



NOAA JPSS Monthly Program Office

AMP/STAR FY20 TTA

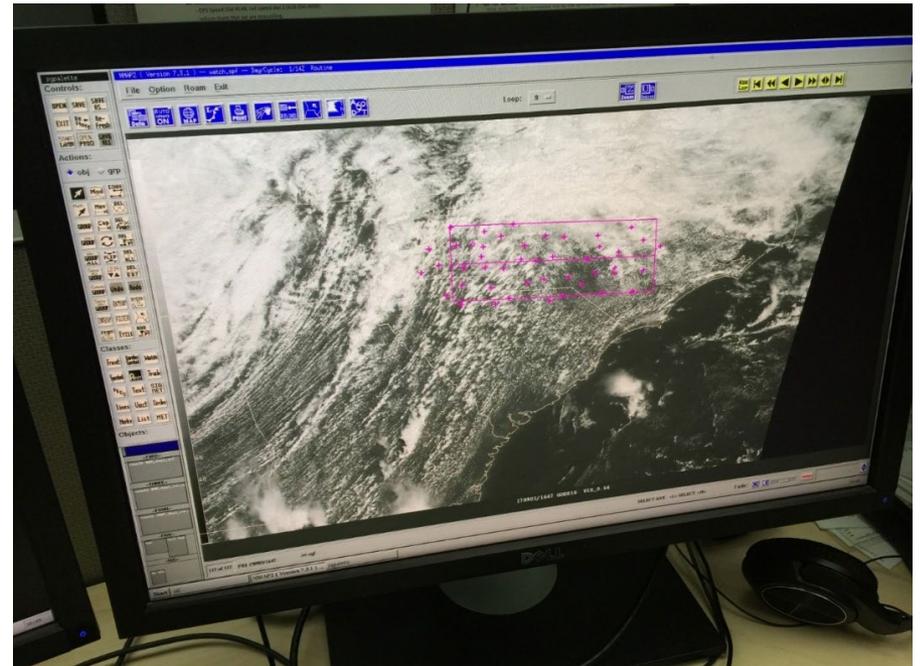
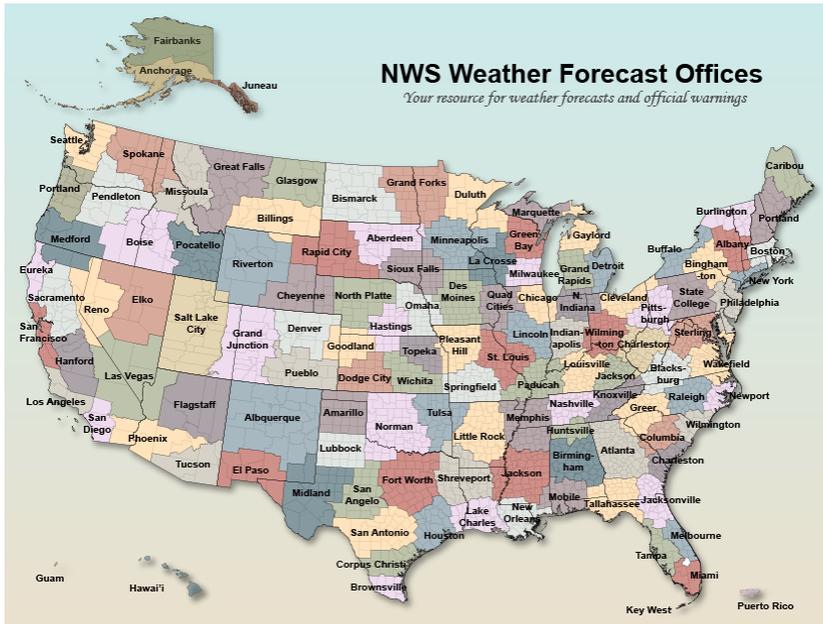
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& JPSS STAR Program Managers

March 10, 2020

Highlights from the Science Teams

JPSS/GOES-R Proving Ground/Risk Reduction Summit

The 2020 JPSS/GOES-R Proving Ground /Risk Reduction Summit was successfully held during February 24-28, 2020 at NCWCP in College Park, Maryland. This summit provided an opportunity for algorithm developers, users, and decision makers to meet face to face to provide insight and guidance for the future of the NESDIS flagship satellite programs. Key speakers included Louis Uccellini, Ellen Mecray, Chris Lauer, and Steve Volz. Users and stake holders across NOAA and outside NOAA including NWS, OAR, NASA, OSPO, and NMFS shared their perspectives on how data produced from our missions due to STAR scientists was showcased. The organizing committee will produce a report with key recommendations. The presentations and posters, as well as the eventual report, can be found at https://www.star.nesdis.noaa.gov/star/meeting_2020JPSSGOES_agenda.php

