AMP/STAR FY20 TTA

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

August 10, 2020

Highlights from the Science Teams

Successful completion of VIIRS lunar calibration for the 2019-2020 cycle

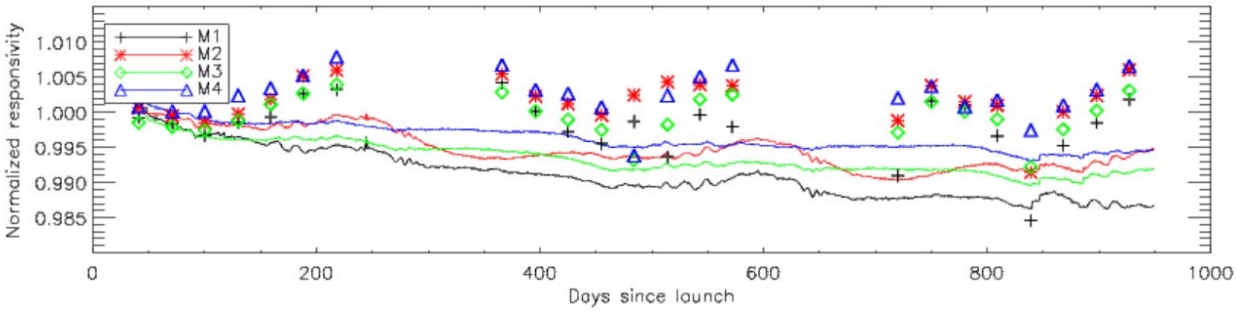


Figure. NOAA-20 VIIRS lunar calibration (symbols) reveal residual degradation in the onboard calibration system (lines) for selected channels (M1-M4)

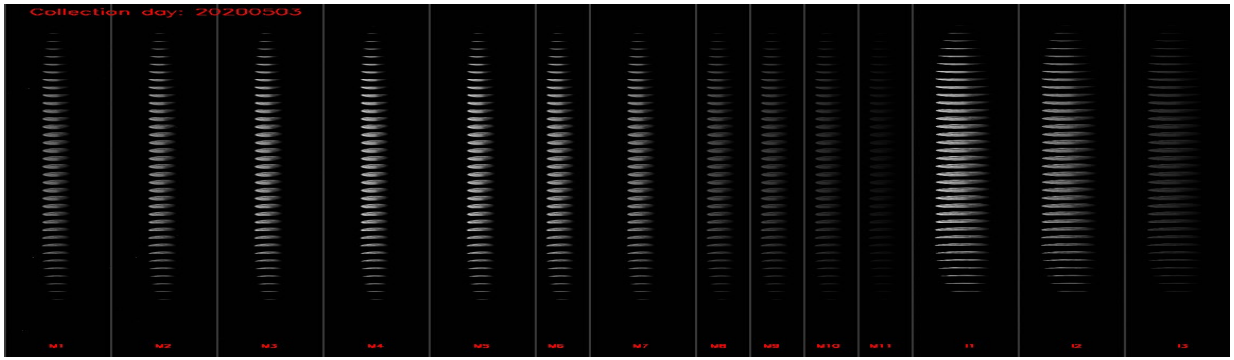


Figure. STAR scientist have mastered the skill of lunar calibration, for which the spacecraft is rolled precisely to observe the moon at the center of the image, at the same lunar phase angle each month. Sample VIIRS lunar image for all solar bands shown here.

Experience tells us that onboard calibration alone is necessary but not sufficient to meet the 0.3% stability mission requirement for NOAA-20 VIIRS.

The top figure suggests degradation in NOAA-20 VIIRS since launch, but the lunar calibration indicates otherwise. After extensive study, we found that the onboard calibration has an artifact of residual degradation.

There are typically nine lunar calibration events per year, starting in October and ends in June the following year. We have successfully completed the 2019-2020 lunar calibration cycle and look forward to the next cycle starting this fall.

Highlights from the Science Teams

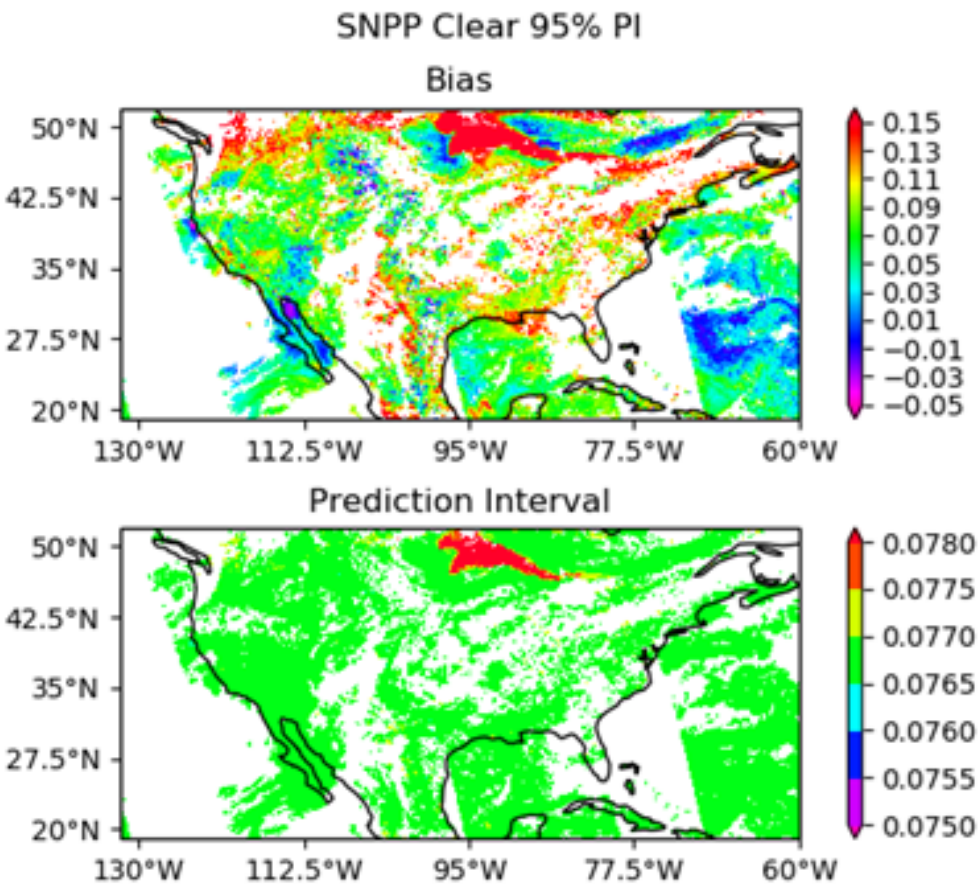


Figure. Pixel by pixel bias for SNPP AOD (top) and Prediction Interval (bottom).

Aerosol Bias Analysis

The STAR aerosol team has completed preliminary analysis of pixel-level bias estimates for Suomi NPP and NOAA-20 VIIRS aerosol optical depth products. This work is being done as part of a task on satellite data assimilation into a regional air quality model by the National Weather Service (NWS) under the disaster supplemental funding STAR received. This is the first time STAR is providing a bias estimate for retrieved AOD at every pixel. This is expected to help the NWS with aerosol assimilation into the Community Multi-scale Air Quality (CMAQ) model. The figure below shows a map of prognostic AOD bias estimates for Suimi NPP VIIRS over CONUS for one single day. The top panel is for bias and the bottom panel is the predicted levels within which the bias is expected to fall.

New Ocean Color Papers Published

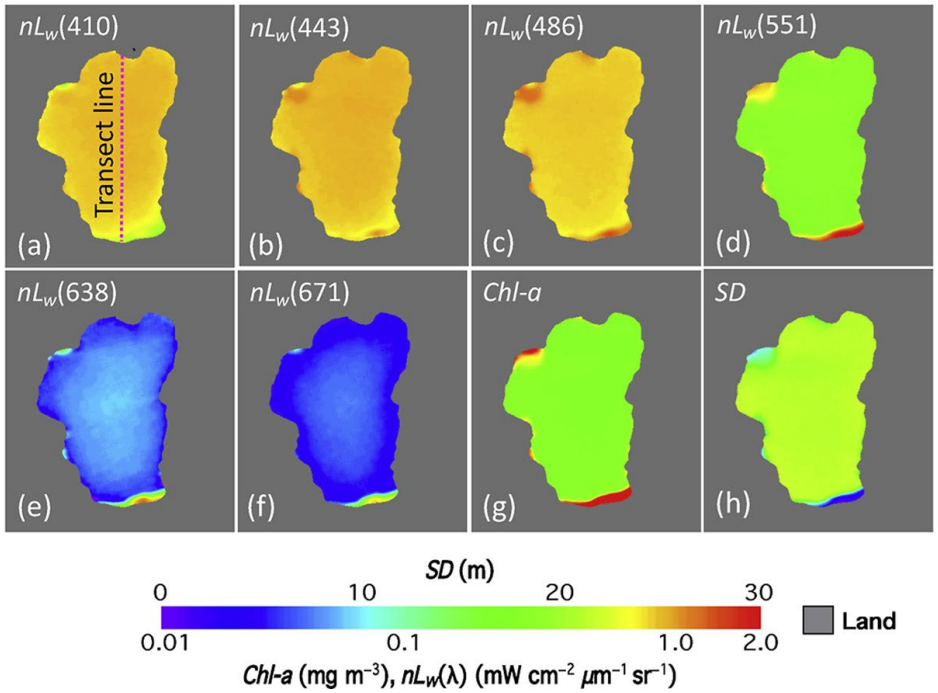


Figure. Various Ocean Color properties for Lake Tahoe, CA/NV, derived from data for the period 2016-2019.

A new paper published in ***IEEE Trans. Geosci. Remote Sensing*****:** Drs., Mike Chu and Menghua Wang are the authors for a paper published in the July 2020 issue of *IEEE Trans. Geosci. Remote Sensing*. The complete citation of the paper is as follows: Chu, M. and M. Wang "The two-year radiometric evaluation of Sentinel-3A OLCI via intersensor comparison with SNPP VIIRS"

Another paper was published in ***Water Research*** - Satellite-measured water properties in high altitude Lake Tahoe – which is the first team to use remote sensing to measure water properties in high altitude lakes. M. Wang, W. Shi, S. Watanabe, Vol. 178,

A third paper - **Water Quality Properties Derived from VIIRS Measurements in the Great Lakes –** was also published. Son, S.; Wang, M. Water Quality Properties Derived from VIIRS Measurements in the Great Lakes. *Remote Sens.* **2020**, *12*, 1605

Accomplishments

- Delivery Algorithm Packages (DAPs) - Mission Unique Products:
  - 7/13/2020: OMPS SDR DAP (ADR9066/CCR5026, N20 OMPS-NP SDR Wavelength Scale Accuracy , LUT update for N20 validated maturity) package (three tables: OMPS-NP-CALCONST-LUT_j01, OMPS-NP-OSOL-LUT_j01, OMPS-NP-WAVELENGTH-GND-PI_j01) delivered to DPES
  - 7/15/2020: VIIRS SDR DAP (ADR9340/CCR5113, NOAA-20 VIIRS RSBAUTOCAL LUTs Update) package (five tables: VIIRS-RSBAUTOCAL-SDSM-SOLAR-SCREEN-TRANS-LUT_j01, VIIRS-RSBAUTOCAL-H-AUTOMATE-LUT_j01, VIIRS-RSBAUTOCAL-H-LUT_j01, VIIRS-RSBAUTOCAL-RSB-F-AUTOMATE-LUT_j01, VIIRS-RSBAUTOCAL-DNB-LGS-GAIN-AUTOMATE-LUT_j01) delivered to DPES
  - 7/30/2020: CrIS SDR team delivered JPSS-2 CrIS Pre-launch Characterization Report
  - Jul-20: VIIRS SDR team delivered initial JPSS-2 VIIRS SDR prelaunch LUTs package (44 LUT files) to ASSISTT

- DAPs – Enterprise Products:
  - 7/7/2020: GCOM team delivered GCOM-W1/AMSR2 Annual Validation Report
  - 7/7/2020: OMPS Ozone V8PRO_v4r0 delivered to ASSISTT/NDE (initial J2 DAP, with N20/NPP updates: new RT tables, new higher-fidelity models, and updated soft-calibration)
  - 7/8/2020: N4RT v4.11 delivered to NDE (OMPS LP, and DMW updates)
  - 7/10/2020: land vegetation team delivered NVPS VI–v2r1 DAP to ASSISST
  - 7/10/2020: Snow Fall Rate team delivered SFR package to MiRS team for integration/testing (J2 capability, updated bias correction for all satellites, and other minor changes)
  - 7/28/2020: NUCAPS team delivered preliminary J2 DAP to ASSISTT team
  - 7/31/2020: MiRS team delivered MiRS v11.6 DAP (initial J2 DAP, with N20/NPP updates: bias correction, static coefficient files, global attributes metadata, issues with output filename) to OSPO/ASSISTT
  - Jul-20: Vegetation Health team delivered DAP (initial J2 & final N20 DAP) to ASSISTT

- New Data Distributions/Availability:
  - 7/6/2020: ICVS-GSICS Portal operational
  - The baseline SNPP reprocessed data and the reprocessed cloud mask (CM) of 2016 is available at ftp://jlrdata.umd.edu/pub/SNPP_Reprocessing

Accomplishments – JPSS Cal Val Supports

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

S-NPP	Weekly OMPS TC/NP Dark Table Updates	07/07/20, 07/14/20, 07/21/20, 07/28/20
NOAA-20	Weekly OMPS TC/NP Dark Table Updates	07/07/20, 07/14/20, 07/21/20, 07/28/20
S-NPP	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	07/14/20, 07/28/20
NOAA-20	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	07/07/20, 07/21/20
S-NPP	Monthly VIIRS LUT Update of DNB Offsets and Gains	07/28/20
NOAA-20	Monthly VIIRS LUT Update of DNB Offsets and Gains	07/28/20

- 7/28/2020: IDPS Block 2.2 Mx1 Operational
  - Terrain Corrected EDR Imagery
  - OMPS TC remove snow/ice/QST tiles usage

- 7/21/2020: EDR Algorithm Update Reviews for JPSS-2
  - Volcanic Ash
  - VIIRS Polar Winds
  - Cryosphere Products (Ice, and Snow)
  - Cloud Products (Cloud Mask, Cloud Phase/Type, Cloud Top/Base, CCL, DCOMP, and NCOMP)
  - Ocean Color
  - Surface Type

- 7/17/2020: July 2020 NOAA-20 Calibration/Validation Maturity Review
  - Ocean Color Validated Maturity

Accomplishments - Transition to Operations and Algorithms

- **SNPP/N20**
  - Build 2.2 Mx 1 Ready for Operations 7/27
- **DPMS Cloud ADA**
  - Continued to refine draft Test Plan and Test Procedures and SOPs
  - Working with Ground SEIT and Raytheon to develop Tracking Database and identify Cloud account permissions
  - Working with IDPS to get STAR accounts set up for Cloud access
- **EPS-SG project support**
  - MetOp-SG Heritage Products CDR
  - MetOp-SG Interim Design Review Dry Runs
  - Participated in the monthly MetOp-SG Risk Working Group meeting
  - Continued to support the LORWG and DACS in product prioritization efforts and met with various line office representatives to go over their priorities for data products
- **J2 and Beyond**
  - Participated in the first (of three) EDR Algorithm Update Review (Jul 21)
  - Continuing to work with Flight Project as they update the JCT dates and coordinate DMPS involvement (including GRAVITE and ADL)
  - Identifying algorithm updates required prior to JCT3 End to End test
  - Participated in the NESDIS Cloud Roadshow
- **Satellite Product Management (Legacy Migration, non-NOAA, MetOp-C) DACS PPM**
  - Continued to support the DACS Product Portfolio Management Team weekly meetings

Upcoming Cal/Val Maturity Reviews

- September, 2020 Maturity Review:
  - Provisional/Validated Maturity:
    GST (Global Gridded Surface Type)
  - Full Validated Maturity:
    OMPS NP Ozone EDR (V8Pro)

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

Upcoming Milestones/Deliveries

- JSTAR Code/LUT/Product Deliveries:

DAP to DPES:

- Sep-20: VIIRS Imagery EDR NCC LUT N20 update
- Aug-20: Initial J2 LUTs (VIIRS SDR)
- Sep-20: Initial J2 PCT (ATMS SDR)
- Oct-20: Initial J2 PCT/LUTs (CrIS & OMPS SDRs)
- Aug-20: OMPS SDR DAP (ADR9095)

NOAA-20 Algorithm DAP to NDE/CoastWatch:

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

FY20 STAR JPSS Milestones

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Algorithm Updates DAPs				
OMPS DAP: Remove VIIRS SnowIce and QST tile dependency (ADR8550)	Oct-19	Oct-19	10/28/19	
OMPS: J2 pre-launch sensor characterization report	Dec-19	Aug-20		Need NASA sharepoint access permission
ATMS: J2 pre-launch sensor characterization report	May-20	Aug-20		PSR changed
*CrIS: J2 pre-launch sensor characterization report	May-20	Jul-20	07/30/20	PSR changed
J2 pre-launch Algorithm Updates Review - SDRs and Imagery	Jun-20	Jun-20	06/16/20	
J2 pre-launch Algorithms/PCT/LUT packages - SDRs and Imagery	Aug-20	Oct-20		PSR changed
OMPS: High resolution SDR implementation (17km x 17km OMPS TC)	Aug-20	Aug-20		
Imagery: All 16 M–bands as Imagery EDRs	Sep-21	Sep-21	RTN will work on this	Work_under_PCR
N20 NUCAPS final DAP to NDE	Nov-19	Nov-19	11/01/19	
N20 Vegetation Health final DAP to NDE	Mar-20	Dec-20		With init J2 DAP To ASSISTT: Jul-20
I-band Active Fires DAP to NDE	Mar-20	Jun-20	06/24/20	With init J2 DAP Need J2 test data
J2 pre-launch Algorithm Updates Review - EDRs	Sep-20	Sep-20	07/21/20: Part A	
Initial J2-ready EDR DAPs (include NPP/N20 updates)	Sep-20	Dec-20	06/24/20: Active Fires	
AST-2019 (VIIRS Annual Surface Type)	Sep-20	Sep-20		

