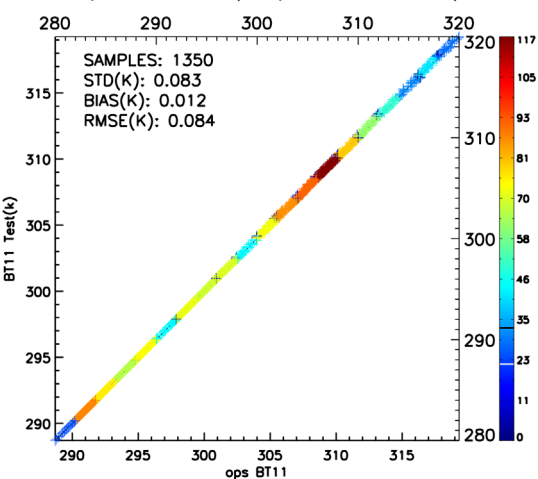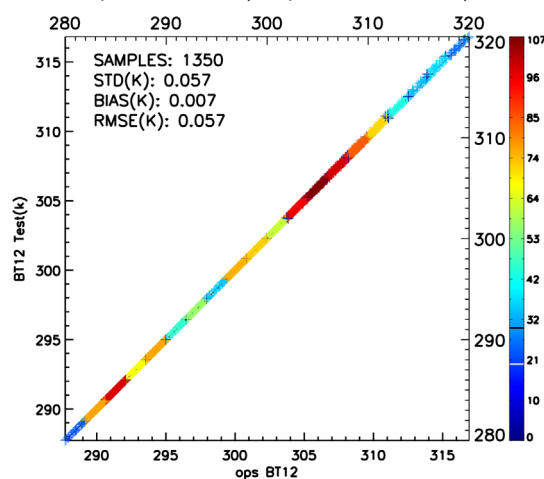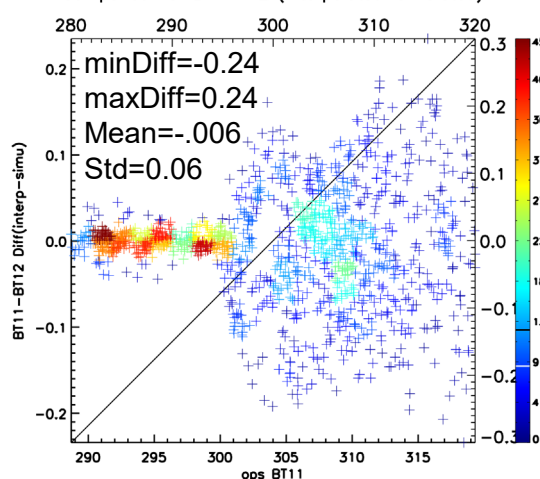
Ts interpolation

- The result is compared between the interpolated database and the Modtran output
- Top is emissivity interpolation and bottom is Ts interpolation: BT11, BT12 and BT difference (BT11-BT12) between the interpolated and MODTRAN output where "ops" represents the interpolated data.
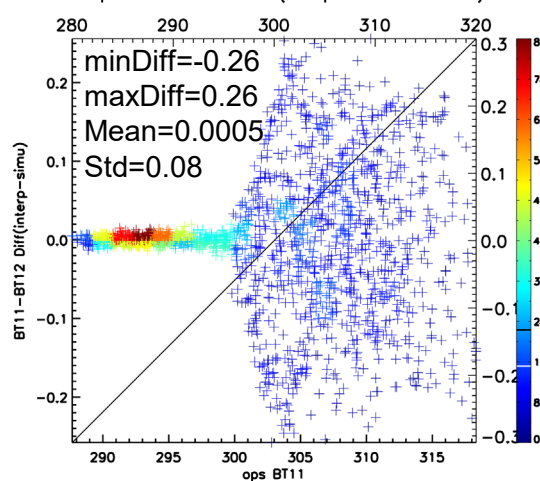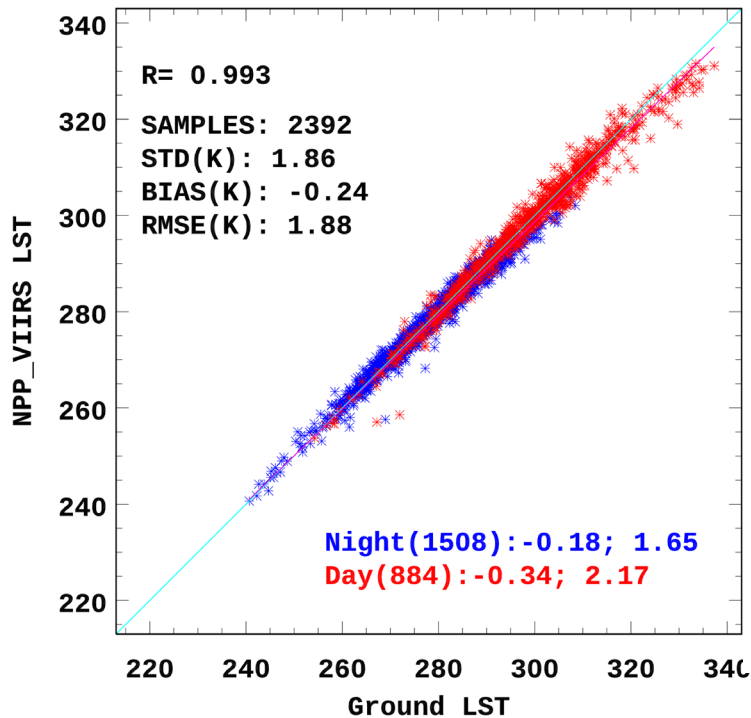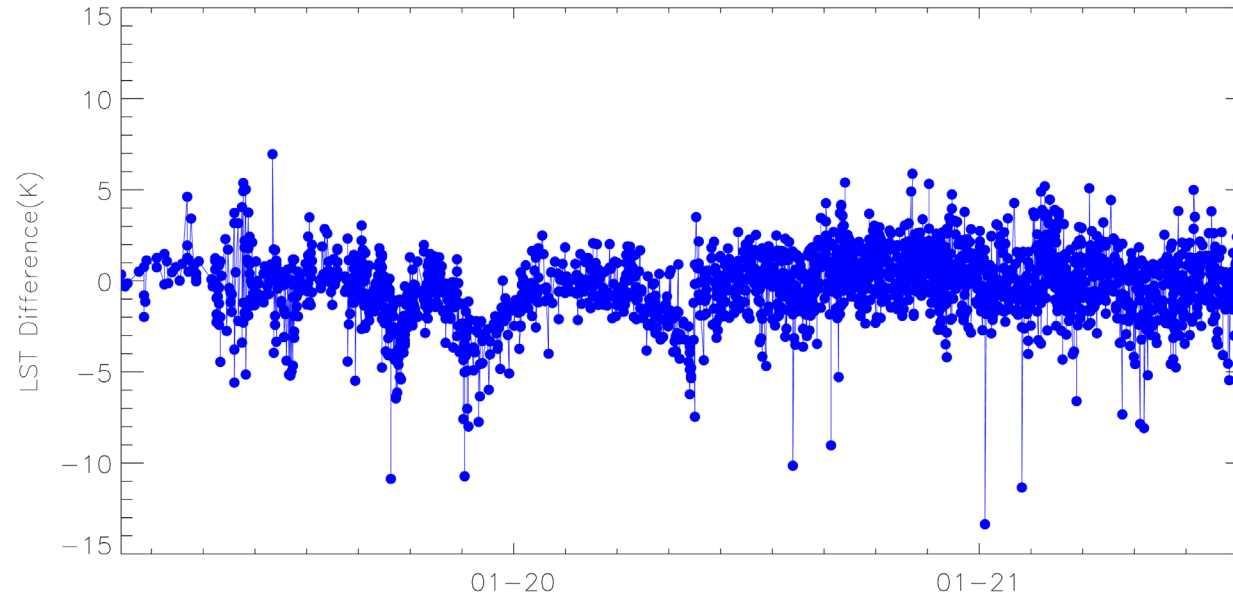
Findings

- The Ts interpolation caused less uncertainty in the cold temperature area less than 300K compared to the emissivity interpolation
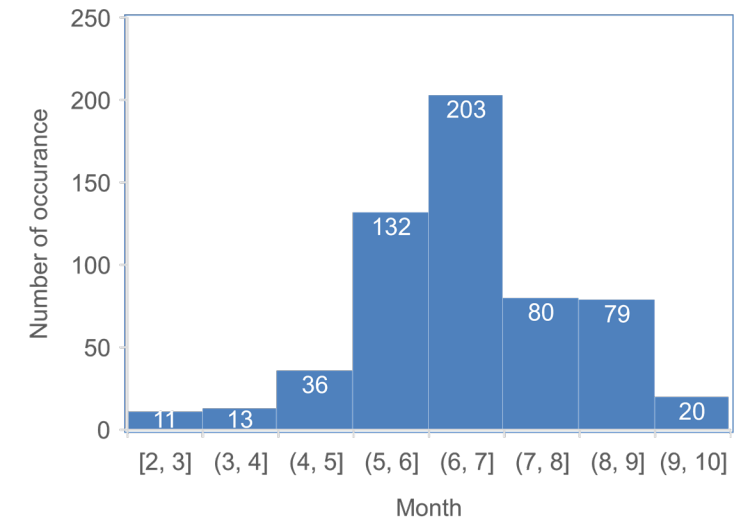- The Ts interpolation leads to slightly more uncertainty in the warm temperature area over 300K compared to the emissivity interpolation

L3 VIIRS LST ground validation-SURFRAD

NPP_VIIRS LST val SURFRAD

R= 0.993

SAMPLES: 2392
STD(K): 1.86
BIAS(K): -0.24
RMSE(K): 1.88

Night(1508):-0.18; 1.65
Day(884):-0.34; 2.17

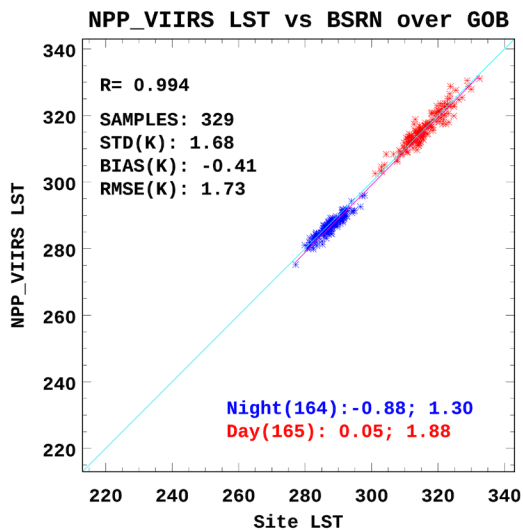LST Difference: NPP_VIIRS LST-Ground LST

- For time period from Feb, 2019 to July, 2021
- 6 sites in SURFRAD network
- Overall validation result (top left), LST error time series (top- right); seasonal validation performance (bottle table)

season	count	bias	std	rmse	Count (day)	Bias (day)	Std (day)	Rmse (day)	Count (night)	Bias (night)	Std (night)	Rmse (night)
Spring	549	-0.21	1.92	1.93	168	-0.2	2.53	2.53	381	-0.21	1.59	1.6
Summer	686	-0.3	2.2	2.22	192	-0.9	2.87	3	494	-0.07	1.83	1.83
Fall	703	-0.27	1.69	1.71	317	-0.26	1.85	1.86	386	-0.29	1.54	1.57
Winter	454	-0.13	1.44	1.45	207	-0.05	1.32	1.32	247	-0.2	1.54	1.55

- Cold bias of 0.9 K for Summer daytime.
- High end satellite temperature underestimation is observed.
- Seasonal statistics indicate the most deviation in summer and the best agreement in winter

NPP_VIIRS LST val ARM

R= 0.988

SAMPLES: 11486
STD(K): 2.21
BIAS(K): 0.15
RMSE(K): 2.22

Night(5911):-0.24; 1.27
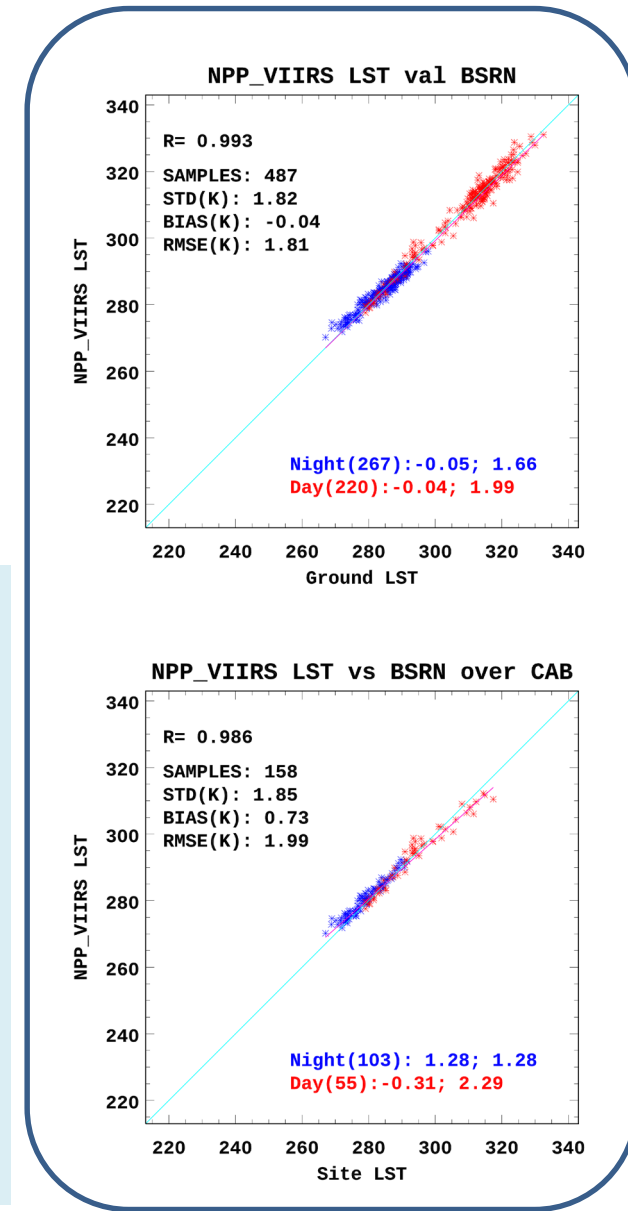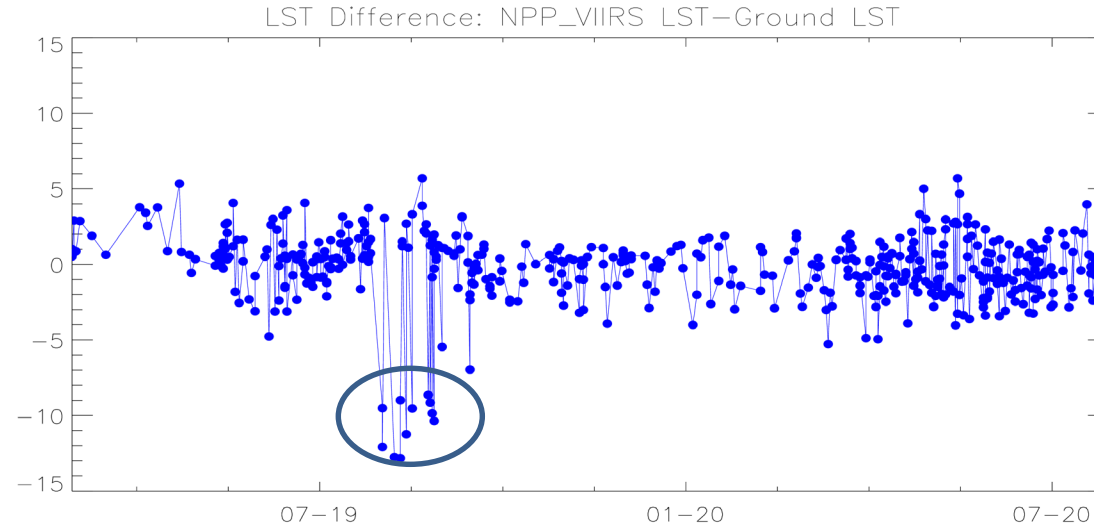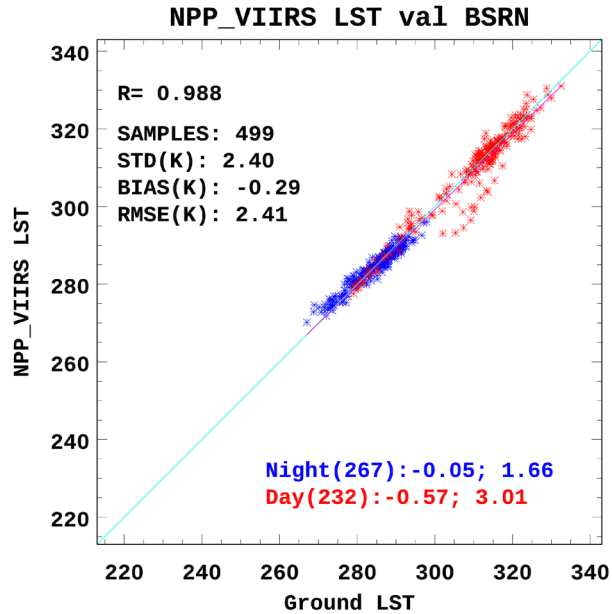Day(5575): 0.57; 2.84