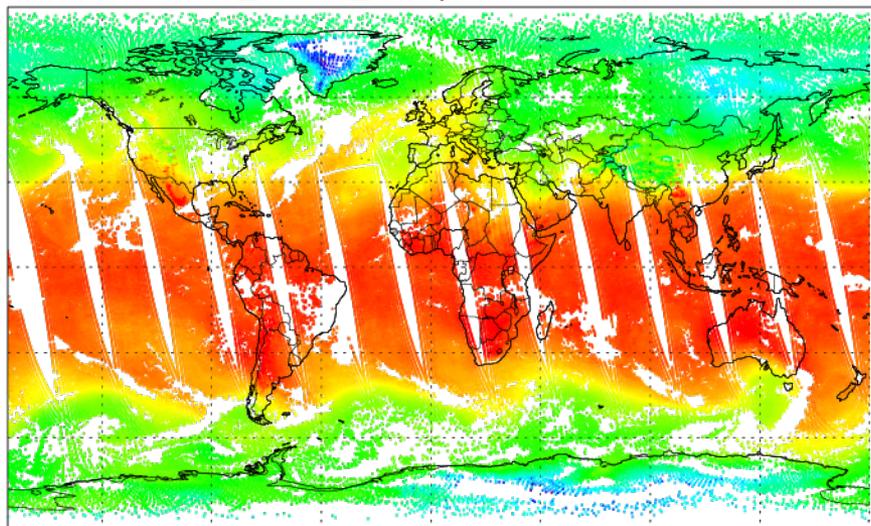


Highlights from the Science Teams

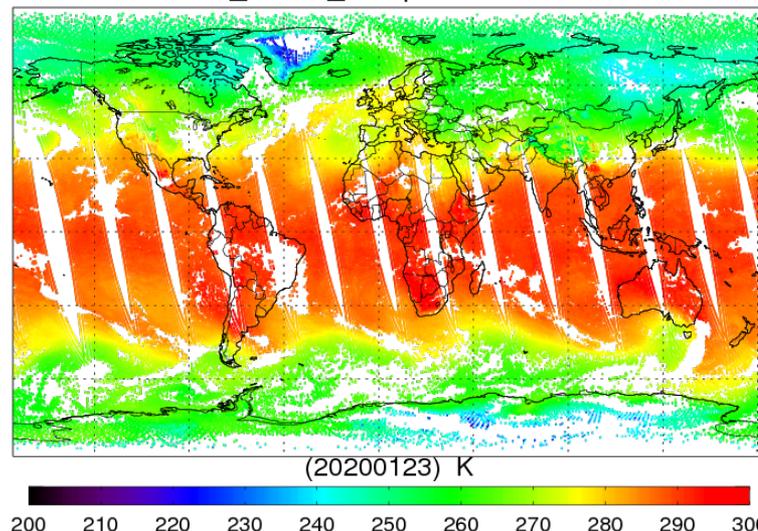
Validated Maturity Review for SNPP/CrIS SDR Side-2 Successfully held on 6 February 2020

On June 24, 2019 the CrIS sensor on SNPP was successfully switched to Side-2 electronics to mitigate the anomaly on Side 1 electronics. The CrIS team performed extensive validation of both radiances and derived products from NOAA Unique Combined Atmospheric Processing System (NUCAPS) and demonstrated that the data and products generated after the switch were of equal quality compared to those generated from CrIS on NOAA20 during the validation maturity review that was held on 6 February 2020. The figure below shows the comparison of atmospheric temperature retrievals at 802 hPa from CrIS on SNPP and NOAA 20 on 1/23/2020

SNPP_v2.6.1_Temperature at 802 hPa



NOAA20_v2.6.1_Temperature at 802 hPa



Highlights from the Science Teams

Progress with Enterprise Cloud Mask and Cryosphere Product Coordination

The Enterprise Cloud Mask team developed a new Look-Up Table for VIIRS to increase confidently clear pixel detection over cold surfaces. Initial analysis indicates excellent improvements, allowing the snow algorithm to provide more realistic results. The new Look-Up Table is being analyzed by Cryosphere team to verify initial analysis is correct.

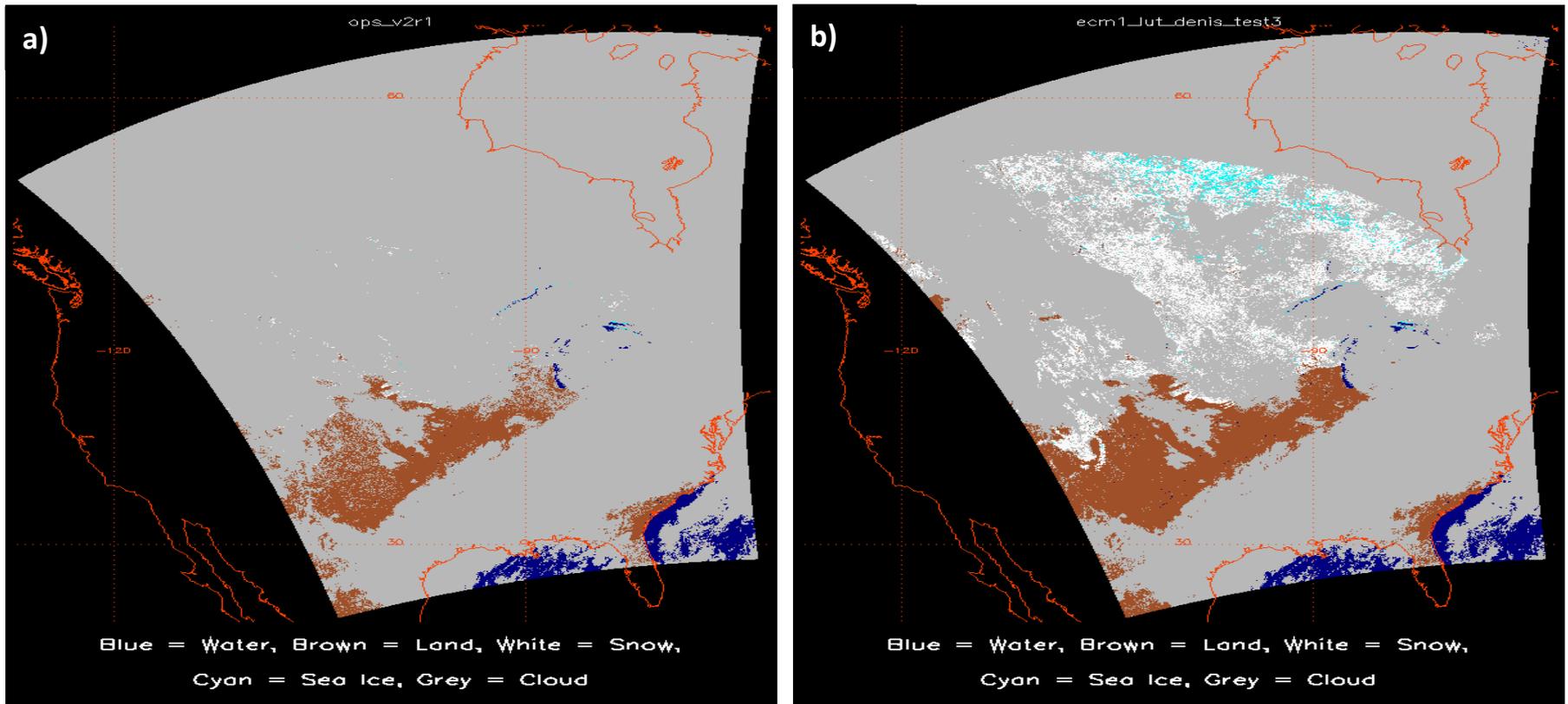
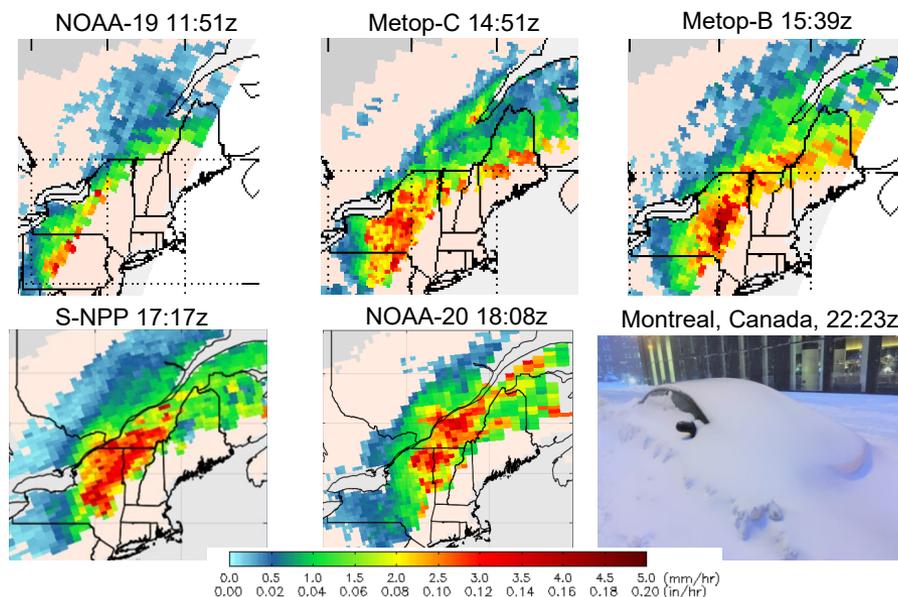