FY20 STAR JPSS Milestones

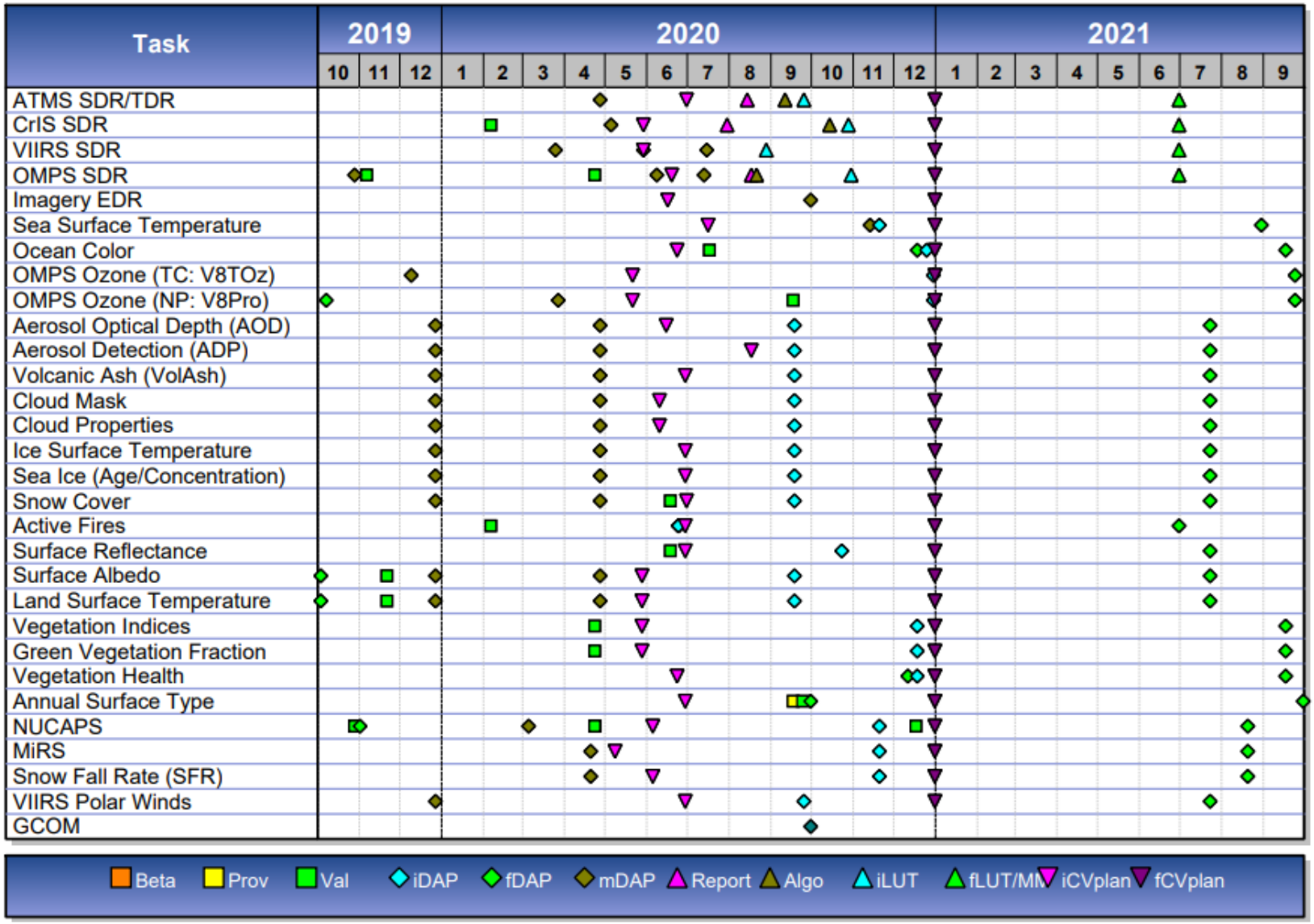
Milestones	Original Date	Forecast Date	Actual Date	Variance Explanation
Algorithm Cal/Val				
J2 Cal Val Plans - Draft Delivery (all SDR/EDR products)	Jun-20	Jun-20	06/30/20	
N20 NUCAPS Full Validated Maturity (all NUCAPS products except CH4 & CO2)	Oct-19	Oct-19	10/28/19	
N20 Land Surface Temperature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

FY20 STAR JPSS Milestones

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

STAR JPSS Schedule

STAR JPSS Schedule: TTA Milestones



FY20 JPSS PSDI Milestones

Product Name	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
S-NPP and N-20 Flood Mapping Product				
-- CDR	Dec-19	Dec-19	Dec 2019	Completed
-- ARR	Oct-20	Oct-20		
-- ORR	Jan-21	Jan-21		
-- Operations	Mar-21	Mar-21		
VIIRS I-Band Active Fires Product				
-- SCR	Jan-20	--	5/27/2020	Completed
-- ARR/AMR	Apr-20	Sep-20		Delay in getting DAP to NDE I&T
-- ORR	Aug-20	Sep-20		
-- Operations	Sep-20	Sep-20		

Prior Year Funded JPSS PSDI Milestones

Product Name	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
S-NPP: OMPS Limb Profiler Products				
-- EDR and SDR ORR	Dec-16	--	12/02/2019	Completed
-- Operations	Mar-17	--	6/16/200	Completed
NOAA-20: OMPS Ozone: V8Pro				
-- ORR	Jul-18	Mar-20	3/2/20	Completed
-- Operations	Aug-18	Apr-20	4/16/20	Completed
NOAA-20: NUCAPS including CrIS OLR				
-- CDR	Oct-16	--	10/27/16	Completed
-- SCR	Aug-18	--	01/25/19	Completed
-- Operations (Temp/H20 profiles)		--	3/7/2017	Completed
-- ARR	Sep-18	--	10/28/19	Completed
-- ORR	Jun-19	Apr-20		Has not integrated to NDE I&T yet
-- Operations	Jul-19	May-20		Dates relate to CO2 and CH4 components
NOAA-20: Enterprise Processing System: Global Gridding LST, and LSA				
-- CDR	Mar-18	--	10/22/18	Completed
-- TRR	Jul-18	--	3/12/2019	Completed
-- SCR	Sep-18	--	8/30/2019	Completed
-- ARR	Dec-18	Sep-19	9/24/2019	Completed
-- ORR	Mar-19	--	2/13/2020	Completed
-- Operations	Jun-19	--	2/20/2020	Completed

Prior Year Funded JPSS PSDI Milestones

Product Name	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
NOAA-20: Ocean Color				
-- CDR	Oct-16	-	10/27/2016	Completed
-- SCR	Jan-19			Completed
-- ARR	Mar-19	11/2018	11/2018	Completed
-- SRR	Apr-19	--		Waived
-- ORR	Apr-19	--		Waived
-- Operations	Jun-19	--	6/15/2020	Completed
NOAA-20: Microwave Tropical Cyclone Products				
-- CDR	Oct-16	-	10/27/2016	Completed
-- SCR	Apr-19	--	4/2/19	Completed
-- ARR	Oct-19	--	5/27/2020	Completed
-- ORR	Dec-19	Oct-20		
-- Operations	Feb-20	Nov-20		
NOAA-20: Blended Products Blended Ozone				
-- SCR	Aug-17	NA		SCR not required; already running in OPS
-- ORR	Jul-18	NA		No ORR is required
-- Operations	Oct-18	--	7/6/2020	Completed
NOAA-20: Blended Products Blended Snow and Ice				
-- SCR	Aug-18	--	7/9/2019	Completed
-- ORR	May-19	--	8/28/19	Completed
-- Operations	Jun-19	--	9/18/19	Completed
Microwave and Diurnal Corrected Blended SST w/ AMSR-2				
-- ORR	Nov-16	ON HOLD		
-- Operations	Nov-16	ON HOLD		

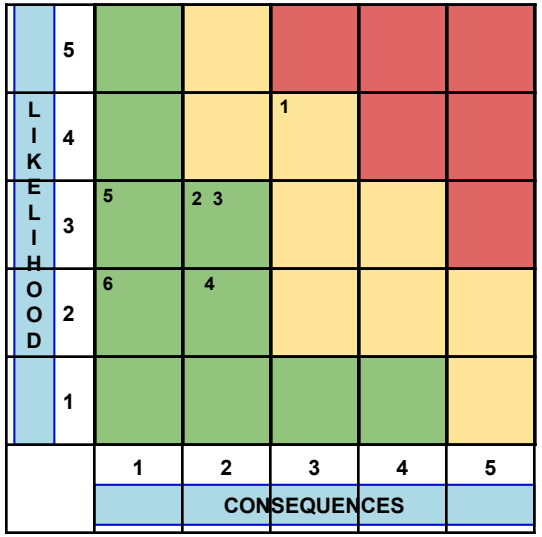
Prior Year Funded JPSS PSDI Milestones

Product Name	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Enhanced TOAST with S-NPP OMPS Limb Profiles				
-- CDR	Jan-17	NA		No longer required
-- SCR	Apr-17	NA		No longer required
-- ORR	May-17	Oct-20		
-- Operations	Jun-17	Nov-20		
Upgrade to the Multi-platform Satellite Tropical Cyclone Surface Wind Analysis Product				
-- PDR/CDR	Dec-17	--	1/26/2018	Completed
-- UTRR	Apr-18	--		Waived
-- SCR	May-18	--	1/24/2020	Completed
-- ARR	Oct-18	--	5/27/2020	Completed
-- ORR	Jan-19	Sep-20		Longer integration time
-- Operations	May-19	Oct-20		
Upgrades to the ADT Product				
-- PDR	Jul-17	--	8/23/2017	Completed
-- CDR	Jul-17	--	8/23/2017	Completed
-- SCR	Jun-18	--	2/25/2019	Completed
-- ARR	Oct-18	--	5/20/2020	Completed
-- ORR	Apr-19	Sep-20		
-- Operations	Jun-19	Oct-20		
Product Monitoring Phase IV (JPSS RR, VIIRS AF)				
-- SRR/ORR	Jun-18	Jan-20	1/29/2020	Completed
-- Operations	Jul-18	--	3/25/2020	Completed
Product Monitoring VI (NDE J1)				
-- CDR	Dec-16	--	04/17/18	Completed
-- TRR	Sep-17	--	5/14/2019	Completed
-- SCR	Jun-19	--	Waived	Waived
-- ORR	Aug-19	Jan-20	1/29/2020	Completed
-- Operations	Sep-19	--	3/25/2020	Completed

JPSS Risk Summary
Top Risks

Status as of: 08/06/2020

Rank Risk ID	Summary	LxC Trend	Aprch	Status
1 GJ-340	Data transfer via hard drive may be delayed due to offices being closed	4x3 ⇔	W	8/5/2020:The users below are getting accounts in the Cloud on the JPSS IDPS DP-AE, and will have read access to an S3 bucket called “BuildResults”.
2 AMP-19-002	Proxy data delay due to J2 10Hz Sampling Freq	3x2 ⇔	W	08/06/2020: Proxy data should be available in September and IDPS is working to provide STAR access to the cloud so the data can be made available for analysis. STAR has also been able to utilize simulated data via ascii dump to review and confirm the usability of the 10Hz S/C RDRs.
3 AMP-19-003	Some IDPS and STAR algorithms cannot use APIDs with 10Hz sample freq	3x2 ⇔	M	08/06/2020: A TIM was held with STAR, IDPS, Raytheon, SDS and DMPS-AMP Reps in which access and use of JPSS-2 simulated data was discussed. The SDS Rep provided access to a more usable version of the simulated data (ascii dump). STAR utilized the data to confirm usability of the 10Hz S/C RDRs. More analysis will be performed with the proxy data which is available on the cloud. Data is expected in September and STAR is currently working with IDPS to gain credentials to access the cloud.
4 AMP-18-003	J2 APID Changes to Accommodate New S/C Bus	2x2 ⇔	W	07/06/2020: CCR 4759 still approved and awaiting incorporation. No updates have been made to the APID to VCID map.
5 AMP-18-008	Data Product Requirements for OMPS-Limb	3x1 ⇔	M	7/6/2020: S-NPP OMPS-Limb products went into operations on 6/16/2020
6 AMP-19-001	Algorithm testing & delivery impacts due to lag between IDPS and G-ADA moving to the Cloud	2x1 ⇔	W	8/10/20: The Cloud-ADA schedule has been integrated in the ground project IMS, and will be tracked regularly. Any deviation of the schedule will be updated on this risk next month.



Criticality
HIGH
MED
LOW

Approach
A – Accept
M – Mitigate
W – Watch
R – Research

LxC Trend
⇩ – Decreasing (Improving)
⇧ – Increasing (Worsening)
⇔ – Unchanged
NEW – Added this month

JPSS Top Risks

Rank	Risk ID	Risk Statement	Approach	Status
1 ⇔ Data transfer via hard drive may be delayed due to offices being closed.	GJ-340	**Given that:** Seit Ops Like (SOL) data is transferred via hard drive and physically transported from Raytheon to STAR. **There is a possibility that:** the data transfer will be delayed due to Government Offices being closed. **Resulting in:** Scheduled testing of algorithm upgrades in SOL testing schedules for April 24 - May 8, 2020 to be delayed.	**Watch**	8/5/2020:The users below are getting accounts in the Cloud on the JPSS IDPS DP-AE, and will have read access to an S3 bucket called “BuildResults”. The Factory results will be copied from DP-FE to DP-AE S3 bucket after the regression testing for each maintenance release. Depending on which results need assessment, the STAR/ASSIST user will obtain the HDF5 products from the DP-AE S3 Bucket. STAR/ASSIST Users with Cloud accounts to S3 “BuildResults” bucket will have Read/Write access. Risk will remain until first Block 2.3 SOL testing. 7/7/2020: Risk will remain until first Block 2.3 SOL testing. Data transfer to STAR will be completed in the cloud. STAR will receive data via GRAVITE. Cloud Account will be created. 7/2/2020: Actions completed from 6/4. No new updates. 6/4/2020: Action:List of STAR names for user?s who will submit Algorithm Change Packages. Action: POC for the non-personal service account for the GRAVITE data transfer to the Cloud ADA DP-AE. 6/3/2020: Mx1 SOL Testing Passed. Risk continues for next maintenance release. 05/07/2020:Testing dates moved to Mx 1 SOL Regression Test time 5/11-5/22/2020. Working different scenarios to get STAR data. GRAVITE AND Sharepoint are possible ways to get data to STAR for Science Testing. 04/03/2020: Risk Submitted

JPSS Top Risks

Rank	Risk ID	Risk Statement	Approach	Status
2 ⇔ Proxy data delay due to J2 10Hz Sampling Freq	AMP-19-002	**Given that:** APID 11 (S/C Attitude and Ephemeris) and 30 (S/C Telemetry) sampling frequencies are at 10Hz on JPSS-2 **There is a possibility that:** It will affect and delay the process of getting/producing simulated J2 data (proxy data) during JCT. **Resulting in:** Test data production during JCT will be more difficult. "Instead of using NPP and J01 Proxy, Attitude and Ephemeris would be manufactured by using STK. To compensate for the sample freq at 10Hz, the APID 11 packet will need to be converted to 10Hz causing unwanted delays.	**Watch**	08/06/2020: Proxy data should be available in September and IDPS is working to provide STAR access to the cloud so the data can be made available for analysis. STAR has also been able to utilize simulated data via ascii dump to review and confirm the usability of the 10Hz S/C RDRs. 06/30/2020: The Softbench version 5 was used to create sample J2 S/C data. The sample J2 S/C data received was APID 11, APID 30 and APID 37 packets from Softbench (version 5). The sample J2 APID 11, APID 30 and APID 37 packet data was distributed to the science teams for analysis. Preliminary feedback was that this J2 test data has no errors and no time issues. 06/04/2020: Proxy data delay due to J2 10Hz Sampling Frequency. Softbench issues for JPSS-2 APID 11 are due to time issues. This risk remains until the next version of softbench is available and the JPSS-2 APID 11 is analyzed. Softbench version 5 data has not been received yet. 17 day test data currently uses JPSS-1 APID 11 data, repeated 1 HZ samples to create 10 HZ (all samples the same). 05/06/2020: waiting on Softbench data to see if J2 test data is making APID 11 at 10HZ. Data is expected to be available this month. 04/01/2020: No update. 02/07/20: Waiting on Softbench data to see if J2 test data is making APID 11 at 10HZ. 12/18/19: Softbench version 5 currently being tested, expected delivery end of January 2020. 11/06/19: Proxy data delay due to J2 10Hz Sampling Frequency Softbench issues for JPSS-2 APID 11 are due to time issues. This risk remains until the next version of softbench is available and the JPSS-2 APID 11 is analyzed. 17 day test data currently uses JPSS-1 APID 11 data, repeated 1 HZ samples to create 10 HZ (all samples the same). 9/9/19: Data from the simulator has been received and bit busted by the SEI&T team. This includes the J2 APID 11 and J2 APID 30 and APID 37.

JPSS Top Risks

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3 ⇔ Some IDPS and STAR algorithms cannot use APIDs with 10Hz sample freq	AMP-19-003	**Given that:** APID 11 (S/C Attitude and Ephemeris) and 30 (S/C Telemetry) sampling frequencies are at 10Hz on JPSS-2 **There is a possibility that:** Some IDPS and STAR algorithms will not be able to use any science products that has APID 11 and 30 or any APIDs with a sampling frequency of 10Hz **Resulting in:** Delays since IDPS geolocation algorithms cannot use 10Hz APIDs. During JCT3 IDPS has to geolocate J2 RDRs with J2 S/C Diary and if the geolocation algorithm is not compatible with the 10hz freq, it will affect IDPS's ability to geolocate J2 RDRs. STAR needs to consider the effect 10Hz APIDs will have on their GEO and sensor product algorithms.	**Mitigate**	08/06/2020: A TIM was held with STAR, IDPS, Raytheon, SDS and DMPS-AMP Reps in which access and use of JPSS-2 simulated data was discussed. The SDS Rep provided access to a more usable version of the simulated data (ascii dump). STAR utilized the data to confirm usability of the 10Hz S/C RDRs. More analysis will be performed with the proxy data which is available on the cloud. Data is expected in September and STAR is currently working with IDPS to gain credentials to access the cloud. 06/30/2020: Waiting on science team analysis to conduct follow on TIM for this Risk. 06/04/2020: The JPSS-2 test data created from J1 APID 11, converted to 10 HZ (due to time issues in Softbench 4.5 for J2 APID 11). IDPS Version 2.3 will include geolocation change. 10hz APID11 (geolocation plan to decimate 10 samples to one sample). 05/06/2020: IDPS presented the J2 PRO review showing how IDPS would use 10 Hz APIDs. Flight provided some clarifications on mode and maneuver. The clarifications from Flight changes the IDPS J2 software configuration for identifying J2 S/C normal operations mode/calibration and diagnostic mode which is part of the IDPS determination on algorithm execution. IDPS does not plan to use the additional samples in APID 11 (10 Hz) and common geolocation algorithm will remain the same. 04/01/2020: No update. 02/07/20: No updates 12/18/19: IDPS Version 2.3 will include geolocation change.