Difference Time Series

- For time period from Feb, 2019 to July, 2021
- 16 sites in ARM network

- Nightime bias is between -1 K to 0.52 K
- Daytime bias is from -0.6 K to 1.9 K
- Seasonal statistics indicate the most deviation in summer and the best agreement in winter

season	count	bias	std	rmse	Count (day)	Bias (day)	Std (day)	Rmse (day)	Count (night)	Bias (night)	Std (night)	Rmse (night)
Spring	2655	-0.33	1.99	2.02	1197	-0.22	2.67	2.68	1458	-0.42	1.17	1.24
Summer	3410	0.95	2.66	2.83	1680	2.06	3.31	3.9	1730	-0.14	0.99	1
Fall	3186	0.12	1.95	1.95	1570	0.5	2.27	2.32	1616	-0.25	1.49	1.51
Winter	2235	-0.43	1.62	1.67	1128	-0.7	1.76	1.9	1107	-0.15	1.41	1.41

Monthly statistics for LST error over 4K

NPP_VIIRS LST val BSRN

R= 0.988

SAMPLES: 499
STD(K): 2.40
BIAS(K): -0.29
RMSE(K): 2.41

Night(267):-0.05; 1.66
Day(232):-0.57; 3.01

LST Difference: NPP_VIIRS LST—Ground LST

NPP_VIIRS LST val BSRN

R= 0.993
SAMPLES: 487
STD(K): 1.82
BIAS(K): -0.04
RMSE(K): 1.81

Night(267):-0.05; 1.66
Day(220):-0.04; 1.99

NPP_VIIRS LST vs BSRN over GOB

R= 0.994
SAMPLES: 329
STD(K): 1.68
BIAS(K): -0.41
RMSE(K): 1.73

Night(164):-0.88; 1.30
Day(165): 0.05; 1.88

NPP_VIIRS LST vs BSRN over CAB

R= 0.969
SAMPLES: 170
STD(K): 3.37
BIAS(K): -0.05
RMSE(K): 3.36

Night(103): 1.28; 1.28
Day(67):-2.10; 4.43

NPP_VIIRS LST vs BSRN over CAB

R= 0.986
SAMPLES: 158
STD(K): 1.85
BIAS(K): 0.73
RMSE(K): 1.99

Night(103): 1.28; 1.28
Day(55):-0.31; 2.29

- For time period from Feb, 2019 to July, 2021 over two sites in BSRN
- Time series plot indicates the time period that the ground site CAB is under management which caused the mismatch between ground instrument view and satellite view.
- After removal of the above problematic matchups, the result is shown on right.

Build up the version 2 simulation database

The simulation database V1

Ts combined ← Ts in [Ts-5,Ts-2.5,Ts, Ts+2.5, Ts+5]

↓

Ts interpolation ← Ts in [Ts-5, Ts+5] with 1K step

↓

Emis interpolation ← Emis in [0.90,0.92,0.95,0.975,0.9999]interpolate to [0.945, 0.9999] with 0.00125 step

↓

v1 simulation database ← Convert the interpolated radiance to BT to build up the version 1 simulation database
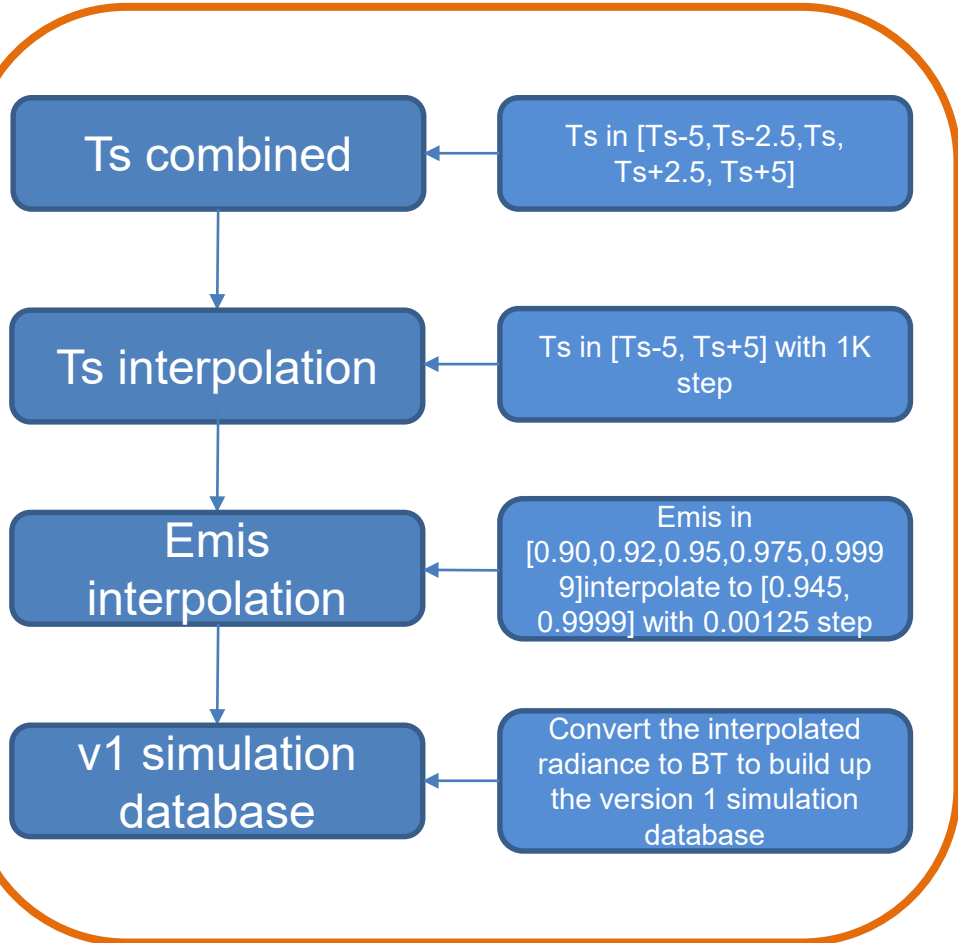
Selected profiles with Ts over 300K

Ts combined ← Ts in [Ts-15,Ts-10, Ts-5,Ts, Ts+5,Ts+10,Ts+15] Ts in emis [0.95,0.975,0.9999] are specially processed

↓

Emis interpolation ← [0.945, 0.9999] with emis unit 0.005 step interpolated to be with 0.00125 step

↓

Final simulation database ← Ts is not interpolated, Emis is interpolated as above. It is converted to BT.

V2 simulation database

The MODTRAN simulation result in v1 is extracted from the BT database.

+

Then combined with newly added simulation results to build up v2 database.

↓

v2 simulation database

V2 includes: warm Ts profile:[Ts-15,Ts-10, Ts-5,Ts, Ts+5,Ts+10,Ts+15] Other profiles: [Ts-5,Ts, Ts+5]

Accomplishments / Events:

- Assessed LSA/LST/NDVI heterogeneity influence over VIIRS pixel
  - Test the heterogeneity analysis on L2 buffer using 1-km circle
  - Test the analysis on L3 buffer using the fixed Sinusoidal Projection grid.
- Improved the BRDF climatology from from snow-free only to be including snow-only also
  - Implementing algorithm to produce the all-snow datasets
  - Compare the difference between snow-free and snow-only datasets
  - Testing the code for generating all surface BRDF climatology

Overall Status:

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

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

Issues/Risks:

None

| Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
CalVal Report on current SNPP and N-20 data	Dec-20	Dec-20	Dec 20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/23/20	
Updated Cal/Val plan (address DPMS review comments)			04/28/21	
Initial J2 ready DAP to NDE (include NPP/N20 updates, ASSISTT delivery)	Jan-21	Mar-21	04/01/21	downstream testing
Initial J2 ready DAP to CSPP			05/26/21	
Final J2 DAP to ASSISTT	Mar-21	Mar-21	Mar-21	
Code developed for BRDF computation	Mar-21	Mar-21	Mar-21	
Snow albedo LUT and update	Apr-21	Apr-21	Apr-21	
Sample BRDF data evaluation comparing to MODIS data	Jun-21	Jun-21	Jun-21	
Annual algorithms/products performance report	Aug-21	Aug-21		The report will be presented to the JPSS annual meeting in Oct.
BRDF component code integration done	Sep-21	Sep-21		
Support to the NDE and STAR ASSIST requests	Sep-21	Sep-21		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Nov-21	Nov-21		

Highlights:

Currently generate BRDF climatology has covered the high-latitude region in North Hemisphere
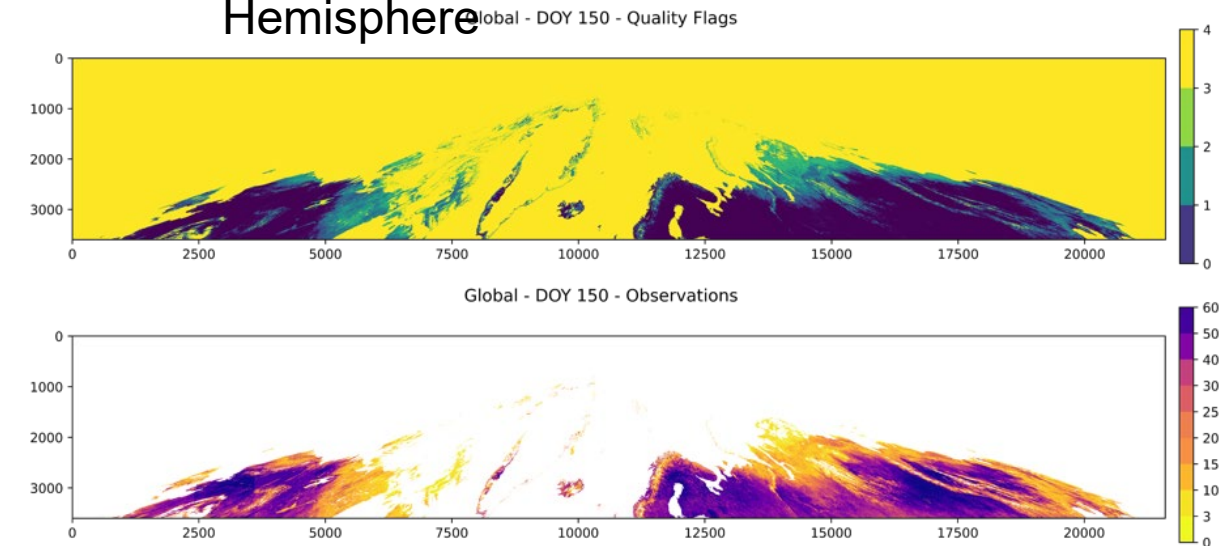
Influence of surface heterogeneity on albedo validation

- The influence is assessed through the albedo difference between the aggregated albedo at two scales: the VIIRS pixel range and the station site field-of-view

$$\text{diff} = \text{Alb}_{site} - \text{Alb}_{pixel}$$
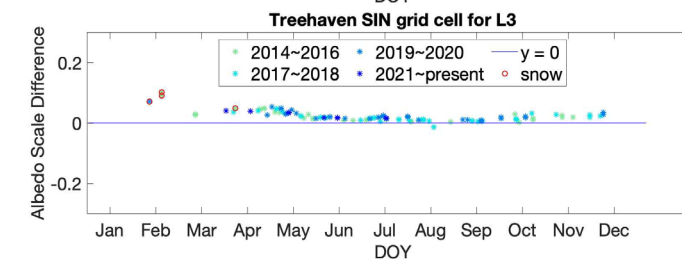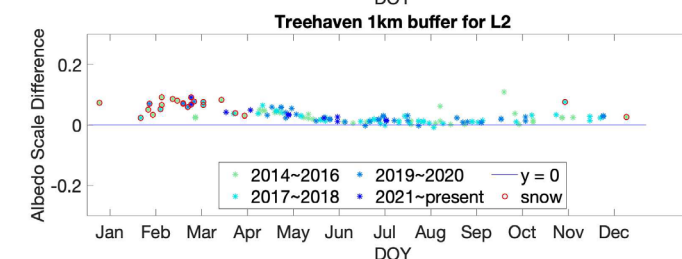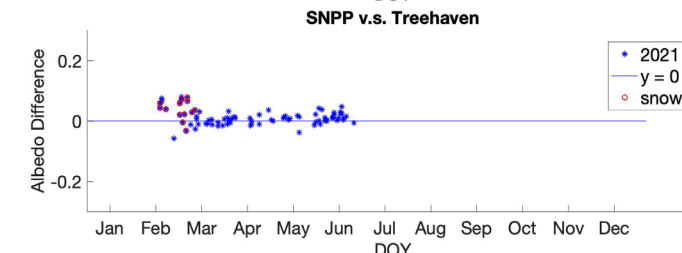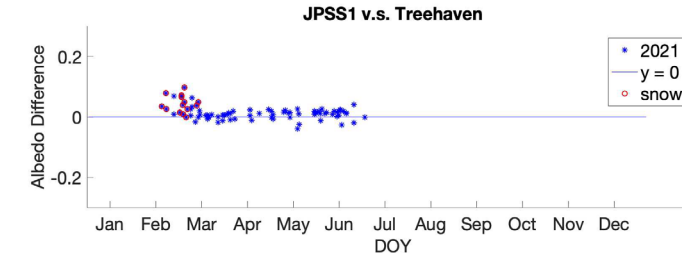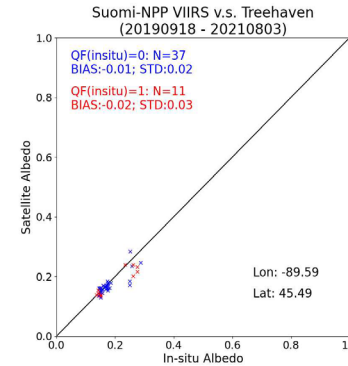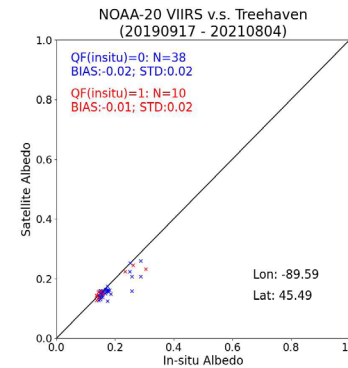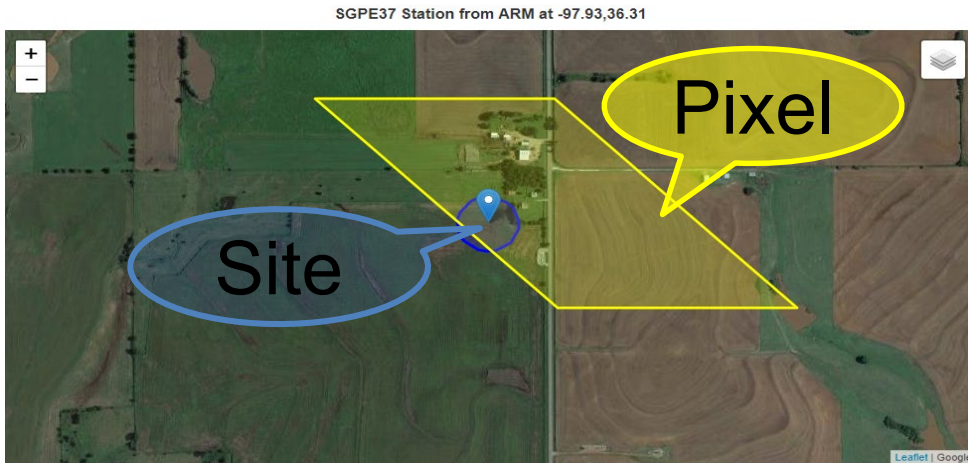
- The right figure shows that the surface heterogeneity seasonal variation matches the albedo difference seasonal change at this site. This inherent difference has been included in the validation error of the Product.