Fig. 1. a) Masked “probably clear”, “probably cloudy” and “confidently cloudy” (grey) using OPS ECM. Number of Snow pixels (white) is 25,255. b) The same but using ECM with the new LUT. Number of Snow pixels (white) is 1,479,008. The granule is for VIIRS/SNPP on December 10, 2019 between 1901 and 1911UTC.

Improved Snowfall Rate Processing System

A new Snowfall Rate (SFR) processing system has been built and delivered to the STAR MiRS team for integration. It is a much more advanced system compared to the operational version currently in use: i) it is a unified ATMS and MHS processing system whereas the existing setup requires separate systems for different sensors; ii) advanced design allows much more efficient system maintenance and update; iii) the package includes Metop-C SFR delivery; iv) the SFR algorithms have been updated with new bias correction for all five satellites: NOAA-20, S-NPP, NOAA-19, Metop-A, and Metop-B. The update significantly improves the quality of the SFR product. The revamped system is the result of several months of development effort and a major milestone for the SFR team.

SFR from February 7, 2020



VIIRS Polar Winds

The JPSS Tandem wind product (S-NPP plus NOAA-20) expands coverage over the Northern and Southern Hemispheres (see figure).

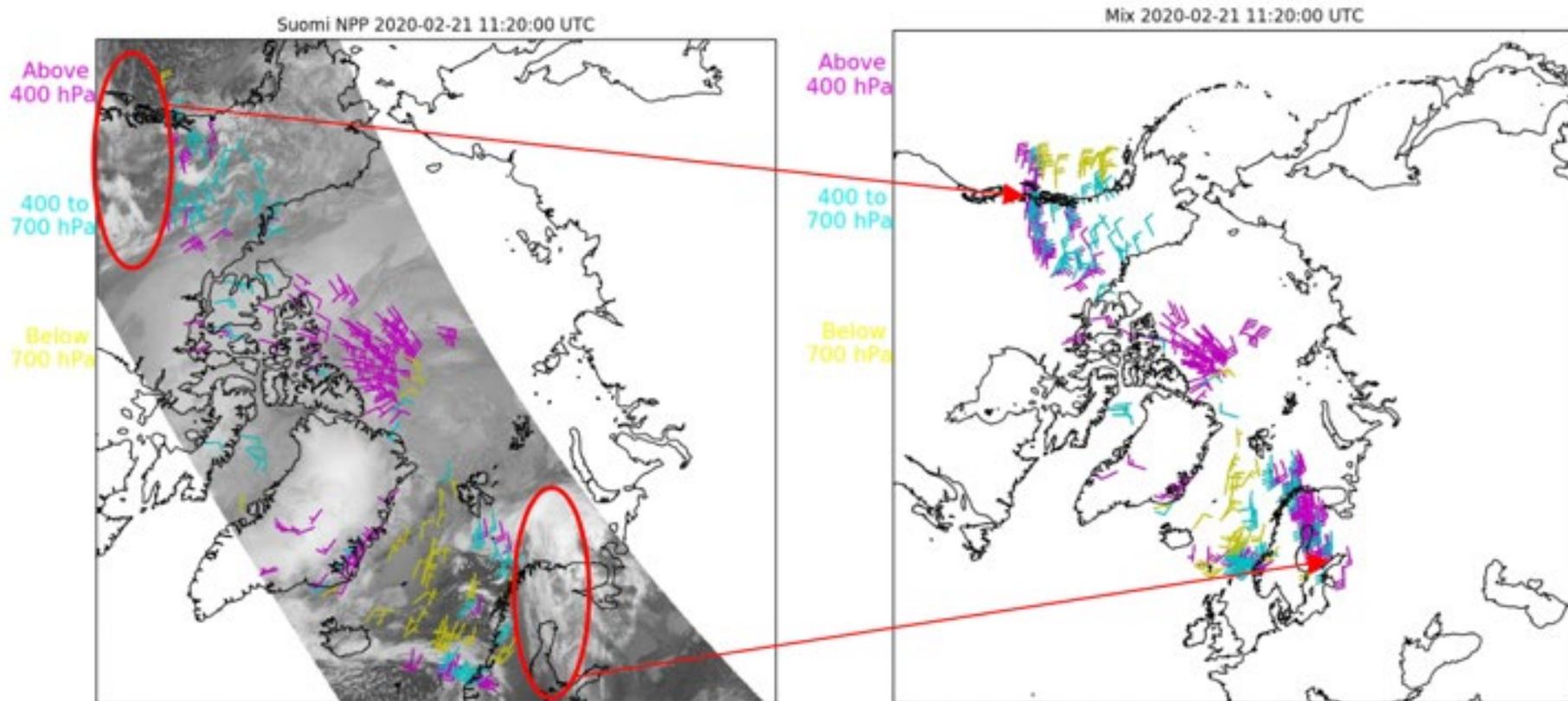
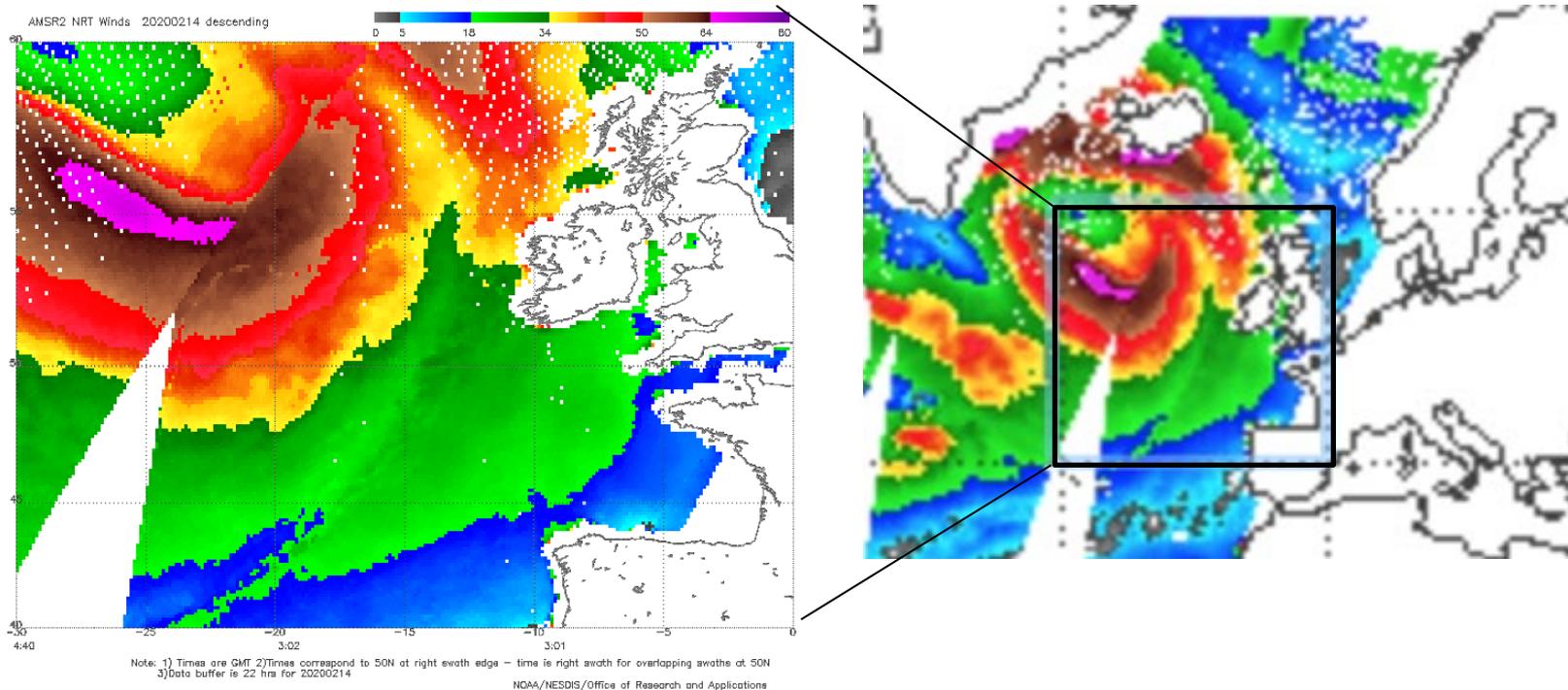


Fig. 1. The NOAA-20/S-NPP tandem winds expand coverage – notice the Suomi-NPP passes do not capture winds where the red circles, but the S-NPP+NOAA20 mix shows wind features.

Winter Storm Dennis observed by GCOM

AMSR2 wind speeds from winter storm Dennis that wreaked havoc throughout the UK and northern Europe in mid-February. The storm has pressure as low as 922 mb. The Ocean Winds flight experiment was underway at this time and a variety of microwave remote sensing equipment was flown into Dennis aboard the NOAA P-3 aircraft. The observations below show the Sea Surface Winds product from AMSR-2 GCOM.