JPSS Top Risks

Rank	Risk ID	Risk Statement	Approach	Status
4 ⇔ J2 APID Changes to Accommodate New S/C Bus	AMP-18-003	**Given that:** J2 has a new S/C Bus manufacturer and some new APIDs compared to J1 and S-NPP **There is a possibility that:** the SDR algorithms will need to be updated to accommodate new RDR format/structure **Resulting in:** additional unplanned work for Ground.	**Watch**	07/06/2020: CCR 4759 still approved and awaiting incorporation. No updates have been made to the APID to VCID map. 06/30/2020: CCR 4978 has been incorporated. No changes in J2 APID changes for JPSS-2 S/C Diary and JPSS-2 S/C Telemetry and JPSS-2 OMPS Limb RDR suite. The last JPSS-2 APID to VCID was received in December 2019. Very unlikely that there will be any further changes to the JPSS-2 APID to VCID mapping that will affect JPSS-2 data production. CCR 4759 (data dictionary updates for J2 ATMS, CrIS, OMPS NP, OMPS TC, VIIRS RDRs) awaiting incorporation. Also waiting on final J2 Application packet to VCID mapping. 06/04/2020: IDPS has received and incorporated APID changes for JPSS-2 in CCR 4439. No APID changes for JPSS-2 ATMS, CrIS, OMPS NP, OMPS TC, and VIIRS. CCR 4978 has been approved and is awaiting incorporation. Very unlikely that there will be any further changes to the JPSS-2 APID to VCID mapping that will affect JPSS-2 data production. 05/06/2020: CCR 4978 was submitted to make JPSS-2 APID Update to ATMS, VIIRS, OMPS NP, OMPS TC and CrIS SRSPF. The CCR is currently in review cycle. CCR 4984 was submitted to make documentation corrections to SRS Data Dictionary Part 8 and 28 for J2 RDR sizes. It has been approved and is awaiting incorporation. 04/01/2020: CCR 4439 and 4892 have been incorporated. 02/07/20: CCR 4439 approved and waiting incorporation. CCR 4892 ? needs approval and incorporation 12/18/19: CCR 4439 has been incorporation. Latest APID to VCID released Dec 4th, 2019. 11/06/19: J2 APID Changes to Accommodate New S/C Bus Received and incorporated APID changes for JPSS-2 in CCR 4439 approved and being incorporated. No APID changes for JPSS-2 ATMS, CrIS, OMPS NP, OMPS TC, and VIIRS ? according to latest JPSS-2 APID to VCID mapping (June 25, 2019). These JPSS-2 products are included in CCR 4759. Very unlikely that there will be any further changes to the JPSS-2 APID to VCID mapping that will affect JPSS-2 data production. 09/09/19: J2 GPS APIDs are currently not included in the J2 S/C TLM RDR, and all other Virtual Channel 0 APIDs are included in the S/C TLM RDR. Investigating the size of APID 133 and APID 144 to determine true size of J2 S/C TLM RDR (30 bytes vs. 38 bytes).

JPSS Top Risks

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5 ⇔ Data Product Requirements for OMPS-Limb **Expected Closure:** 10/2020	AMP-18-008	**Given that:** There are no JPSS (or NOAA) data product requirements for OMPS-L **There is a possibility that:** benefits/impacts analysis from users based on NPP data products may demonstrate the need for NOAA processing of OMPS-L from JPSS-2/3/4 **Resulting in:** Additional funding needed for delivering the algorithm, product generation/distribution/archive, and calval of the products.	**Mitigate**	7/6/2020: S-NPP OMPS-Limb products went into operations on 6/16/2020 6/4/2020: OMPS Limb SDR and EDR are expected to be in operation with the next NDE release on June 10th 5/7/2020: OMPS LP is successfully running in I&T with the new file names, moving forward for May promotion which will happen in the first week of June 4/2/2020: The OMPS LP is going for the SPSRB briefing on April 15 2002, and is on schedule to be in operation in NDE May 2020, pending on a successful SPSRB briefing. 2/19/2020: Promotion to NDE operations is scheduled for May, 2020 12/05/2019: An OMPS Operations Readiness Review (ORR) was conducted on Dec. 2, 2019. This is the last major review before it goes into operations. Will keep risk open until the algorithm is promoted from NDE I&T to Operations. 9/23/2019: The OSPO PAL and STAR PI will schedule the ORR in Oct. 2019. The science team has been busy with NOAA-20 OMPS cal val during September and now the ORR for OMPS-LP is moved to October 2019. 8/8/2019: OSPO PAL and STAR PI are working on Operational Readiness Review (ORR) slides now and planning to hold ORR in September 2019. 7/12/2019: No change. There is still some issues with ancillary data with running OMPS-L on NDE I&T. 5/1/2019: No change

JPSS Top Risks

Rank	Risk ID	Risk Statement	Approach	Status
6 ⇔ Algorithm testing & delivery impacts due to lag between IDPS and G-ADA moving to the Cloud **Expected Closure:** 12/2020	AMP-19-001	**Given that:** IDPS will be in the cloud prior to G-ADA being in the cloud, **There is a possibility that:** algorithm change testing and implementation may take longer **Resulting in:** delays to implementation of algorithm changes.	**Watch**	8/10/20: The Cloud-ADA schedule has been integrated in the ground project IMS, and will be tracked regularly. Any deviation of the schedule will be updated on this risk next month. 7/6/2020: DPMS put together the Cloud-ADA schedule and has been approved by the GP Schedule Control Board. DPMS is tracking the Cloud ADA schedule on routine basis. 06/04/2020: DPMS put together a draft schedule for migrating GADA to Clouds. 5/7/2020: No change. Expected close in Dec 2020 when IDPS and G-ADA are implemented in the Cloud. 2/19/2020: After the successful cloud CDR held in Jan 2020, we would expect that the risk is lower and should be closed when the IDPS and G-ADA implemented in Cloud which is scheduled to be Dec 2020. 12/05/2019: Lihang will look into whether this risk should be transferred to DPMS 8/8/2019: Suggest to transfer this risk to be under DPMS risk 7/12/2019: No update. AMP and STAR teams have been engaged with the IPR reviews and provided feedback/inputs related to the algorithms/cal val. 5/1/2019: No Update 3/6/19: Based on limited understanding from Ground Project as of February 2019, we believe that there is a real possibility that IDPS will be migrated to the Cloud prior to G-ADA being available in the Cloud (with proper training, etc).

Color code:

Green: **Completed Milestones**

Gray: **Non-FY20 Milestones**

ATMS SDR

July, 2020

Accomplishments / Events:

- Analyze the current ATMS science data quality flag, quality indicator, and quality metadata setup algorithm in operational ground processing system
- Discuss the optimal solution of updating current ATMS science data quality flag setting in order to facilitate the effective use of ATMS science data in applications
- Introduce application of Backus-Gilbert footprint resampling algorithm in ATMS to NUCAPS group
- Update JPSS-2 ATMS IDPS processing coefficients table using available instrument TVAC data for pre-launch testing
- Plan for FY21 ATMS SDR team working plan

Overall Status:

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

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

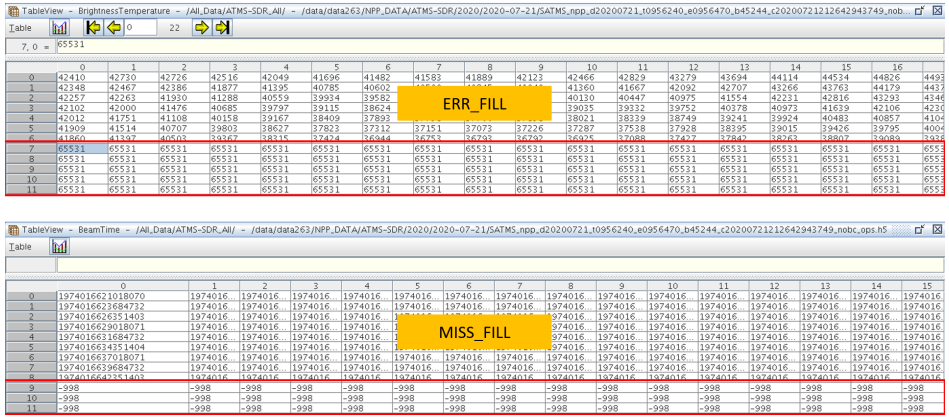
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 pre-launch test data (TVAC) review/analyze	Apr-20	Apr-20	Apr-20	TVAC: Dec-19
J2 pre-launch evaluation tools development	Sep-20	Sep-20		
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/30/20	
Pre-launch sensor characterization report	Jun-20	Aug-20		PSR + 3m
Algorithm update based on pre-launch test data and other changes (e.g. APID, sampling frequency, FSW, and RDR)	Sep-20	Sep-20		PSR + 6m
PCT update based on pre-launch test data and other changes	Sep-20	Sep-20		PSR + 6m
Algorithm Updates Review	Jun-20	Jun-20	06/16/20	
J2 SDR data (based on TVAC) available for EDRs	Apr-20	Apr-20	03/25/20	Proxy Data
ATMS TDR/SDR discrepancy between ADL and IDPS over lunar intrusion regions (ADR 9035)	Sep-20	Sep-20	04/27/20	
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20		
Annual ATMS TDR/SDR performance report	Feb-20	Feb-20	Feb-20	
Verification of cloud implementation	Sep-20	Sep-20		
IDPS Mx build I&T deploy regression support:				
BL2.1 Mx 8 I&T ATMS data review/checkout	Nov-19	Nov-19	11/13/19	
BL2.2 Mx 0 I&T ATMS data review/checkout	Apr-20	Apr-20	04/01/20	
BL2.2 Mx 1 I&T ATMS data review/checkout	Jun-20	Jun-20	06/19/20	

Highlights:

ATMS science data quality flag setting under different scenario



CrIS SDR

July, 2020

Accomplishments / Events:

- Completed the collection of collocated FOVs at SNOs between S-NPP CrIS and IASI-A,B,C for the entire record of available data for each **(Fig. 1)**. Completed the same collection for NOAA-20 CrIS and IASI-A,B,C. IASI-C, which launched last year. Preliminary results shows very good agreement with S-NPP CrIS, as well as with the other two IASI instruments. The bias between S-NPP CrIS and IASI-C is within 0.1 K for nearly all LWIR and MWIR channels.
- Reported results about a method to predict the metrology laser wavelength using measurements of the laser diode temperature **(Fig. 2)**. The method has been successfully implemented in ADL. The method is expected to mitigate a potential failure of the J2 CrIS neon lamp calibration system, near the end of the instrument mission life. The coefficients for NOAA-20 need further optimization. A departure of about 0.3-0.6 ppm was identified. The predicted SNPP laser wavelength showed larger variations during 1 orbit (~0.6 ppm) compared to NOAA-20 (~0.3 ppm), resulting in higher frequency resampling matrix.
- Preparing initial J2 LUTs for the operational ground processing system IDPS. The initial J2 auxiliary data including CrIS-FS-SDR-CC_j02, CrIS-FS-SDR-DQTT_j02, and CrIS-FS-SDR-FILL-PACKET-LUT_j02 are required to process J2 SDR data in the IDPS ground processing.
- Computed the difference between the calibrated radiance of each FOV against the predicted brightness temperature of the External Calibration Target (ECT), as part of the J2 CrIS TVAC nonlinearity evaluation. The ECT residuals are close to zero Kelvin when the nonlinearity correction is applied to the CrIS observations (**Fig. 3**).

Overall Status:

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

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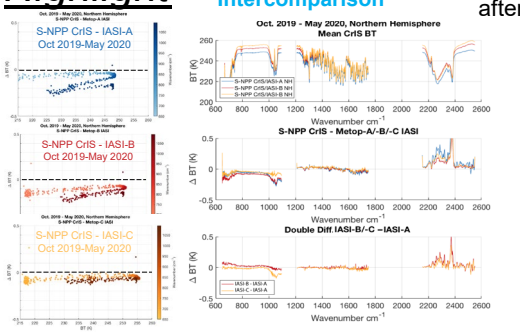
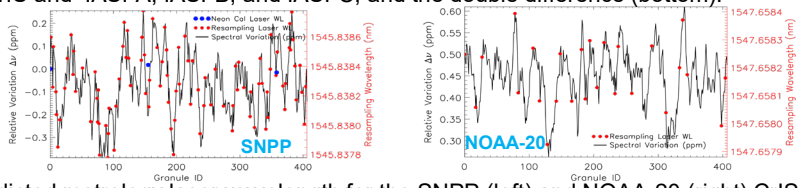
Issues/Risks:

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
NPP (side-2) Validated Maturity	Feb-20	Feb-20	02/06/20	Prov + 6m
J2 pre-launch test data (TVAC) review/analyze	Apr-20	Apr-20	Apr-20	TVAC: Jan-20
J2 pre-launch evaluation tools development	Sep-20	Sep-20		
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	05/29/20	
Pre-launch sensor characterization report	Jul-20	Jul-20	07/30/20	PSR + 3m
Algorithm update based on pre-launch test data and other changes (e.g. APID, sampling frequency, FSW, and RDR)	Oct-20	Oct-20		PSR + 6m
PCT update based on pre-launch test data and other changes	Oct-20	Oct-20		PSR + 6m
Algorithm Updates Review	Jun-20	Jun-20	06/16/20	
J2 SDR data (based on TVAC) available for EDRs	Apr-20	Apr-20	03/26/20	Proxy Data
Update Quality flag and threshold for Spike Detection algorithm (ADR8820)	Aug-20	Aug-20		
Optimize/update FCE detection and correction algorithm	Aug-20	Aug-20	05/05/20	
Turn off Truncated Spectrum CrIS Data (ADR8761)	Sep-20	Sep-20	Aug-20	5/1/20 CCR Approved
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20		
Annual CrIS SDR performance report	Feb-20	Feb-20	02/26/20	
Verification of cloud implementation	Sep-20	Sep-20		
IDPS Mx build I&T deploy regression support:				
BL2.1 Mx 8 I&T CrIS data review/checkout	Nov-19	Nov-19	11/12/19	
BL2.2 Mx 0 I&T CrIS data review/checkout	Apr-20	Apr-20	04/01/20	
BL2.2 Mx 1 I&T CrIS data review/checkout	Jun-20	Jun-20	06/18/20	

Highlight

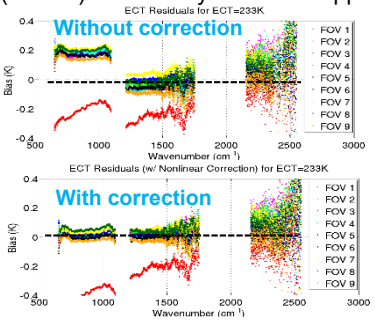


(1) Left: S-NPP vs. IASI-A, B, and C biases in the LWIR as a function of CrIS scene temp. and wavenumber. Right: Mean brightness temps (top), mean biases (middle) between S-NPP CrIS and IASI-A, IASI-B, and IASI-C, and the double difference (bottom).



(2) Predicted metrology laser wavelength for the SNPP (left) and NOAA-20 (right) CrIS, derived from a method that relies on the measurements of the laser diode temperature.

(3) J2 TVAC ECT Residuals before (top) and after (bottom) nonlinearity correction applied.



VIIRS SDR

July, 2020

Accomplishments / Events:

- Delivered for deployment in IDPS operations updated NOAA-20 and S-NPP DNB offset and gain ratio LUTs generated using new moon calibration data from 7/20/2020
- Created a test case package for the initial JPSS-2 VIIRS SDR prelaunch LUTs and submitted it to ASSISTT (including the 44 LUT files) for functional testing and future deployment in IDPS
- Successfully completed the 2019-2020 lunar calibration cycle, and after confirming stability of the NOAA-20 VIIRS radiometric response in the reflective solar bands, began planning for the next cycle starting this fall
- Completed reanalysis of the solar calibration measurements from 2017-2020 using LUTs prepared for extending the VIIRS SDR Reprocessing Version 2 to support ESA TROPOMI data reprocessing

Overall Status:

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

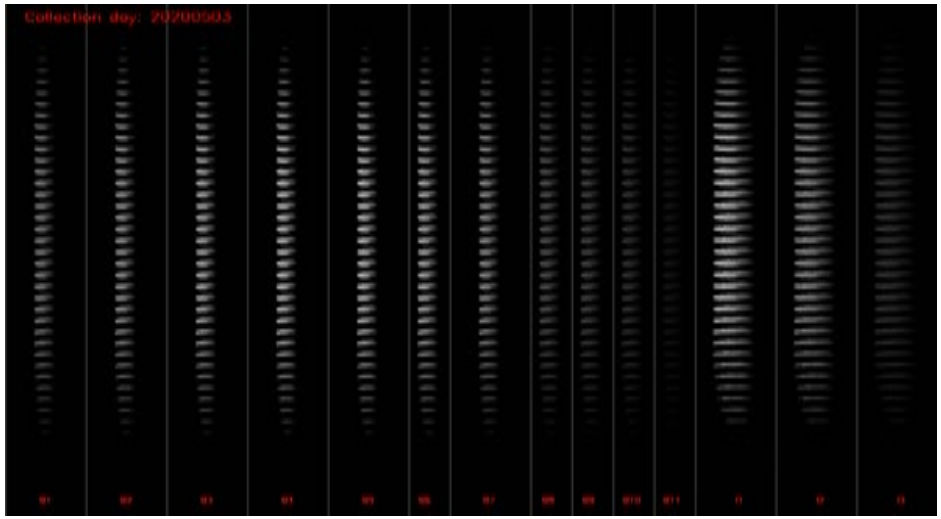
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

none

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

Highlights:



An example of the VIIRS observations of the Moon during one of the recent spacecraft roll maneuvers in the 2019-2020 season

OMPS SDR

July, 2020

Accomplishments / Events:

- Delivered SNPP/NOAA-20 OMPS weekly Dark tables and solar irradiance LUTs to GRAVITE
- Completed the J2 sample tables, timing pattern tables for NM and NP, and OMPS version table
- Assessed SNPP NM off-nadir geolocation errors to support to the DR9361, which is consistent with the NASA analysis
- Analyzed the NOAA-20 NP solar flux trending features and identified 'anomalous' features in the working diffusor
- Initialized a PCA-based SNR method to improve the stability of earth radiance SNR computations
- Completed a preliminary version of J2 OMPS instrument pre-launch characterization analysis
- Opened a DR and a risk about J2 OMPS sensor calibration datasets (SCDBs) delivery issue

Overall Status:

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

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

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

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity: OMPS-NP	Jan-20	Apr-20	04/23/20	See Issues/Risks
J2 pre-launch test data (TVAC) review/analyze	Apr-20	Aug-20		See Issues/Risks
J2 pre-launch evaluation tools development	Sep-20	Sep-20		
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/19/20	
Pre-launch sensor characterization report	Dec-19	Aug-20		See Issues/Risks
Algorithm update based on pre-launch test data and other changes (e.g. APID, sampling frequency, FSW, and RDR)	Aug-20	Aug-20		10x10 km TC
Launch-ready LUTs (initial delivery)	Aug-20	Oct-20		
Algorithm Updates Review	Jun-20	Jun-20	06/16/20	
J2 SDR data (based on TVAC) available for EDRs	Apr-20	Jun-20	05/22/20	See Issues/Risks
Remove VIIRS SnowIce and QST tile dependency (ADR8550/CCR4589)	Oct-19	Oct-19	10/28/19	8/1/19 to ASSISTT
ADR9172/CCR5018, Error in OMPS Nadir Mapper Dark Count Correction			06/08/20	
ADR9066/CCR5026, N20 OMPS-NP SDR Wavelength Scale Accuracy			07/13/20	
High resolution SDR implementation (17km x 17km OMPS TC)	Aug-20	Aug-20		
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20		
Annual OMPS SDR performance report	Feb-20	Feb-20	Feb-20	
Verification of cloud implementation	Sep-20	Sep-20		
IDPS Mx build I&T deploy regression support:				
BL2.1 Mx 8 I&T OMPS data review/checkout	Nov-19	Nov-19	11/12/19	
BL2.2 Mx 0 I&T OMPS data review/checkout	Apr-20	Apr-20	04/07/20	
BL2.2 Mx 1 I&T OMPS data review/checkout	Jul-20	Jul-20	06/23/20	

