NOAA JPSS Monthly Program Office

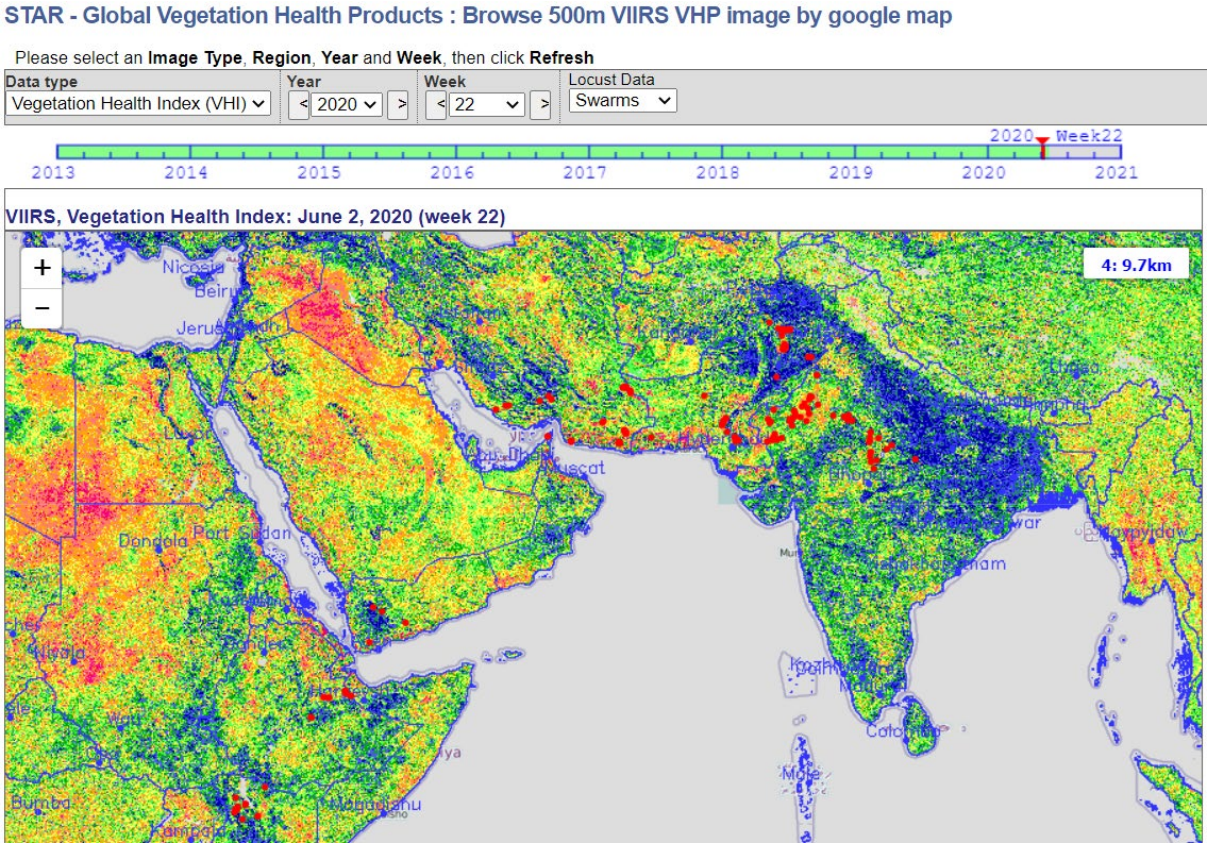
AMP/STAR FY20 TTA

Lihang Zhou, DPMS Deputy
Bonnie Reed, Algorithm Sustainment Lead
Banghua Yan & Satya Kalluri, Acting AMP Deputies for Science & JPSS STAR Program Managers

July 13, 2020

Highlights from the Science Teams

More Locusts 2020



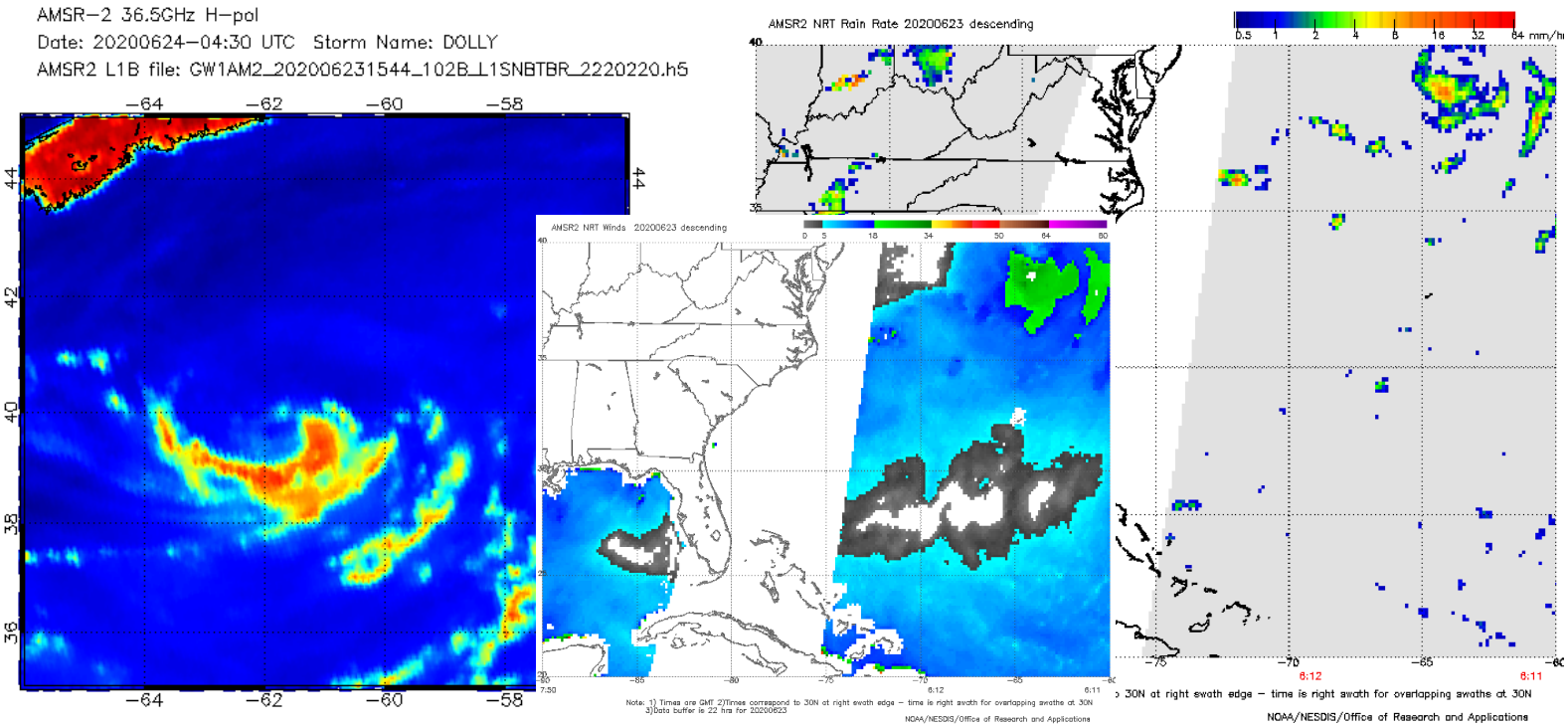
Throughout the first half of 2020, large swarms of locusts have appeared in various places globally. Initially found in East Africa, new swarms have been encountered in Pakistan, and India. The Vegetation Health team is mapping these outbreaks and looking at correlations with their products. The red spots on the map above represent locust swarms from FAO.

https://locust-hub-hqfao.hub.arcgis.com/

Highlights from the Science Teams

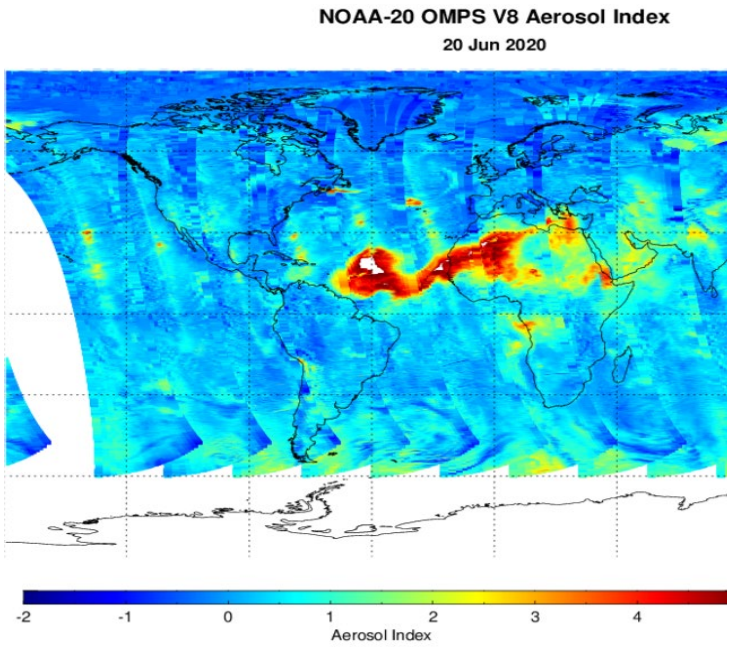
Early 2020 Hurricane Season Activity Exceeds Expectations

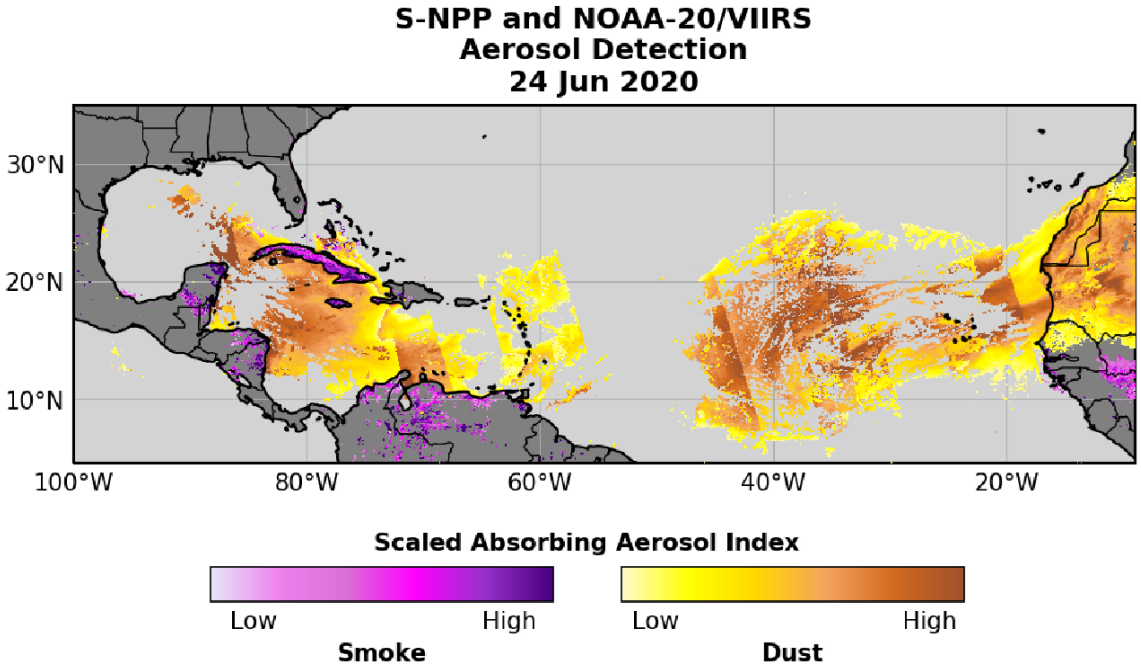
The first several weeks of the 2020 Atlantic Hurricane season have been unusually active, setting records for the earliest fourth, fifth, and sixth named storms of the season, so far. The AMSR2 instrument on GCOM has been watching these storms, which have clustered around Gulf of Mexico and US East Coast. The maps blow show brightness temperature (left), wind speed (center), and rain rate (right) for Tropical Storm Dolly as it moved south of Nova Scotia on June 23.



Highlights from the Science Teams

2020 Saharan dust event hits historic levels

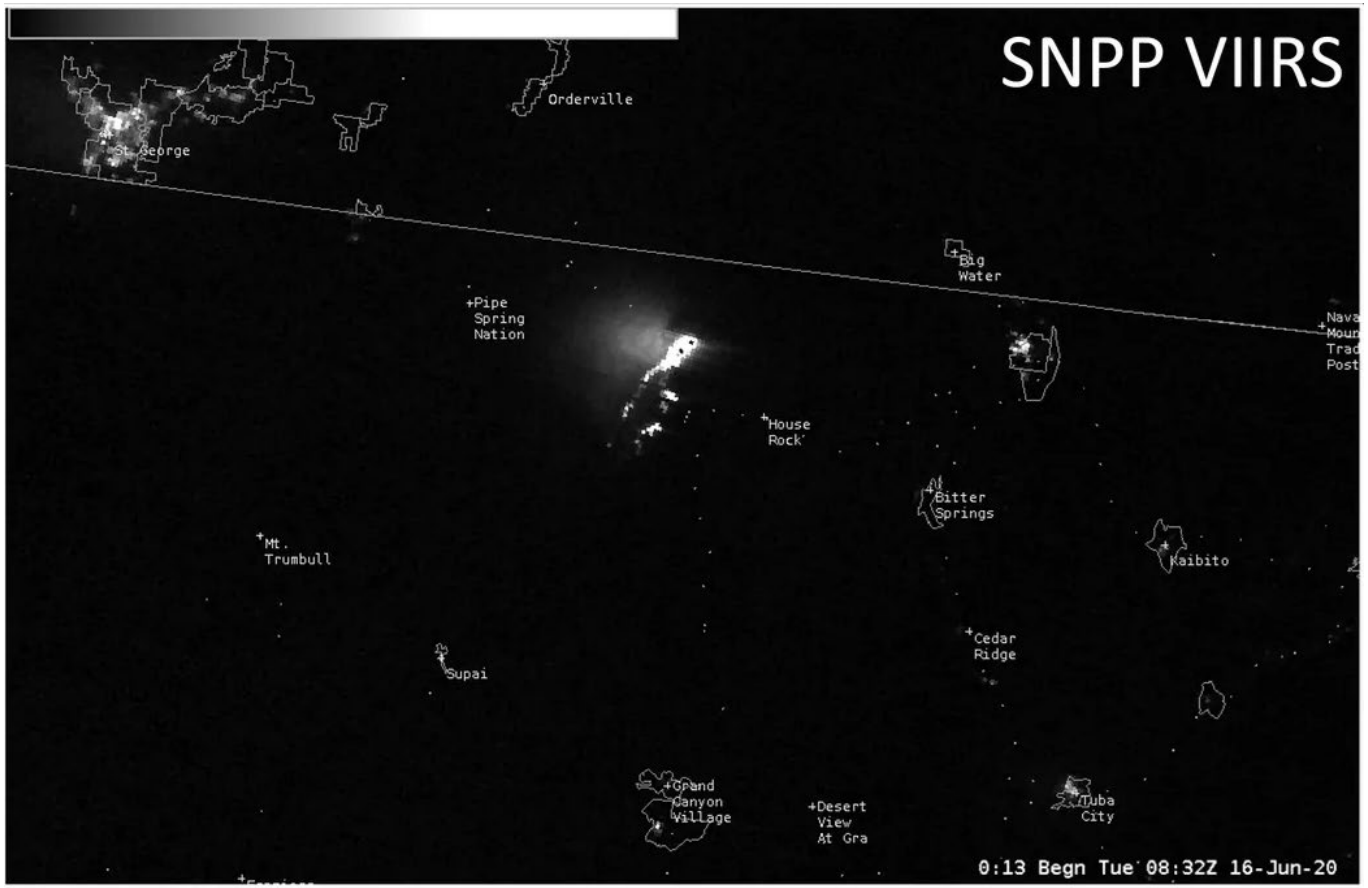




During normal times storms over Africa can loft dust from the Sahara Desert high into the atmosphere, where it can then be transported thousands of miles to South America and the Caribbean. This year, anomalous conditions lead to an extreme Saharan dust even which caused extremely poor air quality in places as far away as San Juan, PR, Houston, TX< and the southeast US. In addition to being visible in true color imagery, JPSS teams were also able to track this event using OMPS and VIIRS aerosol products, as seen above.