Accomplishments

- Delivery Algorithm Packages (DAPs) - Mission Unique Products:
 - A set of simulated JPSS-2 VIIRS SDR granules, acquired during the pre-launch testing in environmental conditions expected on orbit, are available on STAR Linux server for EDRs & ASSISTT teams for potential J2 algorithm/coefficient adjustment/testing
 - Location: /data/smcd5/SimJ2_VIIRS_SDR/
 - Data Types: DNB: GEO, and SDR
 - I-Band: GEO (TC & non-TC), and SDR (I1-I5)
 - M-Band: GEO (TC & non-TC), and SDR (M1-M16)
 - Dates/Granules: 2017-06-22 (18 gran), 2017-06-24 (8 gran), 2017-07-21 (16 gran), 2017-07-23 (18 gran)
 - Data Distribution System for reprocessed S-NPP VIIRS V2 data is available at <http://viirs.astro.umd.edu/SatData/FileSearch/>, the system enable users to search the reprocessed S-NPP VIIRS V2 data set, and generate the scripts to download (FTP) data files
 - The Operational Implementation of the CrIS Polarization Correction (Mx8 TTO) on 1/29/2020
- DAPs – Enterprise Products:
 - VIIRS Global Annual Surface Type AST-2018 is available for users to download from STAR FTP site (<https://www.star.nesdis.noaa.gov/jpss/>)
 - S-NPP and NOAA-20 VIIRS Gridded LST/LSA products operational (NDE OPS) on 2/20/2020
- January/February 2020 Calibration/Validation Maturity Review on 2/6/2020:
 - Active Fires Validated Maturity Review (M-Band & I-Band)
 - SNPP/CrIS SDR Side-2 Validated Maturity Review
- JPSS/GOES-R Proving Ground/Risk Reduction Summit, February 24-28, 2020
- IDPS Builds Checkouts:
 - STAR submitted Block 2.2 Mx0 SOL deploy regression review/checkout report on 2/14//2020