Highlights:

Preliminary Correction of Elevation Angle vs. CCD Spatial Pixels Over all Spectral Channels for NOAA-20 NM

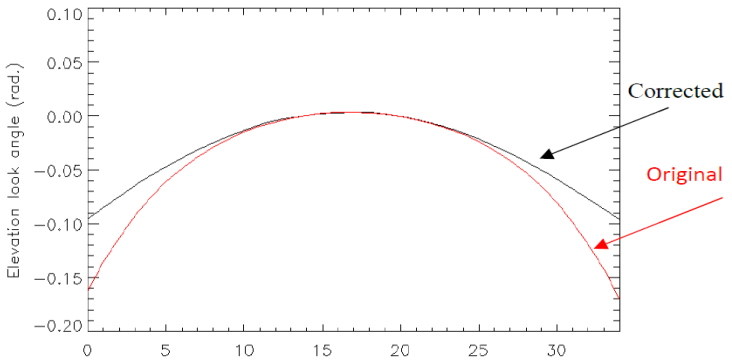


Figure Comparison of NOAA-20 NP elevation angles vs. spatial pixel location with/without the correction

SDR Reprocessing

July, 2020

Accomplishments / Events:

- The manuscript of "The Reprocessing Suomi NPP Satellite Observations" is complete and was submitted to Remote Sensing (highlights)
- Formed the Reprocessing Working Group with collaborations of SDR teams
- The baseline SNPP reprocessed data and the reprocessed cloud mask (CM) of 2016 is available at ftp://jlrdata.umd.edu/pub/SNPP_Reprocessing
- Preparation of the Readme for reprocessed SNPP SDR data (ATMS, CrIS, VIIRS, OMPS) is ongoing
- Evaluation and preparation of transitioning the reprocessed SNPP SDR data to CLOUD is ongoing
- Extending the reprocessing of SNPP VIIRS data to 2019 is ongoing
- SNPP CrIS V2 SDR reprocessing is ongoing

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

Overall Status:

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

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

Issues/Risks:

None

Highlights:

Manuscript was submitted to Remote Sensing

The Reprocessed Suomi NPP Satellite Observations

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

[1]*Center for Satellite Applications and Research, NOAA/NESDIS, College Park, MD, 20740, USA*
[2]*Joint Polar Satellite System, NOAA/NESDIS, Lanham, MD 20706, USA*
[3]*ESSIC/CISESS, University of Maryland, College Park, MD, 20740, USA*
[4]*Global Science and Technology, College Park, MD, 20740, USA*
[5]*I. M. Systems Group, Inc., College Park, MD, 20740, USA*
[6]*Global Environment and Natural Resources Institute/Environmental Science and Technology Center, George Mason University, Fairfax, VA 22030, USA*
[7]*University of Maryland Baltimore County, Baltimore, MD, 21250, USA*
[8]*University of Wisconsin-Madison, Space Science and Engineering Center, Madison, WI, 53715, USA*

ICVS

July, 2020

Accomplishments / Events:

- Promoted the ICVS-GSICS portal into operation on 07/06/2020
- Improved the stability of SNPP and NOAA-20 CrIS LTM inter-sensor bias computations by using a new developed SNO-interpolation method (ABI as a transfer)
- Created satellite trajectory map with orbit number and cross equatorial UTC time
- Updated ICVS software gitlab structure to ensure all updates can be archived correctly
- Adding the Brightness Temperature Nighttime Observations for VIIRS
- Analyzed NOAA-20 NP radiance conversion coefficients to better plan the ICVS-OMPS development
- Applied the ICVS-ATMS HWCS to monitor Hurricane Douglas and Storm Gonzalo on 07/22/20

Overall Status:

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

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

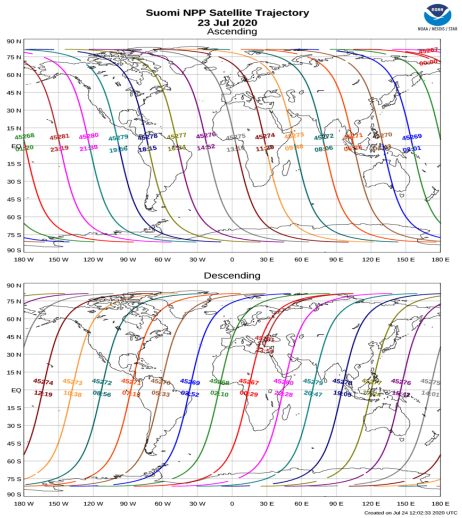
Issues/Risks:

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

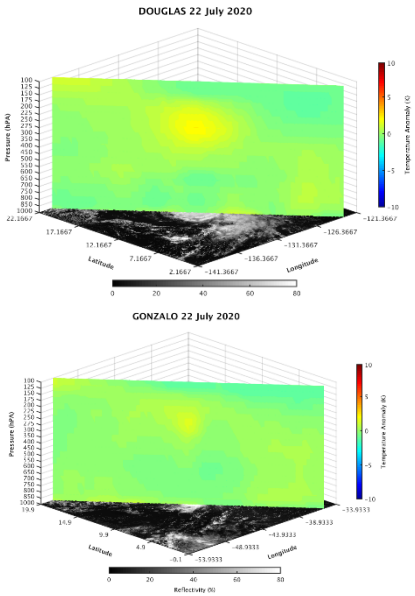
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
• ICVS Intersensor web site beta version (e.g., direct, CRTM, 3rd instrument as transfer)	Dec-19	Jun-20	Jun-20	
• ICVS-J2 prototype beta version using J1 as proxy data	Dec-19	Dec-20		Lower priority
• ICVS interactive modules: beta version • OMPS geolocation error development • Cloud mask module improvement using AI-based cloud detection algorithm: beta version	Mar-20	Sep-20		Low priority and schedule conflict with the new task
• Develop a LEO-GEO GSICS portal final version	Ma-20	Apr-20	Apr-20	
• ICVS intersensor web site improvement	Jun-20	Jul-20	Jul-20	ABI sub-satellite point location issue
• ICVS Module improvements (each instrument on both SNPP and NOAA-20) (QCs and other improvments)	Jun-20	Jun-20	Jun-20	
• ICVS Interactive modules: operational version • ICVS-AI modules for each instrument lifetime performance assessment: beta version • OMPS geolocation error monitoring module	Jun-20	Sep-20		Low priority and schedule conflict with the new task (GSICS Portal)
• ICVS-AI modules for each instrument lifetime performance assessment: • ICVS-AI modules for each instrument SDR data quality assessment: beta version • ICVS upgrade (if new servers are ready)	Sep-20	Sep-20		
JPSS-ICVS System Standardization and ICVS Annual Performance Review	Feb-20	Feb-20	Feb-20	

Highlights: Significantly contribute to STAR SDR Teams

SNPP satellite trajectory map with orbit number and cross equatorial UTC time



ICVS-HWCS Hurricane Watch



ICVS-GSICS Portal Operation on 07/06/2020

https://www.star.nesdis.noaa.gov/icvs/GSICS.php

STAR ICVS Integrated Calibration / Validation System Long-Term Monitoring

Monitoring and characterizing satellite instrument performance for weather, climate and environmental applications

STAR ICVS Home

Intersensor Comparisons
- ATMS
- CrIS FSR
- VIIRS
- OMPS
- GSICS Portal >>

On-orbit Events & Anomalies
- Suomi NPP
- NOAA-20

ICVS Severe Weather Watch

NOAA-20
- Spacecraft
- ATMS
- CrIS
- CrIS FSR
- VIIRS
- OMPS Nadir Mapper
- OMPS Nadir Profiler

Suomi NPP
- Spacecraft
- ATMS
- CrIS
- CrIS FSR
- VIIRS
- OMPS Nadir Mapper
- OMPS Nadir Profiler
- OMPS Limb Profiler

MetOp-C
- AMSU-A
- MHS
- AVHRR

MetOp-B
- AMSU-A

GSICS: Global Space-based Inter-Calibration System

18 Mar 2020 - 22:07 ET / 02:07 UTC

Animate Selected Product | Animate All Products | Finder

Select a Date: 03-02-2020 Submit

Select GEO Instrument & Platform
(•) GOES-16 (ABI) ( ) GOES-17 (ABI)

Select LEO Instrument
( ) VIIRS (•) CrIS

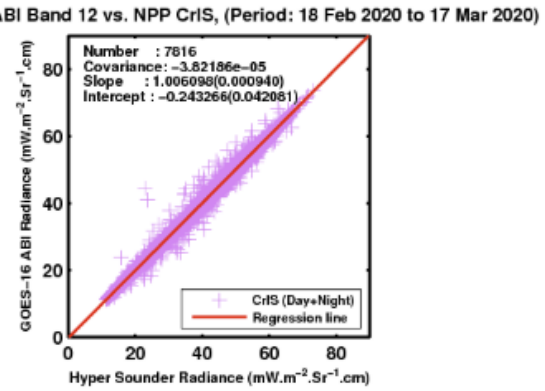
Select LEO Platform
(•) S-NPP ( ) NOAA-20

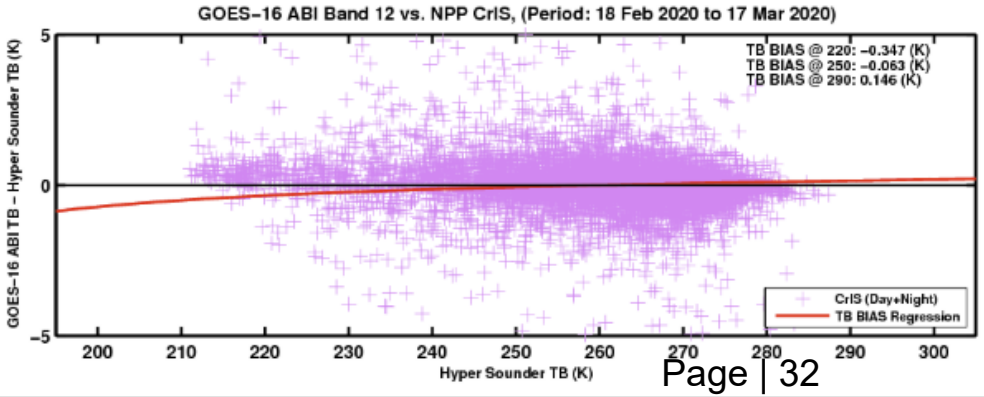
Select ABI Channel/Band
( ) Band07 (3.90 μm) ( ) Band08 (6.20 μm)
( ) Band09 (6.90 μm) ( ) Band10 (7.30 μm)
( ) Band11 (8.60 μm) (•) Band12 (9.60 μm)
( ) Band13 (10.4 μm) ( ) Band14 (11.2 μm)
( ) Band15 (12.4 μm) ( ) Band16 (13.3 μm)

Select Node
( ) Ascending ( ) Descending (•) Both

Select Data Type to Display
Time Series
( ) BT Difference ( ) Regression coef.
Statistics for GSICS Correction
(•) Scatter plot

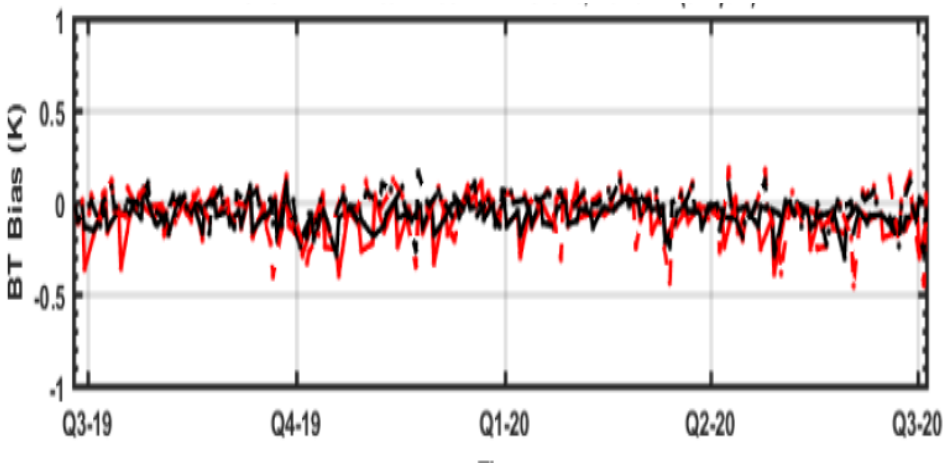
Push the button to get GSICS Correction statistics csv file
(Please select LEO data before download)
Download



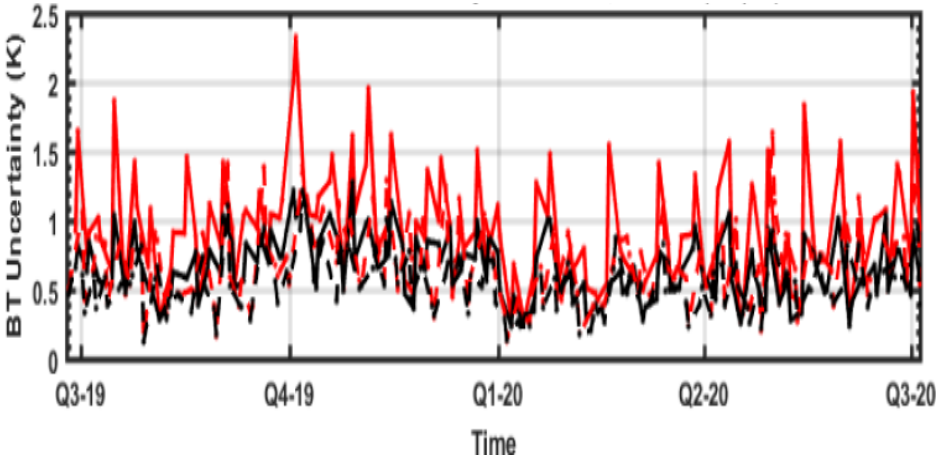


Improving SNPP & NOAA-20 CrIS Inter-sensor Radiometric Bias LTM Estimation Stability Using a New SNO-Interpolation Method

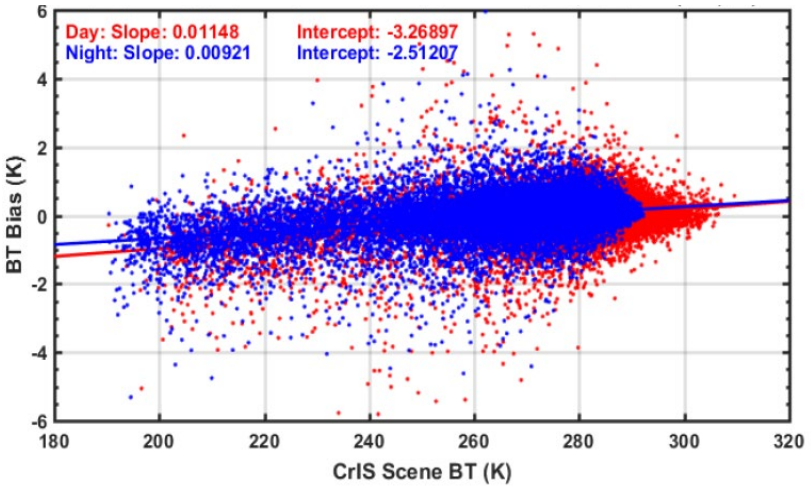
(a) SNPP CrIS – G16 ABI (Band 11) Mean Bias Time Series



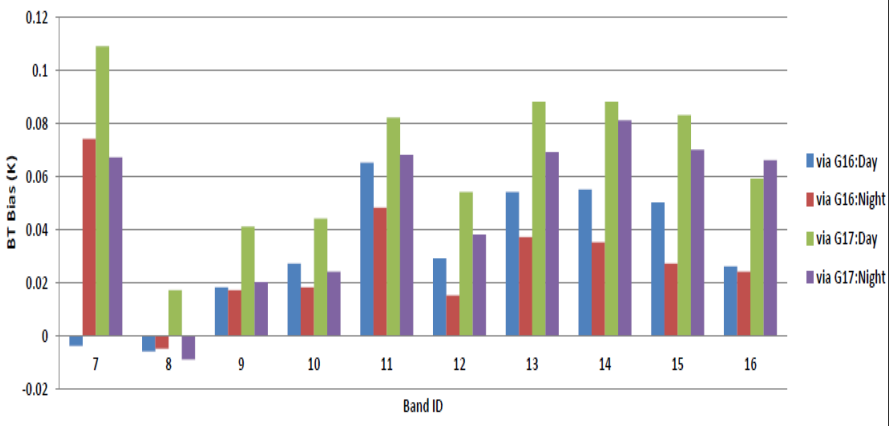
(b) SNPP CrIS – G16 ABI (Band 11) Standard Deviation Time Series



(c) SNPP CrIS – G16 ABI (Band 11) Mean Bias Temperature Dependency



(d) SNPP and NOAA-20 CrIS DD (ABI as a Transfer)



The CrIS and ABI inter-sensor radiometric biases (standard deviation) are more stable by using a newly developed SNO-Interpolating method (GOES-16/17 ABI as a transfer). The presentation is going to submit to AMS 2021 conference.

VIIRS Imagery

July, 2020

Accomplishments / Events:

- **VIIRS EDR Terrain Correction code changes:** EDR Terrain-corrected images should be in production now (un-verified).
- **VIIRS NOAA-20 DNB-to-NCC LUT update:** NCC Imagery has significant changes in the day-night terminator region using the new NOAA-20 LUT. This is not unexpected based on the LUT values, but the explanation for this is still being investigated.
- **Uses of VIIRS Imagery in case study blogs:** See image provided.
- **VIIRS Imagery Team website** still awaiting a larger RAMMB website update, projected for Q4 2020.
- **16-band VIIRS EDR M-band Imagery.** CCR4631 has been approved by the JPSS Program. Cost and implementation date are yet unknown, but Tomi A. suggested that implementation will be on the order of 6 months, or well before the code freeze for JPSS-2.