Bondville_IL Station from SURFRAD at -88.37,40.05
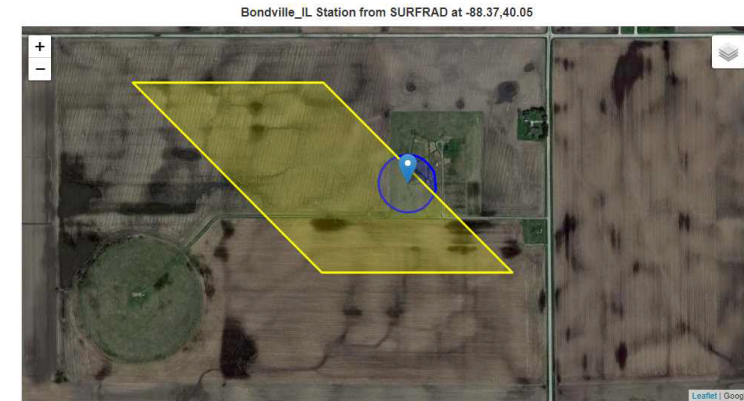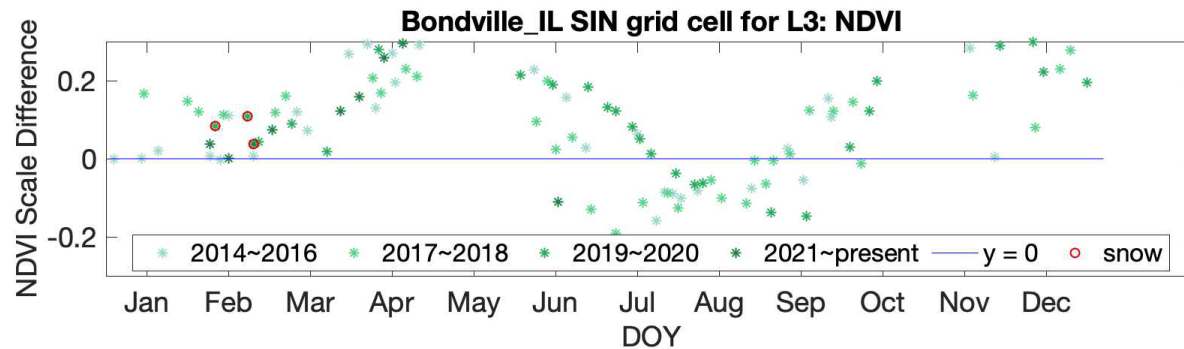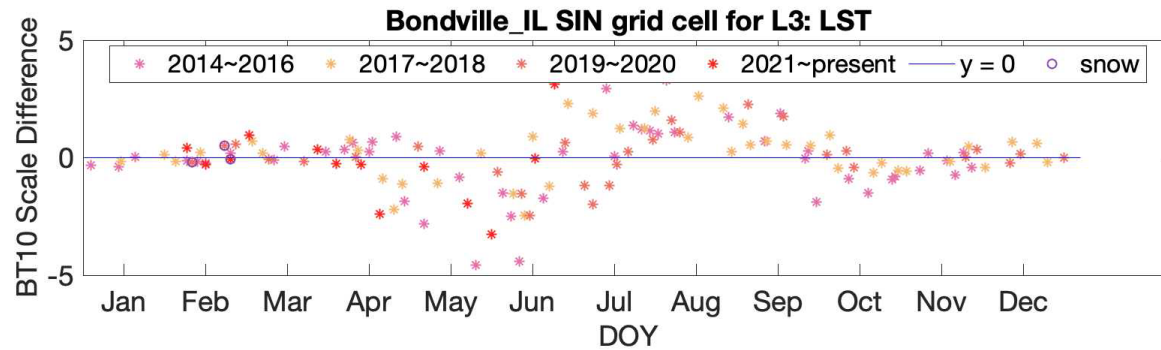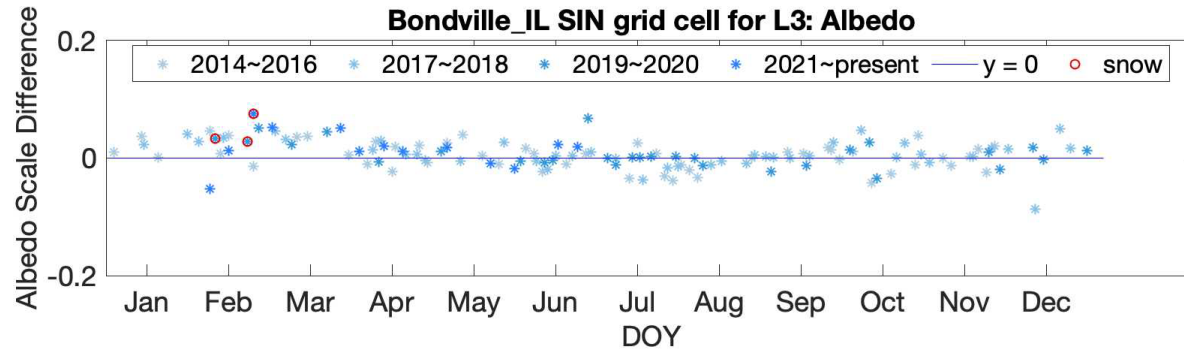
Conjoint analysis of the heterogeneity caused scale effect helps to understand the surface variation reason behind the difference. e.g. the crop growth status difference caused the seasonal feature of the heterogeneity around the Bondville site.

Noted that For all parameters, the cloud/cloud shadow is screened, and snow observations are separated.

- Albedo
  - Narrowband-to-broadband method is applied
  - TOA reflectance is used
- LST
  - BT 10 is used temporally
  - LST algorithm will be used instead
- NDVI
  - TOA reflectance was used to calculate the NDVI

- The User requirement of VIIRS BRDF is for snow-free BRDF

- Snow-only BRDF faces data missing in high latitude region, especially in yearly snow-covered area such as Greenland.

- We implemented snow-only BRDF climatology generation function and developing the details to combine to all-surface BRDF climatology.

- The first test tile h15v02 (south of Greenland) shows the climatology quality improves after snow being included.

- The second test tile h20v02 shows the snow-covered retrievals and snow-free counterpart occupy half and half in historical dataset in some high-latitude region.
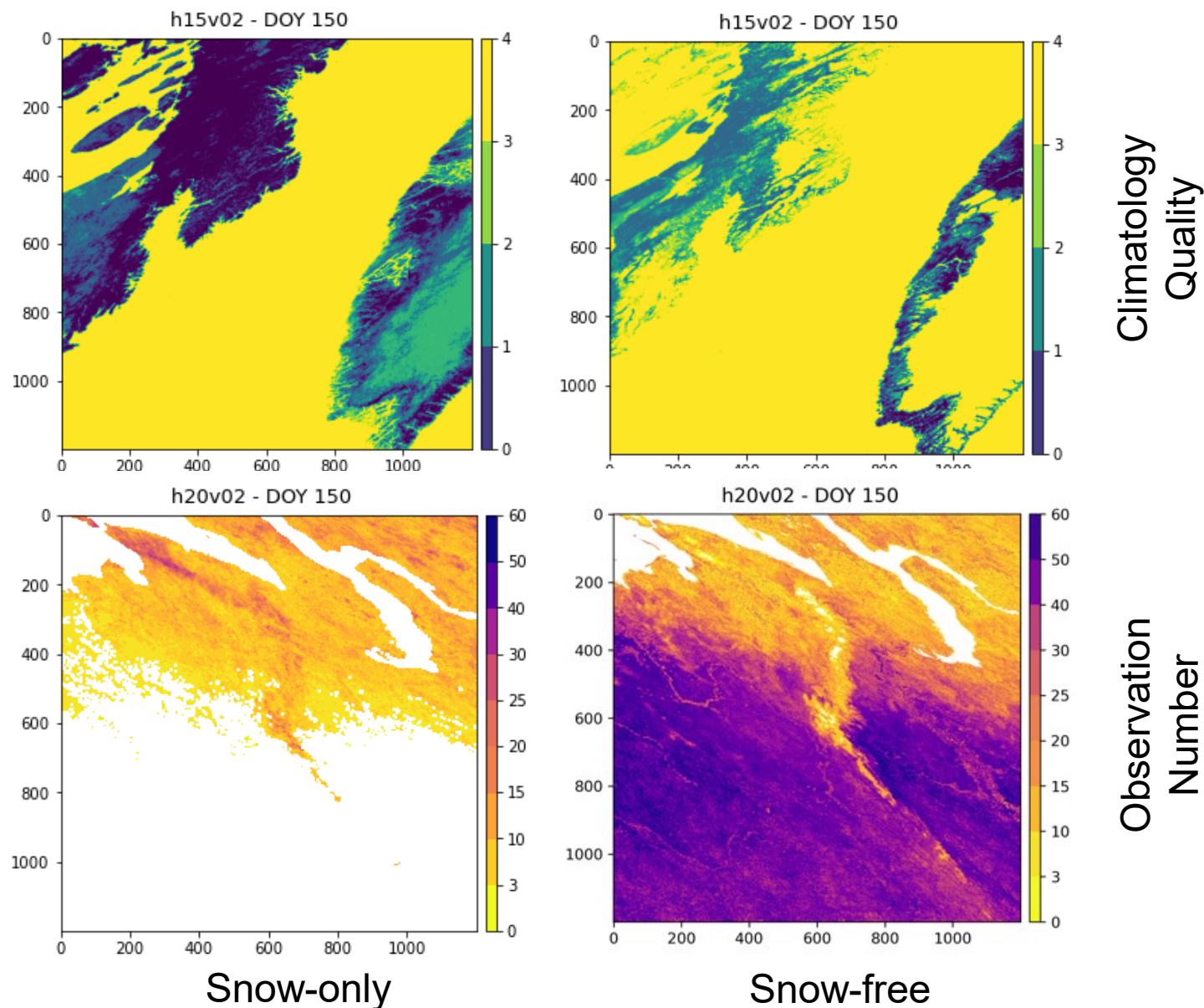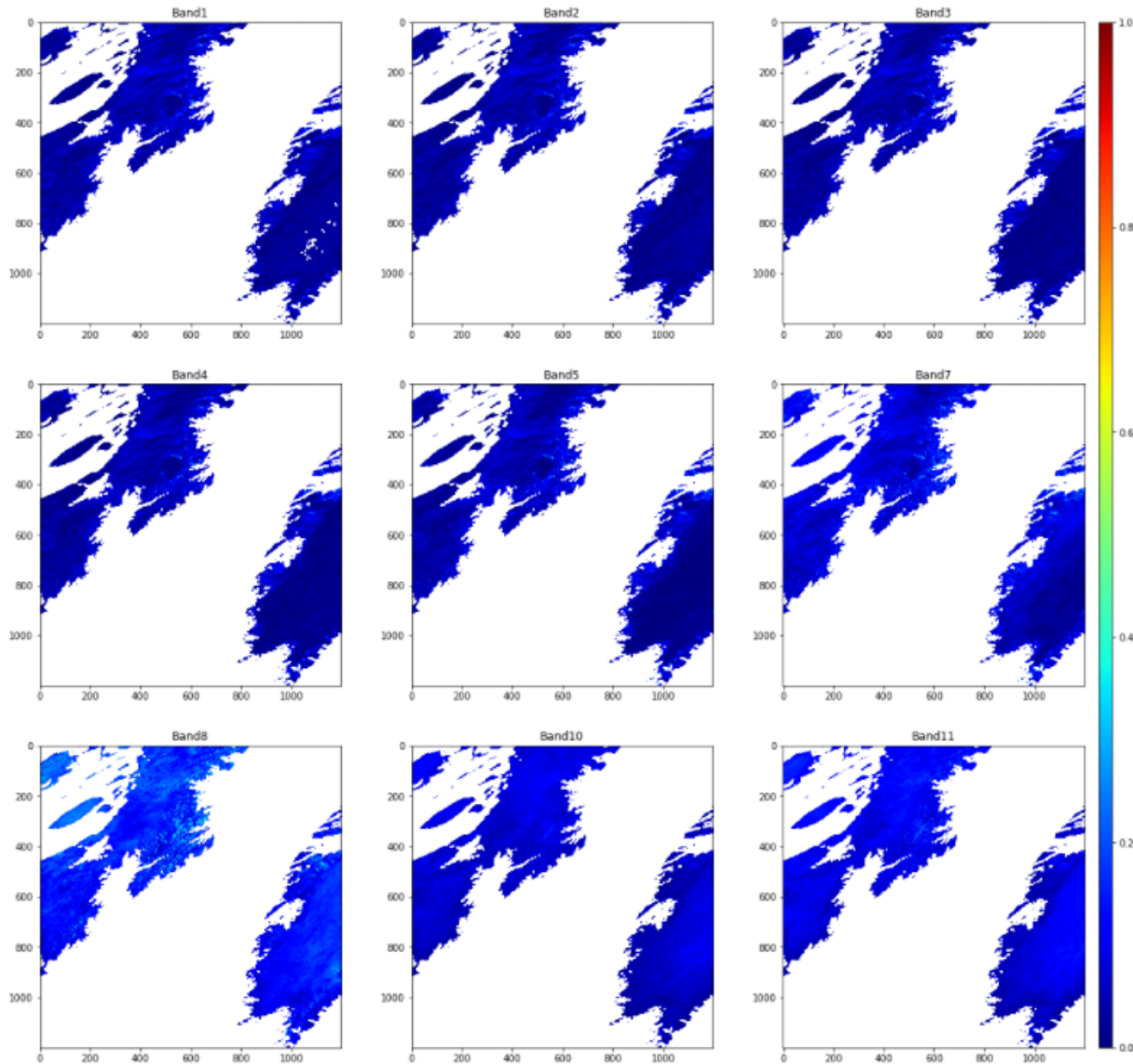