Accomplishments – JPSS Cal Val Supports

- NOAA-20/S-NPP Operational Calibration Support:
 - S-NPP Weekly OMPS TC/NP Dark Table Updates: 02/04/20, 02/11/20, 02/18/20, 02/25/20
 - NOAA-20 Weekly OMPS TC/NP Dark Table Updates: 02/04/20, 02/11/20, 02/18/20, 02/25/20
 - S-NPP Bi-Weekly OMPS NP Wavelength & Solar Flux Update: 02/11/20, 02/25/20
 - NOAA-20 Bi-Weekly OMPS NP Wavelength & Solar Flux Update: 02/04/20, 02/18/20
 - S-NPP Monthly VIIRS StrayLight LUTs Update: 01/29/20, 02/12/20 (updated)
 - S-NPP Monthly VIIRS LUT Update of DNB Offsets and Gains: 01/29/20 (Feb)
 - NOAA-20 Monthly VIIRS LUT Update of DNB Offsets and Gains: 01/28/20 (Feb)

- **SNPP/N20**
 - NDE Build 2.0.21 was promoted to NDE OPS 2/20/2020
 - VIIRS Gridded LST/LSA
 - VIIRS VPW patch
 - OMPS TOZ patch
 - OMPS TOS LFSO2 patch
 - HEAP MetOp-C Radiances BUFR
- **EPS-SG project support**
 - Participated in the Product Preliminary Design Review (and several dry runs)
- **J2 and Beyond**
 - Continuing to work with Flight Project as they update the JCT dates and participation
- **Satellite Product Management (Legacy Migration, non-NOAA, MetOp-C)**
 - Legacy Migration Project
 - Awaiting OSGS cost estimates for Cloud computing - expected in April 2020
 - non-NOAA Product List (from IT Summit)
 - Awaiting OSGS cost estimates for Cloud computing - expected in April 2020
 - MetOp-C
 - Developed budget and milestone sheet for tracking FY20 schedules and costing

Upcoming Cal/Val Maturity Reviews

- March, 2020 Maturity Review (3/26/2020):
 - Provisional Maturity:
NUCAPS CO₂ product (S-NPP & NOAA-20)
 - Full Validated Maturity:
NUCAPS CH₄ product (S-NPP & NOAA-20)
Green Vegetation Fraction
Vegetation Index
OMPS NP SDR

- April, 2020 Maturity Review:
 - Full Validated Maturity:
Snow Cover (Binary Map & Snow Cover Fraction)
Surface Reflectance
OMPS NP Ozone EDR (V8Pro)

- June, 2020 Maturity Review:
 - Full Validated Maturity:
Ocean Color

- September, 2020 Maturity Review:
 - Provisional/Validated Maturity:
GST (Global Gridded Surface Type)

- December, 2020 Maturity Review:
 - Full Validated Maturity:
NUCAPS CO₂ product (S-NPP & NOAA-20)

- JSTAR Code/LUT/Product Deliveries:

DAP to DPES:

- Sep-20: NCC Imagery LUT N20 update
- Sep-20: Initial J2 LUTs (VIIRS & OMPS SDRs)
- ATMS SDR, ADR9035 DAP
- VIIRS SDR, ADR9171 DAP
- OMPS SDR, ADR9095 DAP

NOAA-20 Algorithm DAP to NDE/CoastWatch:

- Apr-20: I-band Active Fires
- Sep-20: Vegetation Health – N20 Final DAP (with init J2 DAP)
- Nov-20: Ocean Color – N20 Final DAP
- Sep-20: Initial J2-ready EDR DAPs (include NPP/N20 updates, all EDRs)
 - *{Per Program Request we are going to spread out these sep-20 deliveries, next Monthly will show new dates}*

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	Apr-20		Need NASA sharepoint access permission
ATMS: J2 pre-launch sensor characterization report	May-20	Jun-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		
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	Aug-20	Aug-20		
N20 NUCAPS final DAP to NDE	Nov-19	Nov-19	11/01/19	
N20 Vegetation Health final DAP to NDE	Mar-20	Sep-20		With init J2 DAP
I-band Active Fires DAP to NDE	Mar-20	Mar-20		
J2 pre-launch Algorithm Updates Review - EDRs	Aug-20	Aug-20		
Initial J2-ready EDR DAPs (include NPP/N20 updates)	Sep-20	Sep-20		
AST-2019 (VIIRS Annual Surface Type)	Sep-20	Sep-20		

FY20 STAR JPSS Milestones

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Algorithm Cal/Val				
J2 Cal Val Plans - Draft Delivery (all SDR/EDR products)	Jun-20	Jun-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	Mar-20		3/26/2020
N20 OMPS NP EDR (V8Pro) Full Validated Maturity	Jan-20	Apr-20		
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	Mar-20		Combine Feb/Mar review
N20 Vegetation Index Full Validated Maturity	Feb-20	Mar-20		Combine Feb/Mar review
NUCAPS CH4 Full Validated Maturity (N20 & NPP)	Feb-20	Mar-20		Combine Feb/Mar review
NPP side-2 CrIs SDR Full Validated Maturity	Feb-20	Feb-20	02/06/20	
N20 Surface reflectance Full Validated Maturity	Apr-20	Apr-20		
N20 Snow Cover Full Validated Maturity	Apr-20	Apr-20		
N20 Ocean Color Full Validated Maturity	Jun-20	Jun-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	
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	
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)	
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)	Re-use LUT after 12 months. The 12 th 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	
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	
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)	
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 12 th 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	
IDPS Mx build SOL and I&T deploy regression verification 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: 2/14/2020	
IDPS Cloud Implementation Verification (Based on Nov 2020 TTO)	Sep-20	Sep-20		