Overall Status:

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

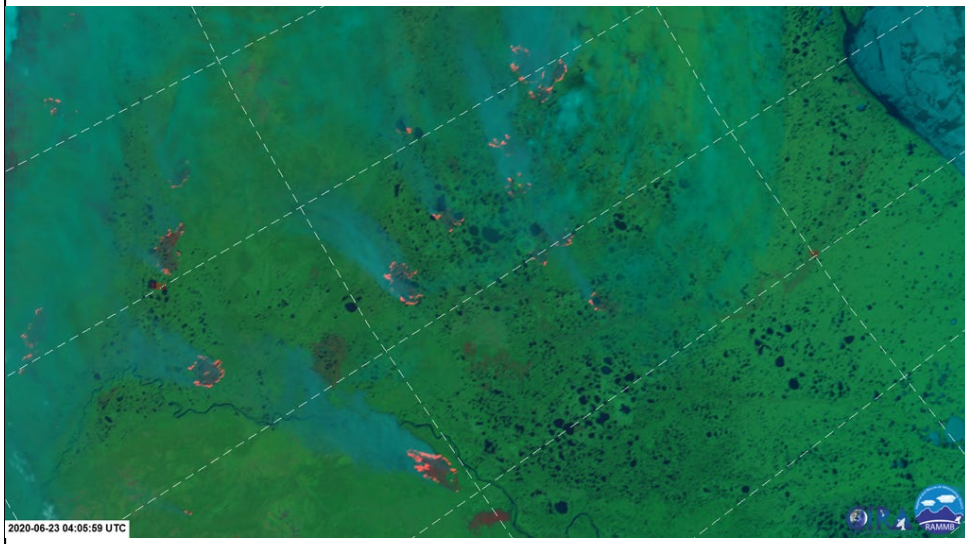
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

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

Highlights: Image of the Month



VIIRS Day Land Cloud Fire RGB as viewed on Polar SLIDER at 375 m-resolution, showing extensive fires over northeastern Siberia, Russia (04:05 UTC, 23 June 2020).

Clouds

July, 2020

Accomplishments / Events:

- The Cloud Mask team discussed the fix to the ECM LUT for snow surfaces with the USAF. The fixed LUT is currently in the I&T string for other teams to evaluate. Schedule Ops date is Sept 2020
- Work on the latest ECM lookup table continues. Fixes to the prior LUT are required before delivery
- Cloud team completed the last three Cal/Val plans (Phase, NCOMP, CCL)
- Cloud height team rewrote ACHA module to different smaller codes for easier maintenance and improvement purposes
- The Cloud Team participated in the annual Algorithm Updates review for JPSS-2

Overall Status:

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

1. *Project has completed.*
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4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20		
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/10/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Sep-20	Sep-20		
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Algorithm update DAP to ASSISTT: ▪ Cloud Mask: Implement DNB ▪ Cloud Mask: Implement DNB ▪ Cloud Phase/Type: Optimize cloud phase thresholds for NOAA-20 ▪ ACHA: Improving multilayer ACHA ▪ CBH: Leverage DCOMP nighttime COD (DNB) to improve performance over IR-only ▪ CCL: Include super-cooled and convective fraction ▪ DCOMP: Incorporate improved surface reflectance for DCOMP channels ▪ NCOMP: Extend NCOMP cloud optical depth range to include larger values	Apr-20	Apr-20	Apr-20	With initial J2 DAP
JRR Patch DAP v2.3 delivered to NDE			04/29/20	
Annual algorithms/products performance report	Feb-20	Feb-20	Feb-20	
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20		
Cal/Val Visualization tool and LTM webpage development/improvement	Sep-20	Sep-20		
Support Alaska Demo and ESRL usage	Sep-20	Sep-20		

Highlights:

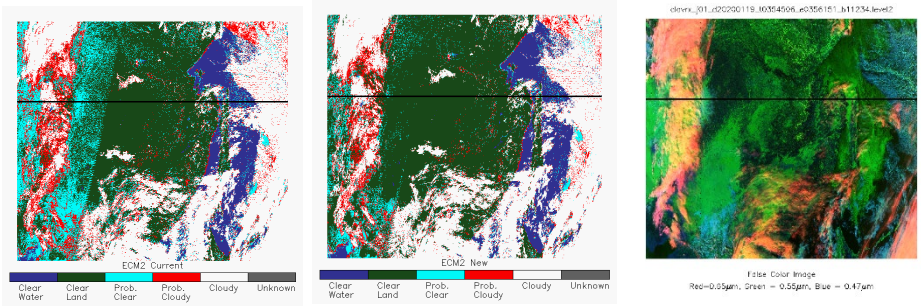


Figure 1. Example image of work on the ECM lookup table for NOAA-20 on January 19 at 0352Z. The latest version, shown in the center, shows improvement over previous version, where the line is due to the scattering angle turns off some visible tests. After removing that filter an improvement can be seen. Further work on the prior LUT in the polar regions is necessary before delivery.

Aerosol

July, 2020

Accomplishments / Events:

- A manuscript entitled “Tracking smoke from a controlled burn and its impacts on local air quality using temporally resolved GOES-16 ABI aerosol optical depth (AOD)” has been prepared. This paper uses VIIRS and ABI AOD data. Co-authors are A. Huff, S. Kondragunta, H. Zhang, I. Laszlo, V. Caicedo, R. Delgado, R. Levy.
- Conducted extensive analysis of VIIRS aerosol detection product for June 2020 dust storm. Comparisons with OMPS aerosol index show that both climatologies (2013-2019) of dust in the Atlantic and the 2020 anomaly observed in VIIRS are similar to OMPS.
- The aerosol team is working on the generation of merged LEO/GEO aerosol products

Overall Status:

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

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 risk. ADP cal/val plan for J2 is being written. Will be submitted in second week of August

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

Highlights:

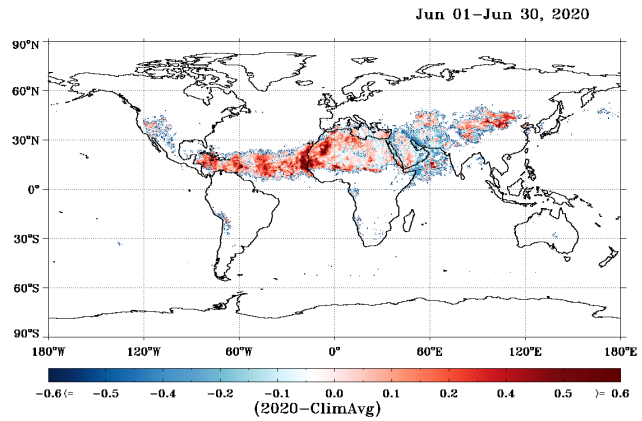


Figure shows SNPP VIIRS dust anomaly for June 2020. Red colors indicate higher dust fraction compared to climatology

Volcanic Ash

July, 2020

Accomplishments / Events:

- Development of CrIS-based SO_2 time series tools (see figure)
- DACS projects planning, including formulation of new requirements
- Completed MetOp-SG Algorithm Theoretical Basis Review

Overall Status:

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

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

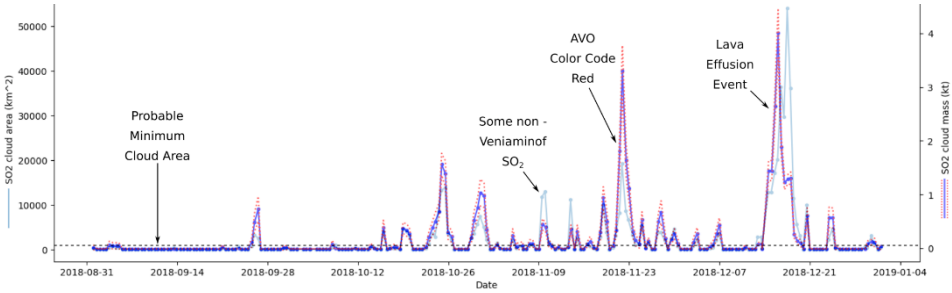
Issues/Risks:

None

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

Highlights:

CrIS-derived SO_2 Emission Time Series



Cryosphere

July, 2020

Accomplishments / Events:

- NOAA-20 VIIRS and AMSR2 Sea Ice Concentration were compared over the Arctic and Antarctic for Dec 2019 – Feb 2020. Agreement is very good, particularly over the Arctic.
- Single-band and dual-band ice surface temperature comparisons show both to be accurate.
- .
- Routinely-produced VIIRS I-band motion shows agreement with icebound buoys. Efforts to calibrate and validate sea ice motion output from the VIIRS I-05 band (11 mm at 375m resolution) are ongoing for the 2020 ice season. In late April, a large, cloud-free area in the Central Arctic north of the Svalbard Archipelago were coincident with a cluster of around 25 buoys that were drifting with the sea ice. Buoy data was retrieved from the International Arctic Buoy Programme (IABP).

Overall Status:

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

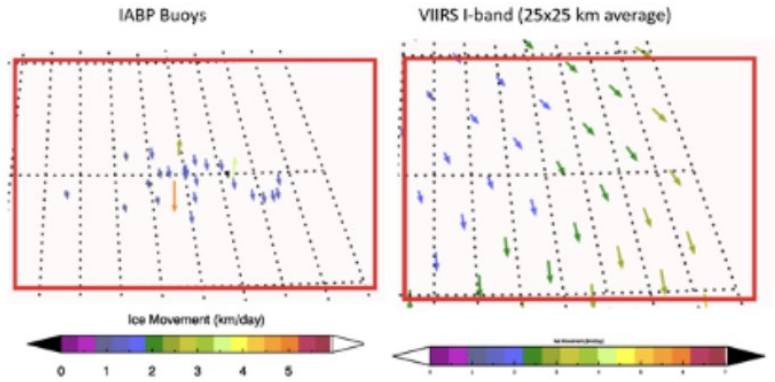
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity: Snow Cover (Binary Map & Snow Cover Fraction)	Apr-20	Jun-20	06/18/20	CM LUT
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20		
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	06/28/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Sep-20	Sep-20		
Algorithm Updates Review	Sep-20	Sep-20	07/21/20	
Algorithm update DAP to ASSISTT: ▪ Add passive microwave filters to improve ice products ▪ Implement I-band ice products ▪ Evaluation of two Enterprise snow algorithms (VIIRS and ABI) and possible replacement	Apr-20	Apr-20	Apr-20	With initial J2 DAP
Annual algorithms/products performance report	Feb-20	Feb-20	Feb-20	
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20		
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20		

Highlights:



VIIRS ice motion from I-Band (right) compared to buoys (left) provides rich dataset for validation

Active Fires

July, 2020

Accomplishments / Events:

- The VIIRS Active Fire product was integrated in the NDE DEV environment and is ready for I&T implementation
- Worked with the CSPP team on improving the handling of noisy input DB data
- Continued working worked with CIMSS on specifics of including the global VIIRS I-band product into RealEarth™
- Generated system to use VIIRS active fire data as reference for GOES-R fire product performance assessment

Overall Status:

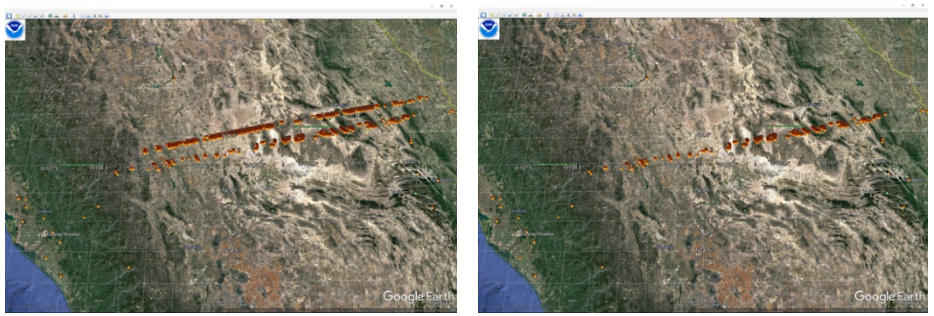
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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

Issues/Risks:

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

Highlights:



False VIIRS I-band fire detections from Suomi NPP Direct Broadcast data as processed by CSPP on April 20, 2020. The image on the right shows the impact STAR-developed fix to eliminate one of the bad scans. Work is ongoing to develop a fix for the more complex scenario represented by the other bad scan.

Marina Tsidulko, IMSG@STAR

Surface Reflectance

July, 2020

Accomplishments / Events:

- The science team worked on evaluating options for the best handling of the bad I3 detector in the Surface Reflectance product
- The team also continued the evaluation of the details of the aerosol retrieval algorithm on the surface reflectance retrievals

Overall Status:

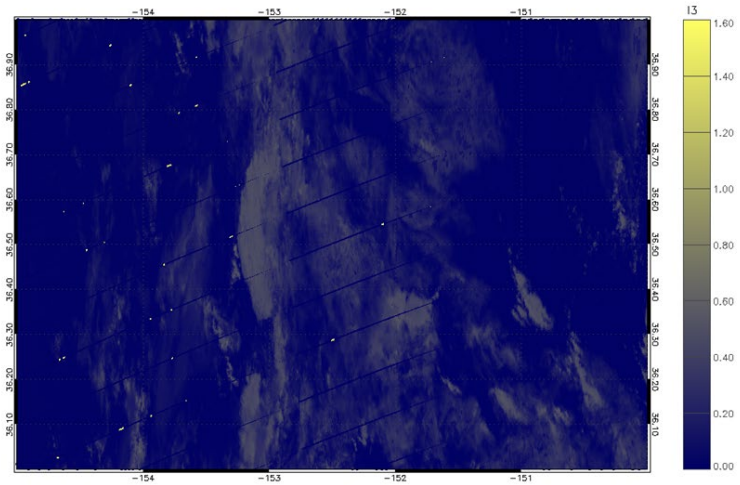
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget	x				
Technical / Programmatic	x				
Schedule			x		Delay in J2 initial DAP delivery

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

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

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

Highlights:



An example of the noise in the NOAA-20 VIIRS I3 Surface Reflectance data on June 29, 2020

Mike Wilson, IMSG@STAR

Surface Type

July, 2020

Accomplishments / Events:

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

– The team has developed algorithms and code for reducing cloud contamination in sub-monthly composites by integrating S-NPP and NOAA-20 data. Such shorter-term composites can better capture rapid changes in surface cover conditions than composites with monthly or longer time intervals.

– The team is finalizing the 2019 Global Surface Type (GST) product.

Overall Status:

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

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

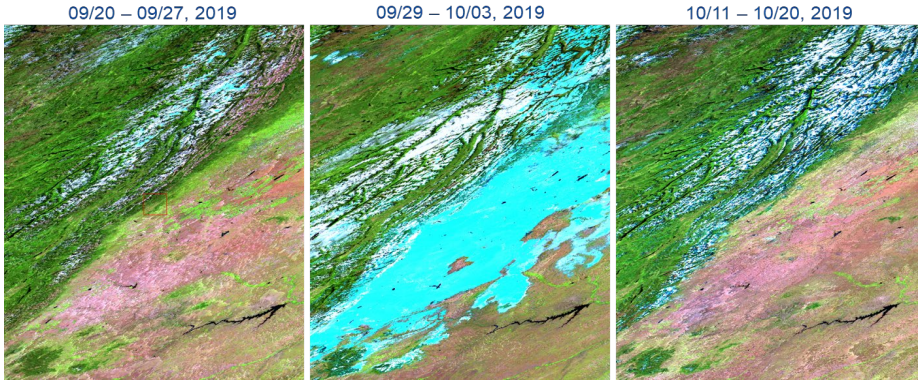
Issues/Risks:

None

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

Highlights:

Heavy snowfall followed by rapid melting captured by short term composites created by using S-NPP and NOAA-20 data



Central Washington/Oregon had an early season snowfall in late September 2019, but most of the snow cover (cyan or white in the above images) in the low land areas disappeared due to rapid melting. This important event was captured using sub-weekly to sub-monthly composites created from both S-NPP and NOAA-20 data, which would not be possible with longer-time composites (e.g., monthly).

Land Surface Temperature

July, 2020

Accomplishments / Events:

- The methodology for VIIRS LST uncertainty estimation at pixel level is preliminarily determined. Literature review has been conducted for legacy LST products e.g. MODIS LST, SEVIRI LST, Sentinel LST etc. The software package is in preparation.
- Verified the operational LST LUT running in NDE.
- The LST underestimation under high temperature condition was investigated. Regression parameterization is modified and the LUT is evaluated through the comparison with ground observations and global gridded LST dataset(slide 2).
- Heatwave monitoring in high latitude region. The daily gridded VIIRS LST was used for heatwave detection which indicates the heatwave occurrence on June 19-24, 2020 in high latitude around 70 degree. (Highlights)
- Finished the slide and recorded the presentation for IGARSS virtual meeting which will take place in Sep. 2020.
- Investigated the impact of the implementation of the NCEP GFS total water vapor data at 0.25 degree spatial resolution in replace of the tpw data at 0.5 degree resolution. The impact on LST is acceptable.

Overall Status:

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

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

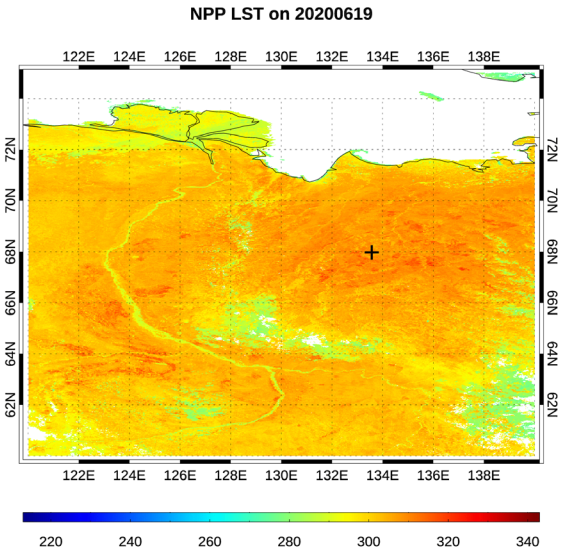
Issues/Risks:

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

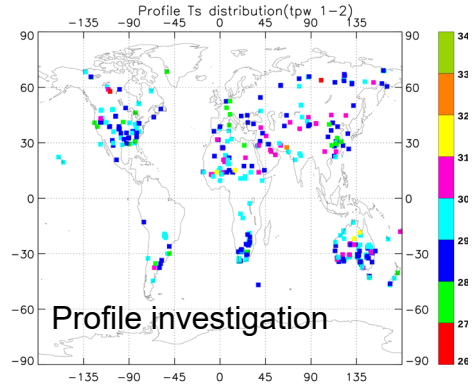
Highlights:

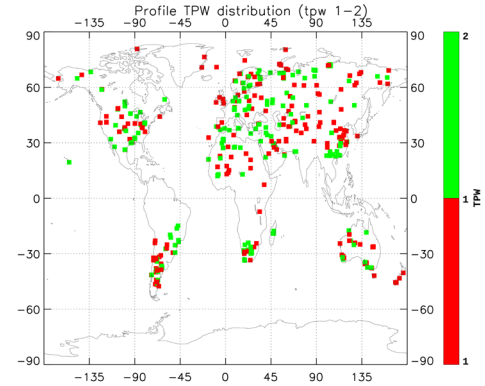
High latitude region heatwave Monitoring

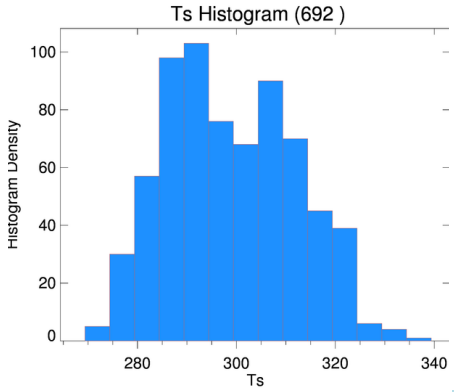
- Daily gridded VIIRS LST in June 2020 was used for heatwave monitoring.
- The cross symbol denotes the location of Verhojanck, Russia.
- The heatwave was observed on June 19-24, 2020.