Snow-only

Snow-free

Snow-only

Snow-free

BRDF Climatology Sample: parameter f_{vol}
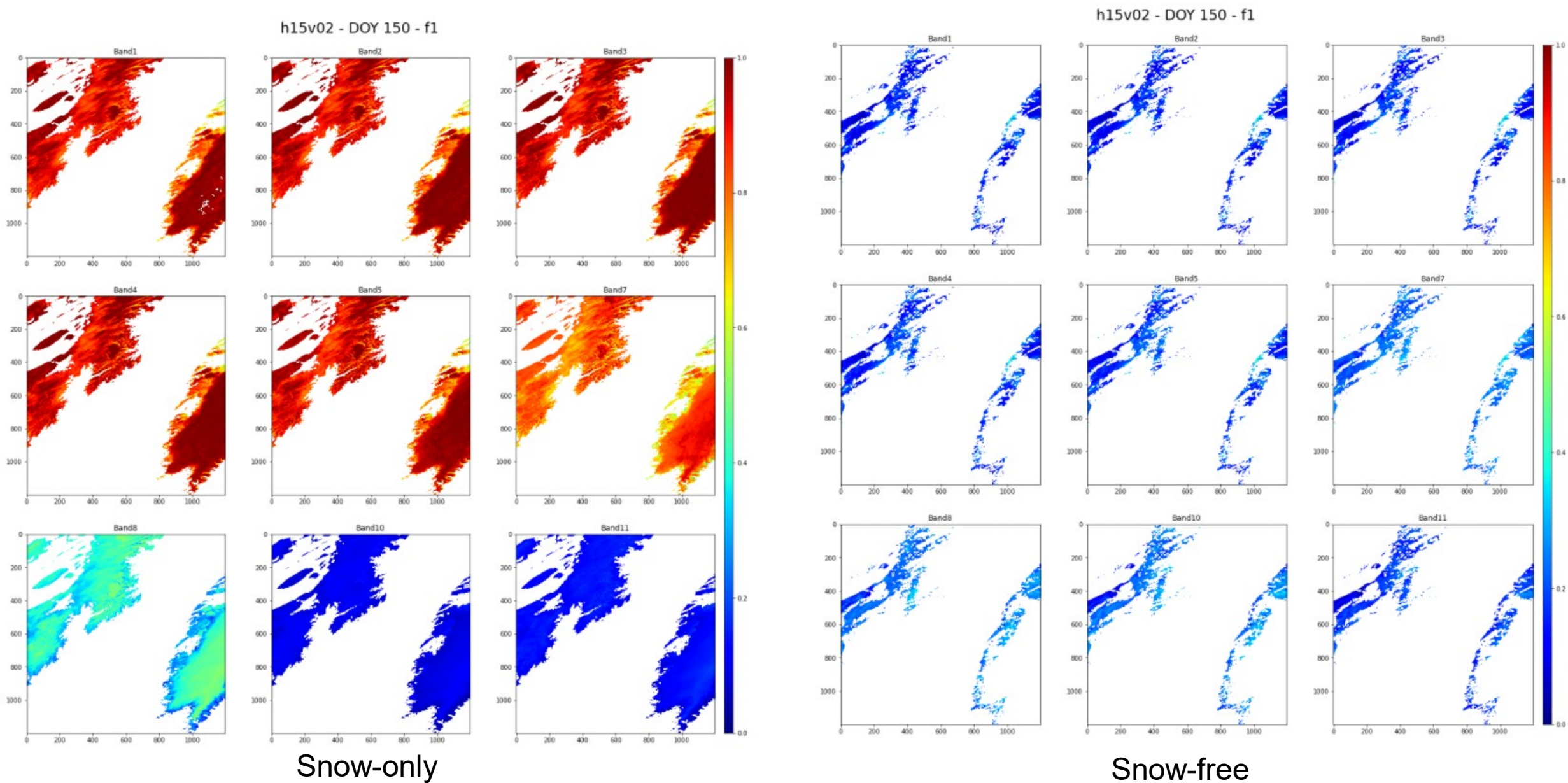
Snow-only
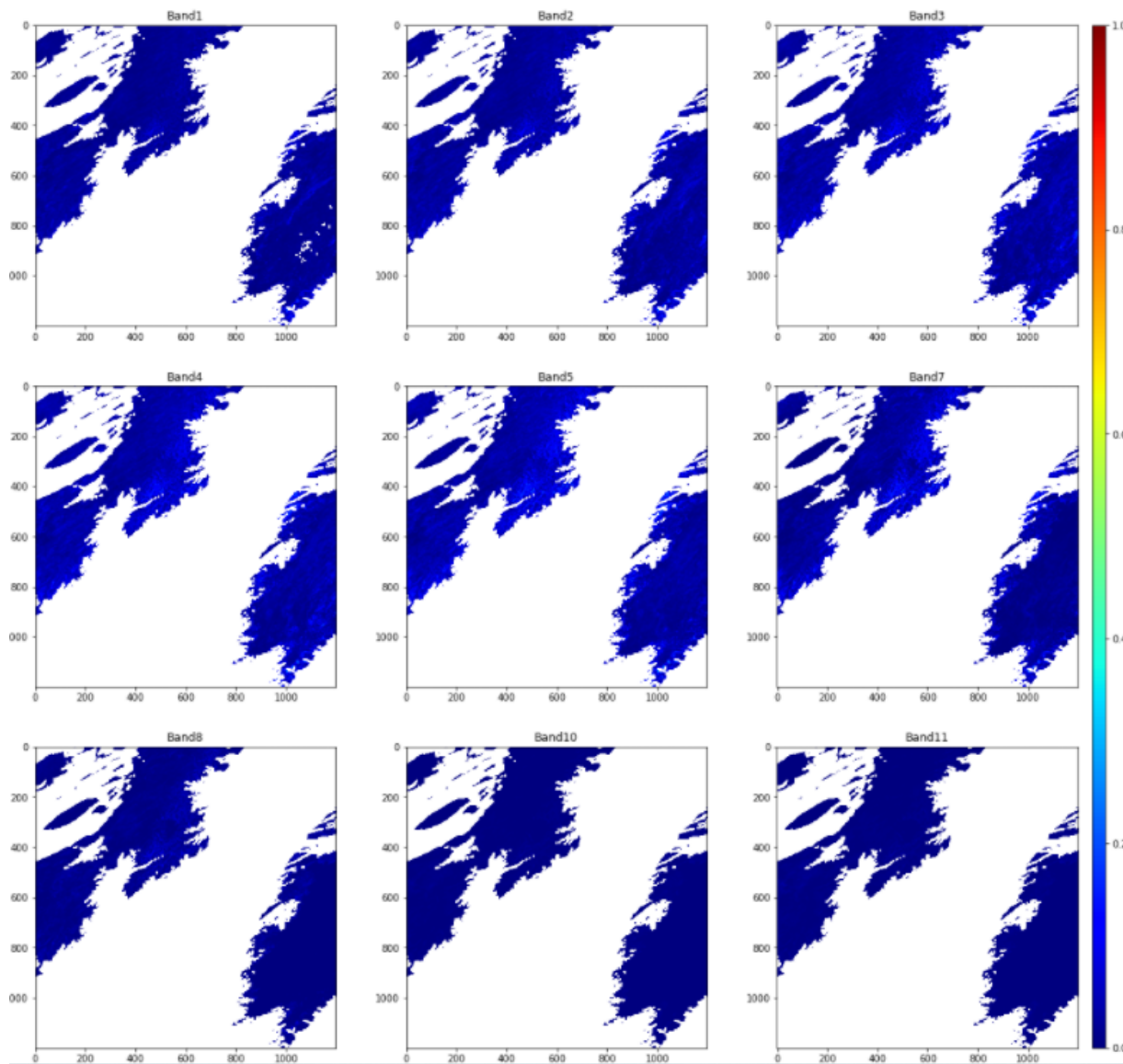
Snow-free

BRDF Climatology Sample: parameter f_{geo}

h15v02 - DOY 150 - f3

Snow-only

h15v02 - DOY 150 - f3

Snow-free

NDE Vegetation Product System (NVPS)
Vegetation Index (VI) & Green Vegetation Fraction (GVF)

August, 2021
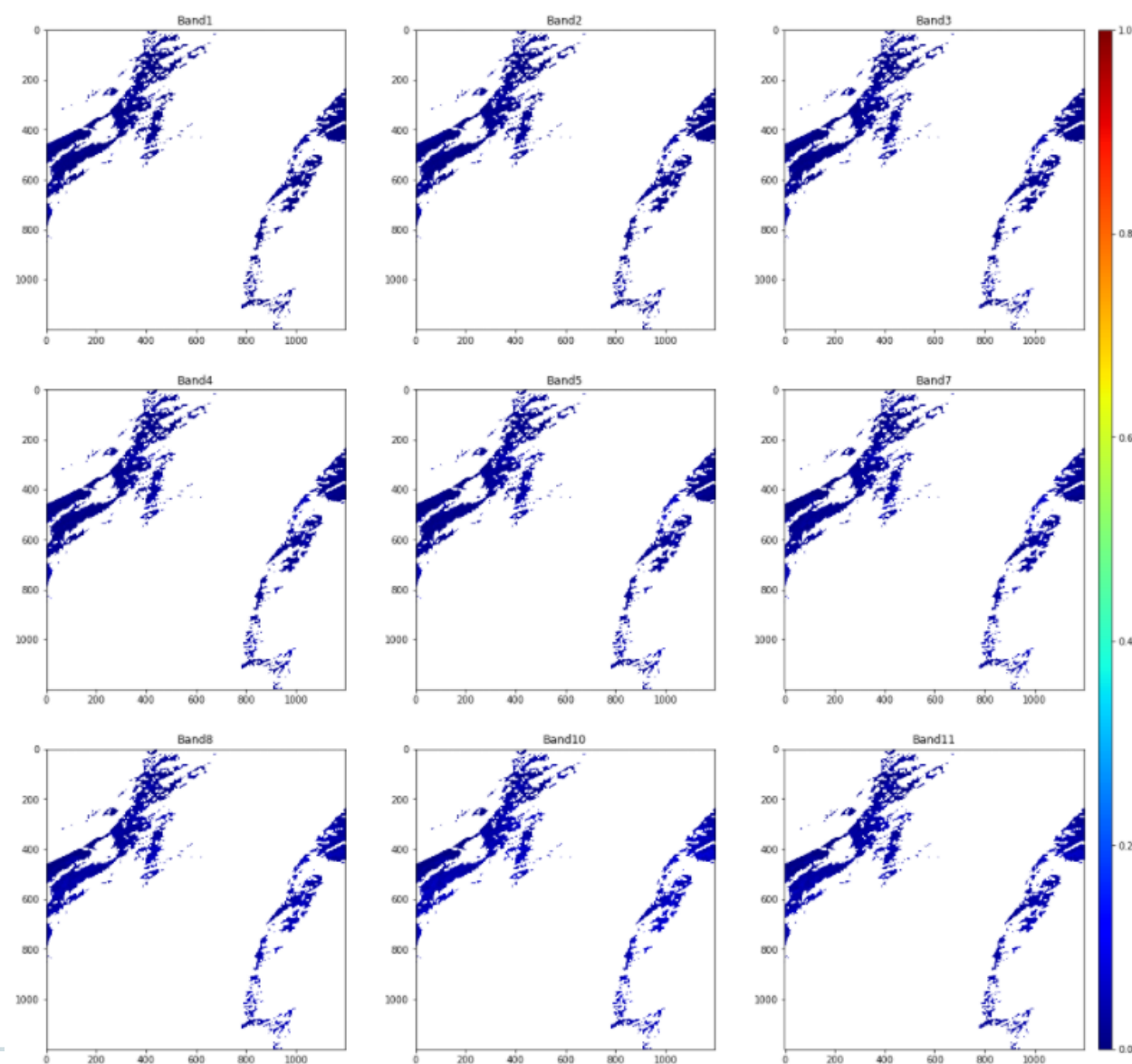
Accomplishments / Events:

- Compared GVF v3.0 with GVF v2.3 using 6 months of testing data and found GVF v3r0 is systematically higher than GVF v2r3 (bias=0.03-0.04, RMSE=0.06-0.07)
- Evaluated the impact of SNPP data outage on the GVF product and found that the SNPP data outage has limited impact on SNPP GVF data.
- Further verified that discrepancies between v3.0 and v2.3 GVFs result from implementation sequence of filter function to screen out cloudy and high latitude pixels.
- Made pixel-level comparisons of GOES-R and VIIRS VI
- Finished annual algorithms/ products performance report

Overall Status:

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

None

Highlights:

GVF v3r0 is 1.15 times of GVF v2r3 (RMSE=0.06)

- GVF v3r0 in Jul-Dec 2020 is systematically higher than GVF v2r3 (bias=0.03-0.04, RMSE=0.06-0.07), which is different from the previous (Apr 1-16, 2020) verification results.
- More investigation is needed to confirm the difference between the two versions

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Evaluation of the V2.1 VI algorithms	Dec-20	Dec-20	Dec-20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	01/13/21	
Updated Cal/Val plan (address DPMS review comments)			04/28/21	VI
			05/04/21	GVF
ATBD update, Detail Design Document Development	Jan-21	Jan-21	01/31/21	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Feb-21	Feb-21	04/19/21	
Software optimization update	Apr-21	Apr-21	05/17/21	Additional testing
Final J2 ready DAP to ASSISTT	Jun-21	Jun-21	Jun-21	
Annual algorithms/products performance report	Aug-21	Aug-21		The report will be presented to the JPSS annual meeting in Oct
SNPP and NOAA-20 product calibration and validation	Sep-21	Sep-21		
Experimental blended data developed	Sep-21	Sep-21		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Nov-21	Nov-21		
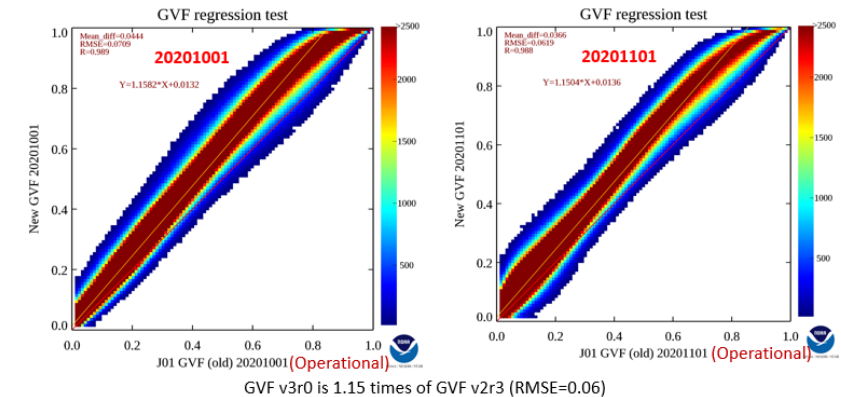
- GVF v3r0 is verified in the testing period Apr 1-16, 2020. But we want to further verify GVF v3r0 data in a longer time period.
- GVF v3r0 data from July 2020 to Dec 2020 were produced and compared with GVF v2r3 data