STAR JPSS Schedule

STAR JPSS Schedule: TTA Milestones

Task	2019			2020												2021									
	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	
ATMS SDR/TDR									▲▼			▲▲			▼										▲
CrIS SDR				■					▼	▲			▲▲		▼										▲
VIIRS SDR									▲▼						▼										▲
OMPS SDR	◆■					■	▲	◆▲▼							▼										▲
Imagery EDR									▼			◆◆			▼										
Sea Surface Temperature									▼			◆◆			▼										◆
Ocean Color								■▼				◆		◆	▼										◆
OMPS Ozone (TC: V8TOz)			◆						▼						▼										◆
OMPS Ozone (NP: V8Pro)	◆					◆■			▼						▼										◆
Aerosol Optical Depth (AOD)			◆						▼						▼										◆
Aerosol Detection (ADP)			◆						▼						▼										◆
Volcanic Ash (VolAsh)			◆						▼						▼										◆
Cloud Mask			◆						▼						▼										◆
Cloud Properties			◆						▼						▼										◆
Ice Surface Temperature			◆						▼						▼										◆
Sea Ice (Age/Concentration)			◆						▼						▼										◆
Snow Cover			◆				■		▼						▼										◆
Active Fires				■			◆		▼				◆◆		▼										◆
Surface Reflectance							■		▼						▼										◆
Surface Albedo	◆	■	◆						▼						▼										◆
Land Surface Temperature	◆	■	◆						▼						▼										◆
Vegetation Indices						■			▼						▼										◆
Green Vegetation Fraction						■			▼						▼										◆
Vegetation Health									▼				◆◆		▼										◆
Annual Surface Type									▼				■◆		▼										◆
NUCAPS	◆	◆				■			▼			◆			▼										◆
MiRS									▼						▼										◆
Snow Fall Rate (SFR)									▼						▼										◆
VIIRS Polar Winds			◆						▼				◆		▼										◆
GCOM													◆												

■ Beta
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 ◆ iDAP
 ◆ fDAP
 ◆ mDAP
 ▲ Report
 ▲ Algo
 ▲ iLUT
 ▲ fLUT/MM
 ▼ iCVplan
 ▼ fCVplan



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
-- TRR	Apr-20	Apr-20		
-- SCR	Jul-20	Jul-20		
-- ARR	Oct-20	Oct-20		
-- ORR	Jan-21	Jan-21		
-- Operations	Feb-21	Feb-21		
VIIRS I-Band Active Fires Product				
-- SCR	Jan-20	Jan-20	Jan 2020	Completed
-- ARR/AMR	Apr-20	Feb-20	Feb 2020	Completed
-- 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	May-20		
NOAA-20: OMPS Ozone: V8Pro				
-- ORR	Jul-18	Mar-20		Still Investigating why OMPS NP SDRs have too large uncertainties between the S-NPP and NOAA-20 results
-- Operations	Aug-18	Apr-20		
NOAA-20: NUCAPS including CrIS OLR				
-- CDR	Oct-16	--	10/27/16	Completed
-- SCR	Aug-18	--	01/25/19	Completed
-- Operations (Temp/H2O 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	Jun-20		
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	Mar-20		
-- Operations	Oct-18	Apr-20		
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	May-20		
-- Operations	Jun-17	Jun-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	Feb-20	1/24/2020	Completed
-- ARR	Oct-18	Apr-20		Integration time is longer than expected
-- ORR	Jan-19	Jun-20		
-- Operations	May-19	Jul-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	Apr-20		Longer integration time than expected
-- ORR	Apr-19	Jun-20		
-- Operations	Jun-19	Jul-20		
Product Monitoring Phase IV (JPSS RR, VIIRS AF)				
-- SRR/ORR	Jun-18	Jan-20	1/29/2020	Completed
-- Operations	Jul-18	Mar-20		
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	Mar-20		



JPSS Risk Summary

Top Risks



Status as of: 03/05/2020

Rank Risk ID	Summary	LxC Trend	Aprch	Status
1 AMP-19-002	Proxy data delay due to J2 10Hz Sampling Freq	4x3 ↔	W	02/07/20: Waiting on Softbench data to see if J2 test data is making APID 11 at 10HZ.
2 GJ-331	ATMS & CrIS SDR J2 Algorithm Update Code Delivery	2x4 ↔	W	02/12/2020: Continue to watch as timeline of events unfold.
3 AMP-19-003	Some IDPS and STAR algorithms cannot use APIDs with 10Hz sample freq	3x2 ↔	M	02/07/20: No updates
4 AMP-18-003	J2 APID Changes to Accommodate New S/C Bus	2x2 ↔	W	02/07/20: CCR 4439 approved and waiting incorporation. CCR 4892 ? needs approval and incorporation
5 AMP-18-008	Data Product Requirements for OMPS-Limb	3x1 ↔	M	2/19/2020: Promotion to NDE operations is scheduled for May, 2020
6 AMP-19-001	Algorithm testing & delivery impacts due to lag between IDPS and G-ADA moving to the Cloud	2x1 ↔	W	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.
7 AMP-18-006	Impact on Testing Ability Due to Major Build Upgrades	1x1 ↔	W	2/5/2020: No change

	5					
L I K E L I H O O D	4			1		
	3	5	3			
	2	6	4		2	
	1	7				
		1	2	3	4	5
		CONSEQUENCES				

Criticality	Approach
HIGH	A – Accept
MED	M – Mitigate
LOW	W – Watch
	R – Research
LxC Trend	
↓	– Decreasing (Improving)
↑	– Increasing (Worsening)
↔	– Unchanged
	NEW – Added this month