Highlights from the Science Teams

2020 Fire season off to hot start in Arizona

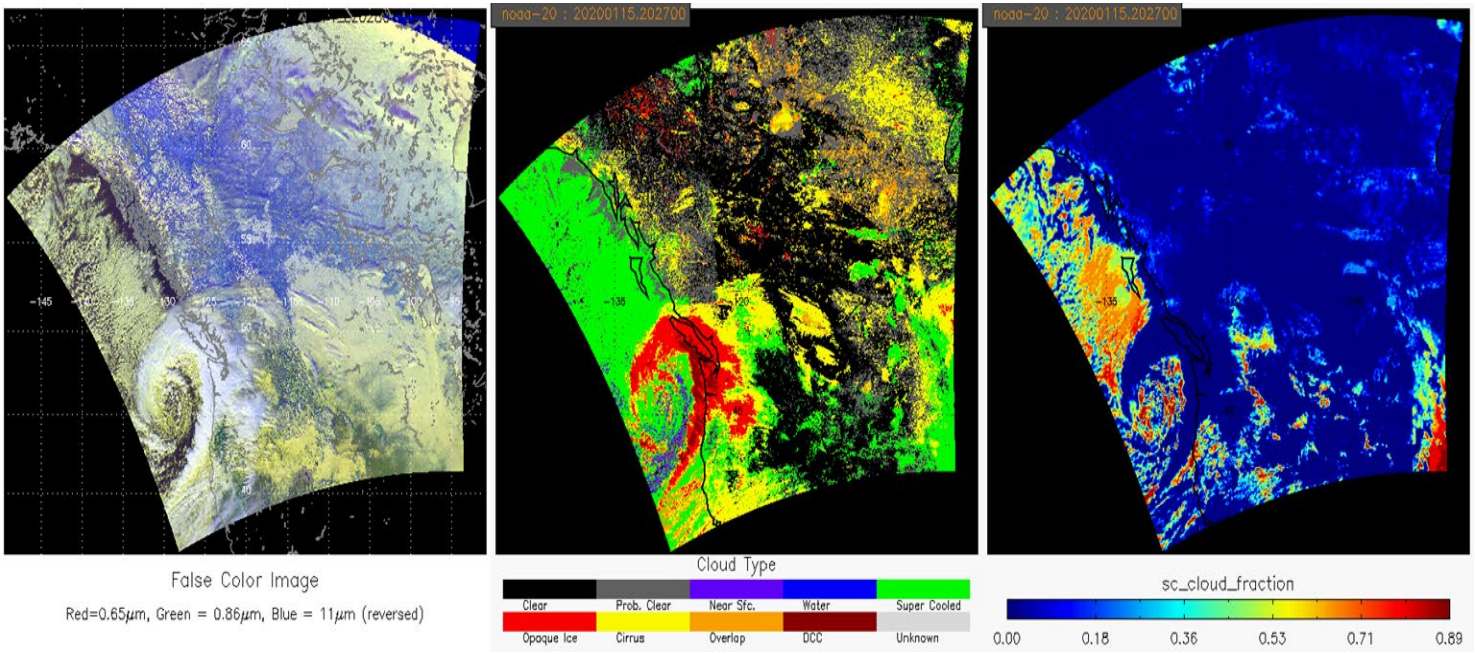


A wet winter has set the stage for an active fire season in Arizona. June featured several large fires in Arizona including the Magnum fire in the Grand Canyon National Forest, the Bush fire, northeast of metro Phoenix, and the Bighorn fire northeast of Tucson. All three are now among the 10 largest in the state's history.

The image to the left shows the Magun Fire on June 20 as captured by the Day/Night Band on VIIRS.

Highlights from the Science Teams

Supercooled cloud product



- The total and layer supercooled water and convective Cloud Cover Layer products, which will be part of the next delivery, continue development. Preliminary studies show promising results. An example is shown above. A false color RGB, (middle) cloud type from the CLAVR-x system, and (right) supercooled cloud probability for the total column from NOAA-20 CCL product on Jan 15, 2020 between 2020 and 2026UTC. Reasonably good consistencies are observed

Highlights from the Science Teams

June Maturity Review

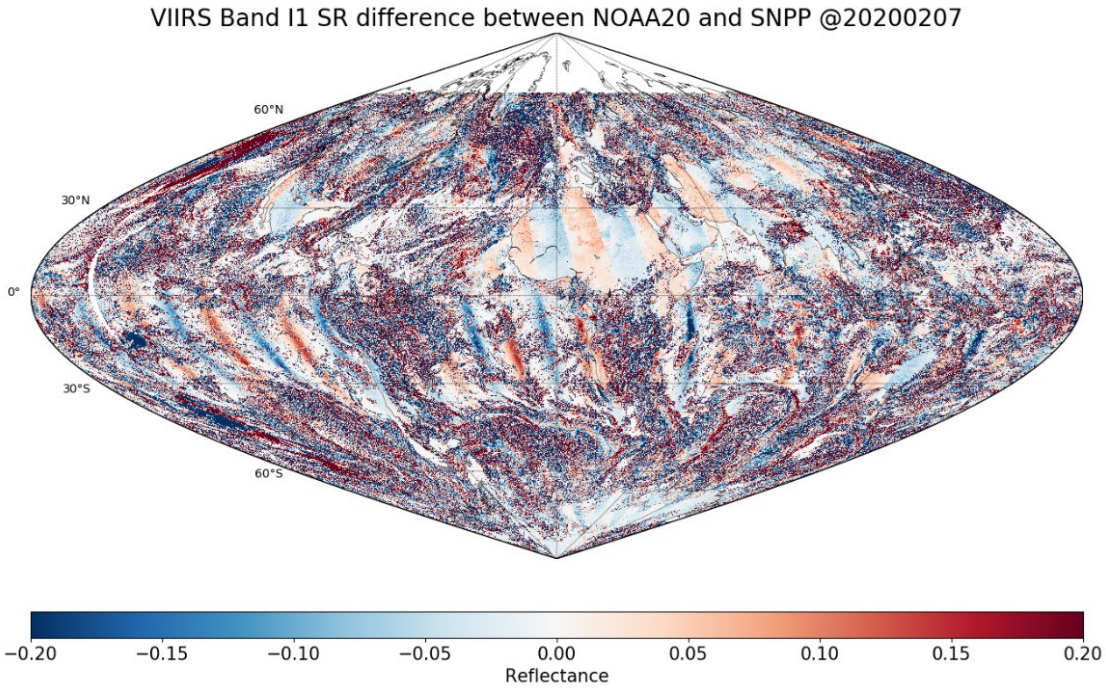


Figure. Reflectance difference between the SNPP and NOAA-20 VIIRS I1 Band Surface Reflectance.

On June 18th, the JPSS Maturity Review panel convened in order to review the NOAA-20 VIIRS Surface Reflectance and Snow Cover (Binary map and Snow Fraction) for Validated Maturity. The panel found that both products have reached that stage of development. It was recommended that the Surface Reflectance team make plans for moving to an enterprise algorithm, as well as adding additional validation datasets at high latitudes.

Accomplishments

- Delivery Algorithm Packages (DAPs) - Mission Unique Products:
  - 6/8/2020: OMPS SDR DAP (ADR9172/CCR5018, Error in OMPS Nadir Mapper Dark Count Correction) delivered to DPES

- DAPs – Enterprise Products:
  - 6/12/2020: I-Band Active Fires DAP (changes to address the software code review) delivered to ASSISTT T4 for integration/testing
  - 6/24/2200: I-Band Active Fires DAP (combined final NPP/N20 DAP and initial J2 DAP) delivered to NDE/OSPO
  - 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)

- New Data Distributions/Availability:
  - 7/6/2020: ICVS-GSICS Portal operational
  - The baseline SNPP reprocessed data is available at ftp://jlrdata.umd.edu/pub/SNPP_Reprocessing/SDR/
  - The reprocessed cloud mask (CM) for 2016 is available at ftp://jlrdata.umd.edu/pub/SNPP_Reprocessing/EDR/Cloud_Mask/Baseline/2016/
  - Initial visualization of the new ocean thermal fronts product: http://www.star.nesdis.noaa.gov/socd/sst/arms_fronts/

- JPSS-2/Enterprise Cal/Val Plan:
  - STAR delivered draft JPSS-2/Enterprise Cal/Val plan to DPMS on 6/30/2020
  - 7/7/2020: GCOM team delivered GCOM-W1/AMSR2 Annual Validation Report

- IDPS Builds Checkouts:
  - STAR submitted Block 2.2 Mx1 I&T deploy regression review/checkout report to DPMS/RTN/OSPO on 6/24/2020

Accomplishments – JPSS Cal Val Supports

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

S-NPP	Weekly OMPS TC/NP Dark Table Updates	06/02/20, 06/09/20, 06/16/20, 06/23/20, 06/30/20
NOAA-20	Weekly OMPS TC/NP Dark Table Updates	06/02/20, 06/09/20, 06/16/20, 06/23/20, 06/30/20
S-NPP	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	06/02/20, 06/16/20, 06/30/20
NOAA-20	Bi-Weekly OMPS NP Wavelength & Solar Flux Update	06/09/20, 06/23/20
S-NPP	Monthly VIIRS LUT Update of DNB Offsets and Gains	06/30/20
NOAA-20	Monthly VIIRS LUT Update of DNB Offsets and Gains	06/30/20

- 6/11/2020: NOAA-20 VIIRS Ocean Color Products have been implemented in the okeanos OPS

- 6/16/2020: NDE build 2.0.23 Operational
  - OMPS Limb Profile (S-NPP, LP V2.0)
  - HEAP 2.1 (NUCAPS for S-NPP, NOAA-20, and MetOp-C)

- 6/16/2020: Algorithm Update Reviews for JPSS-2
  - JPSS SDRs: ATMS, CrIS, VIIR, and OMPS SDRs
  - VIIRS Imagery EDR

- 6/18/2020: June 2020 NOAA-20 Calibration/Validation Maturity Review
  - Snow Cover (Binary Map & Snow Cover Fraction) Validated Maturity
  - Surface Reflectance Validated Maturity

Accomplishments - Transition to Operations and Algorithms

- **SNPP/N20**
  - OPMS Limb Profile and Hyperspectral Enterprise Algorithm Package v2.1 (includes NUCAPS) Promoted to Operations (Jun 16)
  - I-Band Active Fires DAP delivered to NDE
  - JPSS RR v2.3 (cloud mask LUT update) in NDE I&T
- **DPMS Cloud ADA**
  - Developed Draft Test Plan and Test Procedures
  - Working with Ground SEIT and Raytheon to develop Tracking Database and identify Cloud permissions
  - Working with IDPS to get STAR accounts set up for Cloud access
- **EPS-SG project support**
  - Participated in the monthly MetOp-SG Risk Working Group meeting
  - Reviewed MetOp-SG L1 Requirements Document
  - 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 SDR/Imagery Algorihtm Update Review (Jun 16)
  - Continuing to work with Flight Project as they update the JCT dates and coordinate DMPS involvement (including GRAVITE)
  - Identifying algorithm updates required prior to JCT3 End to End test
- **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

- July, 2020 Maturity Review (7/17/2020):
  - Full Validated Maturity:
    Ocean Color
- 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
- Sep-20: Initial J2 LUTs (VIIRS & OMPS SDRs)
- Sep-20: Initial J2 PCT (ATMS SDR)
- Oct-20: Initial J2 PCT (CrIS SDR)
- OMPS SDR, ADR9066/9095 DAPs

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	Jul-20		Need NASA sharepoint access permission
ATMS: J2 pre-launch sensor characterization report	May-20	Jul-20		PSR changed
CrIS: J2 pre-launch sensor characterization report	May-20	Jul-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		
Initial J2-ready EDR DAPs (include NPP/N20 updates)	Sep-20	Dec-20		
AST-2019 (VIIRS Annual Surface Type)	Sep-20	Sep-20		

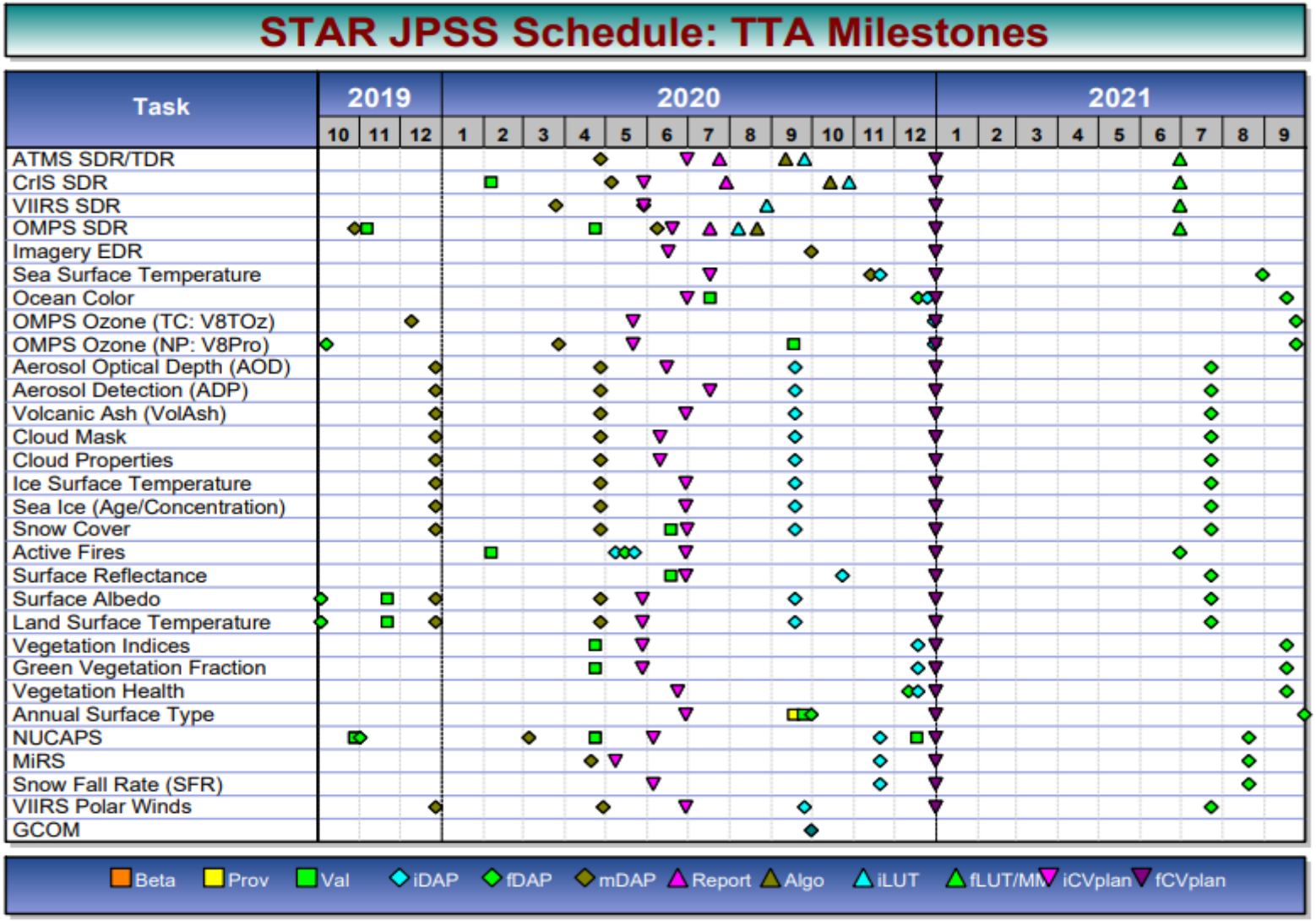
FY20 STAR JPSS Milestones

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		
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	
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	
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	
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	
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	
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	
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	
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



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	Aug-20		
-- ORR	Aug-20	Aug-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	Aug-20		ASSISTT results are not as expected
-- 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

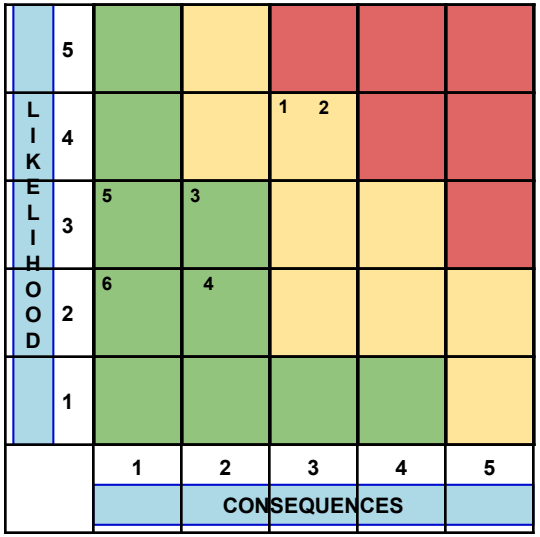
Product Name	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Enhanced TOAST with S-NPP OMPS Limb Profiles				
-- CDR	Jan-17	NA		No longer required
-- SCR	Apr-17	NA		No longer required
-- ORR	May-17	Aug-20		
-- Operations	Jun-17	Sep-20		
Upgrade to the Multi-platform Satellite 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: 07/07/2020

Rank Risk ID	Summary	LxC Trend	Aprch	Status
1 AMP-19-002	Proxy data delay due to J2 10Hz Sampling Freq	4x3 ⇔	W	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.
2 GJ-340	Data transfer via hard drive may be delayed due to offices being closed	4x3 ⇔	W	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 DP_AE. Cloud Account will be created.
3 AMP-19-003	Some IDPS and STAR algorithms cannot use APIDs with 10Hz sample freq	3x2 ⇔	M	06/30/2020: Waiting on science team analysis to conduct follow on TIM for this Risk.
4 AMP-18-003	J2 APID Changes to Accommodate New S/C Bus	2x2 ⇔	W	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.
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	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.