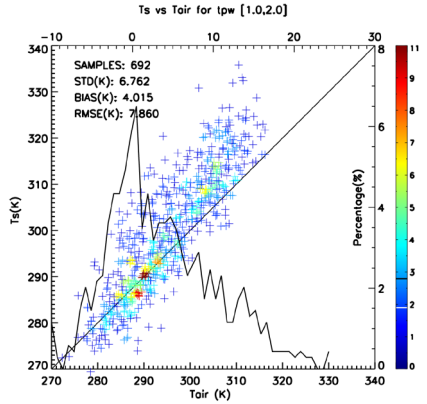


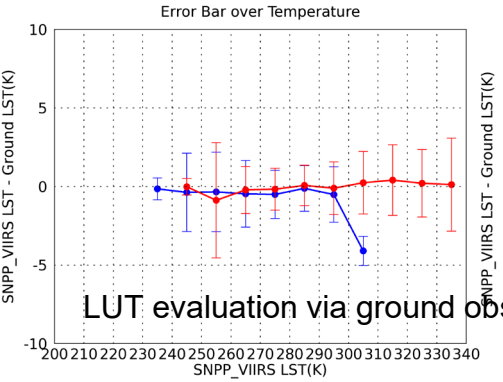
Regression study and LUT test

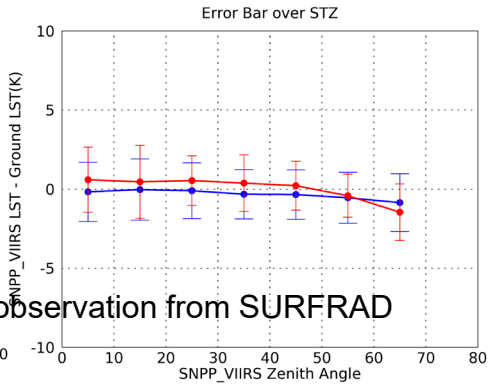


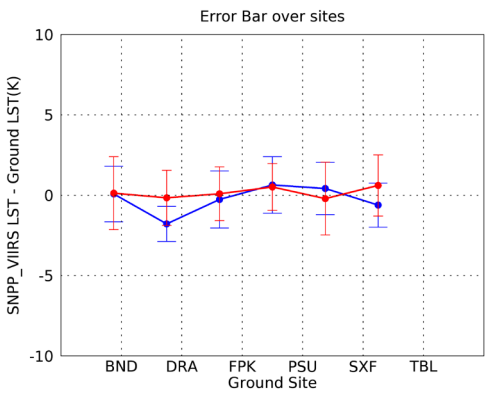






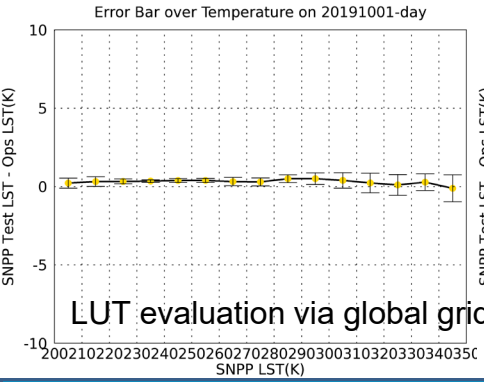


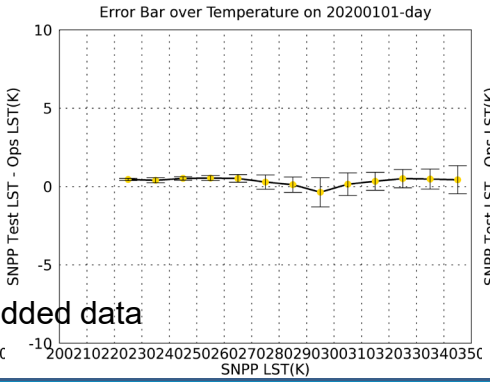


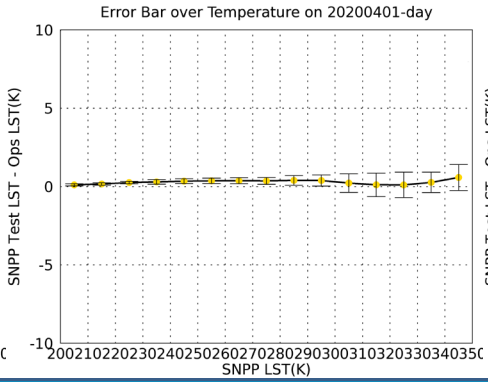


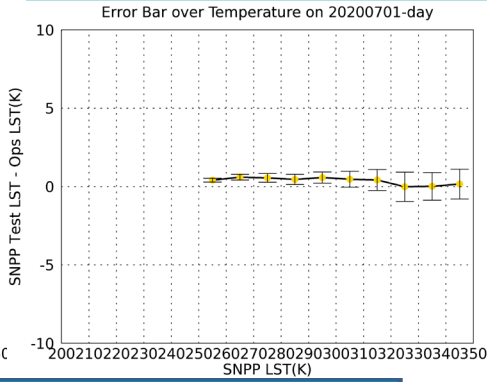
LUT evaluation via ground observation from SURFRAD

- Profiles were checked for the TPW in range of 1 to 2cm. A nice coverage is observed.
- Regression parameters are modified and the LUT generated was evaluated.
- The global test result indicates an overall close LST estimation with the operational LUT. Slightly warm LST estimation is observed at high temperature end.









LUT evaluation via global gridded data

Surface Albedo

Jul, 2020

Accomplishments / Events:

- Deep validation of L3 albedo by reprocessing historical data to show the effect of the recent updates on bright-surface albedo improvement
- Refined the L3 local production system to have the ability of reprocessing the data within recent two weeks
- Enabled the local L3 albedo map plotting function in the monitoring system
- Cooperated with NDE and ASSISTT colleagues on diagnosing the L3 albedo issue at NDE side
- Revising drafting manuscript about L3 VIIRS albedo product

Overall Status:

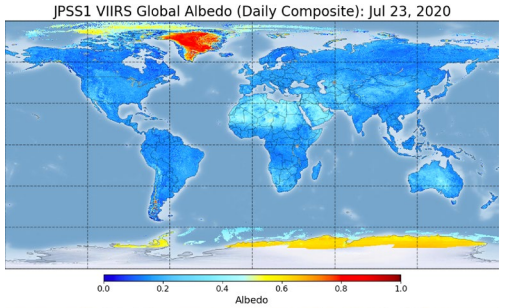
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

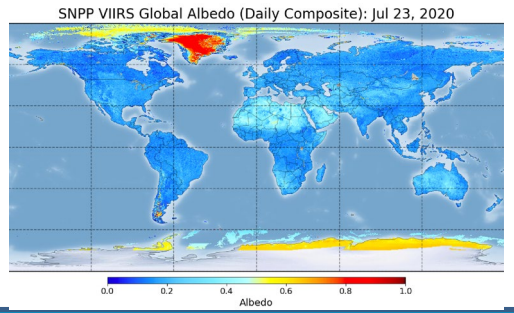
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

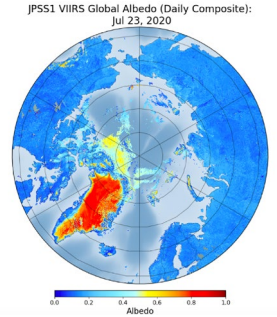
Issues/Risks:

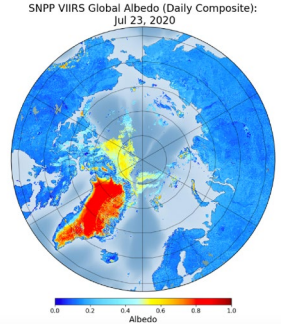
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity	Nov-19	Nov-19	11/21/19	
Validation of global gridded SURFALB product	Sep-20	Sep-20		report
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20		
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20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

Highlights: NRT monitoring



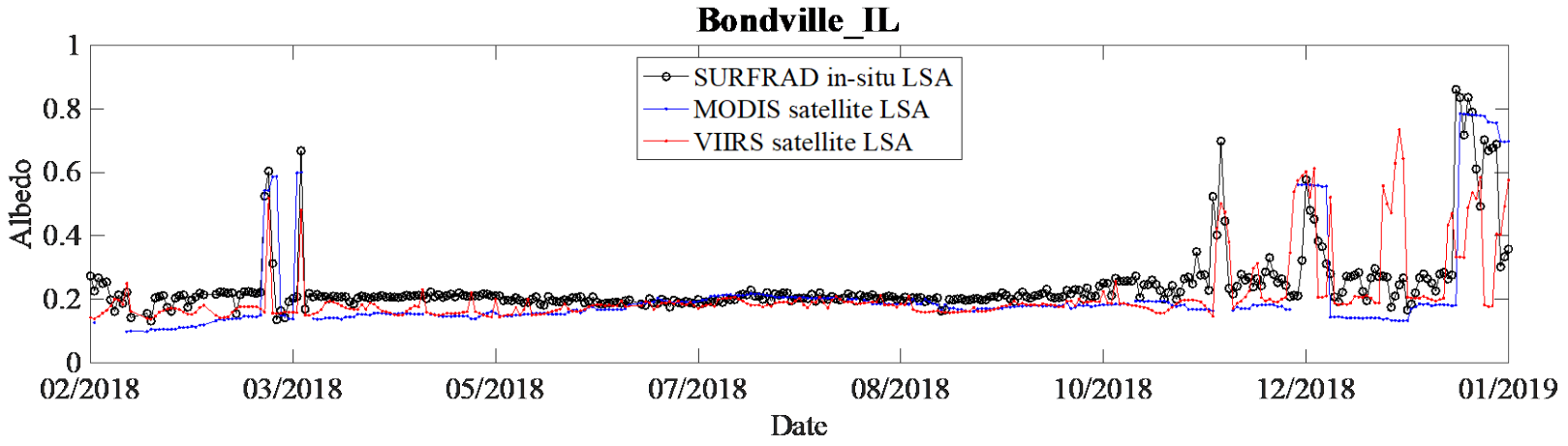




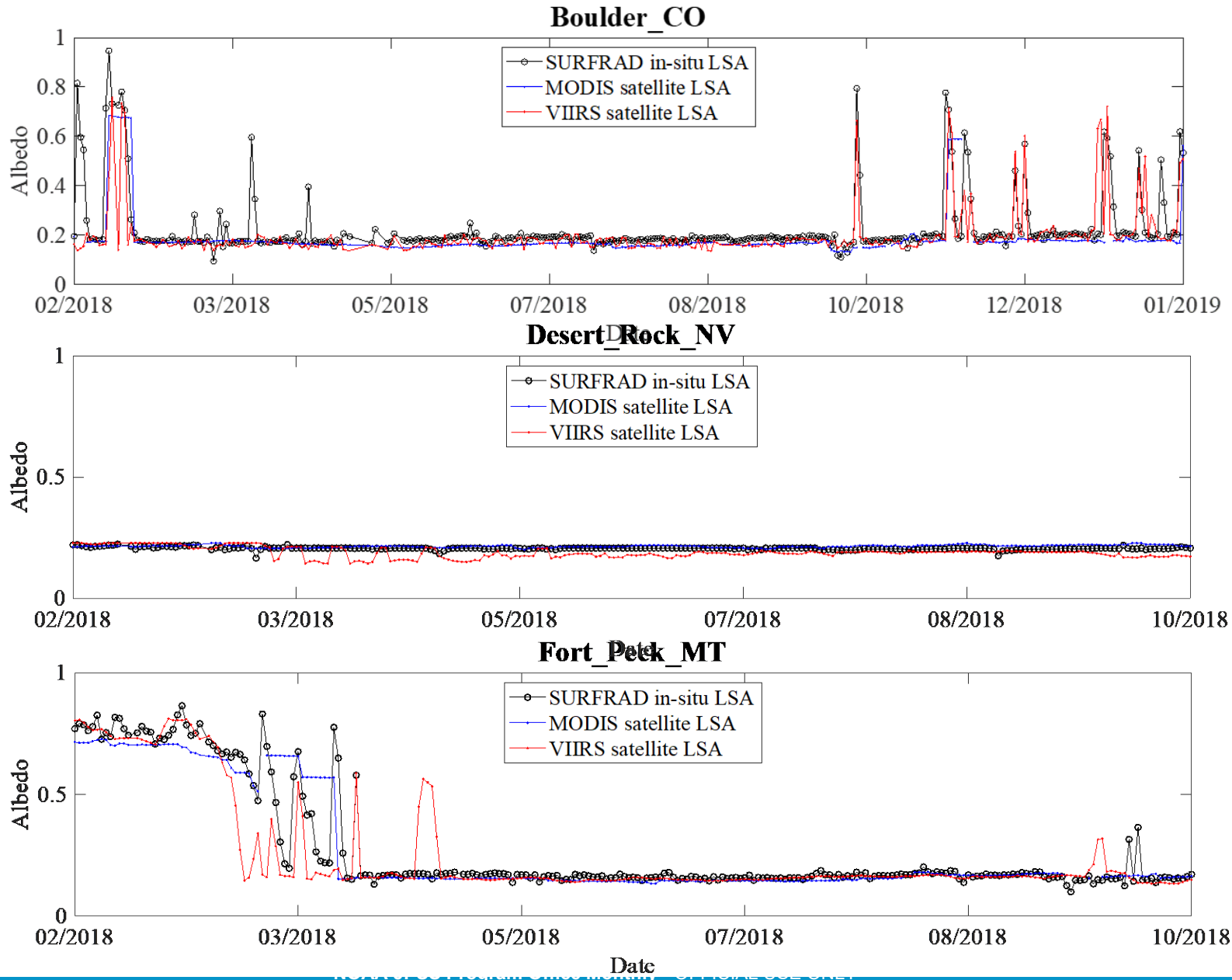


Validation of L3 albedo using yearly data over SURFRAD

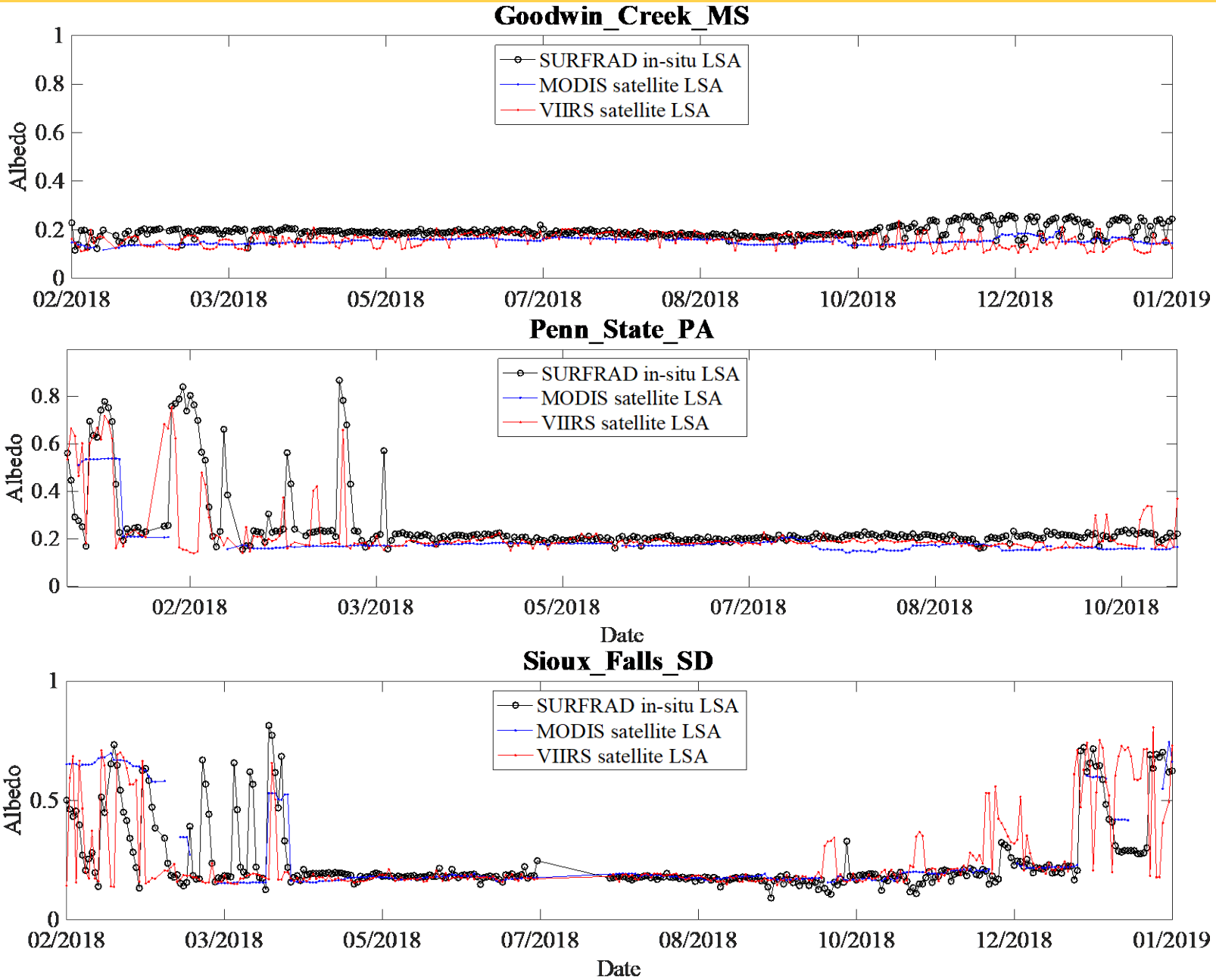
- Reprocessed the L3 albedo over SURFRAD sites over 2018 for testing the latest L3 algorithm, including using filtered albedo for desert surface.
- Direct-comparison with Local albedo and cross-comparison with MODIS albedo has demonstrated the features of the VIIRS L3 albedo product
- Pros:
  - Catching more snow events relative to MODIS
  - Continuous data coverage as long as production system works
- Cons:
  - Vulnerable to single observation uncertainty such as false snow under cloudy. (*Noted the cloud and snow has been improved in Enterprise version so that the larger outliers in this test has not been observed in current operational validation results.)*



Validation of L3 albedo using yearly data over SURFRAD



Validation of L3 albedo using yearly data over SURFRAD



IMS snow mask in filtering of cloudy-sky snow albedo

- **Background:** We found in the preliminary validation of the VIIRS albedo product that in continuous cloudy days, even after filtered by climatology, the albedo values are not retrieved correctly for the snow cases under cloudy days. It's a common issue for all albedo products, thus we would like to include auxiliary data for providing snow information.
- **Conclusion:** By comparing site observations with the snow mark data from IMS (Interactive Multisensor Snow and Ice mapping system), we found that IMS can capture the snow days under the clouds while those days were not filtered as snow albedo values, illustrating that IMS can provide spatially and temporally continuous snow mark information. Thus, we are working on the promotion of using IMS snow in filtering of snow surface.