GVF v3r0 is 1.15 times of GVF v2r3 (RMSE=0.06)
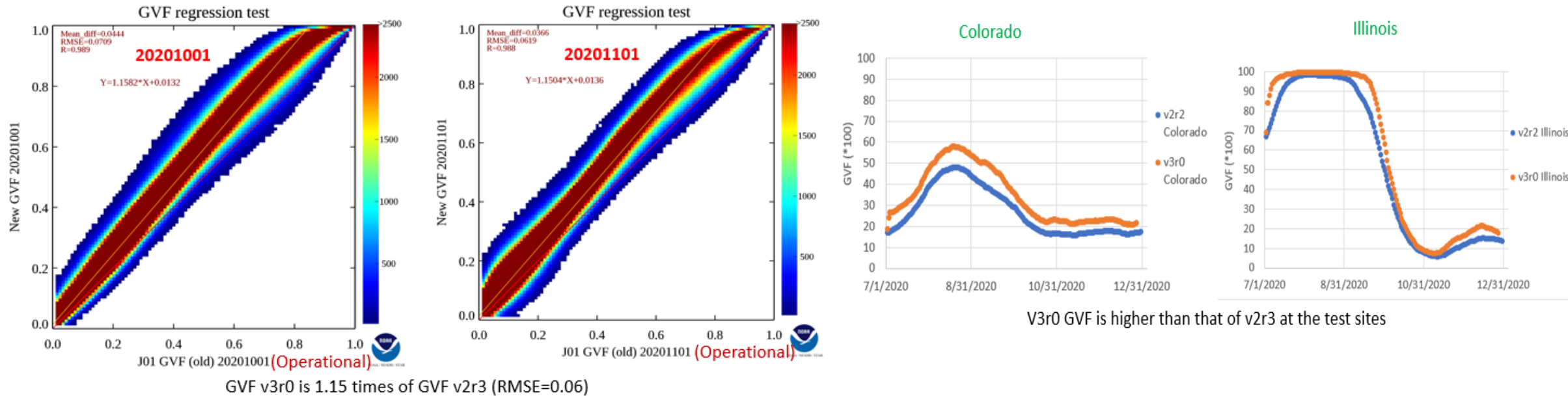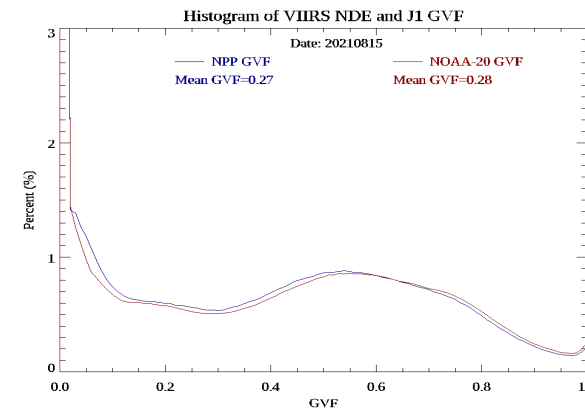
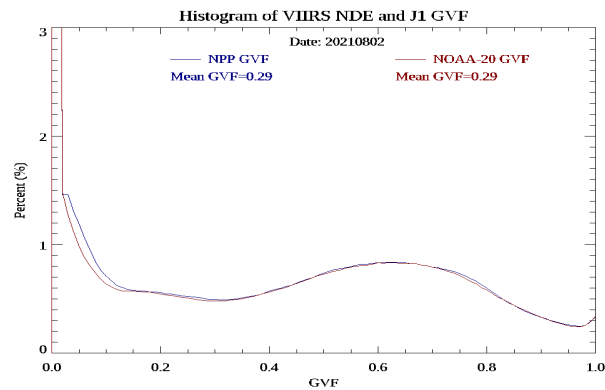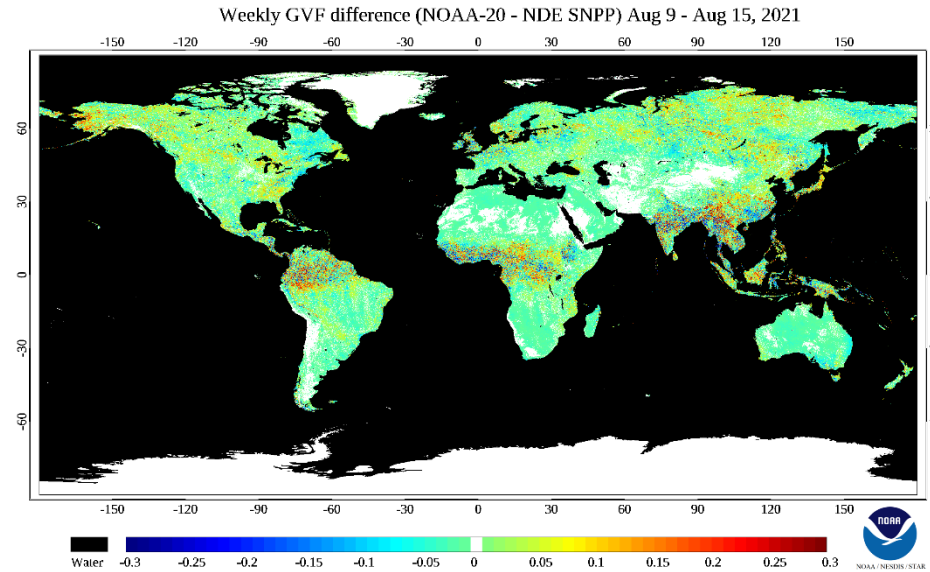V3r0 GVF is higher than that of v2r3 at the test sites

- GVF v3r0 in Jul-Dec 2020 is systematically higher than GVF v2r3 (bias=0.03-0.04, RMSE=0.06-0.07), which is different from the previous (Apr 1-16, 2020) verification results.
- More investigation is needed to confirm the difference between the two versions

Evaluation of S-NPP outage impact on GVF

- Since J01 data were not affected, SNPP GVF was compared with J01 GVF before and after the outage to evaluate the SNPP outage impacts on GVF

before outage

J01,NPP GVF histogram

Evaluation of S-NPP outage impact on GVF

Scatter plots (SNPP vs J01)

before outage
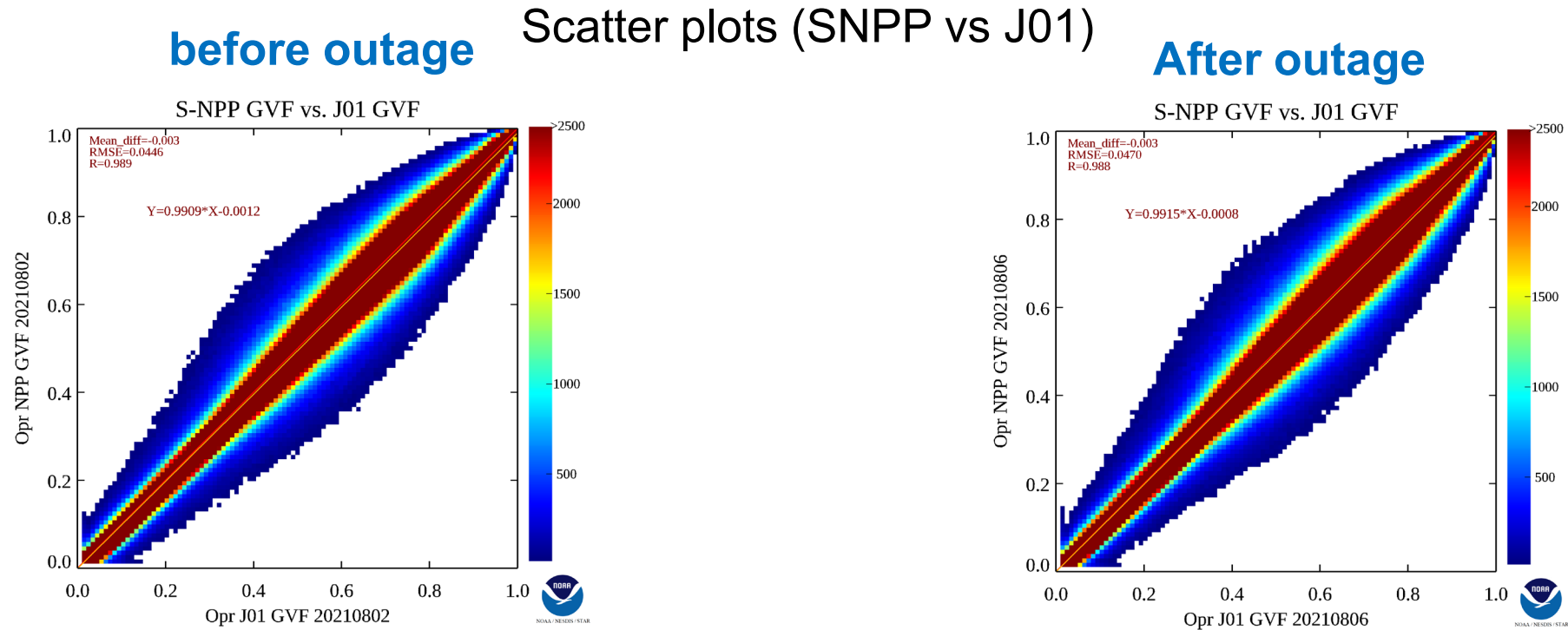
After outage

- The SNPP weekly GVF is consistence with J01 GVF before and after the SNPP outage, which indicated the SNPP data outage has limited impact on SNPP GVF data
- RMSE between SNPP GVF and J01 GVF increased slightly from 0.04 to 0.05 after the outage
- Bias between SNPP GVF and J01 GVF kept very low after the outage
- The weekly compositing and time series smoothing processes reduced the impacts of SNPP data outage on GVF data

Weekly Global GVF
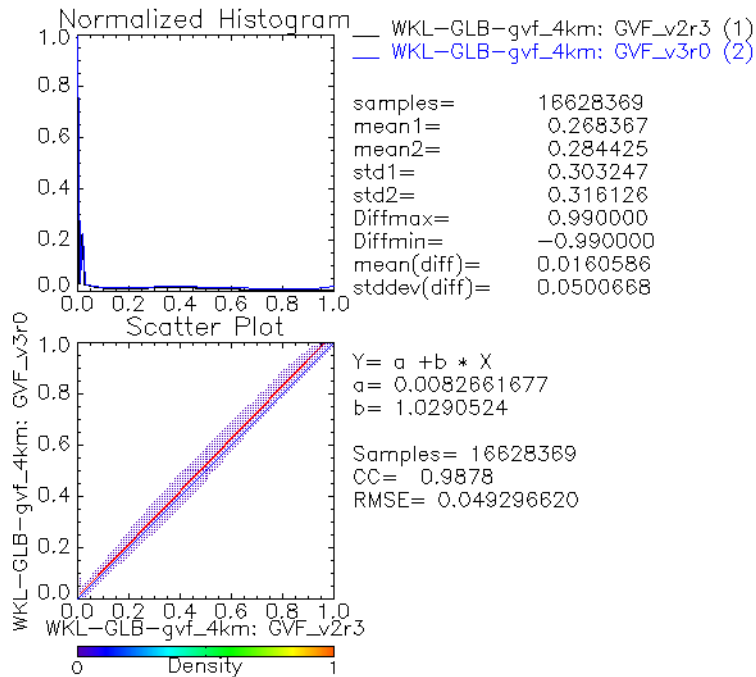
Weekly Regional GVF
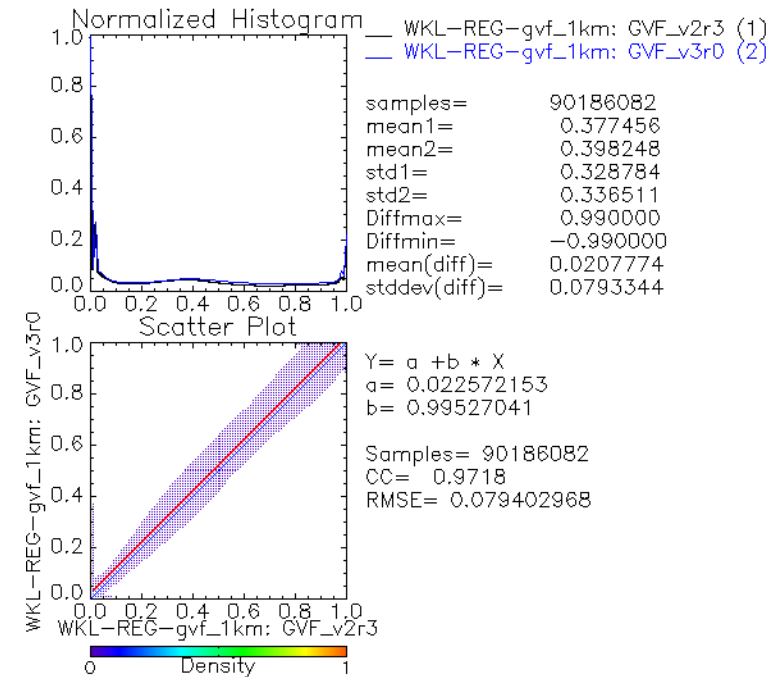
- Regression analysis verified means and standard deviations of differences between GVF v3.0 and GVF v2.3 in weekly global and regional cases are quite small
- The corresponding scatters showed both GVFs v3.0 and GVFs v2.3 distribute around diagonal lines

- GVF v3.0 uses daily SR from VI v2.1 as inputs and thus saves 2+ hours to do daily gridding process compared to GVF v2.3.
- GVF v3.0 implemented a filter function to screen out cloud and high latitude gridding points after the gridding process while GVF v2.3 did that at granule pixels before gridding process.
- In order to verify the discrepancies between GVF v3.0 and GVF v2.3 result from their different implementation sequence of the filter function, we modified code of GVF v2.3 to generate GVF v2.4 in which the filter function was implemented after gridding process.
- The tests of GVF v3.0, v2.3, and v2.4 with NOAA-20 observations in the period of June 1-16 of 2021 showed that daily SR data from GVF v2.4 are completely consistent with those from GVF v3.0 but a little different from those from GVF v2.3.
- This verifies that the difference in sequence of screening and gridding is the cause of the v3r0 versus v2r3 GVF differences.