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 ⇔ 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**	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

Rank	Risk ID	Risk Statement	Approach	Status
2 ⇔ 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**	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
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**	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**	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

Rank	Risk ID	Risk Statement	Approach	Status
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**	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

June, 2020

Accomplishments / Events:

- Update JPSS ATMS Cal/Val plan document to include latest JPSS-2 ATMS instrument TVAC testing data analysis results and lessons learned from J1 ATMS pre- and post-launch activities
- Prepare and present JPSS-2 ATMS SDR algorithm update presentation
- Study and report the S-NPP ATMS scan driver motor current anomaly event on June 24 and its impact on S-NPP ATMS science data quality
- Lead the discussion on future ATMS science data quality improvement plan
- Update ATMS data dictionary document to incorporate the latest PCT format update associated with lunar intrusion correction algorithm update

Overall Status:

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

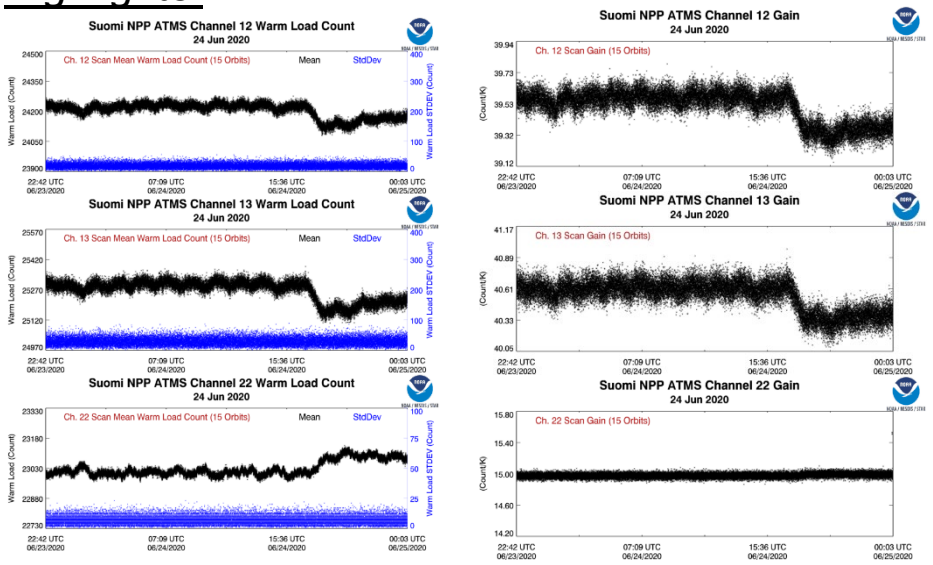
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

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	Jul-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:



S-NPP ATMS channel 12, 13, and 22 calibration warm target (left) and gain (right) variation during scan drive motor current anomaly event on June 24, 2020

CrIS SDR

June, 2020

Accomplishments / Events:

- Prepared and Delivered the CrIS SDR Reprocessing Version 2 Software Package. CrIS Reprocessing software version 2 was based on ADL 5.3.23 IDPS Block 2.1 Mx5, the latest version run with RHEL 6, and with polarization correction algorithm update and other updates, effectively same as IDPS Block 2.1 Mx8 (January 29 2020).
- Developed software for radiometric inter-sensor comparison between CrIS and GOES-R ABI **(Fig. 1)**. Matched spatially the ABI pixels at ABI-CrIS SNOs to the CrIS IFOVs based on the geo-location information provided in the L1b granules.
- Made progress on the FCE implementation. Following algorithm and PCT updates have been proposed and are under test: 1) a new FCE_CORRECT quality flag, 2) a new PCT parameter for FCE status, and 3) having the FCE algorithm off. These updates provide all tools in preparation for a CrIS instrument entering into a failure mode with frequent FCE events.
- Generated the noise correlation factor matrix, from the principal component analysis (PCA), to characterize the noise performance of the NOAA-20/CrIS SDR data product **(Fig. 2)**.
- Using J2 TVAC mission nominal side-2 scanning mode data, at plateau 22, for external calibration target (ECT) temperatures from 200-310K, and the nonlinearity coefficients provided by Dave Tobin from UW, the calibrated radiance data were generated by Harris PC tool. The results showed that the nonlinearity coefficients are reasonably good **(Fig. 3)**.
- Delivered the J2 CrIS Cal/Val Plan Draft and reported J2 CrIS Algorithm/PCT Updates.

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			

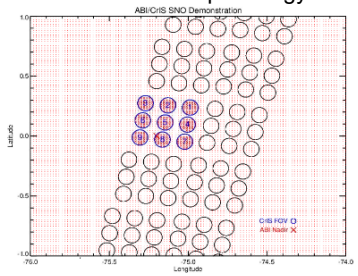
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

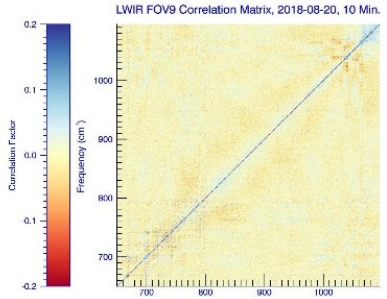
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
NPP (side-2) Validated Maturity	Feb-20	Feb-20	02/06/20	Prov + 6m
J2 pre-launch test data (TVAC) review/analyze	Apr-20	Apr-20	Apr-20	TVAC: Jan-20
J2 pre-launch evaluation tools development	Sep-20	Sep-20		
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	05/29/20	
Pre-launch sensor characterization report	Jul-20	Jul-20		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	with Mx1 TTO	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	

Highlights:

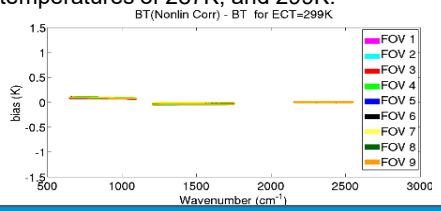
(1) The Lon/Lat of CrIS nadir FOVs and ABI pixels for a SNO on 04/26/2020. Illustration of match-up strategy.

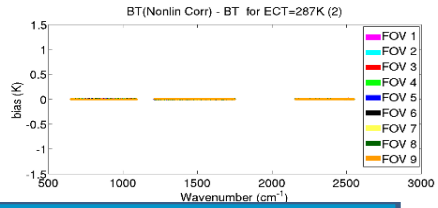


(2) Noise correlation factor matrix derived from PCA methodology for a data set over tropical ocean, LWIR/FOV9 for NOAA-20/CrIS.



(3) Difference between the calibrated CrIS spectra (including nonlinear correction) when viewing the traceable ECT and the predicted radiance of the traceable ECT, for ECT view temperatures of 287K, and 299K.





VIIRS SDR

June, 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 6/21/2020
- Processed and analyzed the scheduled lunar collections that were successfully performed for both S-NPP and NOAA-20 VIIRS instruments on 6/2/2020: confirmed N20 reflective band radiometric response is stable within the observed variability of lunar data
- Extracted the latest VIIRS SDR data from the Saharan pseudo-invariant calibration sites (PICS) for NOAA-20 and S-NPP: the current reflective solar band measurements and image quality are consistent with the previous time series
- Estimated S-NPP VIIRS M13 low-gain radiometric response changes based on mission-lifetime analysis of OBC BB WUCD events

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			

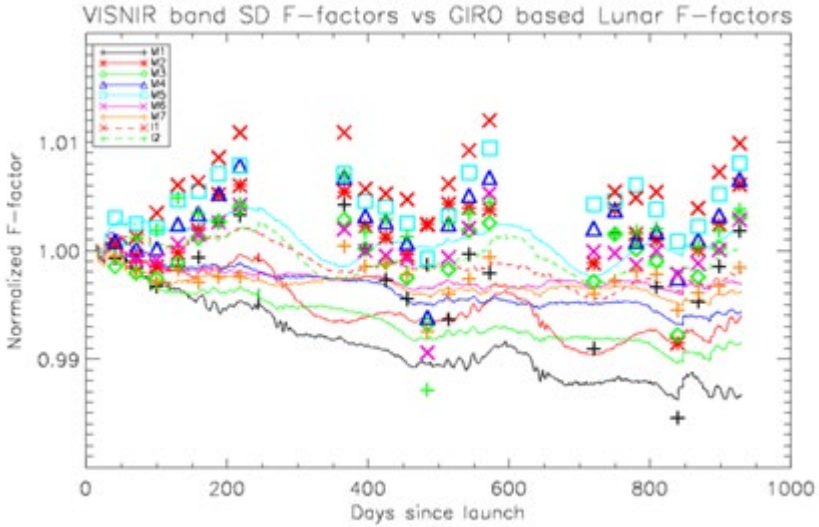
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

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		
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	
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:



NOAA-20 VIIRS radiometric calibration scaling coefficients (F-factors) derived from solar (lines) and lunar (symbols) measurements

OMPS SDR

June, 2020

Accomplishments / Events:

- Delivered SNPP/NOAA-20 OMPS weekly Dark tables and solar irradiance LUTs to GRAVITE
- Completed the J2 OMPS SDR algorithm review
- Completed the first version of J02 OMPS SDR cal/val plan
- Generated J2 OMPS NM/NP sample and macro tables using the J02 OMPS GND-PI tables.
- Developed a new SAA detection algorithm for NOAA-20 NP observations, in coordination with the ICVS and OMPS EDR teams.
- Continued to revise the SDR code for J2 NM high resolution of data processing.

Overall Status:

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

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

Issues/Risks:

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

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	Jul-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	Jul-20		See Issues/Risks
Algorithm update based on pre-launch test data and other changes (e.g. APID, sampling frequency, FSW, and RDR)	Jun-20	Aug-20		
Launch-ready LUTs (initial delivery)	Jun-20	Aug-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
DAP (ADR9172/CCR5018, Error in OMPS Nadir Mapper Dark Count Correction)			06/08/20	
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:

Comparisons of J02 OMPS NM Sample Table (In and Out)

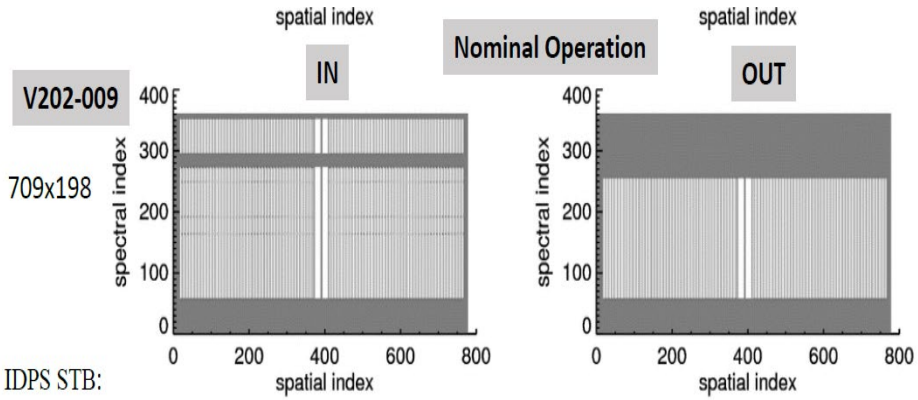


Figure J02 OMPS NM sample tables for input and output. The input is the original sample tables in the data stream to the IDPS SDR processing system, while the output is the sample table that the IDPS can produce. The sample table determines the spatial and spectral resolution of the SDR data

SDR Reprocessing

June, 2020

Accomplishments / Events:

- The baseline SNPP reprocessed data is available at ftp://jlrdata.umd.edu/pub/SNPP_Reprocessing/SDR/ (highlights)
- The reprocessed cloud mask (CM) for 2016 is available at ftp://jlrdata.umd.edu/pub/SNPP_Reprocessing/EDR/Cloud_Mask/Baseline/2016/ (highlights)
- SNPP CrIS V2 SDR reprocessing is completed for 2019/06/25-2020/01/29
- NOAA20 CrIS SDR reprocessing is completed for 2019/06/25-2020/01/29
- The manuscript of SNPP SDR Reprocessing is complete and ready for NOAA/STAR internal review
- Transition of the reprocessed SNPP SDR data to NCEI/CLASS 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		
Evaluation of impact of reprocessed VIIRS SDR data on cloud mask product	Sep-20	Sep-20		
Finish V2 SNPP CrIS reprocessing	Sep-20	Sep-20		
Finish V2 SNPP OMPS reprocessing	Sep-20	Sep-20		
Develop reprocessing data website	Sep-20	Sep-20		
Analyze the quality of reprocessed data in a journal paper	Sep-20	Sep-20		
Readme for reprocessed SNPP ATMS, CrIS, OMPS and VIIRS data	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			

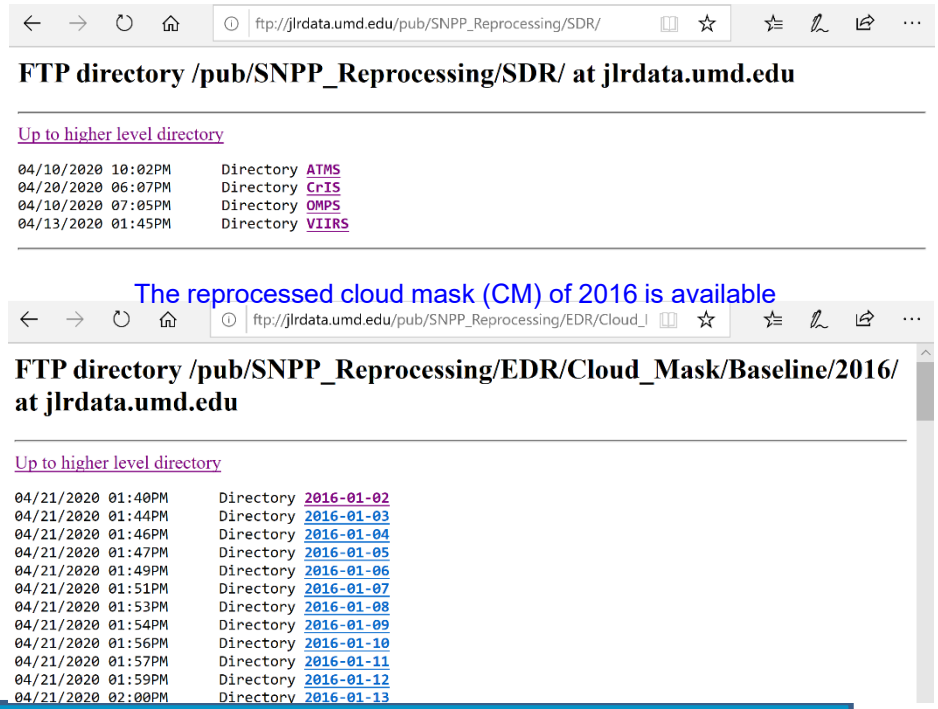
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Highlights:

The baseline SNPP reprocessed data is available



The reprocessed cloud mask (CM) of 2016 is available

ICVS

June, 2020

Accomplishments / Events:

- ICVS module improvement: figure out the ABI sub-satellite point issue in order to improve the accuracy of ABI vs CrIS inter-sensor bias time series so as to improve NOAA-20 vs S-NPP CrIS inter-sensor bias accuracy through double difference method using ABI as transfer
- Develop new South Atlantic Anomaly detection algorithm for OMPS NP and analyze results by comparing experimental results to operational ones.
- Transition ICVS severe event watch web site from development server to STAR public server in order to provide broader users near real time severe event watch products using JPSS sensor data
- Retro process NPP CrIS geolocation accuracy data to build long term CrIS geolocation accuracy monitoring time series
- Prepare the transition of ICVS GSICS portal web pages from development mode to public access mode

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.*

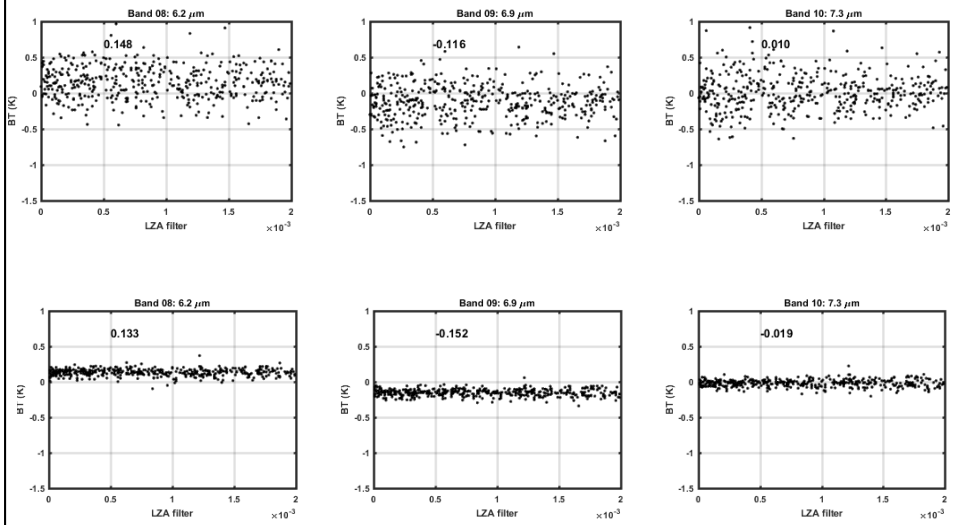
Issues/Risks:

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		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

S-NPP CrIS vs GOES-17 ABI intersensor bias before (upper) and after (lower) ABI sub-satellite point correction for selected channels



VIIRS Imagery

June, 2020

Accomplishments / Events:

- **VIIRS EDR Terrain Correction code changes:** Checked the latest I&T test data, the last step before operational implementation. (TC to become operational in July)
- **VIIRS NOAA-20 DNB-to-NCC LUT update:** More testing to determine effect of new LUT on NCC Imagery. Some results are un-expected and need to be investigated further.
- **JPSS-2 Cal/Val Plan:** Draft finished, final due in December.
- **JPSS-2 Imagery Algorithm Update:** presentation given
- **Uses of VIIRS Imagery in case study blogs:** Saharan dust case, TX/OK blowing dust, fires and smoke plumes, GeoColor, etc. Large media usage of NOAA satellites!
- **VIIRS Imagery Team website** being revised as part of larger RAMMB website update, projected for Q4 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			

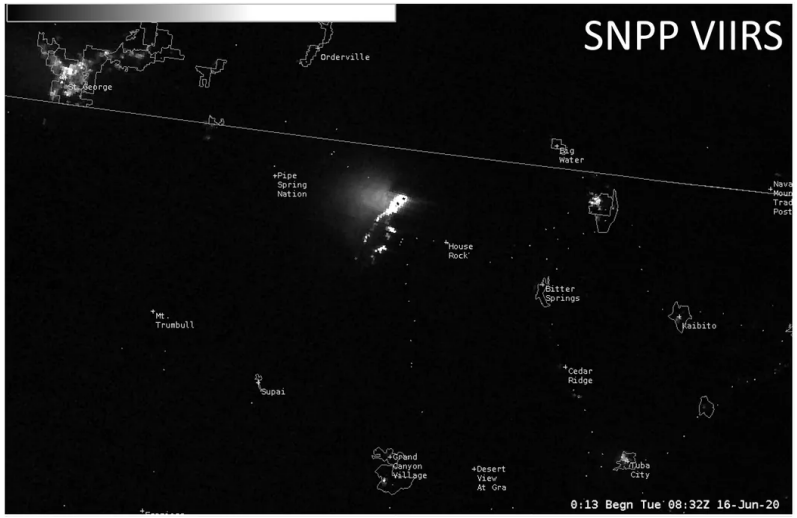
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
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		
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



Magnum Fire near Grand Canyon North Rim: 16 June 2020 SNPP VIIRS NCC Imagery. Fire is located northwest of House Rock AZ.

Clouds

June, 2020

Accomplishments / Events:

- Cloud team prepares for the Metop-SG Heritage CDR
- An issue in the KD-tree algorithm that may affect ACHA performance was identified, and an update to fix the issue was delivered
- Cloud team continued to work on Cal/Val plans. Drafts were done in June 2020.
- The total and layer supercooled water and convective Cloud Cover Layer products, which will be part of the next delivery, continue development. Preliminary studies show promising results. An example is shown in the 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	06/10/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Sep-20	Sep-20		
Algorithm Updates Review	Sep-20	Sep-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
Verification of direct readout EDRs	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 tool and LTM webpage development/improvement	Sep-20	Sep-20		
Support Alaska Demo and ESRL usage	Sep-20	Sep-20		

Highlights:

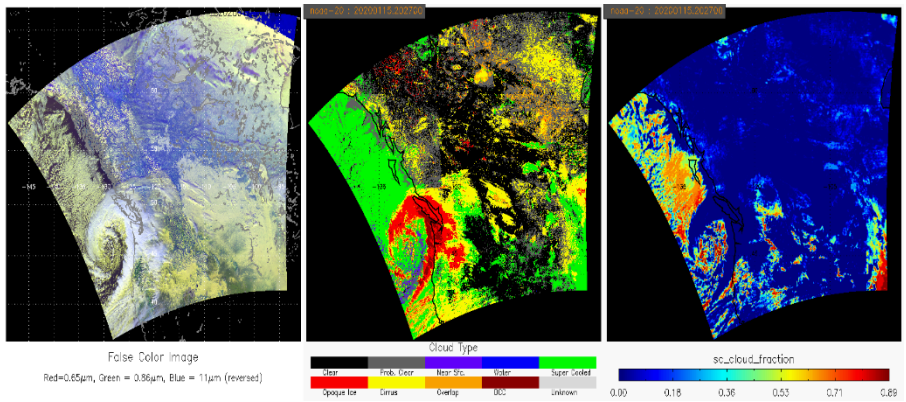


Figure 1. (left) A false color RGB, (middle) cloud type from the CLAVR-x system, and (right) supercooled cloud probability for the total column from NOAA-20 CCL product on Jan 15, 2020 between 2020 and 2026UTC. Reasonably good consistencies are observed.

Aerosol

June, 2020

Accomplishments / Events:

Provided NWS/NCEP with test data for Level 3 gridded VIIRS “dust AOD” and “smoke AOD” for model verification

Delivered summer 2019 pixel level AOD files to NWS Environmental Modeling Center (EMC) for assimilation studies/experiments.

The STAR aerosol team fulfilled a milestone of delivering one month of 2019 SNPP VIIRS aerosol optical depth (AOD) data for a joint project with NWS and OAR through Disaster Supplemental project. Prior to delivering the product the team evaluated the AOD product by comparing to AERONET observations. The uncertainty estimate, fitted bias (VIIRS - AERONET) as a function of VIIRS AOD will be provided to NWS to incorporate into their observational error estimates when assimilating VIIRS AOD in their Global Ensemble Forecast System for Aerosols (GEFS-Aerosols).

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.*

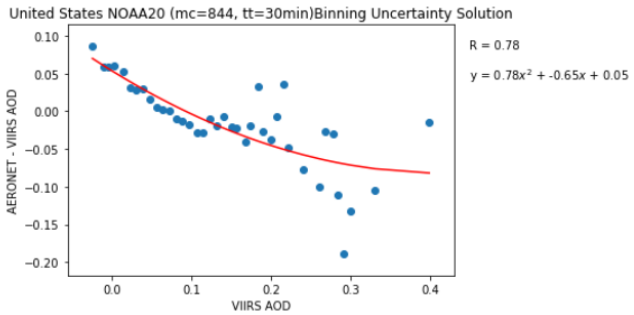
Issues/Risks:

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	06/15/20	AOD delivered; awaiting ADP
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Sep-20	Sep-20		
Algorithm Updates Review	Sep-20	Sep-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
Verification of direct readout EDRs	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, update aerosol cal/val & AerosolWatch website	Sep-20	Sep-20		

Highlights:

VIIRS-AERONET AOD bias as a function of VIIRS AOD for several stations in the U.S. The fits are second order polynomials but biases at high optical depths are large for both SNPP and NOAA-20 VIIRS and slightly different.



Volcanic Ash

June, 2020

Accomplishments / Events:

- Collected user feedback on VOLCAT products;
- Submitted J2 cal/val plan
- Deployed updated version of VOLCAT

Overall Status:

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

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

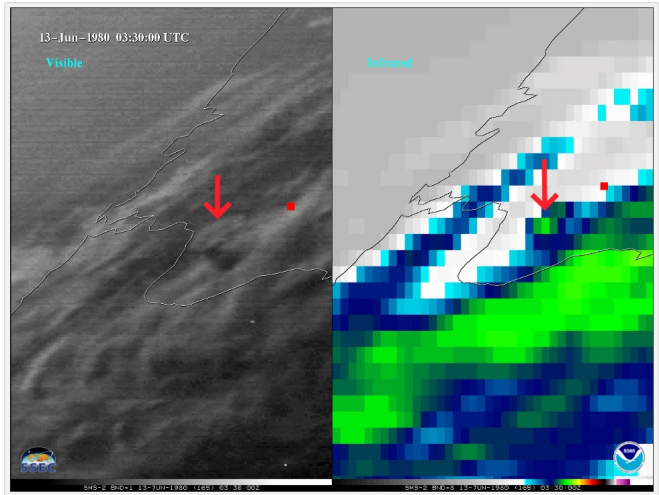
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 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		
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		
Verification of direct readout EDRs	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: *60 years ago Mt. St Helens experienced small eruptions June 12,13 – paroxysmal to the larger May 18, 19890 eruption*

SMS-2



Visible and Infrared NASA SMS-2 animation on June 13, 1980 between 02:30 and 07:00 UTC. The red square denotes the approximate location of Mount St. Helens, and the arrows highlight the plumes of the two separate eruptions. [Click to play mp4]

Cryosphere

June, 2020

Accomplishments / Events:

- Validated Maturity Reviews for Snow Cover (Binary Map and Fraction)
- Draft Delivery for Cal/Val Plans
- Identified and proposed fix for inconsistency in labeling invalid observations in N20 VIIRS gap-filled SDR that causes striping in VIIRS NDE snow product. The STAR ASSISTT team has been informed of the problem. A possible solution consists of assigning a new unique quality flag to the I3 bad detector data that would unambiguously define these data as corrupted, invalid or missing.
- VIIRS ice concentration is more accurate than AMSR2 when compared to Landsat over the warmer months: VIIRS S-NPP Sea Ice Concentrations (SIC) and AMSR2 were compared to Landsat over the Arctic for an extensive period from March 2017 through October 2019. AMSR2 has a greater probability of underestimating SIC in melting sea ice environments, in the -10 to -20% range.

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		
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
Verification of direct readout EDRs	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: Snow Cover striping identified in NDE Product

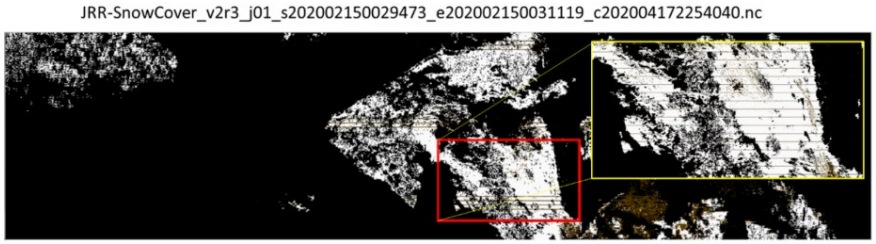


Figure 1. Snow cover granule illustrates striping. Snow is shown in white, Snow-free is dark brown, everything else (e.g., water, clouds, no data, etc.) is black.

Active Fires

June, 2020

Accomplishments / Events:

- Finished documentation for the VIIRS I-band Active Fire product
- The VIIRS Active Fire product was delivered to NDE for operational implementation
- Delivered draft JPSS-2 cal/val plan
- Tested the algorithm on JPSS-2 proxy data
- Worked with CIMSS on specifics of including the global VIIRS I-band product into RealEarth™
- Worked with the HRRR-smoke team on retrospective testing and evaluation of the impact of the VIIRS I-band product and the persistent anomaly flag

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.*

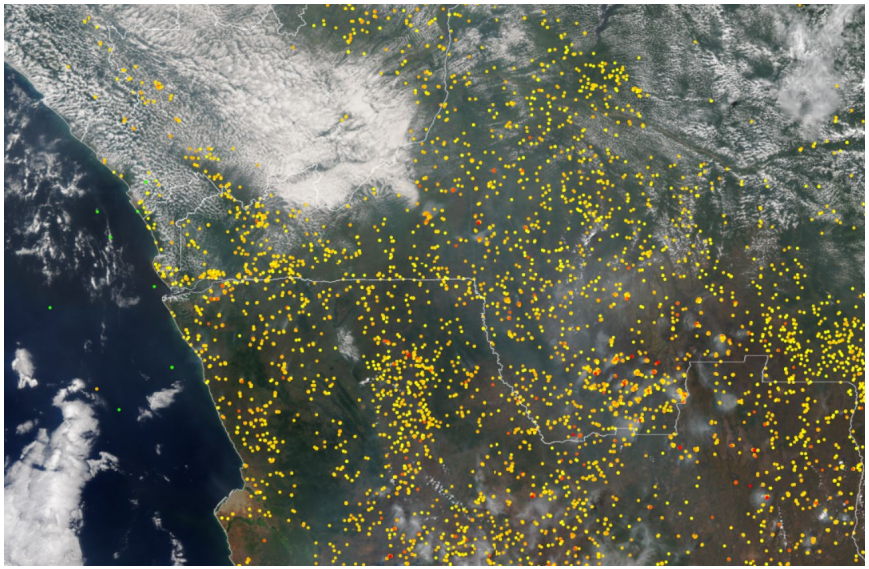
Issues/Risks:

Delay in OSPO / NDE's readiness to implement I-band algorithm

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		
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
Verification of direct readout EDRs	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:

https://www.star.nesdis.noaa.gov/jpss/mapper/



NOAA-20 I-band fire detections in Central Africa on June 27, 2020. Off-shore gas flares appear in green

Surface Reflectance

June, 2020

Accomplishments / Events:

- Completed the NOAA-20 Validated Science Maturity review on June 18 the analysis presented included:
  - intercomparisons between Suomi NPP and NOAA-20 retrievals;
  - validation against 4 months of globally distributed AERONET sites;
  - intercomparisons between the operational and NOAA STAR and NASA ST implementations of the algorithm
- The science team also presented examples and rationale for the implementation of a proposed improved High Aerosol quality flag in the operational product
- Prepared draft JPSS-2 cal/val plan

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		
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
Verification of direct readout EDRs	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		

Overall Status:

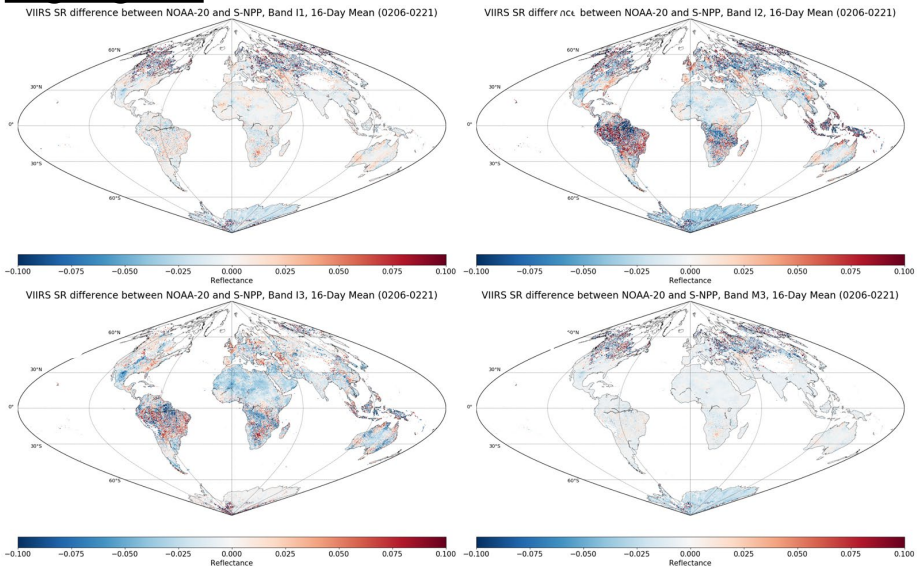
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget	x				
Technical / Programmatic	x				
Schedule			x		Delay in J2 initial DAP delivery

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.