JPSS Top Risks



Status as of: 03/05/2020

Rank	Risk ID	Risk Statement	Approach	Status
<div data-bbox="40 282 117 332" style="background-color: yellow; border: 1px solid black; padding: 2px; display: inline-block;">1</div> <p data-bbox="150 297 469 344">Proxy data delay due to J2 10Hz Sampling Freq</p> <div data-bbox="54 354 104 386" style="text-align: center;">↔</div>	AMP-19-002	<p data-bbox="685 287 1097 382">Given that: APID 11 (S/C Attitude and Ephemeris) and 30 (S/C Telemetry) sampling frequencies are at 10Hz on JPSS-2</p> <p data-bbox="685 415 1097 486">There is a possibility that: It will affect and delay the process of getting/producing simulated J2 data (proxy data) during JCT.</p> <p data-bbox="685 515 1097 715">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.</p>	Watch	<p data-bbox="1358 287 1881 334">02/07/20: Waiting on Softbench data to see if J2 test data is making APID 11 at 10HZ.</p> <p data-bbox="1358 362 1881 409">12/18/19: Softbench version 5 currently being tested, expected delivery end of January 2020.</p> <p data-bbox="1358 438 1881 614">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).</p> <p data-bbox="1358 642 1881 714">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.</p>

Risk Owner: Tomi Ibranke



JPSS Top Risks



Status as of: 03/05/2020

Rank	Risk ID	Risk Statement	Approach	Status
<p>2</p> <p>ATMS & CrIS SDR J2 Algorithm Update Code Delivery</p> <p>↔</p>	<p>GJ-331</p>	<p>Given that: ATMS & CrIS TVAC and PSR have been delayed from original schedule which was:</p> <ol style="list-style-type: none"> 1.ATMS TVAC: July-2019 2.ATMS PSR: Sept 2019 3.CrIS TVAC: July 2019 4.CrIS PSR: Sept 2019 5.JCT3: Feb 2021 <p>There is a possibility that: ATMS & CrIS SDR JPSS-2 algorithm and PCT update package can not be delivered as scheduled</p> <p>Resulting in: Resulting in: the ATMS & CrIS JPSS-2 DAPs can not be implemented in IDPS build before JCT3 (the first E2E test event, IDPS build Code-cut-off date is about 6-7 months before TTO)</p>	<p>Watch</p>	<p>03/03/2020: Nothing to report - schedule remain</p> <p>02/12/2020: Continue to watch as timeline of events unfold. New Schedule: 1.ATMS TVAC: Completed Dec 2019 2.ATMS PSR: Mar-2020 3.CrIS TVAC: Jan-2020 4.CrIS PSR: Apr-2020 5.ATMS & CrIS JPSS-2 DAPS delivery: Sep 2020 & Oct 2020 (PSR+6 months) 6.JCT3: May-2021</p> <p>12/05/2019: Continue to watch as timeline of events unfold. Date of JCT3 is now 5/26/2020.</p> <p>10/16/2019: New schedule: 1.ATMS TVAC: Oct-2019 2.ATMS PSR: Feb-2020 3.CrIS TVAC: Jan-2020 4.CrIS PSR: Feb-2020 5.ATMS & CrIS JPSS-2 DAPs delivery: Aug-2020 6.JCT3: Feb-2021</p> <p>2/12/2020 Continue to watch as timeline of events unfold. New Schedule: 1.ATMS TVAC: Completed Dec 2019 2.ATMS PSR: Mar-2020 3.CrIS TVAC: Jan-2020 4.CrIS PSR: Apr-2020 5.ATMS & CrIS JPSS-2 DAPS delivery: Sep 2020 & Oct 2020 (PSR+6 months) 6.JCT3: May-2021</p>

Risk Owner: Tess Valenzuela



JPSS Top Risks



Status as of: 03/05/2020

Rank	Risk ID	Risk Statement	Approach	Status
 <p>Some IDPS and STAR algorithms cannot use APIDs with 10Hz sample freq</p> 	AMP-19-003	<p>Given that: APID 11 (S/C Attitude and Ephemeris) and 30 (S/C Telemetry) sampling frequencies are at 10Hz on JPSS-2</p> <p>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</p> <p>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.</p>	Mitigate	<p>02/07/20: No updates</p> <p>12/18/19: IDPS Version 2.3 will include geolocation change.</p> <p>11/06/19: Geolocation algorithm to use only 1 sample of APID 11 10HZ. The JPSS-2 test data had to utilize J1 APID 11, but converted to 10 HZ (due to time issues in softbench for J2 AP11 thus far).Raytheon will hold the Detailed design review for the JPSS-2 S/C Attitude and Ephemeris RDR on November 7th. 10hz APID11 (xDR probably won't use all samples; decimate to one sample)</p> <p>9/9/19: The TIM to discuss the 10Hz APID 11 was held between IDPS, STAR and Raytheon personnel. It was determined that J2 simulation data is needed to make a concrete decision on the correct action to take. Another TIM will be planned for the first quarter of 2020. IDPS Geolocation algorithm is planning to use only 1 sample of the 10/Hz APID.</p>

Risk Owner: Tomi Ibronke



JPSS Top Risks



Status as of: 03/05/2020

Rank	Risk ID	Risk Statement	Approach	Status
<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; background-color: #4CAF50; color: white; padding: 2px 5px; margin-right: 5px;">4</div> <div style="margin-right: 5px;"> <p>J2 APID Changes to Accommodate New S/C Bus</p> <p>↔</p> </div> </div>	AMP-18-003	<p>Given that: J2 has a new S/C Bus manufacturer and some new APIDs compared to J1 and S-NPP</p> <p>There is a possibility that: the SDR algorithms will need to be updated to accommodate new RDR format/structure</p> <p>Resulting in: additional unplanned work for Ground.</p>	Watch	<p>02/07/20: CCR 4439 approved and waiting incorporation. CCR 4892 ? needs approval and incorporation</p> <p>12/18/19: CCR 4439 has been incorporation. Latest APID to VCID released Dec 4th, 2019.</p> <p>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.</p> <p>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).</p>