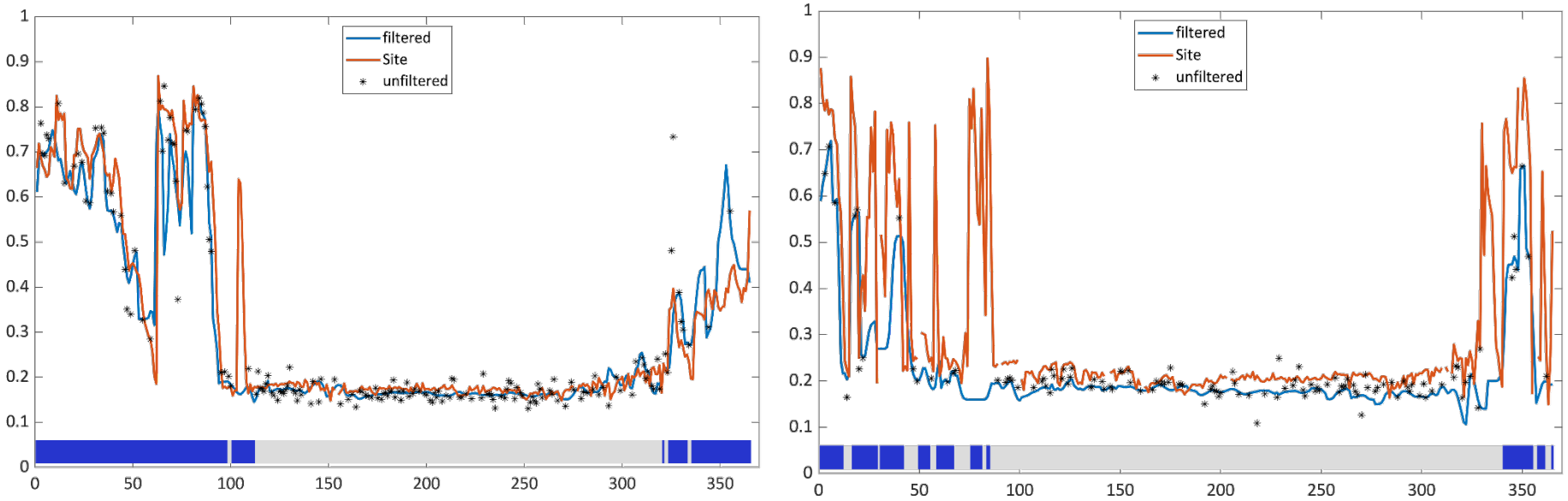


Figure. Temporal variation of clear sky retrieved, filtered, and ground-observed albedo at the FPK and PSU site. The bottom blue bars are snow days while gray bars are non-snow days marked by IMS data.

NVPS
(Vegetation Index & Green Vegetation Fraction)

Jul, 2020

Accomplishments / Events:

- Delivered NVPS VI–v2r1 DAP to ASSISST on July 10, 2020
- Compared with the operational VI-v1r4 in NDE, testing attests VI-v2r1:
  - Reduced CPU from more than 7 hours to less than 3 hours
  - Quality assurance describes properties of VI in 13 quality flags instead of the original 2 quality flags
- Comparison performed between daily, weekly and biweekly VI, reflectance and view zenith angle data produced from the new VI code (v2r1) versus data produced by operational VI-v1r4.
  - Test performed using NOAA20 data from April 1-16, 2020
  - Analysis confirmed that new compositing algorithm is functioning correctly
  - V2r1 and v1r4 VIs and other output data are highly consistent with each other

Overall Status:

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

1. *Project has completed.*
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4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

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

Highlights:

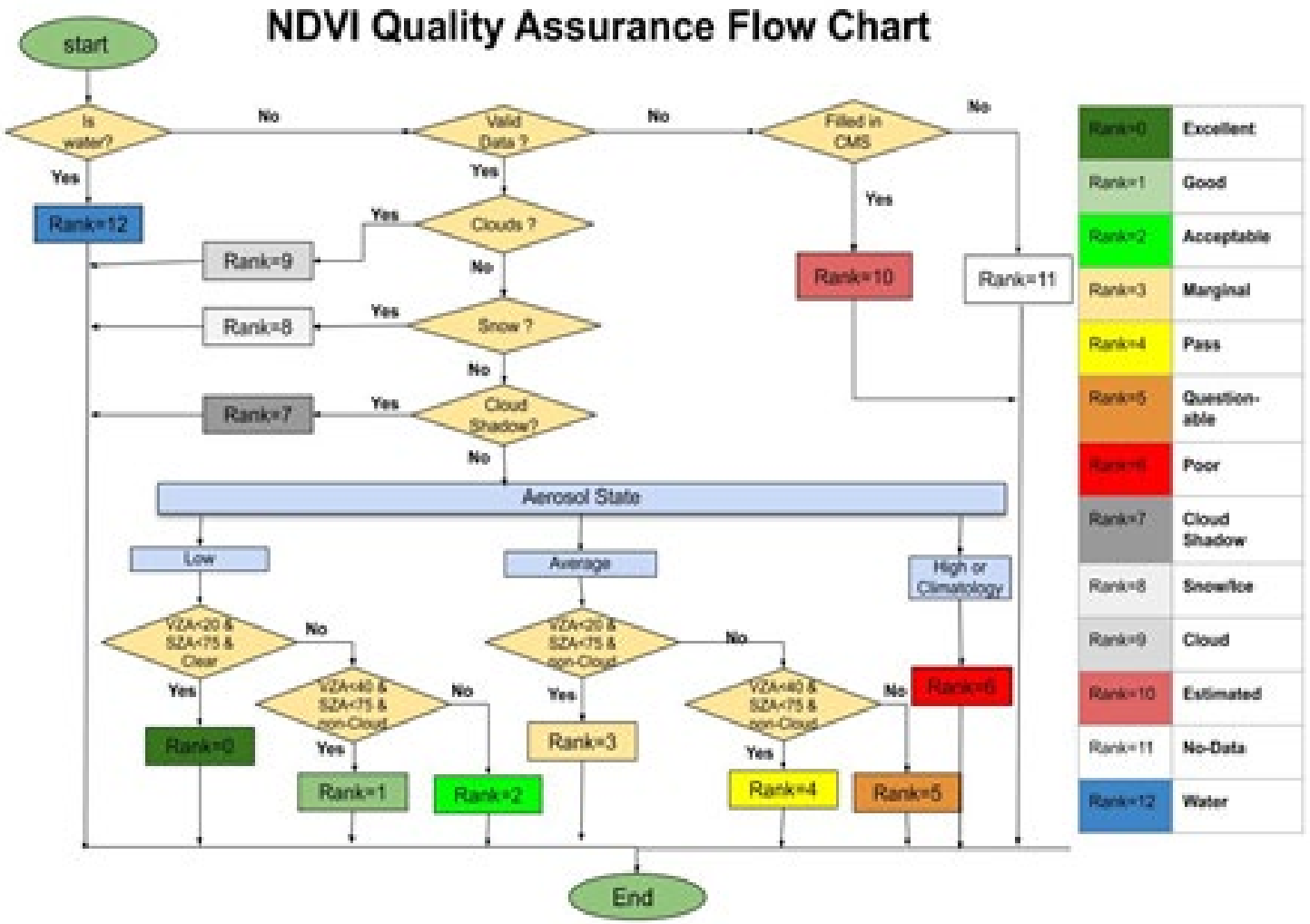
Test results of the improved VI software package: Ccmparison of Running Time between VI-v2r1(new) and VI-v1r4(old) on 04/16/2020 NOAA-20 observations

VI-v2r1 (new) (Process Unit)	Running Time (H:M:S)	VI-v1r4 (old) (Process Unit)	Running Time (H:M:S)
TGM & Gridding (size: 0.003°)	1:45:42	TGM & Gridding (size: 0.003°)	1:49:22
Daily Block Aggregating (size: 0.009° & 0.036°)	0:18:37	Daily Aggregating (size: 0.009° & 0.036°)	1:13:30
Daily Mosaicking	0:08:36		
Weekly Compositing	0:14:58	Weekly Compositing	1:15:16
Weekly Mosaicking	0:08:45	Weekly Aggregating	1:00:36
Biweekly Compositing	0:09:29	Biweekly Compositing	0:49:05
Biweekly Mosaicking	0:11:37	Biweekly Aggregating	1:04:24
Total	2:57:44	**Total**	7:06:14

DAP of NVPS VI-v2r1 delivered July 10, 2020

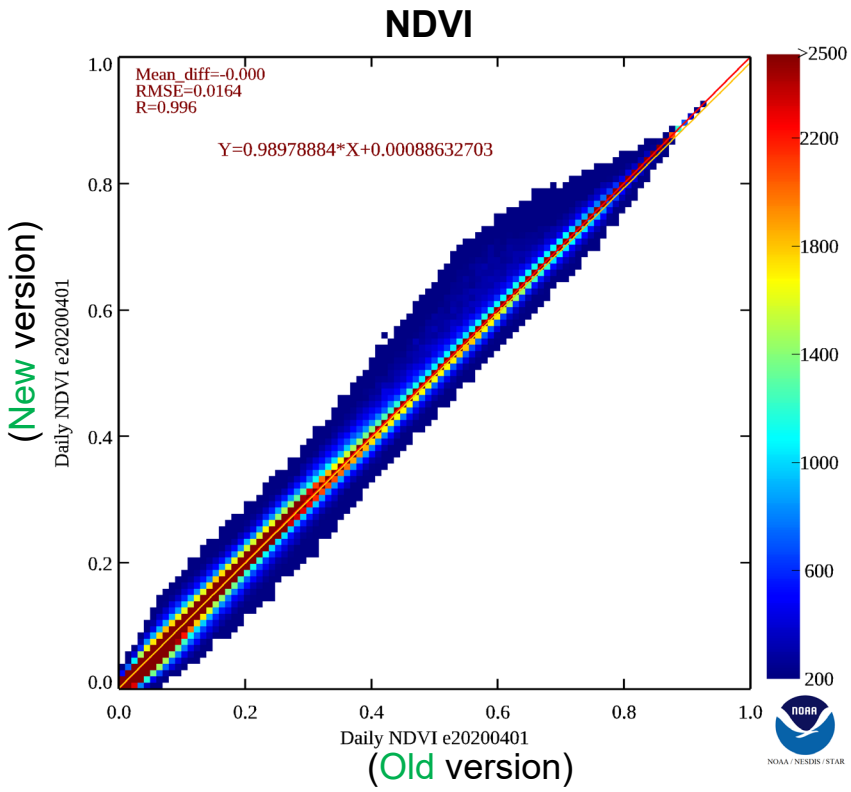
- ✓ Source codes including shell scripts, C++/C programs, and configuration text files
- ✓ Documents including
  - ✓ README summary of VI-v2r1 describing process of set up, compiling, executing, and running with test data and auxiliary data (tile-based and block-based water masks)
  - ✓ External User's Manual (EUM)
  - ✓ System Maintenance Manual (SMM)
  - ✓ VI Algorithm Theoretical Basis Document(VI-ATBD)
- ✓ Test data: J01 & NPP granule inputs from April 1-16, 2020

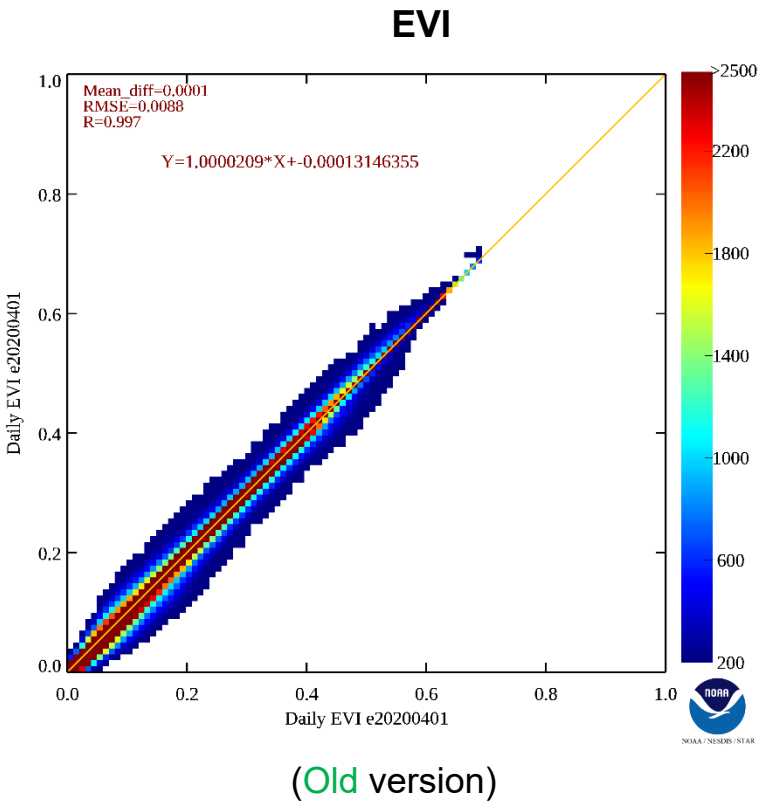
Redesigned Quality Assurance of VI with 13 quality flags



Verification of Daily Global VI

- NDVI and EVI are compared between the old version and the new version
- New version daily VI matched the old version daily VI (RMSE<0.02, R>0.99)
- The new daily VI is aggregated from (1) single view angle observation; (2) cloud filtered observation

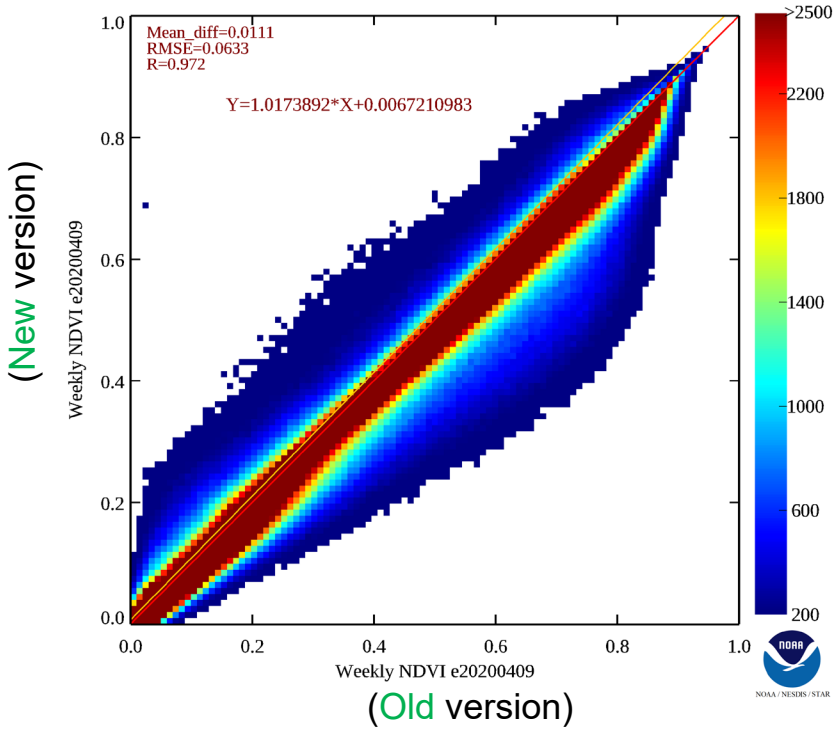




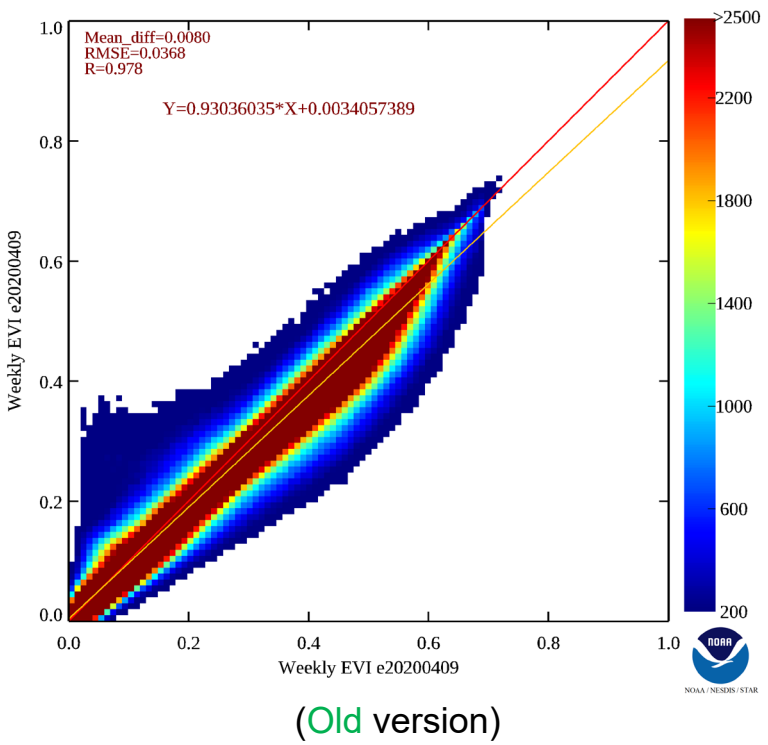
Verification of weekly Global VI

- NDVI and EVI are compared between the old version and the new version
- New version weekly VI matched the old version weekly VI (RMSE<0.06, R>0.97)
- The new weekly VI is composted from the daily global VI at 0.036° resolution, which saved processing time

NDVI



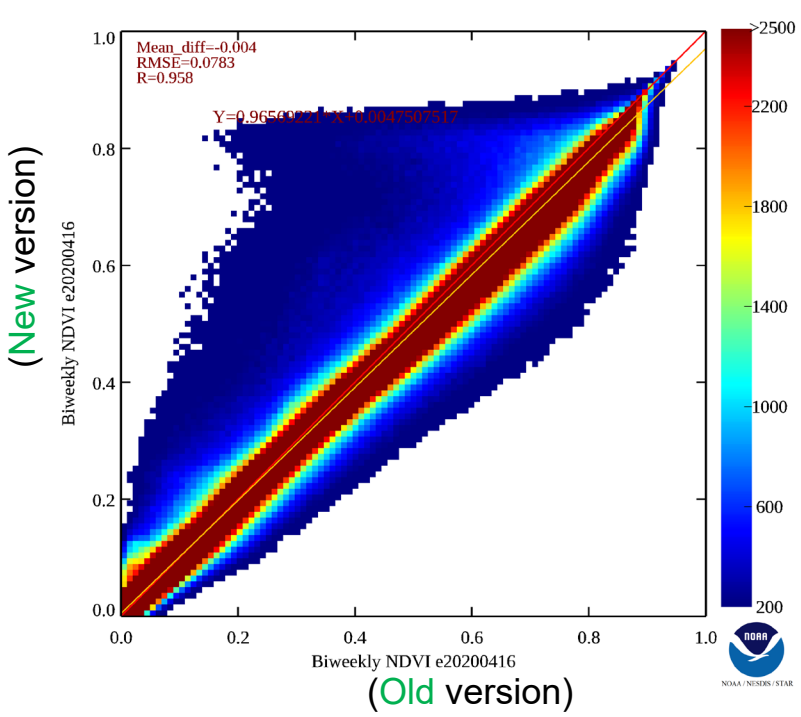
EVI



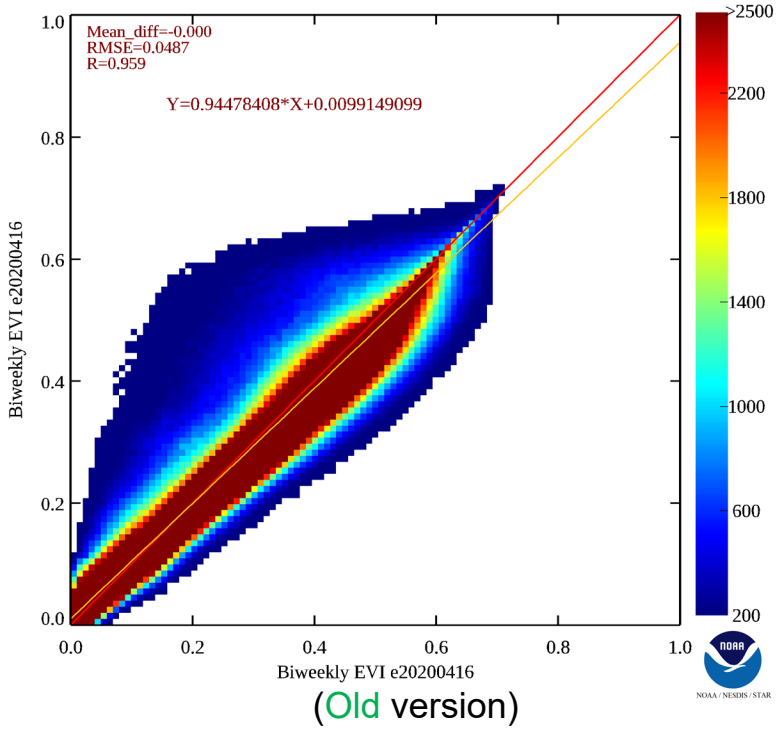
Verification of biweekly Global VI

- NDVI and EVI are compared between the old version and the new version
- New version biweekly VI matched the old version biweekly VI (RMSE<0.08, R>0.95)
- The new biweekly VI is composted from the weekly global VI at 0.036° resolution, which saved processing time

NDVI



EVI



Vegetation Health

July, 2020

Accomplishments / Events:

- Updated DAP code to fit J02 requirements, including file name and metadata;
- Prepared 15 weeks of ND data and 7 days of 1km VHP data, changed the file names to fit J02 requirements;
- Deeper literature survey on how ecological data were used on locust-related research;
- Generated locust-VH pixel-to-pixel records, using 1/20 deg MODIS AQUA data, plotted the VH histogram (highlighted);
- Generated a series of data and figures of VIIRS/VHP-1 and -4, -16 km resolution products, covering June 2020.