GVF v2r4 vs GVF v3r0
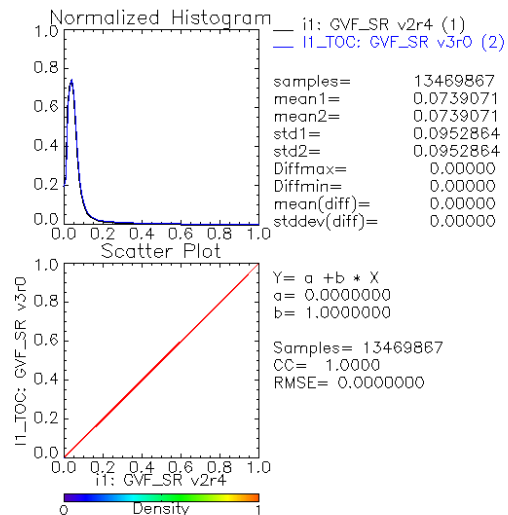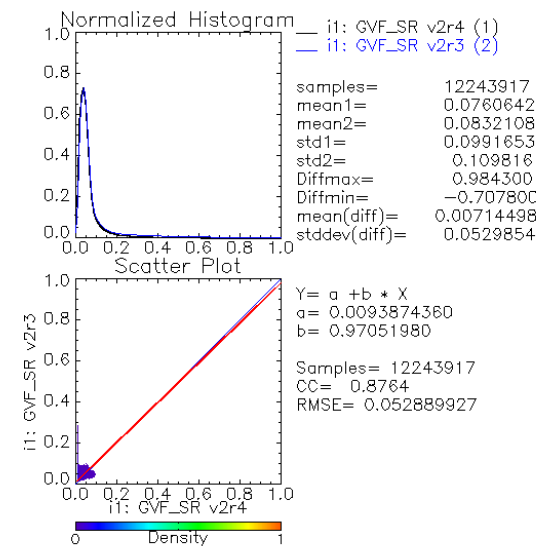
GVF v2r4 vs GVF v2r3
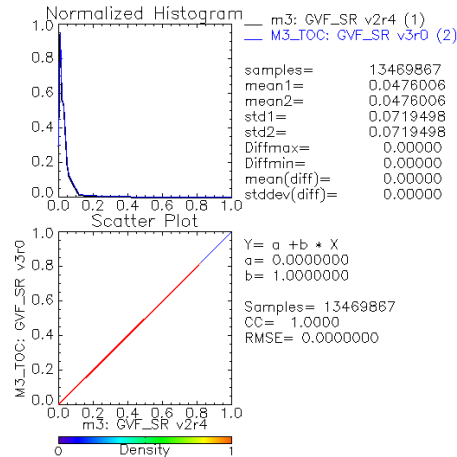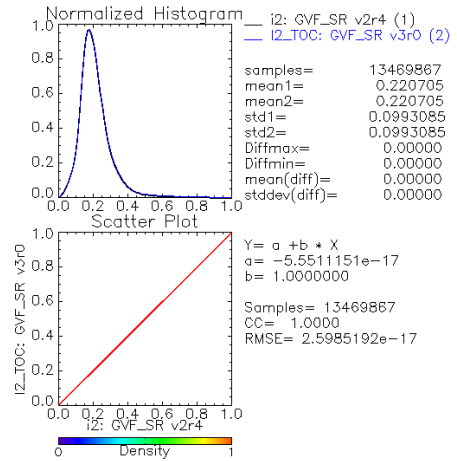
GVF v2r4 vs GVF v3r0

GVF v2r4 vs GVF v2r3
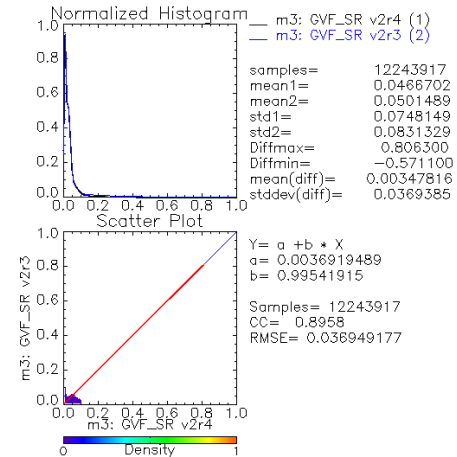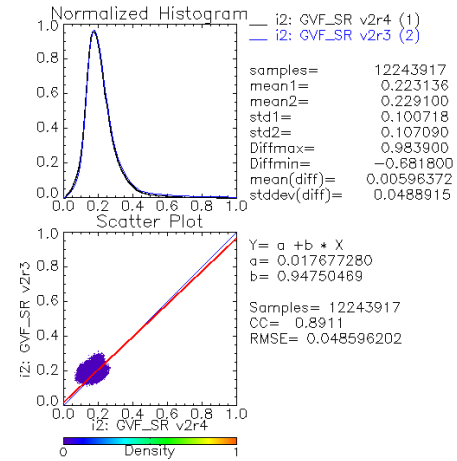
- GOES-R and VIIRS data were composited for the same 7 and 16 day periods
- A "GOES-R projected" VIIRS data set was produced for each time period by finding the nearest neighbor in the VIIRS global data to each GOES-R pixel
- Individual images, difference images, histograms, and difference histograms were generated
- Individual images include all pixels labeled "clear" or "probably clear". Difference images and histograms include only pixels that are "clear" or "probably clear" in both GOES-R and VIIRS data
- Results:
  - VI value distribution similar for GOES-R and VIIRS NDVI, but regional variation in differences is apparent.
  - EVI values consistently higher for GOES-R than for VIIRS
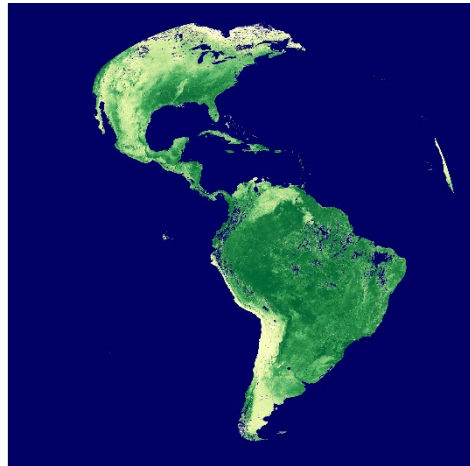
GOES-R

VIIRS

GOES-R - VIIRS

Histogram of GOES-R and VIIRS NDVI

Histogram of GOESR - VIIRS NDVI, 16 days beginning 1 April 2020
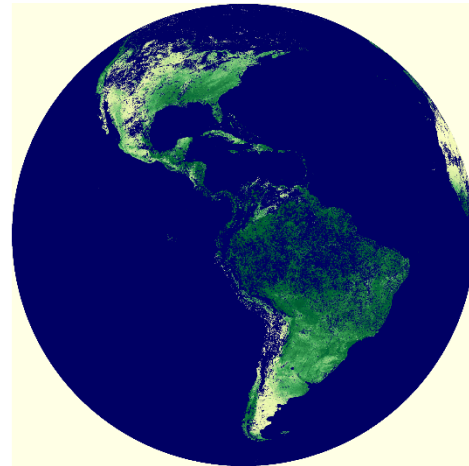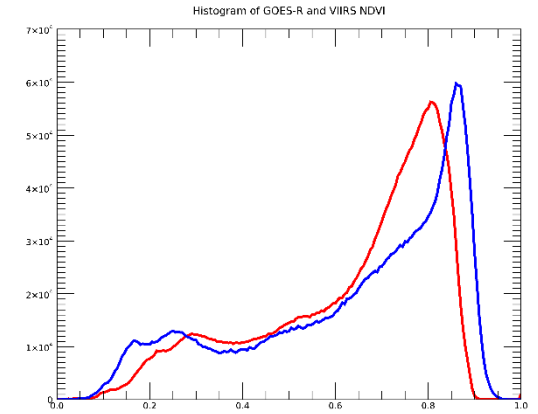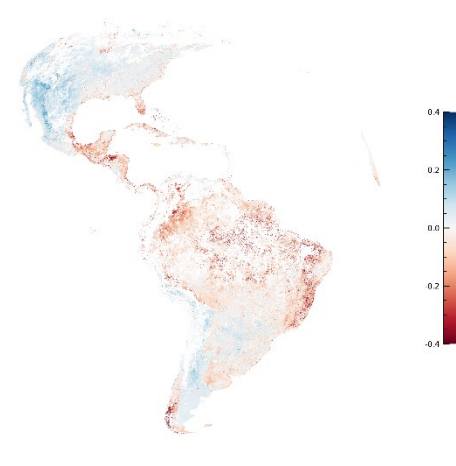
GOES-R
VIIRS
GOES-R - VIIRS

EVI, 20200401-20200416

GOES-R

VIIRS

GOES-R - VIIRS

Histogram of GOES-R and VIIRS EVI

Histogram of GOESR - VIIRS EVI, 16 days beginning 1 April 2020

GOES-R
VIIRS
GOES-R - VIIRS

Vegetation Health

Accomplishments / Events:

- Investigated VHP impacts due to 1) S-NPP outage/anomaly on August 3 and 4 (Highlighted), and 2) S-NPP and NOAA-20 data delay/missing on August 10 and 11;

- Designed a plan on switching S-NPP weekly processing with NOAA-20;

- Implemented part of the switching plan, including 1) routinely generate NOAA-20 weekly maptiles; 2) routinely generate NOAA-20 daily figures for monitoring purpose; 3) routinely generate NOAA-20 16km weekly products;

- Worked on drafting a new manuscript on locust activity vs VH indices;

- Generated a series of data and figures of VIIRS/VHP-1 and -4, -16 km resolution products, covering August 2021;

Overall Status:

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

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

Issues/Risks:

None

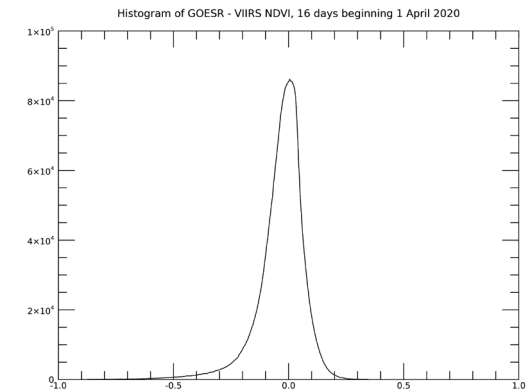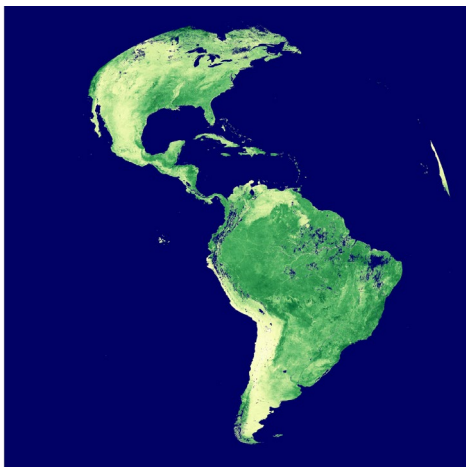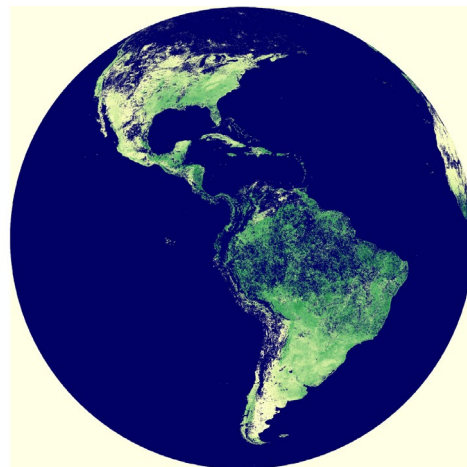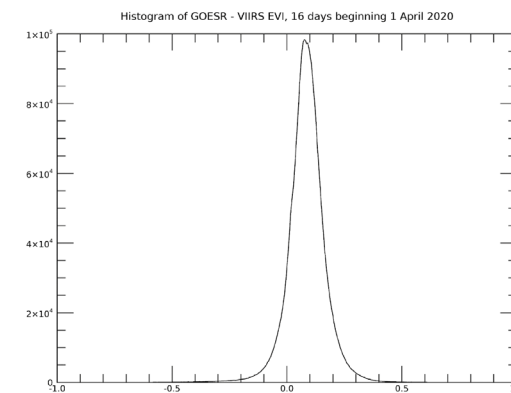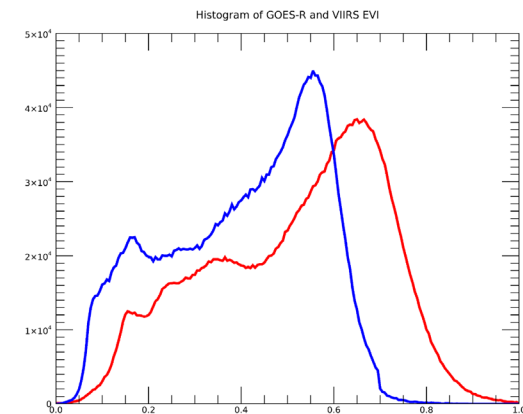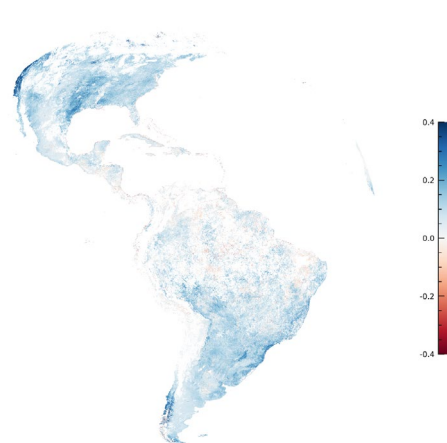| Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/29/20	
Updated Cal/Val plan (DPMS comments)			04/23/21	
Initial/Final J2 ready DAP to NDE (include NPP/N20 updates)	Oct-21	Oct-21		Combined
Update 1 km VH data for OSPO, USDA, NIDIS	Sep-21	Sep-21		On-going
VIIRS-0.5 km SMN & SMT (8-year Max-Min Climatology)	Sep-21	Sep-21		On-going
40-year Vegetation Greenness (MDVI) & Global warming	Sep-21	Sep-21		On-going
Climate warming & temperature (SMT) in agricultural regions	Sep-21	Sep-21		On-going
FAO locust activity vs VHindices in 2021	Sep-21	Sep-21		On-going
NDVImax/min & BTmax/min: 0.5 and 1 km correlation	Sep-21	Sep-21		On-going
Regional drought and global warming trends	Sep-21	Sep-21		On-going
Algorithm: VHindices-Locust (Africa, Arabia & India)	Sep-21	Sep-21	05/18/21	
Algorithm: VHindices-Malaria (South America)	Sep-21	Sep-21		
VHindices vs Locust (Africa, Arabia & India) 2020 & 2019	Sep-21	Sep-21	07/21/21	
Annual algorithms/products performance report	Sep-21	Sep-21		

Highlights: S-NPP Spacecraft Outage/Anomaly Impacts on VHP

Correlation Coefficients (CC) and NDVI Difference Comparison with Previous Weeks

	I1	I2	NDVI	Diff_NDVI	I5	SMN	Diff_SMN	SMT	VCI	TCI	VHI
Week 31	0.8291	0.6259	0.9167	9.9e-3	0.8802	0.9795	4.5e-3	0.9604	0.8841	0.7480	0.8705
Week 30	0.8418	0.6261	0.9325	1.1e-3	0.8808	0.9838	3.5e-3	0.9670	0.8973	0.7536	0.8795
Week 29	0.8587	0.6449	0.9380	1.3e-3	0.8617	0.9886	2.8e-3	0.9763	0.9190	0.7768	0.8967
Week 28	0.8689	0.6415	0.9440	2.0e-3	0.8708	0.9911	2.3e-3	0.9814	0.9328	0.7933	0.9075
Week 27	0.8697	0.6468	0.9431	1.7e-4	0.8858	0.9925	1.9e-3	0.9842	0.9402	0.8042	0.9131
Week 26	0.8653	0.6448	0.9417	1.6e-3	0.8882	0.9930	1.5e-3	0.9856	0.9431	0.8080	0.9149
Week 25	0.8537	0.6123	0.9415	7.6e-4	0.8832	0.9933	1.2e-3	0.9867	0.9442	0.8094	0.9146
Week 24	0.8679	0.6395	0.9475	5.3e-4	0.8868	0.9935	7.9e-4	0.9877	0.9443	0.8105	0.9131
Week 23	0.8573	0.6168	0.9514	1.2e-3	0.9016	0.9936	6.1e-4	0.9885	0.9423	0.8118	0.9121

Ocean Color

Accomplishments / Events:

- Provided a detailed briefing to NMFS, NOS and the JPSS Program Office on requested Ocean Color Specification Changes on August 23, 2021
- Continued work toward September 2021 Milestones

Overall Status:

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

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

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	01/19/21	
Updated Cal/Val plan (DPMS comments)			04/29/21	
Update MSL12 LUTs and various coefficients for J-2	Jun-21	Jun-21	Jun-21	
Complete testing/verification of J-2 OC data processing	Sep-21	Sep-21		
Final J2 ready DAP delivery (include NPP/N20 updates) to CW	Dec-21	Dec-21		cc ASSISTT
Complete MSL12 v1.40 preparation and implementation	Jun-21	Jun-21	Jun-21	
Working on improvement of the ocean color data processing system (MSL12), particularly over global coastal and inland water regions	Sep-21	Sep-21		
Improve the merged VIIRS OC data from SNPP and NOAA-20, and gap-free global Chl-a data	Sep-21	Sep-21		
Continue VIIRS Cal/Val data analysis (SNPP & NOAA-20 comparison)	Mar-21	Mar-21	Mar-21	
In situ data collections from OC Cal/Val team including NOAA dedicated cruise and other opportunities, and continue Cal/Val for ocean color EDR	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		

Highlights:

Ocean color ground segment requirement specification challenges discussed by JSTAR, JPSS Program Office, NOS and NMFS

Normalized Spectral $nR_{rs}(\lambda)$ Distribution over the Global Ocean
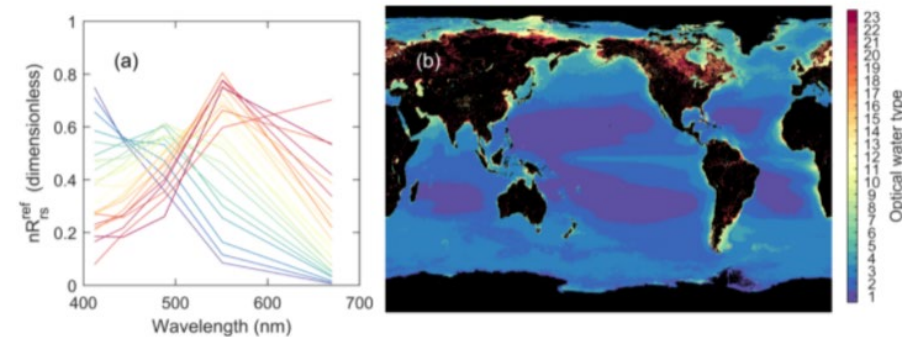
$$nR_{rs}(\lambda_i) = \frac{R_{rs}(\lambda_i)}{\sqrt{\sum R_{rs}(\lambda_j)^2}}.$$

where λ_j refers to a total of five nominal center wavelengths at 412, 443, 488, 551, and 670 nm.