Highlights:

Credit: Heshun Wang, UMD



Differences between 16-day average NOAA-20 and Suomi NPP retrievals for VIIRS bands I1, I2, I3 and M3 on February 6-21, 2020

Surface Type

June, 2020

Accomplishments / Events:

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

– The team has generated the first Global Surface Type (GST) map based solely on NOAA-20 data
  – This map is near identical to that derived based solely on S-NPP data, suggesting that NOAA-20 is highly comparable with S-NPP for global surface type mapping

– The team is developing approaches to integrate S-NPP and NOAA-20 data in finalizing the GST 2019 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.*

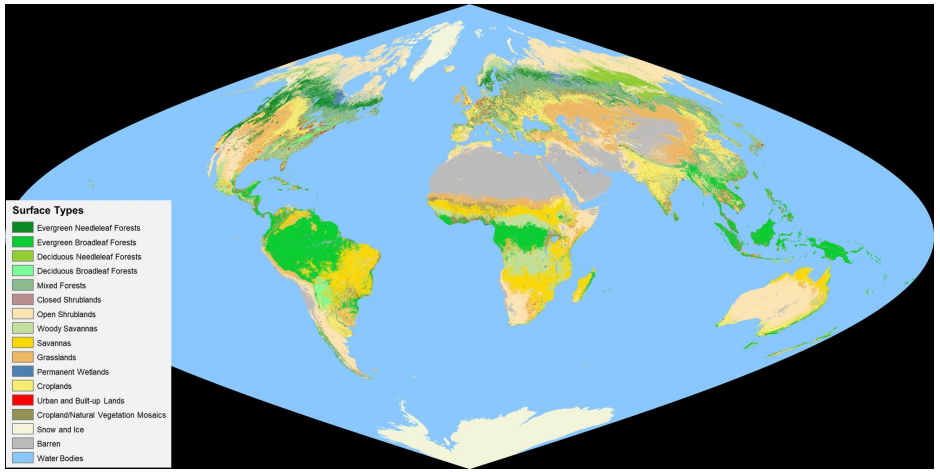
Issues/Risks:

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	
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:

First Global Surface Type (GST) Derived from NOAA-20



Derivation of the GST product requires one full year's (12 months) VIIRS observations to calculate annual metrics for the entire globe. By April 2020, NOAA-20 acquired its first collection of 12-month data, which was used to produce this map.

Land Surface Temperature

June, 2020

Accomplishments / Events:

- Finished the code and test of the routine cross satellite comparison with NASA LST products including MYD11A1, MYD21A1 and VNP21 LST. (example MYD21A1 results in slide 2)
- Revisit the procedures for LST LUT generation. The emissivity pairs used in the regression are updated based on the latest emissivity data for recent years. The LUT is under test.
- Compared the VIIRS emissivity and ABI emissivity. Checked the LST sensitivity to the emissivity variation. (slide 3)
- Updated the software code for LST LUT evaluation.
- Revised and submitted the final version manuscript to IGARSS proceedings.

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			

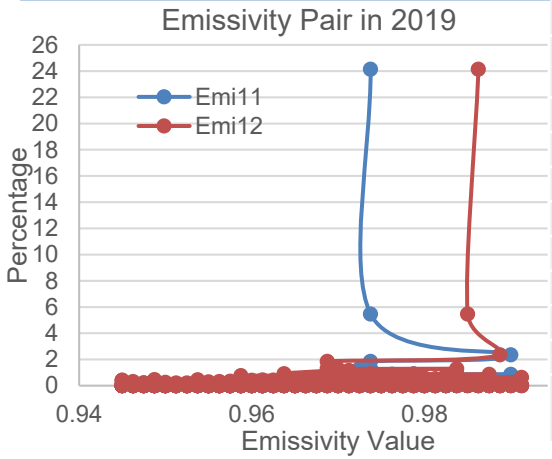
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

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 (B/P/V ?)	Sep-20	Sep-20		
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)	Aug-20	Sep-20		
Algorithm Updates Review	Sep-20	Sep-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	
Verification of direct readout EDRs	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:

Emissivity pairs global distribution

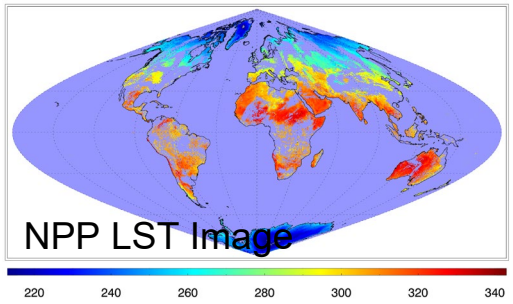


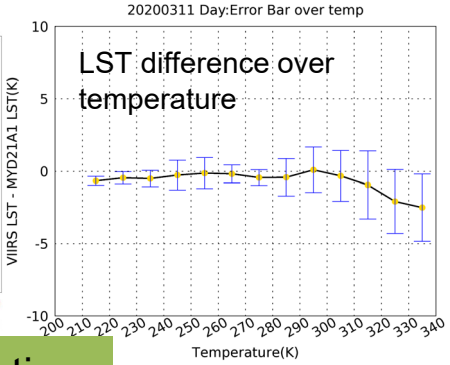
Top 10 emissivity pairs

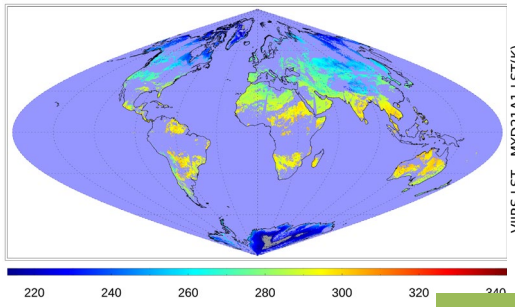
No	Emi11	Emi12	percentage
1	0.97375	0.98625	24.127
2	0.97375	0.985	5.46131
3	0.99	0.98875	2.34184
4	0.97375	0.96875	1.84919
5	0.9725	0.96875	1.31254
6	0.97375	0.98375	1.28524
7	0.97375	0.97	1.27507
8	0.97375	0.97125	1.15322
9	0.97125	0.96875	1.13084
10	0.96875	0.96375	0.901574

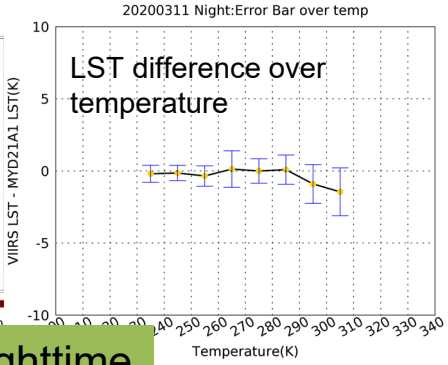
The emissivity data in latest version (v2p1) in one day of each month is used in this analysis.

Routine cross comparison with MODIS LST-MYD21A1



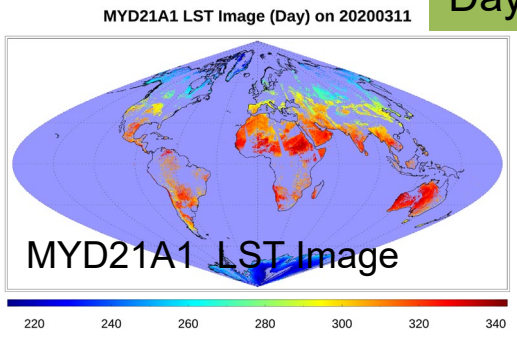


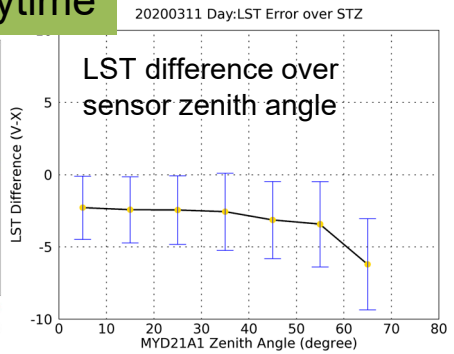


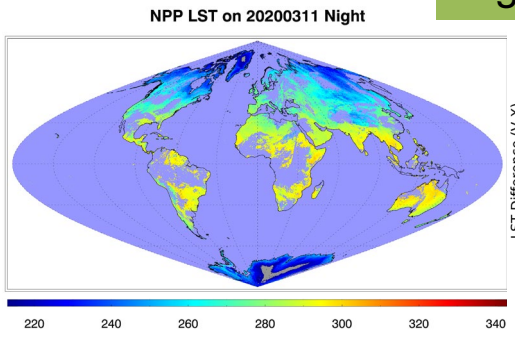


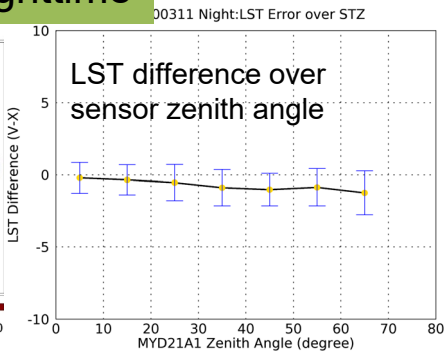
Daytime

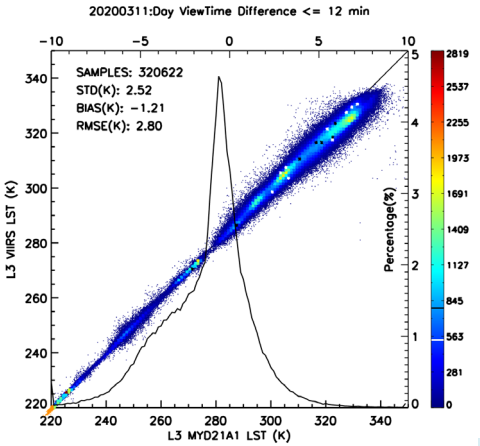
Nighttime

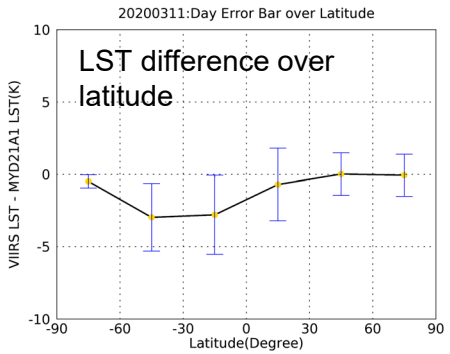


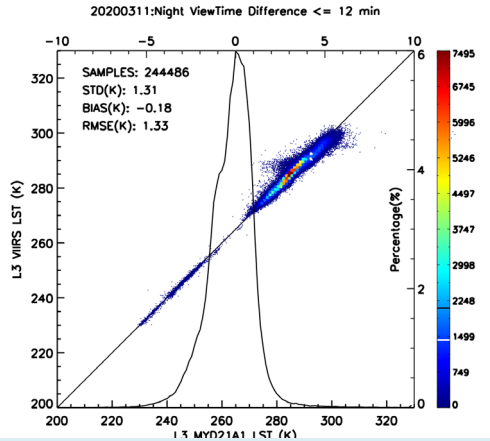


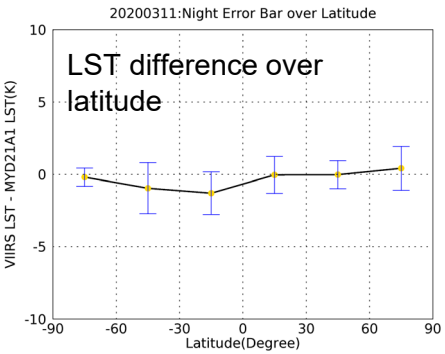








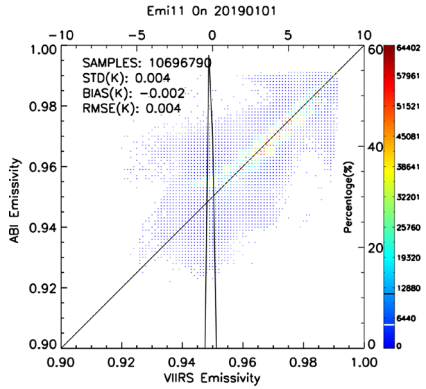


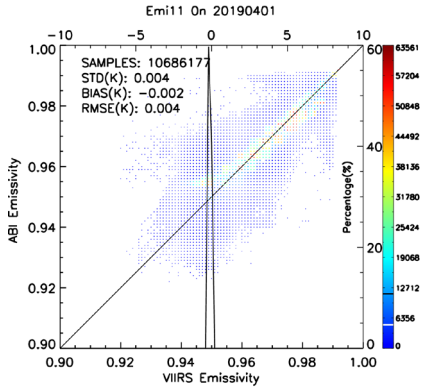


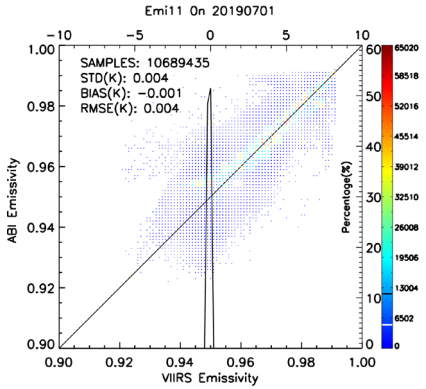
LST Difference statistics

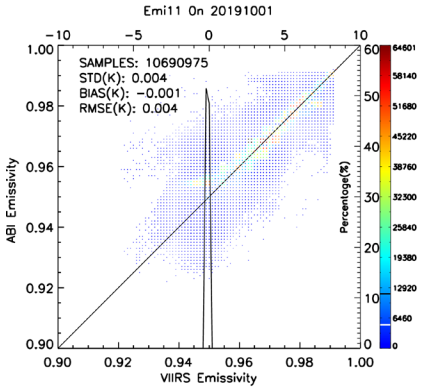
The statistics is for the absolute temporal difference less than 12 minutes and cloud clear condition

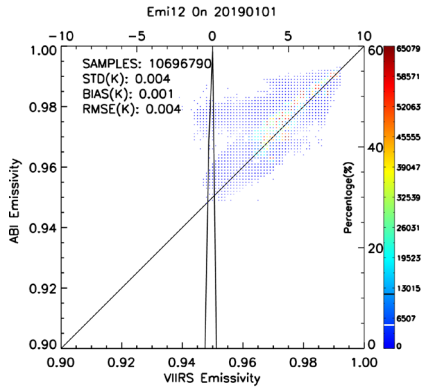
Emissivity comparison between VIIRS and ABI

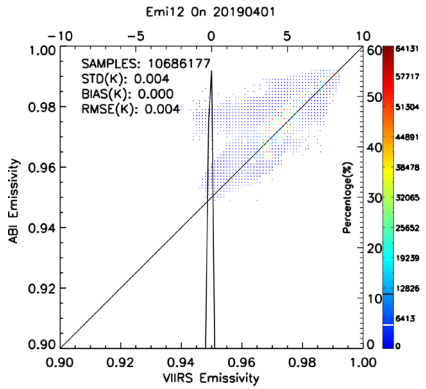


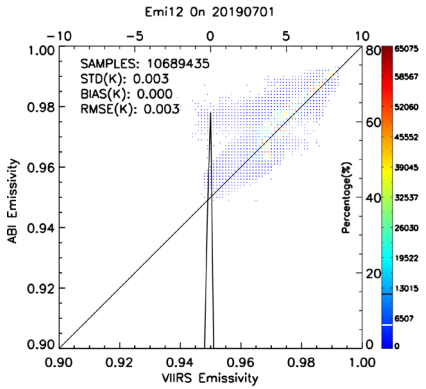


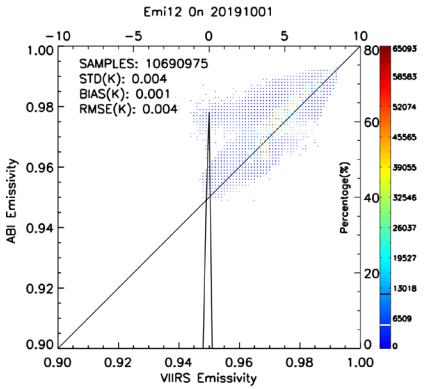












- The spectral emissivity at 11 and 12 micron in Jan. 1st, Apr. 1st, Jul. 1st and Oct. 1st in 2019 were selected for comparison to have seasonal representativeness
- The comparison is conducted at global scale
- The comparison results indicate they are statistically close to each other with possible regional difference .