Overall Status:

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

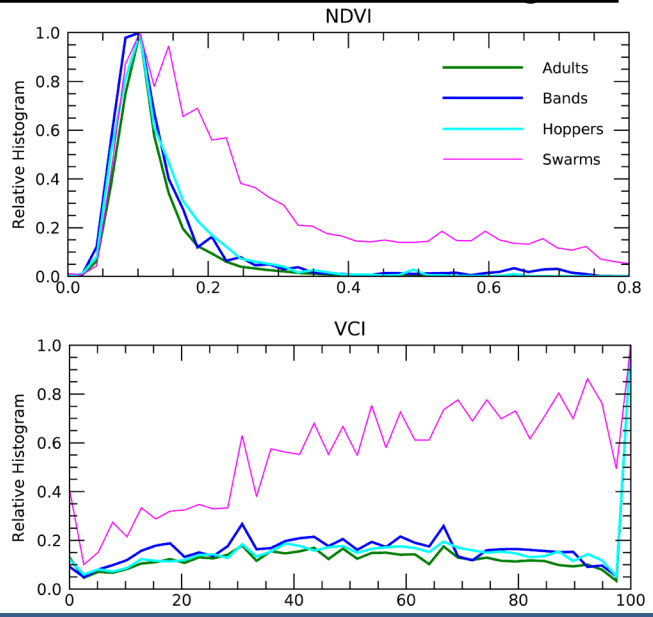
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

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

Highlights: Locust-related VH Histogram



Ocean Color

July, 2020

Accomplishments / Events:

Successful validated maturity review

A paper was published in ***Water Research*** showing water properties derived from VIIRS for high-altitude Lake Tahoe. This is first time for remote sensing of water properties for high altitude lake.

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.*

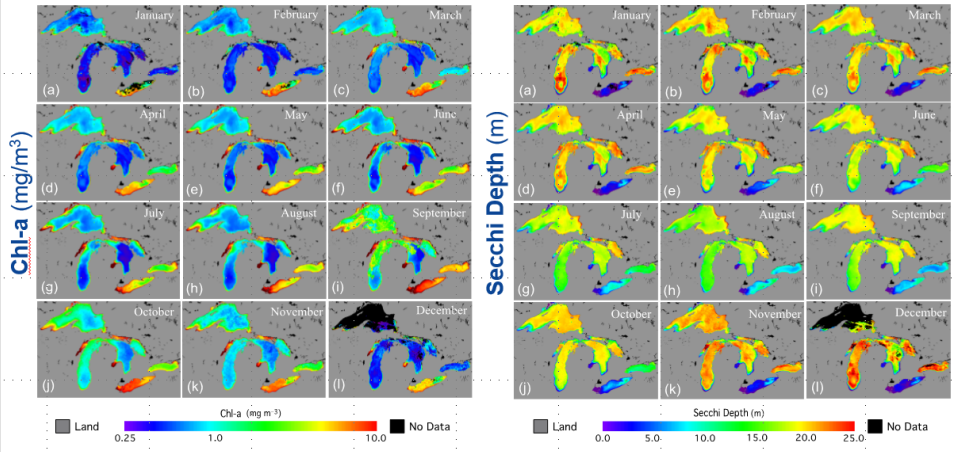
Issues/Risks:

Big jumps in NOAA-20 SDR have impacted the schedule for validation of NOAA-20 MSL12 ocean color EDR

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

Highlights:

A New Paper: The Great Lakes Water Properties from VIIRS Measurements



- Chlorophyll-a (Chl-a) and Secchi depth (SD) algorithms for the Great Lakes have been developed using the VIIRS observations. VIIRS-derived data are used for quantitatively characterizing water property in the Great Lakes.
- The left panel shows VIIRS-derived climatology (2012-2019) monthly chlorophyll-a images for January to December (a-l).
- The right panel shows VIIRS-derived climatology (2012-2019) monthly Secchi depth images for January to December (a-l).

Sea Surface Temperature

July, 2020

Accomplishments / Events:

- Draft enterprise SST Cal/Val Plan delivered to JSTAR on 7/16/2020. This closes one of JSTAR milestones (see in table)
- VIIRS SST RAN2 archival w/PO.DAAC/NCEI completed (see Fig). PO.DAAC archive is complete/uniform produced w/ACSPO v2.61. NCEI archive remains incomplete/non-uniform comprising different versions of ACSPO. This closes another important milestone.
- NPP and N20 RAN2 SST records are exemplarily consistent. This closes the third milestone "Cross-calibrate/Compare N20 and NPP SST records". See Figure below
- Remaining instabilities and some seasonality in the NPP time series may be due to in situ data, or due to NPP VIIRS sensor. More overlapping time series w/N20 will help to better atrtribute those.

Overall Status:

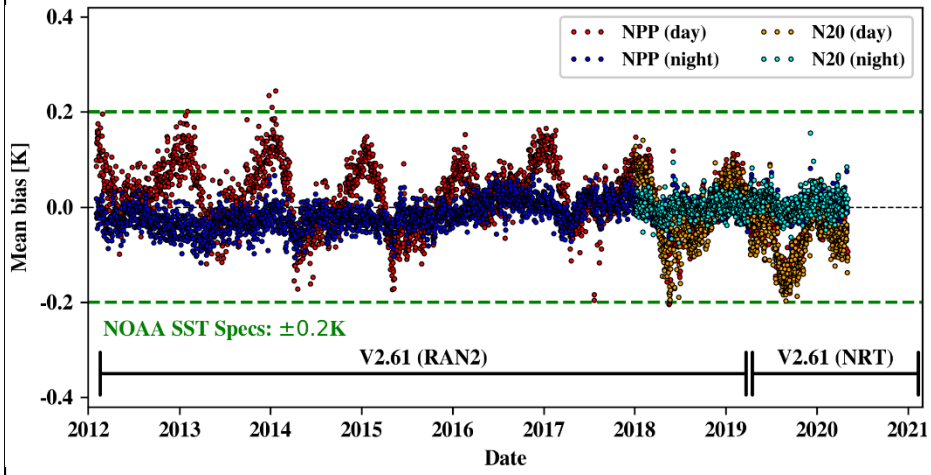
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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

Issues/Risks:

None

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



Validation bias of VIIRS RAN2 time series archived in PO.DAAC (Satellite minus in situ iQuam SSTs). Note exemplary consistency between the NPP & N20 SSTs. Nighttime VIIRS SSTs are closer to in situ data as expected, due to minimized diurnal cycle. Daytime data show significant seasonality due to increased and variable skin-bulk difference. All data are well within NOAA specs ±0.2K.

VIIRS Polar Winds

July, 2020

Accomplishments / Events:

- Successful in getting Algorithm Services (aka ASSISTT Framework 2) installed and completed a run of NPP/NOAA-20 VIIRS winds processing. Finalizing scripting for NRT and reprocessing.
- ROSES proposal (NOAA-centric) Selected for Award: Develop capability to produce stereo winds from mix of ABI imagery (GOES-16 or GOES-17) and VIIRS imagery (NOAA-20 or NPP).
- Preparing for model impact studies with tandem winds. CIMSS is preparing to test the VIIRS "tandem" winds in the NCEP Global Forecast System (GFS). The atmospheric motion vector (AMV) text files are being converted to BUFR for input into the GFS (running on the S4 computer at SSEC), after which the GFS will be configured for assimilating the winds. This is being done in concert with two other winds projects (NASA ROSES AIRS/CrIS and SSEC-funded MIRS retrieval winds).

Overall Status:

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

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

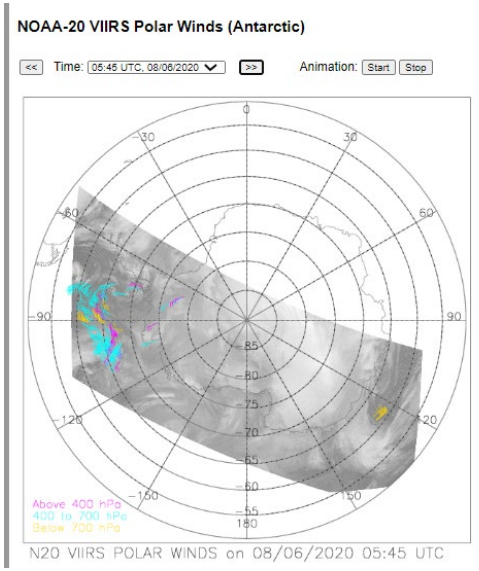
Issues/Risks:

None

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

Highlights:

Polar wind information from STAR webpage interface



NUCAPS Products

July, 2020

Accomplishments / Events

Team members delivered (7/28/2020) J2 preliminary DAP using the latest NUCAPS version (v2.8b) as the baseline.

NUCAPS CO for ACCLIP Field Campaign

Successfully completed Metop-SG CDR on July 14, 2020.

Overall Status:

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

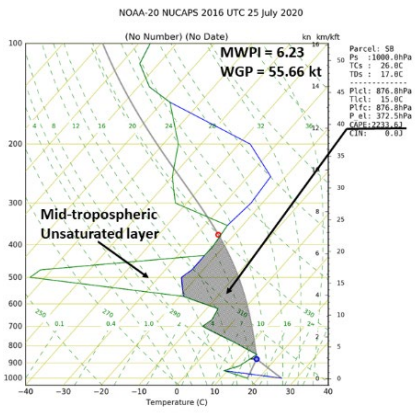
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

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

Highlights

Landfall of Hurricane Hanna as observed by a NOAA-20 NUCAPS sounding retrieval 87 km south of the cyclone center



MiRS Products

July, 2020

Accomplishments / Events:

- The MiRS science team officially released the v11.6 Delivery Algorithm Package (DAP). Includes Extension of MiRS preliminary full processing capability to JPSS-2 (NOAA-21). This is a pre-launch capability, which will be updated once real data are received after launch. Radiometric bias corrections are identical to those for NOAA-20.
- NOAA-21 ATMS implementation on MiRS
  - Testing on 2020.02.01
  - Proxy JPSS-2 (NOAA-21) data files used in retrievals were identical to the N20 data, except that all metadata attributes and filename conventions were changed to J2 (N21)
  - Ancillary input files are copied and renamed from N20 files
  - Proxy CRTM coefficient files are copied from the current N20 files
  - Results are identical, as expected. 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			

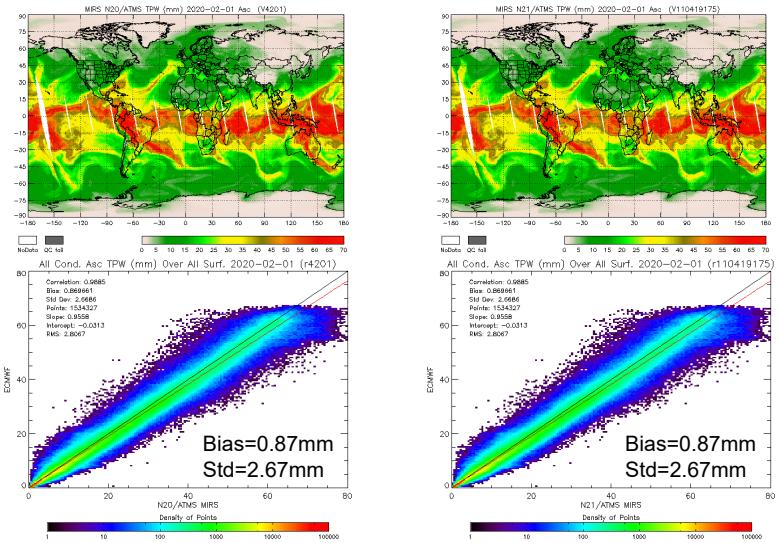
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

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

Highlights:



Comparison of MiRS N20 real data retrievals (left) with N21 retrievals (right)

Snowfall Rate

July, 2020

Accomplishments / Events:

– An issue was identified in the Metop-A algorithm included in the updated SFR package that was delivered to MiRS recently. Additional effort was made to remove the degraded 157 GHz channel from the algorithm including re-developing the radiance bias correction and the empirical equations for the first guess vector. The updated algorithm results in much more coherent storm structure than the original version (the Highlights section). Product O&M often requires algorithm modification in order to eliminate or mitigate the impact of failed or degraded channels. Due to the dynamic nature of snowfall, it is beneficial to retrieve SFR from as many satellites as possible including the legacy satellites like Metop-A.

Overall Status:

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

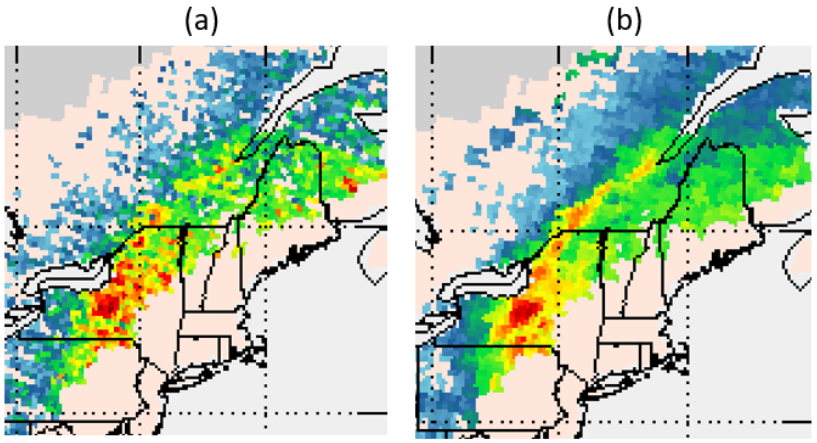
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

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

Highlights: Algorithm update to eliminate impact of degraded channel



Metop-A SFR from a snowstorm on February 7, 2020 before (a) and after (b) an algorithm update removing the degraded 157 GHz channel. The update results in much more coherent snowfall system structure.

OMPS Ozone

July, 2020

Accomplishments / Events:

DAP for V8PRo with better forward model fidelity and J02 adaptations provided to ASSIST July 15th. Iterating on soft calibration adjustments.

Identified In-Band Stray Light contamination for NOAA-20 OMPS NP.

Investigating polarization sensitivity as source of OMPS NM differences.

EDR Validated Milestone for V8Pro has slipped from Q3 to Q4.

V8TOz with J02 adaptations and small FOV SNR mitigation 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			
Schedule			X		# SDR Schedule, code change

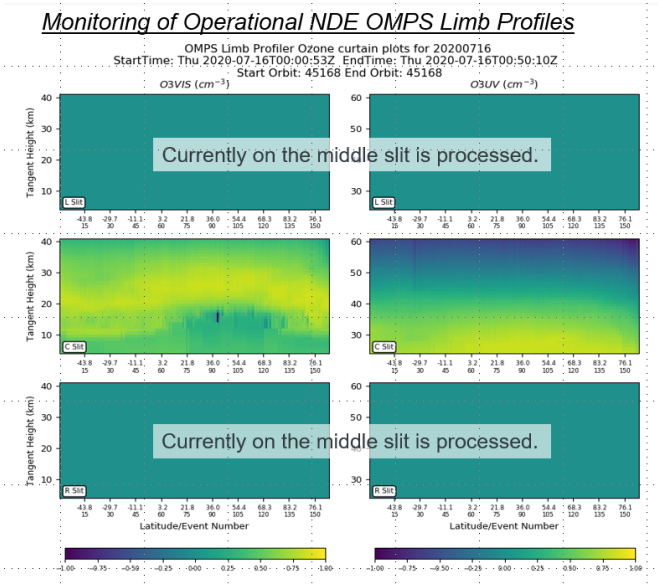
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

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

Highlights:

Monitoring of Operational NDE OMPS Limb Profiles



GCOM-W1 Products

July, 2020

Accomplishments / Events:

- Completed annual cal/val report
- Activities continue with NESDIS IA and JPSS to discuss AMSR3 and AMSR2 progress/plans; have engaged JAXA regarding preferred AMSR3 data formats, as per their request
- Continued product cal/val; all products meeting requirements
- Finalizing FY21 and beyond budget requests
- Portions of GCOM system under consideration for EPS-SG MWI and presented at EPS-SG PDR; EDR formulation underway

Overall Status:

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

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

Issues/Risks:

None

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

Highlights:

Hurricane Hannah

AMSR2 wind speed, rain rate and 36 GHz horizontal polarization brightness temperature imagery from Hurricane Hannah in the Gulf of Mexico at 1945 UTC on 24 July 2020