Sea Surface Temperature

Accomplishments / Events:

- STAR worked to mitigate the NPP outage from 3-5 Aug 2021. About 50% of data on 3 Aug, 100% on 4 Aug, and 40% on 5 Aug are lost, resulting in ~45hrs data gap
- PO.DAAC contacted STAR with a request to fix & back-fill the broken and missing data. 49/144 10min L1b granules are available on 4 Aug and 144/144 on 5 Aug, but all 4 Aug granules and 40% of 5 Aug granules are marked as poor quality. Our analyses confirm that they are unusable for SST
- STAR reprocessed good quality 60% on 5 Aug data and worked with PO.DAAC and CoastWatch to back-fill. Some following days were also incomplete in NDE ops (6 Aug only had 6 SST granules, out of 144; 7 Aug is also incomplete, although all L1b data exist and are of good quality; etc). We worked to consistently reprocess, remove damaged granules from archives, and back-fill.
- We told PO.DAAC that NPP is close to 10yrs in orbit, 3yrs above its 7yr life expectancy. We hope that this longest NPP outage was an isolated event, but strongly recommend users to include N20 in their processing chain (if they haven't done so yet) as a complement/fallback to NPP.
- PO.DAAC JPSS usage statistics remains strong in month of July 2021, see table below.

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:

CAC badges of 4 main SST developers were let expired by the STAR Resource Management Division. Two were badged 3 weeks later, and two 6 weeks later. This delays deliverables by at least a month

Highlights:

- PO.DAAC report on JPSS ACSPO data usage statistics in July 2021. There are total of 40 individual users, who downloaded more than 2.4 Million files comprising 90TB of data.
- Currently, the JPSS data products are complete life-of-mission comprise. 95%+ are reprocessed at STAR. In next version of ACSPO (v2.80), the product name will change from OSPO to STAR.
- The ACSPO JPSS product remains one of the most requested and downloaded PO.DAAC products

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/15/20	
Updated Cal/Val plan (address DPMS review comments)			04/21/21	
Initial (same as Final) J2 ready DAP to NDE (include NPP/N20 updates)	Apr-21	Sep-21		ACSPO 2.80
ACSPO 2.90 DAP to ASSISTT	Aug-21		Post-launch	ACSPO 2.90
Final J2 ready DAP to NDE (include NPP/N20 updates)	Dec-21			Will be omitted because 2.80 is initial and at the same time final J2-ready DAP
Improved clear-sky mask, SST fronts to support data fusion (ACSPO 2.90)	Aug-21		Post-launch	Next ACSPO version will be J2-tweaked
J2 ACSPO and Cal/Val Readiness	Sep-21	Oct-21		Delayed by expired CAC cards
Support N20/NPP SST Cal/Val & fixes	Sep-21	Oct-21		Delayed by expired CAC cards
Continue archival w/PO.DAAC/NCEI. Work w/NCEI to complete holdings	Sep-21	Oct-21		Delayed by expired CAC cards
Maintain SQUAM, iQuam, ARMS, match-up codes, RAN infrastructure. Improve and optimize	Sep-21	Oct-21		Delayed by expired CAC cards
NOAA SST Cal/Val Tools ready to monitor N21 SST	Sep-21	Oct-21		Delayed by expired CAC cards
Annual algorithms/products performance report	Sep-21	Oct-21		Delayed by expired CAC cards

Persistent ID	Data Set Name	Users	GB	Files
PODAAC-GHV20-2PO61	GHRSST Level 2P OSPO dataset v2.61 from VIIRS on NOAA-20 satellite (GDS v2)	14	16002.1	98027
PODAAC-GHV20-3UO61	GHRSST Level 3U OSPO dataset v2.61 from VIIRS on NOAA-20 Satellite (GDS v2)	5	578.1	694091
PODAAC-GHVRS-2PO61	GHRSST Level 2P OSPO dataset v2.61 from VIIRS on S-NPP Satellite (GDS v2)	12	89897.5	642301
PODAAC-GHVRS-3UO61	GHRSST Level 3U OSPO dataset v2.61 from VIIRS on S-NPP Satellite (GDS v2)	9	755.0	979958

VIIRS Polar Winds

Accomplishments / Events:

- **DNB Winds**: The CIMSS polar winds team is now routinely producing Day Night Band (DNB) Atmospheric Motion Vectors (AMVs) for S-NPP (see highlight).
  - Overall, the agreement with rawinsondes is good, with speed and direction RMS errors of around 3 ms-1 and 12° respectively for 21,807 AMVs.

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

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/30/20	
Updated Cal/Val plan (DPMS comments)			04/23/21	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Jan-21	Mar-21	04/01/21	downstream testing
Initial J2 ready DAP to CSPP			05/26/21	
Final J2 ready DAP to ASSISTT	Mar-21	Mar-21	Mar-21	
Final J2 ready DAP to NDE (include NPP/N20 updates)	Nov-21	Nov-21		
Prototype the derivation of winds with the DNB using the heritage windco algorithm	Sep-21	Sep-21		
Implementation of the shortwave IR (2.25 μm) band winds	Sep-21	Sep-21	Jun-21	
Adapt QC method designed for winds derived using optical flow from image pairs to VIIRS tandem winds	Sep-21	Sep-21		
Assess the use of cloud heights derived from LEO hyperspectral sounders (CrIS, IASI)	Sep-21	Sep-21		
Collaborate with NWP community on model assimilation and impact studies	Sep-21	Sep-21		
Continue to improve products monitoring capability	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		

Highlights: New DNB AMVs compare well with Rawinsondes
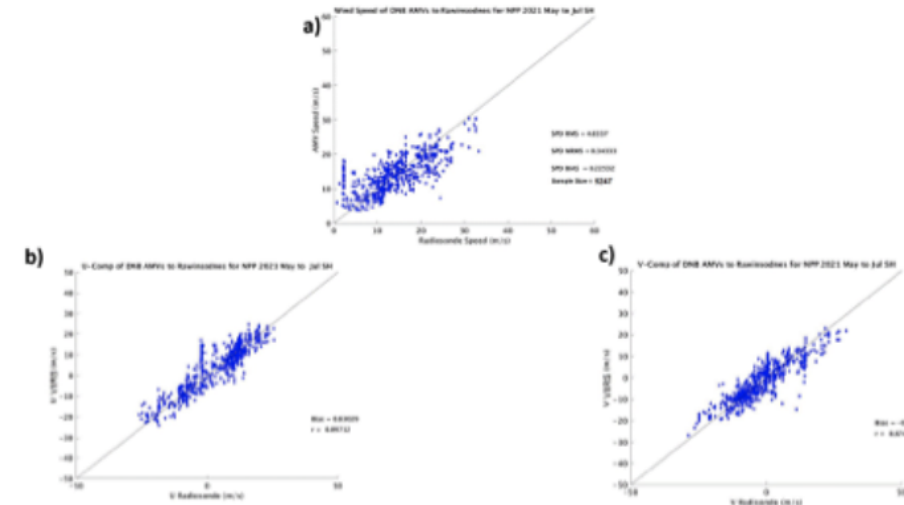

Figure: VIIRS DNB AMVs versus rawinsonde from May through July 2021 over Antarctica. Top a) is the comparison to wind speed and bottom comparisons broken down to b) u-comp and d) v-comp.

Accomplishments / Events

- The NUCAPS team provided EDR impacts to the Suomi NPP recovery efforts from the anomaly that occurred after the star tracker catalog update. Analyzed two focus days of S-NPP NUCAPS products, one focus day before the anomaly, and the other after recovering from the anomaly, and verified S-NPP NUCAPS retrieved products with the NOAA-20. The results of evaluation indicated no apparent degradation in S-NPP (LW/SW) retrievals.

- Continued work on three major updates to the current NUCAPS V3.0 towards NUCAPS V3.1 for mission long reprocessing of S-NPP products. These include, (a) Averaging Kernels and surface corrections implementation into the NUCAPS product output file, (b) updates to the ozone climatology, (c) improving PBL temperature biases optimizing the temperature damping. The reprocessing version will be implemented on the Cloud through NCIS Cloud infrastructure.

- The NUCAPS team prepared and submitted a total of 6 abstracts for the AMS-2022 Annual Meeting. . Team members also worked on two manuscripts: (1) the BAMS manuscript (Kalluri et al.) and OLR manuscript (Wang et al.), and resubmitted the papers that addressed all of the reviewers' comments. The team continued work on the Elsevier reference book on Field Measurements.

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: CO2 (S-NPP & NOAA-20)	Dec-20	Dec-20	12/17/20	
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/30/20	
Updated Cal/Val plan (address DPMS review comments)			04/28/21	
NUCAPS3.0/HEAP2.3 to ASSISTT			12/14/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Apr-21	Apr-21	02/26/21 04/13/21 patch	
Initial J2 ready DAP to CSPP			04/27/21	
Final J2 ready DAP to ASSISTT	May-21	Aug-21	Jun-21	
Final J2 ready DAP to NDE (include NPP/N20 updates)	Oct-21	Oct-21		
NUCAPS averaging kernels for T/H2O/O3/CO/CH4/CO2	Sep-21	Sep-21		
Improve trace gas retrievals	Sep-21	Sep-21		
Explore the use of alternate technologies for certain NUCAPS modules such as AI-based bias tuning and regression	Sep-21	Sep-21		
Collection of validation data sets and collocated matches of satellite radiances and ancillary data sets for product validations and monitoring	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		

Highlights:
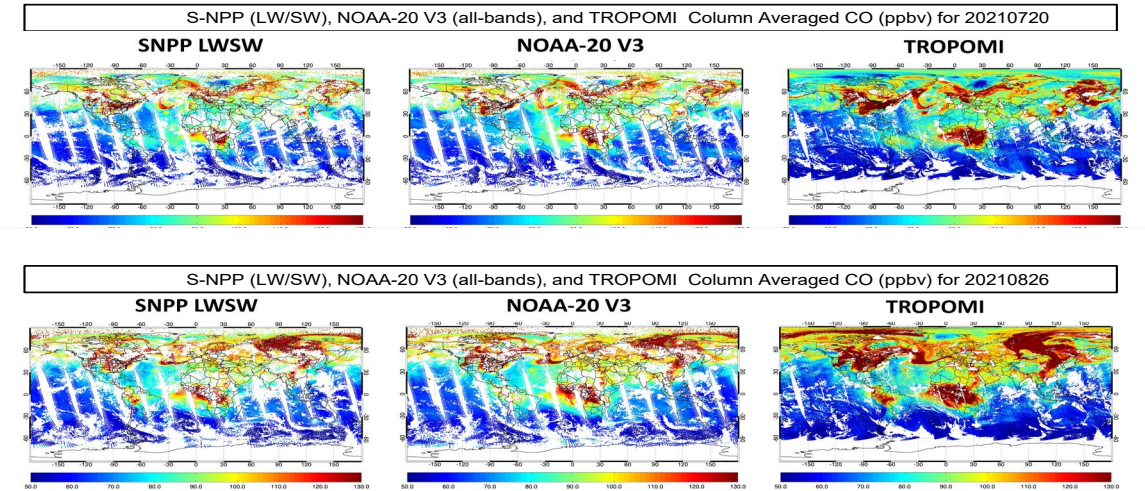
Figure 1. The Suomi-NPP (LW/SW) column averaged Carbon Monoxide concentrations for two focus day data sets, one before the S-NPP anomaly (07202021), and after recovering from the anomaly (08062021). There is no apparent degradation in the NUCAPS S-NPP (LW/SW) Co retrievals after the recovery. Differences in the total CO values between these two days are due to differences in the variability of CO. We are currently investigating quantitative impacts of S-NPP trace gas products due to mid-wave band loss, and apparently, there is no obvious degradation in S-NPP (LW/SW) trace gas retrievals.

MiRS Products

August, 2021

Accomplishments / Events:

- Work on developing and testing a machine learning approach to improve MiRS NOAA-20/ATMS sea surface temperature (SST) retrievals has progressed and a manuscript for submission is nearly finalized. Several experiments were compared: MiRS operational, DNN-Retrieval (a deep neural network that used MiRS retrieved products as inputs and was trained to ECMWF analysis SSTs to estimate and correct MiRS retrieval errors), DNN-TB (a network trained using uncorrected Level 1 brightness temperatures to predict SST), and MLReg-TB (a multilinear regression using Level one brightness temperatures to predict SST). The figure below shows an analysis of scan dependence of the retrieved SST bias and difference standard deviation on two different independent test days. The curve corresponding to DNN-Retr (orange curve) shows the lowest overall bias and standard deviation and generally the smallest scan angle dependence, although the DNN-TB experiment shows very small dependence, but higher overall bias and standard deviation.