Surface Albedo

June, 2020

Accomplishments / Events:

- In-situ evaluation of VIIRS albedo products: assessed the influence from the in-situ heterogeneity derived from high-resolution albedo from Landsat OLI images
- Checked the cross-comparison result between VIIRS and MODIS and confirmed the advantage of generic land LUT in reflecting snow albedo when the snow is not recognized in snow mask input
- Checked the contribution of 'daytime' and 'both' granules to the L3 albedo global image
- Supported the issue solving of VIIRS L3 albedo at NDE side
- 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			

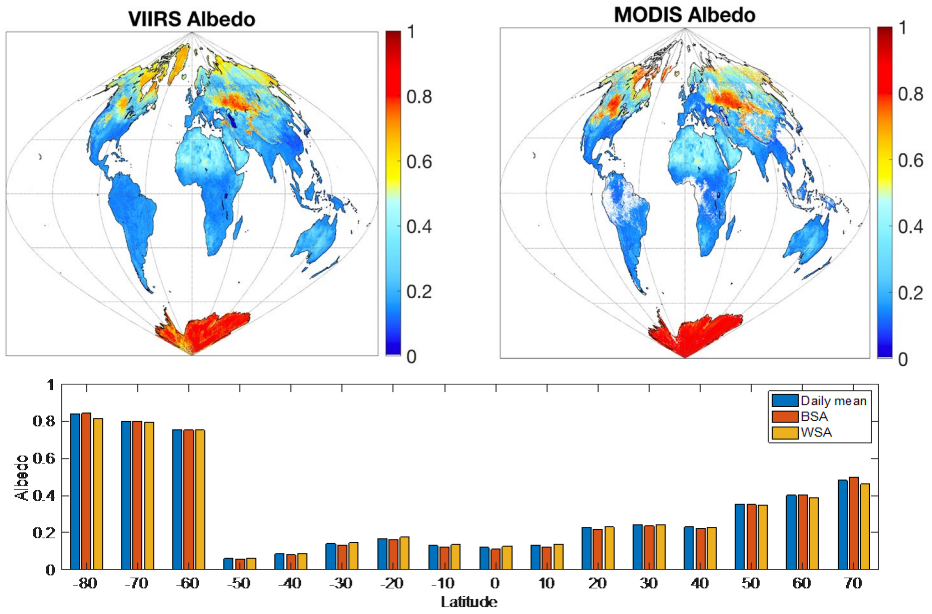
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

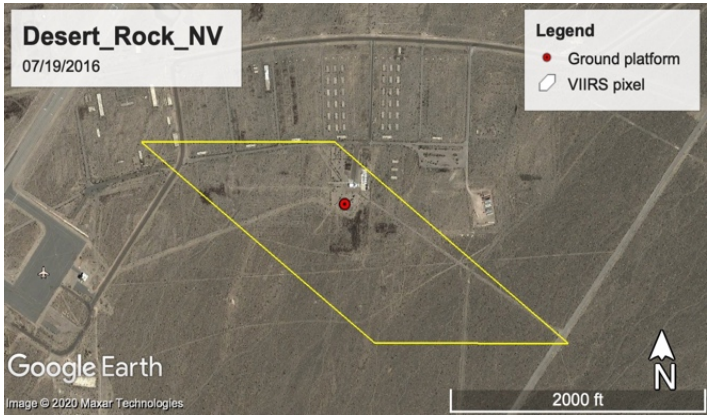
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity	Nov-19	Nov-19	11/21/19	
Validation of global gridded SURFALB product (B/P/V ?)	Sep-20	Sep-20		
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20		
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20	05/28/20	
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Aug-20	Sep-20		
Algorithm Updates Review	Sep-20	Sep-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		
Verification of direct readout EDRs	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		

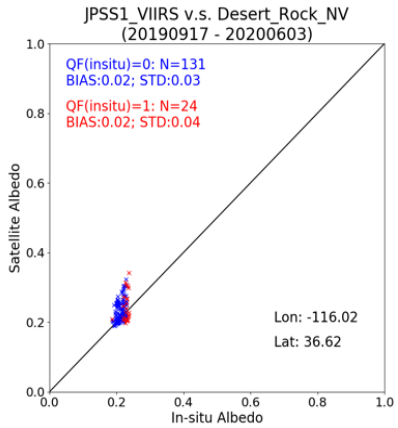
Highlights:

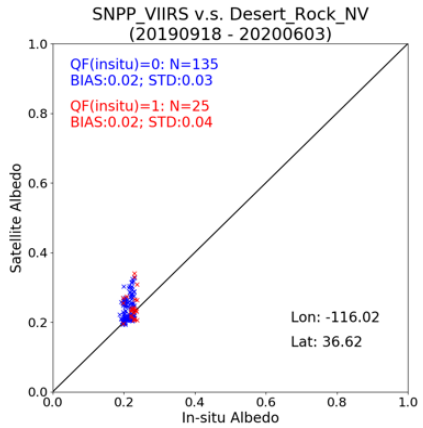
Feb 15, 2019



Influence from heterogeneity at Desert_Rock

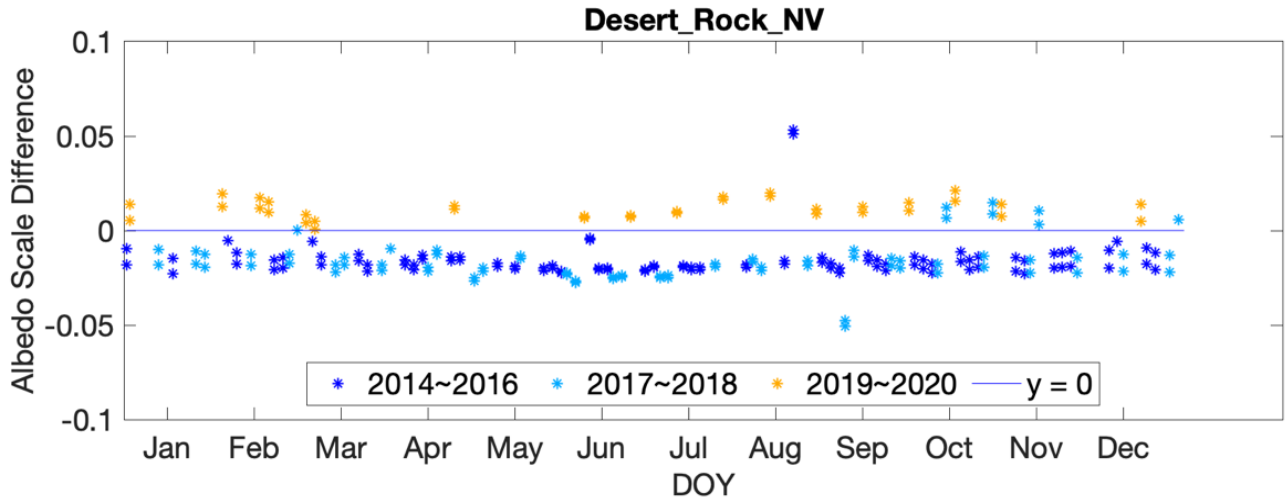






It has been previously reported that VIIRS albedo only show outliers at Desert_Rock in all 7 SURFRAD sites in the long-term monitoring system.

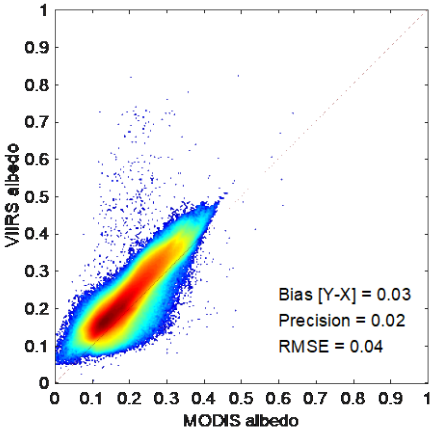
High-resolution Landsat albedo was deployed to assess the influence from the albedo scale difference, i.e. inherent albedo difference in due to the field view of in-situ instrument and satellite sensor.



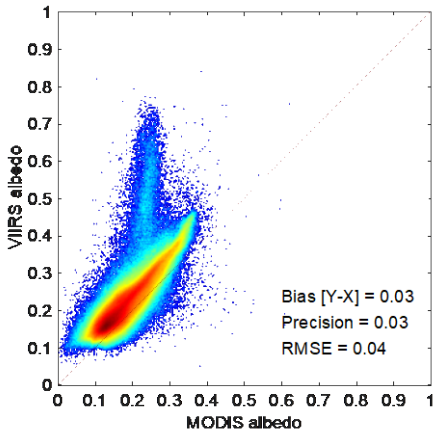
- The bias can be explained through the albedo scale difference.

Comparison between VIIRS and MODIS albedo over ***VIIRS generic land & MODIS snow-free*** pixels

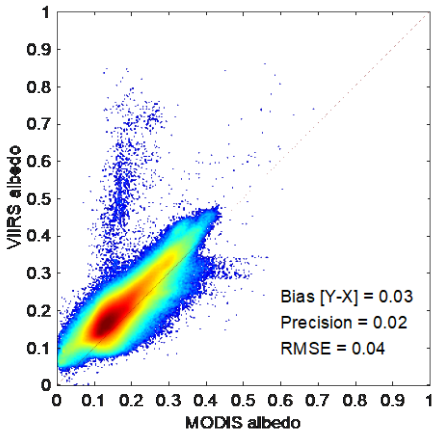
VIIRS high vs. MODIS best



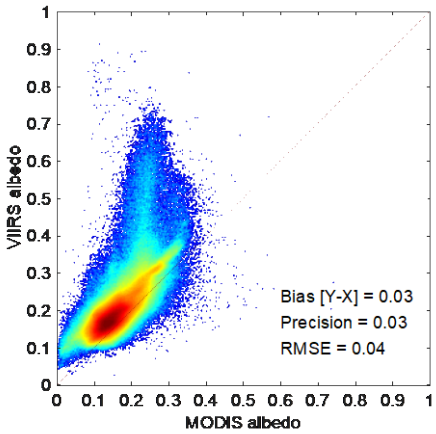
VIIRS median vs. MODIS best

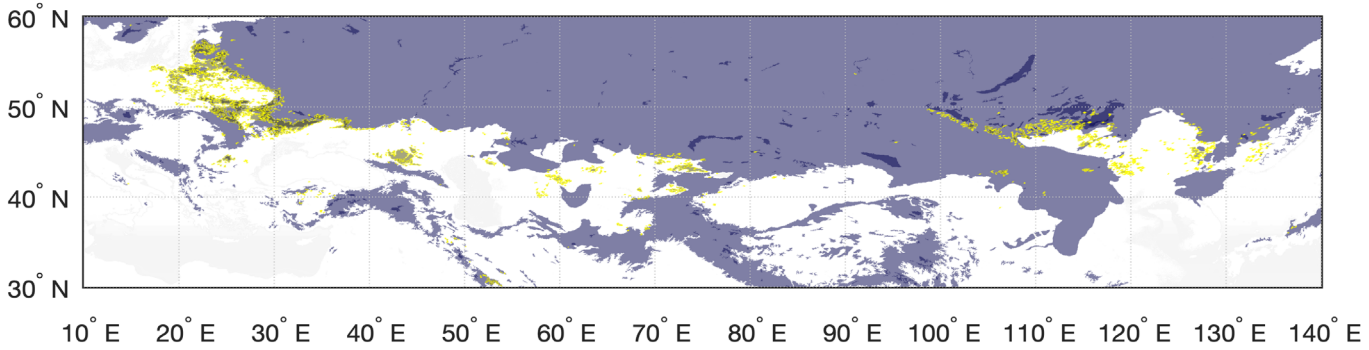


VIIRS high vs. MODIS good



VIIRS median vs. MODIS good





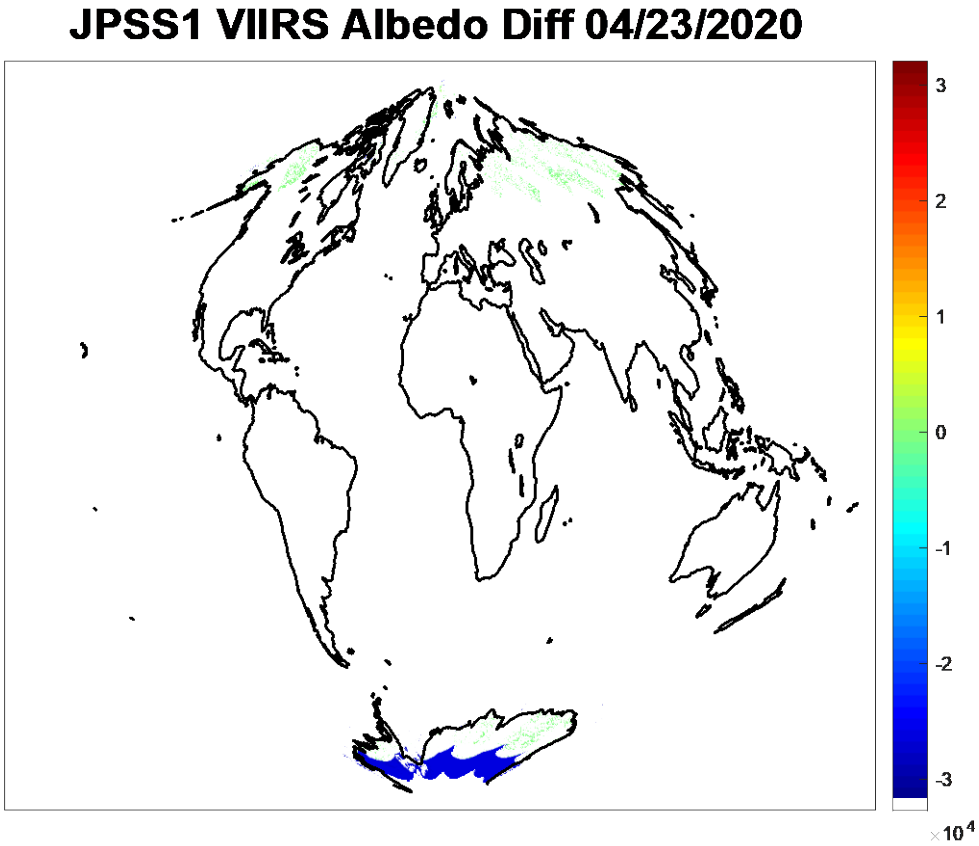
We can observe some scattered points existed between generic land VIIRS albedo and snow-free MODIS albedo at all quality levels (higher figures). The scattered clusters suggest higher VIIRS albedo. These pixels mainly distribute over North east China, mainly at or around the snow-covered region according to IMS snow map (lower figure).

The result indicates the VIIRS albedo algorithm can reflect snow albedo even if the upstream snow cover can not correctly mark it as snow as long as it is not categorized as bare soil.

L3 LSA difference with/without 'Both' granules

- NDE suggests removing 'both' granules in L3 albedo input for solving the data missing issue
- However, the L3 albedo algorithm should contain 'day' and 'both' granules and the L3 albedo algorithm has the ability to exclude the invalid retrievals from night pixels;
- The L2 operational albedo are normal in all 'day' and 'both' granules;
- Combining above two, local test suggests including 'both' granules would not cause a data missing issue;
- If excluding the 'both' granules, the L3 output would be different over near-polar regions including Antarctic region

L3_all_granules - L3_daytime_granules



NVPS
(Vegetation Index & Green Vegetation Fraction)

June, 2020

Accomplishments / Events:

- Completed updates to Vegetation Index ATBD
- Preparing updated VI code unit for delivery to ASSISST
- Evaluation of VI code results and resolution of issues found

Overall Status:

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

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

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity	Feb-20	Apr-20	04/23/20	Combine review
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20		
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		
Algorithm update DAP to ASSISTT: ▪ NVPS algorithms optimization and improvement (to reduce the process time) ▪ Sensitivity analysis of the GVF/VI gridding algorithms	Jun-20	Jun-20		
Verification of direct readout EDRs	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		
Deep-dive analysis for the anomaly watch	Sep-20	Sep-20		

Highlights:

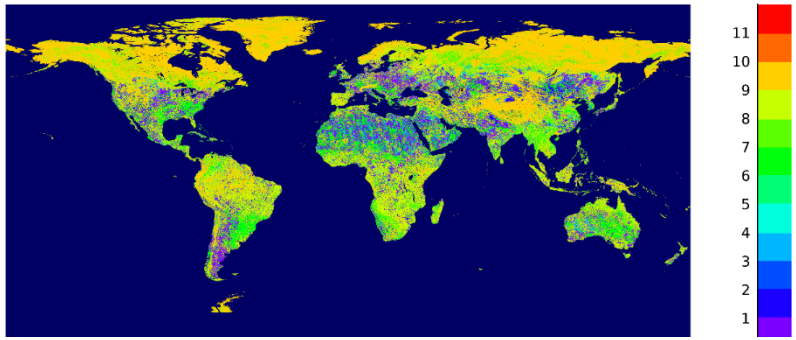
See attached slides

Bit Layout of QF1 in NVPS VI Product

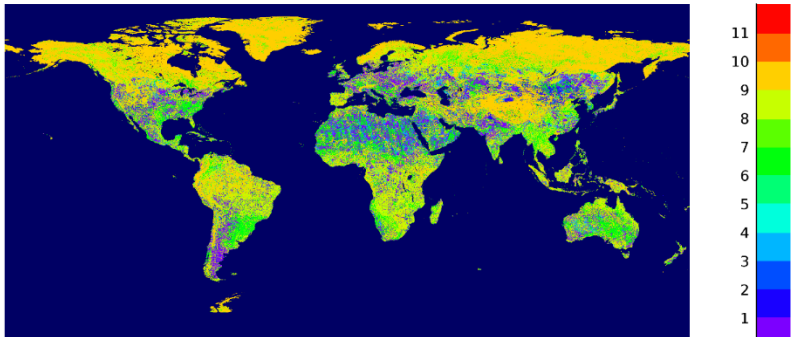
Quality Flag Name	Elements of quality flag	Description	Bit positions in a byte
QF1	**Quality Ranks of TOA NDVI**	**0000 = Excellent** **0001 = Good** **0010 = Acceptable** **0011 = Marginal** **0100 = Pass** **0101 = Questionable** **0110 = Poor** **0111 =Cloud Shadow** **1000 = Snow/Ice** **1001 = Cloud** **1010 = Estimated (CMG)** **1011 = NO Data** **1111 = Water/Ocean**	**0-3**
	Quality Ranks of TOA NDVI	**0000 = Excellent** **0001 = Good** **0010 = Acceptable** **0011 = Marginal** **0100 = Pass** **0101 = Questionable** **0110 = Poor** **0111 =Cloud Shadow** **1000 = Snow/Ice** **1001 = Cloud** **1010 = Estimated (CMG)** **1011 = NO Data** **1111 = Water/Ocean**	**4-7**

Sample output of the improved VI software Biweekly global and regional QF1

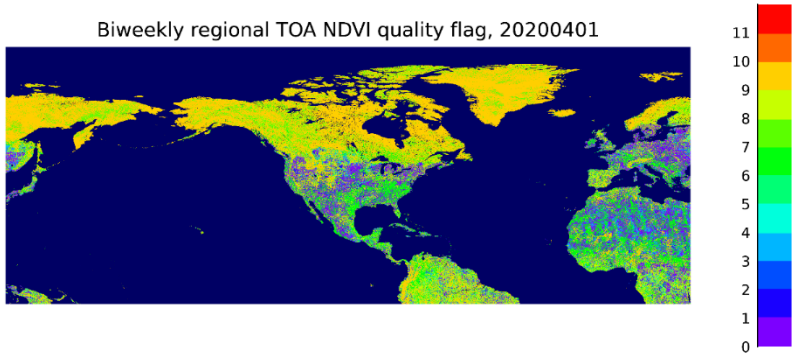
Biweekly global TOA NDVI quality flag, 20200401



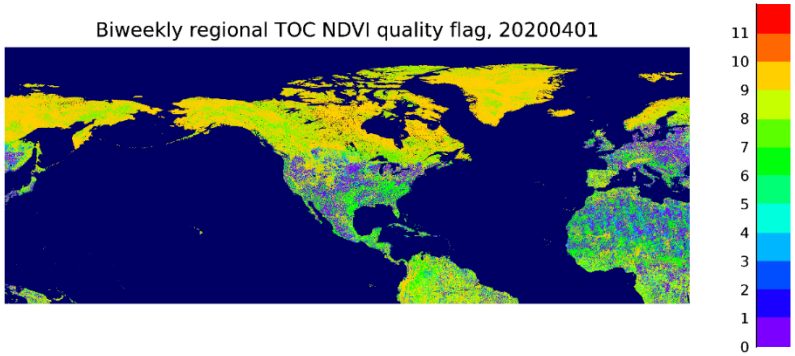
Biweekly global TOC NDVI quality flag, 20200401



Biweekly regional TOA NDVI quality flag, 20200401



Biweekly regional TOC NDVI quality flag, 20200401



Improved cloud filtering (1)
0.003° Daily I1_TOC
(on tile H07V06)

I1_TOC at / [VI-SR-J01_s20200401_e20200401_h07v06_c202004182231580_OldVersion.h5 in E:\Y Drive\VIIRS VI\VI_code_i

Table

0-based

23, 443 = 2819

	432	433	434	435	436	437	438	439	440	441	442	443
12	1581	1719	1719	1182	1182	740	740	790	1493	1493	1629	1629
13	1581	1719	1248	1385	1385	1152	1152	790	790	1493	1493	1403
14	1292	1248	1248	1385	1385	1574	1574	1547	1547	1742	1742	1403
15	1456	1456	1614	1604	1604	1574	1574	1547	1547	1583	1583	1342
16	1456	1456	1614	1614	1692	1668	1668	1547	1547	1583	1583	1342
17	1553	1553	1644	1644	1692	1692	1668	1761	1761	1655	1655	1148
18	1553	1553	1578	1578	1713	1713	1761	1761	1761	1761	1506	1506
19	1625	1561	1578	1578	1713	1163	1730	1730	1712	1712	1506	1506
20	823	921	921	1134	1134	1163	1730	1730	3324	3324	3004	3004
21	823	921	921	1149	1149	1359	1359	2158	3324	3324	3004	3004
22	1769	1008	1008	1149	1149	1359	1644	3752	3752	3729	3729	2604
23	1769	1008	999	1221	1221	1644	1644	3752	3752	3729	6082	2819

I1_TOC at / [VI-DLY-GLB_v2r1_j01_s20200401_e20200401_c202006121807...

Table

0-based

3536

3001 1441

Average I1_TOC of (12*12pixels) =1706.333

0.036° I1_TOC (old version)=1706

0.036° I1_TOC (new version)=1441 (used cloud filter)

1. Red reflectance is higher over cloudy pixels
2. Cloudy pixels are mistakenly used in aggregation in the current (v1r4) and elder versions
3. Two differences in new aggregation:
   (1) single angle
   (2) could filter

Improved cloud filtering (2)
0.003° Daily I1_TOC
(on tile H07V06

I1_TOC at / [VI-SR-J01_s20200401_e20200401_h07v06_c202004182231580_OldVersion.h5 in E:\Y Drive\VIIRS VI\VI_code_i

Table

0-based

23, 443 = 2819

	432	433	434	435	436	437	438	439	440	441	442	443
12	1581	1719	1719	1182	1182	740	740	790	1493	1493	1629	1629
13	1581	1719	1248	1385	1385	1152	1152	790	790	1493	1493	1403
14	1292	1248	1248	1385	1385	1574	1574	1547	1547	1742	1742	1403
15	1456	1456	1614	1604	1604	1574	1574	1547	1547	1583	1583	1342
16	1456	1456	1614	1614	1692	1668	1668	1547	1547	1583	1583	1342
17	1553	1553	1644	1644	1692	1692	1668	1761	1761	1655	1655	1148
18	1553	1553	1578	1578	1713	1713	1761	1761	1761	1761	1506	1506
19	1625	1561	1578	1578	1713	1163	1730	1730	1712	1712	1506	1506
20	823	921	921	1134	1134	1163	1730	1730	3324	3324	3004	3004
21	823	921	921	1149	1149	1359	1359	2158	3324	3324	3004	3004
22	1769	1008	1008	1149	1149	1359	1644	3752	3752	3729	3729	2604
23	1769	1008	999	1221	1221	1644	1644	3752	3752	3729	6082	2819

I1_TOC at / [VI-DLY-GLB_v2r1_j01_s20200401_e20200401_c202006121807...

Table

0-based

	3536
3001	1441

Average I1_TOC of (12*12pixels) =1706.333

0.036° I1_TOC (old version)=1706

0.036° I1_TOC (new version)=1441 (used cloud filter)

1. Red reflectance is higher over cloudy pixels
2. Cloudy pixels are mistakenly used in aggregation in the current (v1r4) and elder versions
3. Two differences in new aggregation:
   (1) single angle
   (2) could filter

Improved cloud filtering (3)
0.003° Daily M3_TOC
(on tile H07V06)

M3_TOC at / [VI-SR-J01_s20200401_e20200401_h07v06_c202004182231580_OldVersion.h5 in E:\Y Drive\VIIRS VI\VI_code_imp

Table

0-based

	432	433	434	435	436	437	438	439	440	441	442	443
12	723	723	723	527	527	527	527	554	554	554	685	685
13	723	723	723	527	527	527	527	554	554	554	554	588
14	723	723	723	527	527	721	721	652	652	652	652	588
15	714	714	714	721	721	721	721	652	652	652	652	588
16	714	714	714	714	721	721	721	652	652	652	652	588
17	714	714	714	714	721	721	721	745	759	759	759	672
18	714	714	621	621	745	745	745	745	759	759	759	759
19	685	621	621	621	745	745	745	745	759	759	759	759
20	685	621	621	621	621	745	745	745	2565	2565	2565	2565
21	685	621	621	651	651	1540	1540	1540	2565	2565	2565	2565
22	767	651	651	651	651	1540	1540	1540	1540	2565	2565	2565
23	767	651	651	651	651	1540	1540	1540	1540	2565	4910	4910

M3_TOC at / [VI-DLY-GLB_v2r1_j01_s20200401_e20200401_c20200612180...

Table

0-based

	3536
3001	672

Blue reflectance is higher over cloudy pixels

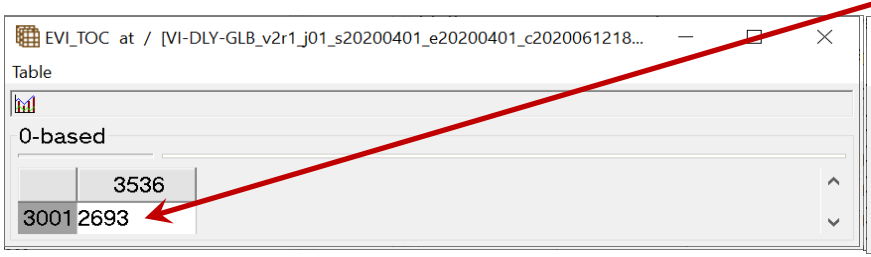
Average M3_TOC of (12*12pixels) =955.3194

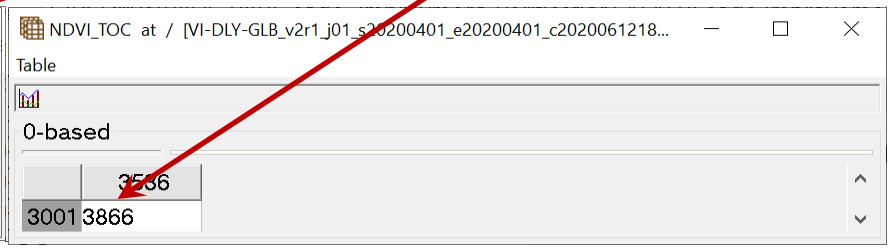
0.036° M3_TOC (old version)=955

0.036° M3_TOC (new version)=672 (cloud filtered)

Verify VI calculation (old vs. new)

	I1_TOC	I2_TOC	M3_TOC	EVI_TOC	NDVI_TOC
Average reflectance	1706	3514	955		
Calculated VI from average refl				0.27249	0.34636
Old version	1706	3514	955	2724	3463
New version	1441	3258	672	2693	3866
VI calculated from new refl				0.26936	0.38668





EVI and NDVI calculations of new version are right

Vegetation Health

June, 2020

Accomplishments / Events:

- Obtained locust data from FAO Locust Hub;
- Plot locust distribution on top of vegetation health maps (Highlighted);
- Plotted number of locust events time series for several countries;
- Generated locust-VH pixel-to-pixel records, using 4km VIIRS data, and plotted the VH histogram;
- 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			

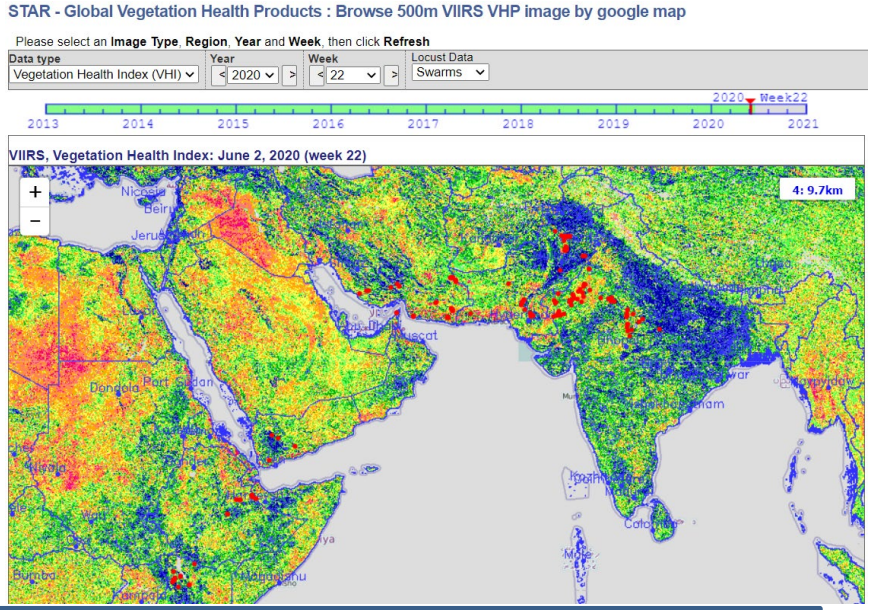
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

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		
Algorithm update DAP to ASSISTT: ▪ Algorithm updates/improvements	Jul-20	Jul-20		With initial J2 & final N20 DAP
Verification of direct readout EDRs	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: Locust Distribution on VH Map



Ocean Color

June, 2020

Accomplishments / Events:

- Routinely producing global ocean color products from VIIRS SNPP and NOAA-20.
- Continue the work for the improvement of the MSL12 ocean color data processing system.
- Continue the work for the improvement of the OCView tool and ocean color product routine data monitoring system functions well.
- Continue the work for the improvement of VIIRS-NOAA-20 ocean color products, in preparing for the delivery of the validation status for VIIRS-NOAA-20.
- Worked on the NOAA-20 ocean color data improvement for the validation status in the summer 2020.
- A paper published in IEEE TGRS showing calibration comparison results from VIIRS-SNPP and OLCI-Sentinel-3A.