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:

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/21/20	
Updated Cal/Val plan (address DPMS review comments)			04/21/21	
MiRS v11.7 to ASSISTT			12/21/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Mar-21	May-21	05/18/21	documentation update
Initial J2 ready DAP to CSPP			06/11/21	
Final J2 ready DAP to ASSISTT	Jul-21	Jul-21	7/30/21	
Final J2 ready DAP to NDE (include NPP/N20 updates)	Dec-21	Jan-22		
Integrate SFR updates	Jun-21	Jul-21	Jul-21	Received SFR code package
AI based radiometric bias correction	Aug-21	Aug-21	Aug-21	
Explore AI application for improved first guess for all weather temperature and water vapor retrievals in particular the enhancement under hurricane conditions	Sep-21	Sep-21		
ATMS SDR reprocessing data verification	Sep-21	Sep-21		
Algorithm maintenance and monitoring	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		

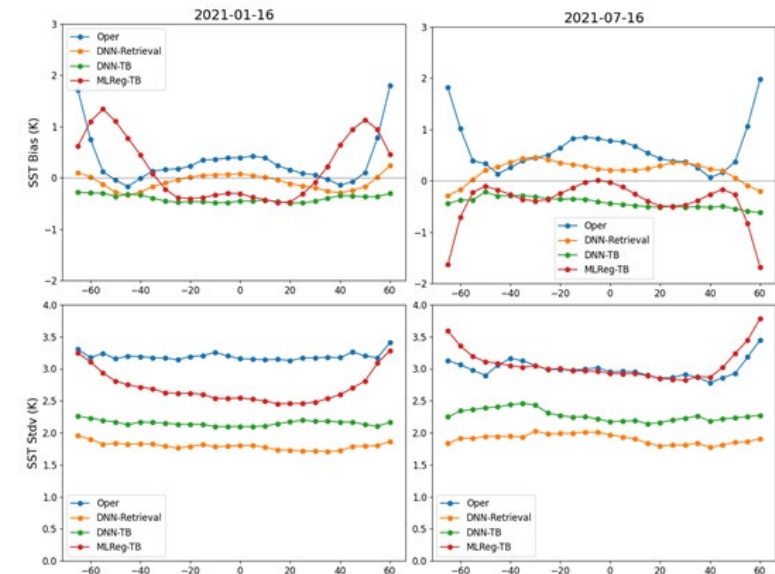Scan angle dependence of NOAA-20/ATMS SST errors from four retrieval experiments. Test days were 2021-01-16 and 2021-07-16. The experiment which used MiRS retrievals to estimate and correct the retrieval error (DNN-Retrieval, orange curve) had the best overall performance.

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Snowfall Rate

Accomplishments / Events:

- Built four training datasets for developing AMSU-A/MHS machine learning (ML) Snowfall Detection (SD) algorithms (Metop-C, Metop-B, Metop-A, and NOAA-19). The truth data is the NOAA Integrated Surface Database (ISD) ground observations. Two types of ML models will be developed: Neural Network (NN) and Random Forest (RF).

- Conducted feature analysis on the Metop-B training data. A set of 25 features was selected from hundreds of features after performing feature elimination. Each of the NN and RF models has a unique set of features.

- Studying the effect of ice habit shape on snowfall rate retrieval. Four different habits are used in this study. The goal is to adopt more advanced microphysics in the radiative transfer modeling to improve retrieval accuracy.

- The CISESS PI, Yongzhen Fan, mentored a UMD summer intern, Dennis Kongoli, who presented his research about ML SD at the CISESS Summer Intern Celebration and highly praised Yongzhen for all the time and effort he put into on being a mentor.

Overall Status:

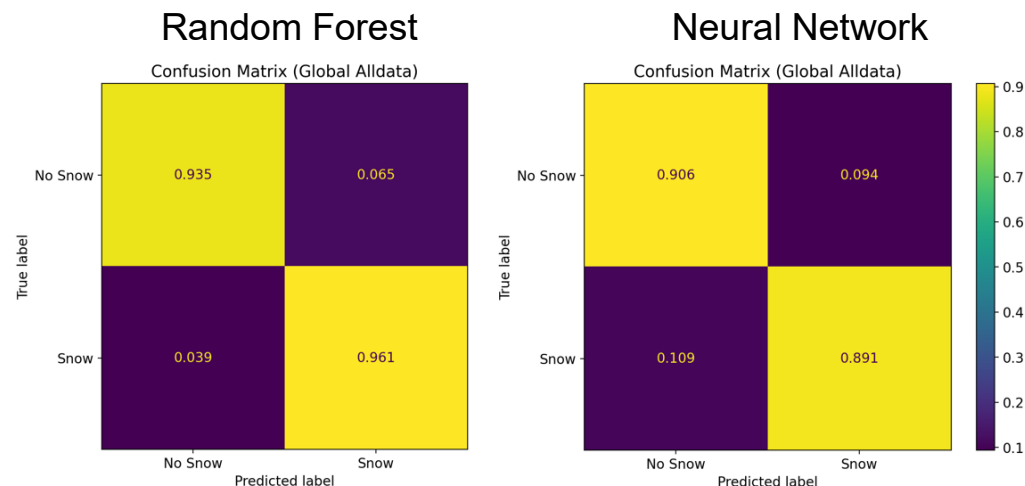|	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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: Feature Analysis for Machine Learning Snowfall Detection

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20	12/15/20	
Updated Cal/Val plan (address DPMS review comments)			04/22/21	
MiRS v11.7 to ASSISTT			12/21/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Mar-21	May-21	05/18/21	ASSISTT delivery
Initial J2 ready DAP to CSPP			06/11/21	
Final J2 ready DAP to ASSISTT	Jul-21	Jul-21	07/30/21	MiRS delivery
Final J2 ready DAP to NDE (include NPP/N20 updates)	Dec-21	Jan-22		ASSISTT delivery
Updated SFR algorithms for JPSS-2	Jun-21	Jun-21	Jun-21	
Deliver updated SFR package (for JPSS-2, NOAA-20, and S-NPP) to MiRS team for integration	Jun-21	Jun-21	06/21/21	11/20/20 SFR package to MiRS
Explore AI-based snowfall detection	Sep-21	Sep-21		
NOAA-20 and S-NPP cross-calibration/comparison	Sep-21	Sep-21		
Algorithm maintenance and monitoring	Sep-21	Sep-21		
Annual algorithms/products performance report	Sep-21	Sep-21		

Metop-B machine learning Snowfall Detection models confusion matrixes. They represent the performance of each model in its ability to detect snowfall with low false alarm rate. In this case, the RF model outperforms the NN model.

Accomplishments / Events:

- Provided scripts / DAPS to allow V8TOz and V8Pro version 3 in use at NDE to work with the different sized SDRs and Geolocation files generated by ADL Block 2.3 MX4.

- Test runs of the Enterprise V8TOz with TropoMI measurements.

- Investigating V2Limb failures for un-repaired granules at NDE.

- Made and delivered small adjustments to version 4 V8TOz for use with JPSS-2. Additional tables for version 4 V8Pro are under development.

Overall Status:

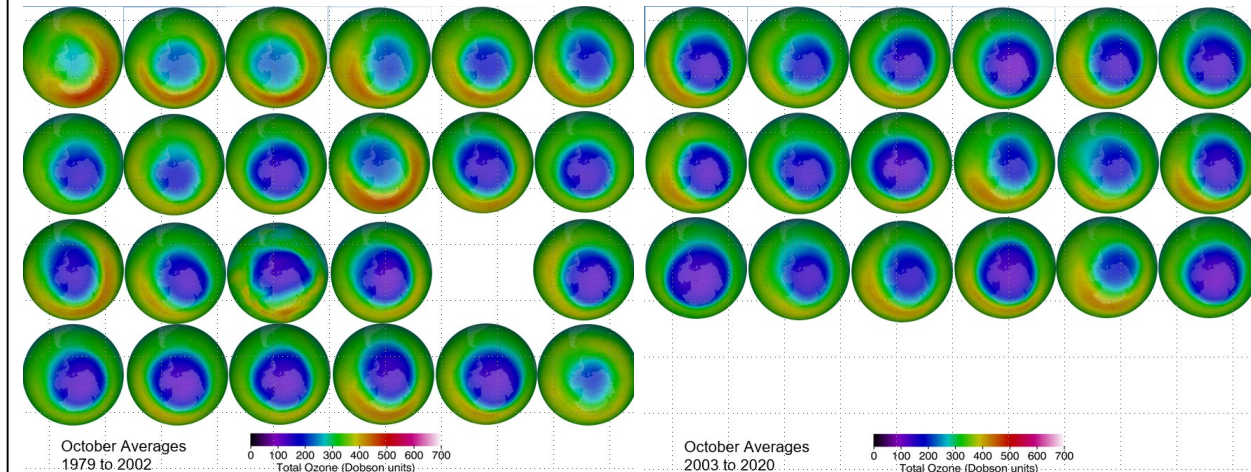|	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
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Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
JPSS-2 Schedule				
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	05/21/20	
J2 Cal/Val Plan – V2.0 delivery	Dec-20	Dec-20	12/30/20	
Updated Cal/Val plan (address DPMS review comments)			04/23/21	
Initial J2 ready DAP to ASSISTT	Jul-20	Jul-20	v4r0: 07/07/20	V8Pro
Initial J2 ready DAP to ASSISTT	Nov-20	Nov-20	v4r2: 11/25/20	V8TOz
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Dec-20	Dec-20	12/31/20 04/15/21 patch 08/04/21 Patch	V8Pro
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Apr-21	May-21	05/27/21	V8TOz: v4r2 V8TOS: v5r0
Final J2 ready DAP to ASSISTT	Jul-21	Jul-21		V8Pro
Final J2 ready DAP to ASSISTT	Jun-21	Jun-21	Jun-21	V8TOz
Final J2 ready DAP to NDE (include NPP/N20 updates)	Dec-21	Dec-21		V8Pro
Final J2 ready DAP to NDE (include NPP/N20 updates)	Nov-21	Nov-21		V8TOz
Algorithm Updates Review	Sep-20	Sep-20	08/18/20	
Algorithm Updates/Cal-Val Activities				
Details in next slides				

Highlights: Monitoring the Recovery of the Ozone Layer – JPSS Science Seminar

October Averages 1979 to 2002 — Total Ozone (Dobson units) 0 100 200 300 400 500 600 700

October Averages 2003 to 2020 — Total Ozone (Dobson units) 0 100 200 300 400 500 600 700

Imagery shows Ozone Holes 1979-2002 (at left) and 2003-2020 (right). Despite years of adherence to protocols on Ozone-Depleting Substances there are still decades left for Ozone layer recovery (October averages from https://ozonewatch.gsfc.nasa.gov/monthly/SH.html)

OMPS Ozone (V8Pro, V2Limb & V8TOz) Milestones

Milestones	Scheduled Date	Actual Completion Date
Provide V8TOz and V8TOS DAP to ASSISTT with new code and tables for broad bandpasses, and updated capability to handle 30x241 FOVs SDR Granules in preparation for J02.	Nov-20	11/25/20 v4r2 V8TOz
Provide One-Line V8Pro Code fix and New NOAA-20 Adjustment Table as a Patch Delivery to NDE with CC to ASSISTT to progress to validated maturity.	Jan-21 Apr-21	04/15/21
Complete work with NDE to resolve two OMPS V2Lmb issues -- Latency / TIme Out and Ancillary File errors.	Feb-21	Patch DAP to NDE 2/11/21 V2Limb.
Demonstrate V8TOz and V8Pro processing of J02 test data as provided by the OMPS SDR team.	Sep-21	SDR Data sets will not be available until at least December
Complete evaluation of NDE resource needs for three-slit processing of the S-NPP OMPS Limb with V2Limb and make a decision on whether to switch from 1 slit to 3 slits.	Jul-21	Testing complete at STAR. Waiting for NDE implementation of previous improvements.
Complete rehosting of CloudRR algorithm at STAR	Aug-21	Work was suspended as personnel dealt with Mx4 and other issues.
V8TOZ Patch DAP to work with SDRs and Geolocation files generated by ADL Block 2.3 MX4		08/19/21
V8PRO Patch DAP to work with SDRs and Geolocation files generated by ADL Block 2.3 MX4		08/25/21

GCOM-W1 Products

Accomplishments / Events:

- Initiate drafting of AMSR3 cal/val plan .
- Algorithm updates to ASSISTT for planned GAASP updates in FY21
  - RR and SSW in progress
- Continued product O&M, keeping abreast of GOSAT-2 AMSR3 activities so plans can be developed for use at STAR.
- A new method has been developed to estimate sea ice thickness with AMSR2 data based on the snow-ice interface temperature and an ice thickness model.
- Ralph Ferraro retired from STAR on June 30; Huan Meng will take over as AMSR precipitation EDR lead; Jeff Key will assume project deputy role.
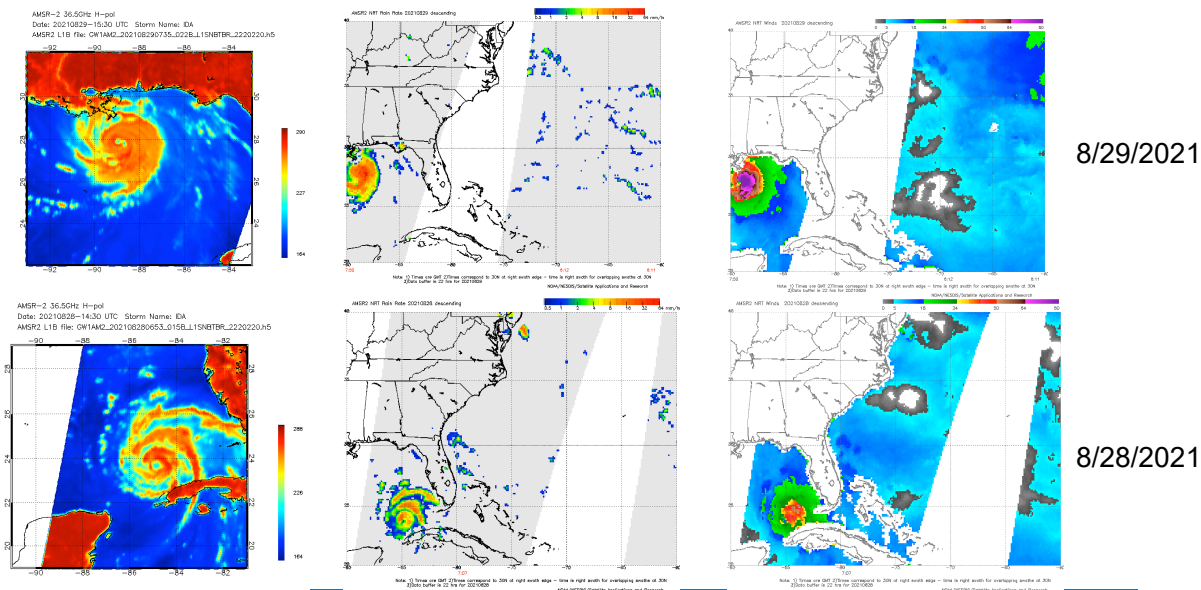
Overall Status:

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

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Issues/Risks:

None

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

Highlights: *Hurricane Ida rapidly strengthening and approaching the Louisiana coast. From the left, AMSR2 37 Tb, Rain rate, and wind speed.*

8/29/2021

8/28/2021

Accomplishments / Events:

- Department of Energy (DOE) / Atmospheric Radiation Measurement (ARM) program agreed to accept the FY21 funding provided by the JPSS dedicated radiosonde program even though funds were received by DOE/ARM after their original June 30 deadline. As a result, field activities have returned to their nominal rate, with radiosonde launches (concurrent with NOAA-20 overpass) approximately every 4-days at the three ARM sites, respectively; Barrow-Alaska, Lamont-Oklahoma and Graciosa Island-Azores. At Lamont, launches have been accelerated to 3-day intervals until the end of August to better capture the summertime environment of high interest to NUCAPS users (NWS forecasters). Work to ensure a more timely transfer of FY22 funds is pending.

- Continued to monitor the newly deployed NUCAPS v3 atmospheric soundings that was implemented (replacing v2.5) back on July 15 (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			

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Issues/Risks:

None

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

Highlights: Monitoring implementation of NUCAPS v3.0

Mean (solid) and standard deviation (dashed) of NUCAPS minus radiosonde temperature differences from the surface to 100 hPa (15km) for respective 10-day periods immediately before (left, v2.5) and after (v3, right) July 15; v3 replaced v2.5 in Operations on July 15. The lower panel shows vertical time series (surface to 100 hPa) of mean temperature differences from mid-May thru early August, 2021, crossing over the July 15th implementation of v3. All 3 sets of vertical statistics confirm a systematic warming for v3 vs v2.5 below 700 hPa (circled); differences are primarily observed during Summer, daytime, land cases. Monitoring continues.