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		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 to NDE (include NPP/N20 updates)	Dec-20	Dec-20		With final N20 DAP
Algorithm Updates Review	Sep-20	Sep-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		
Verification of direct readout EDRs	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: VIIRS comparison with OLCI published

Abstract:

The on-orbit calibration performance of the Ocean and Land Color Instrument (OLCI) onboard the Sentinel-3A satellite, launched on February 16, 2016, is evaluated via a radiometric intersensor comparison with reference to the Visible Infrared Imaging Radiometer Suite (VIIRS) onboard the Suomi National Polar-orbiting Partnership (SNPP) satellite. Among the 21 OLCI bands (designated as “Oa” bands), which are reflective solar bands (RSBs), seven OLCI bands match up sufficiently well with the seven shortest wavelength SNPP VIIRS bands (M1–M7)—they are Oa02 at 412.5 nm, Oa03 at 442.5 nm, Oa04 at 490 nm, Oa06 at 560 nm, Oa08 at 665 nm, Oa12 at 754 nm, and Oa17 at 865 nm. The radiometric comparison adopts a “nadir-only” refinement of the simultaneous nadir overpass (SNO) approach and uses the official SNPP VIIRS RSB data processed by the Interface Data Processing Segment (IDPS). The time-series result for bands Oa02, Oa03, Oa08, and Oa17, with spectral coverage that well represents the spectral range of OLCI, shows two-year stability at the level of 0.3% that supports nominally correct on-orbit calibration. The result for Oa08, Oa09, and Oa10, the three spectrally adjacent bands matching M5, demonstrates the effects of spectral mismatch—different radiometric ratio baselines and seasonally modulating patterns. Lastly, this result clarifies some key findings of earlier studies involving SNPP VIIRS and illustrates great potential for significantly more radiometric evaluation activities in the new era of Earth observations with many more powerful multispectral sensors coming into operation.

Published in: IEEE Transactions on Geoscience and Remote Sensing (Volume: 58 , Issue: 7 , July 2020)

Sea Surface Temperature

June, 2020

Accomplishments / Events:

- Work continues on ACSPO v2.80 which will be delivered to NDE operations in Sep 2020. In addition to J2 functionality, and several incremental upgrades, it will release for the first time the ocean thermal fronts product
- Two additional layers will be reported in ACSPO files: a frontal presence bit (front/no front), and front intensity (only for those pixels/grids where the front flag is set)
- Initial visualization of fronts in a test version of the NOAA ARMS system was implemented, see chart in the bottom-right. It has shown remaining issues, in particular inconsistent front reporting in swath L2 and gridded L3 files. Work is underway to address the observed discrepancies before the final release of ACSPO v2.80.
- Work is underway on J2 Cal/Val plan which will be delivered in Jul

Overall Status:

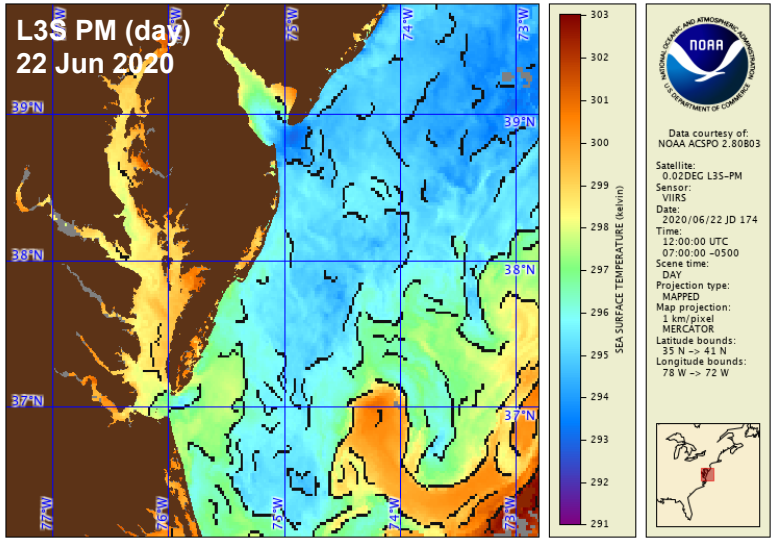
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule			X		

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		
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		
Complete VIIRS RAN2 archival with PO.DAAC & NCEI	Aug-20	Aug-20	Dec-19: DAAC	
Verification of direct readout EDRs	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		
Maintain SQUAM/iQuam/ARMS. Resolve anomalies	Sep-20	Sep-20		



www.star.nesdis.noaa.gov/socd/sst/arms_fronts/

Initial visualization of the new ocean thermal fronts product (to be released in ACSPO 2.80 in Sep 2020) implemented in the offline version of NOAA ACSPO Regional Monitor for SST(ARMS) system

VIIRS Polar Winds

June, 2020

Accomplishments / Events:

- Delivered Draft for J2 Cal/Val Plan
- All available NOAA-20 IR Cloud Motion Vectors (CMV) being generated by operations (STAR, v2r1) were compared to radiosonde wind data from the International Global Radiosonde Archive provided by NOAA NCEI (https://data.nodc.noaa.gov/cgi-bin/iso?id=gov.noaa.ncdc:C00975) for the period 1 March - 31 May 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
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		
Wind product updates/improvements: continue routine generation of combined S-NPP/NOAA-20 global winds	Sep-20	Sep-20		
Verification of direct readout EDRs	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:

Spring statistics, indicate high-quality VIIRS Polar Winds

Spring season (March-May) 2020 statistical comparison of NOAA-20 CMVs to radiosonde winds for the Arctic (60-90° N)). The minimum (maximum) value for each row is highlighted in blue (red).

Arctic

	> 700 hPa	*700 to >400 hPa*	*<=400 hPa*	*Total*
Accuracy (ms^{-1})	**5.15**	5.49	**5.88**	5.56
Precision (ms^{-1})	3.66	**3.64**	**4.14**	3.83
Speed Bias (ms^{-1})	+0.51	**+0.20**	-0.26	+0.10
NRMSE (ms^{-1})	**0.57**	0.38	**0.29**	0.36
Mean AM V Speed (ms^{-1})	**11.70**	17.59	**24.79**	18.97
Sample Size	**5584**	13434	10187	**29205**

NUCAPS Products

June, 2020

Accomplishments / Events

- Team members finalized (1) enterprise Cal/Val plan document for the NUCAPS sounding products, and (2) the J2 NUCAPS algorithm update presentation and submitted to the JPSS Program office. These updates included algorithm improvements planned as well as the validation plan/schedules for all the four Cal/Val phases (Pre-Launch, EOC, ICV, and LTM).
- The team is updating MW and IR bias tuning LUT and preparing for the final August DAP delivery that includes LUTs specific to MetOp-C as well as OLR retrieval for running in the Cloud.
- Continued collaborations with the STAR CrIS SDR team members on the use of SNOs (S-NPP and MetOp-A) for radiance cal/val as well as EDR product evaluations retrieved from the associated sensors (CrIS/ATMS and IASI/AMSU-A/MHS).
- Continued algorithm improvements for CO2 and CH4 damping factors. The NUCAPS team generated retrieval runs with different CO2 damping factors to look for possible optimization. Performed retrieval runs for a focus day changing the damping factor to characterize CO2 retrievals. The damping factor currently used in the retrieval (0.38) appears to be optimal but the team plans on further evaluation of statistical metrics with the reference data for the retrievals associated with different damping factors.

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		
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		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		
Verification of direct readout EDRs	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

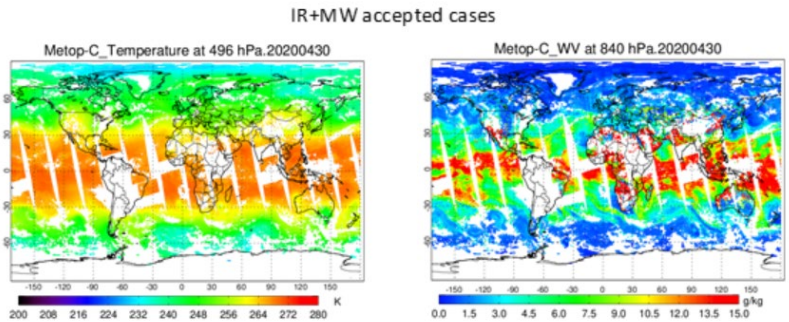


Figure 1. Preliminary MetOp-C T(p) and q(p) retrievals for 20200430. The NUCAPS team is currently evaluating the retrieval products with the matched ECMWF analysis fields.

MiRS Products

June, 2020

Accomplishments / Events:

- As part of its participation in the JPSS Hydrology Initiative, the MiRS team conducted validation of rainfall retrievals from SNPP and N20 ATMS for several cases of heavy rain in the Smoky Mountains (N. Carolina). Agreement is very good.
- "The NOAA Microwave Integrated Retrieval System (MiRS): Validation of Precipitation from Multiple Polar Orbiting Satellites" was published in IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing The paper summarized a multi-satellite analysis of MIRS rainfall from SNPP, N20, MetopB, and MetopC for the year 2019.
- The MiRS team has been evaluating a machine learning approach to applying a radiometric bias correction to ATMS measured radiances.
- Delivered Draft J2 Cal/Val 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.*

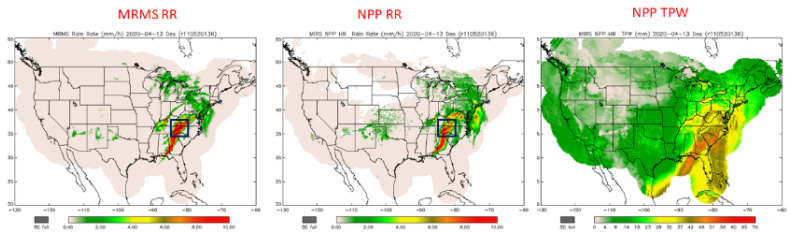
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 pre-launch test/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		
Algorithm update DAP to ASSISTT: ▪ Optimize MiRS for NOAA-20 and SNPP ▪ SFR integration; Algorithm test and verification	Jul-20	Jul-20		With initial J2 DAP
Verification of direct readout EDRs	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:

MiRS retrievals were compared to the operational MRMS gauge-adjusted radar estimates for 3 days: 2020-02-06, 2020-04-12, and 2020-04-13. The figure below shows an example of rainfall over the CONUS from MRMS, MiRS NPP, as well as MiRS NPP TPW, along with the study region of interest (box areaOverall agreement with MRMS estimates is generally very high.



Comparison of MRMS rain rate (left), MiRS NPP rain rate (center), and MiRS NPP TPW over CONUS for 2020-04-13. The Smoky Mountain study area is highlighted.

Snowfall Rate

June, 2020

Accomplishments / Events:

- A updated SFR package was delivered to the MiRS team. This fulfilled a JPSS milestone. The package includes the following major updates:
  a. Addition of J2 ready capability
  b. Updated bias correction for all satellites (NOAA-20, S-NPP, NOAA-19, Metop-B, and Metop-C)
  c. Re-activation of Metop-A SFR
- A modification to the SFR algorithm was developed. It adds the flexibility to the number of channels used in the 1DVAR. An immediate benefit is the re-activation of the Metop-A SFR which was turned off before due to the failed 157 GHz channel.

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			

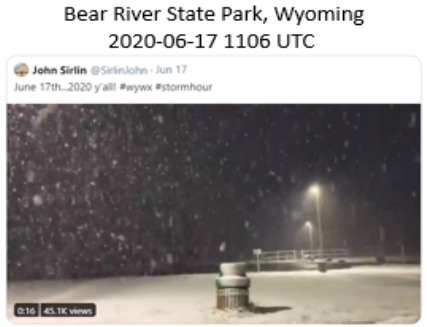
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

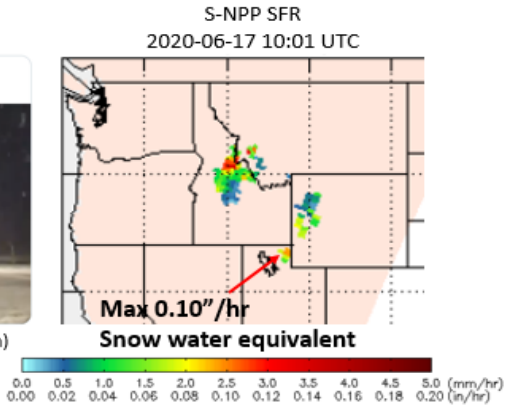
Issues/Risks:

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		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		
Verification of direct readout EDRs	Sep-20	Sep-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: SFR Captures Late Season Snowfall





The Bear River State Park in Wyoming tweeted a video of a late season snowstorm with silver dollar sized snow flakes. Sheldon Kusselson (CIRA) conducted a study on the case and compared the SFR product with the observation. The S-NPP overpass about one hour before the video was taken captured the snowfall with a maximum SFR of 0.1"/hr. It is 1"/hr in solid snow assuming a 10:1 liquid to snow ratio.

OMPS Ozone

June, 2020

Accomplishments / Events:

Validating OMPS V2Limb SDRs, EDRs and BUFR.

- Product is at Provisional maturity performance on NDE Operations as of June 16th.
- Working with CLASS and OSPO for archiving and monitoring.

Investigating S-NPP / NOAA-20 OMPS product differences.

- Preparing V8PRo DAP with better model fidelity.
- Iterating on soft calibration adjustments.
- EDR Milestone has slipped from Q3 to Q4.

JPSS-2 Preparations

- Presentation summarizing algorithm refinements in new deliveries.

V8TOz and TOAST for the Cloud and GSICS

- Contractors have received accounts to work in the Cloud.
- Testing Enterprise V8TOz at STAR.
- Gaining experience on differences between Cloud and STAR computing environments.

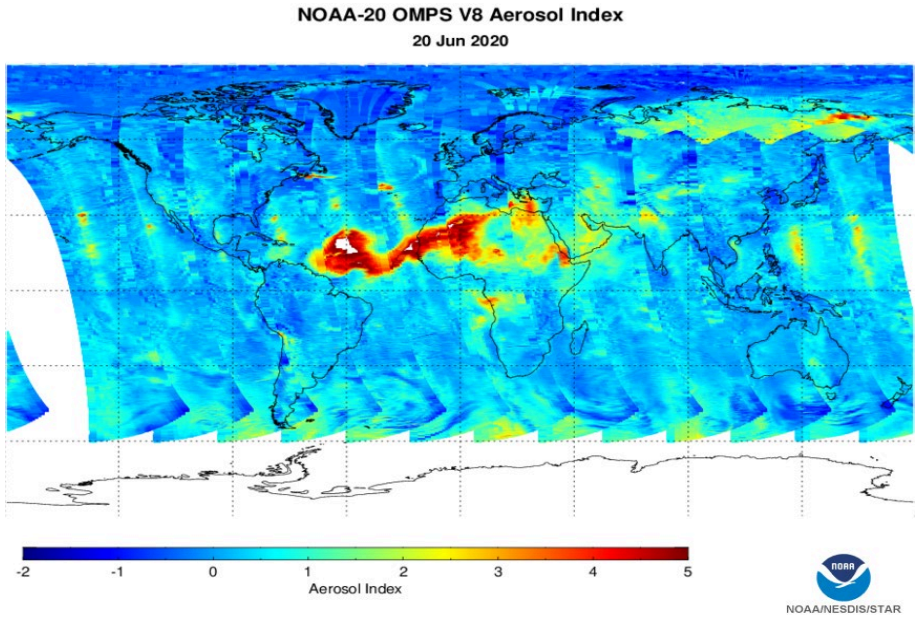
Overall Status:

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



GCOM-W1 Products

June, 2020

Accomplishments / Events:

- Completed annual cal/val report
- Activities continue with NESDIS IA and JPSS to discuss AMSR3 and AMSR2 progress/plans
- Continued product cal/val; all products meeting requirements; Annual cal/val report for 2019 under development
- Portions of GCOM system under consideration for EPS-SG MWI; 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	June-20	Jun-20	delayed (various reasons)
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:

Tropical Storm Dolly

AMSR2 wind speed, rain rate and 36 GHz horizontal polarization brightness temperature imagery from Tropical Storm Dolly in the North Atlantic on June 23, 2020.