Risk Owner: Tomi Ibrionke



JPSS Top Risks



Status as of: 03/05/2020

Rank	Risk ID	Risk Statement	Approach	Status
<div style="display: flex; align-items: flex-start;"> <div style="background-color: #2e8b57; color: white; padding: 5px; margin-right: 10px; text-align: center; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">5</div> <div> <p>Data Product Requirements for OMPS-Limb</p> <p>↔</p> <p>Expected Closure: 10/2020</p> </div> </div>	AMP-18-008	<p>Given that: There are no JPSS (or NOAA) data product requirements for OMPS-L</p> <p>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</p> <p>Resulting in: Additional funding needed for delivering the algorithm, product generation/distribution/archive, and calval of the products.</p>	Mitigate	<p>2/19/2020: Promotion to NDE operations is scheduled for May, 2020</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>7/12/2019: No change. There is still some issues with ancillary data with running OMPS-L on NDE I&T.</p> <p>5/1/2019: No change</p>

Risk Owner: Lihang Zhou



JPSS Top Risks



Status as of: 03/05/2020

Rank	Risk ID	Risk Statement	Approach	Status
<div style="background-color: #008000; color: white; padding: 2px; display: inline-block; border: 1px solid black;">6</div>  Algorithm testing & delivery impacts due to lag between IDPS and G-ADA moving to the Cloud Expected Closure: 12/2020	AMP-19-001	<p>Given that: IDPS will be in the cloud prior to G-ADA being in the cloud,</p> <p>There is a possibility that: algorithm change testing and implementation may take longer</p> <p>Resulting in: delays to implementation of algorithm changes.</p>	Watch	<p>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.</p> <p>12/05/2019: Lihang will look into whether this risk should be transferred to DPMS</p> <p>8/8/2019: Suggest to transfer this risk to be under DPMS risk</p> <p>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.</p> <p>5/1/2019: No Update</p> <p>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).</p>

Risk Owner: Lihang Zhou



JPSS Top Risks



Status as of: 03/05/2020

Rank	Risk ID	Risk Statement	Approach	Status
 Impact on Testing Ability Due to Major Build Upgrades 	AMP-18-006	<p>Given that: DPMS has had issues installing major Block/Build updates in the past on G-ADA</p> <p>There is a possibility that: this could occur again in the future (Block 2.2)</p> <p>Resulting in: delays to testing of instrument code and table updates.</p>	Watch	<p>2/5/2020: No change</p> <p>12/5/2019: Monitor until Block 2.2 MX0 is ready for operations on May 11,2020.</p> <p>11/7/2019: No change</p> <p>10/05/2019: No change. Continue to watch until Block 2.2</p> <p>9/5/2019: No issues. Continue to Watch</p> <p>7/11/2019: No issues. Continue to Watch</p> <p>3/6/19: Risk Owner changed from Cole to Jeff.</p>

Risk Owner: Jeff Weinrich

Color code:

Green:

Completed Milestones

Gray:

Non-FY20 Milestones

Accomplishments / Events:

- Reviewed JPSS-2 ATMS Calibration Data Book to ensure information and analysis results are accurate
- Discussed ATMS thermal vacuum testing deficiency and recommended improvements in future testing configuration
- Started developing NOAA-20 vs S-NPP TDR/SDR inter-sensor bias using RO observations as the radiative transfer model input
- Kept updating and testing lunar intrusion correction algorithm to fix correction error in operational mode
- Analyzed S-NPP ATMS G-band channel NEdT small bump in November 2019 and impact to SDR data
- Kept watching S-NPP ATMS scan drive anomaly 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			

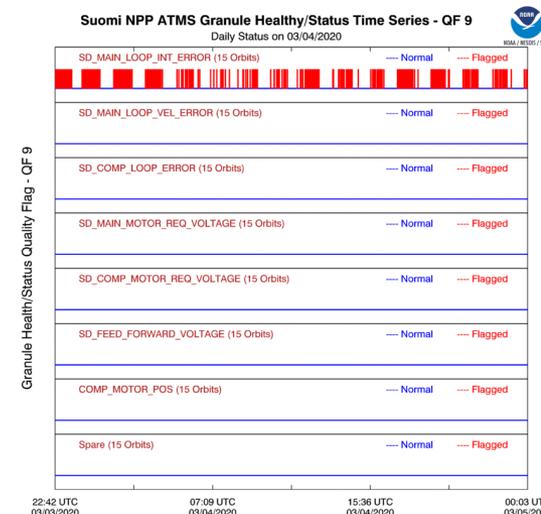
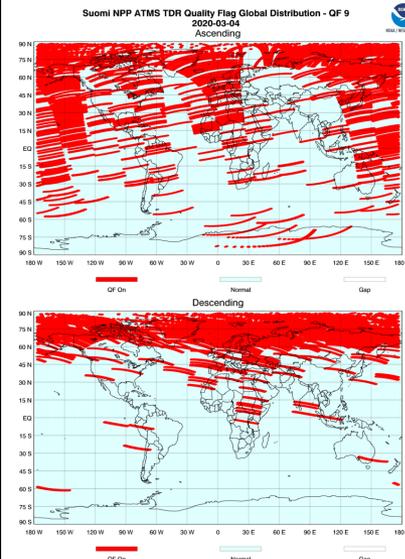
1. Project has completed.
2. Project is within budget, scope and on schedule.
3. Project has deviated slightly from the plan but should recover.
4. Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

None

Highlights:

S-NPP ATMS SDR Quality Flag triggered due to SD anomaly



Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 pre-launch test data (TVAC) review/analyze	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		
Pre-launch sensor characterization report	Jun-20	Jun-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		
J2 SDR data (based on TVAC) available for EDRs	Apr-20	Apr-20		
ATMS TDR/SDR discrepancy between ADL and IDPS over lunar intrusion regions (ADR 9035)	Sep-20	Sep-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		
BL2.2 Mx 1 I&T ATMS data review/checkout	Jul-20	Jul-20		

Accomplishments / Events:

- The S-NPP CrIS SDR Side-2 Validated Maturity Level Review was completed on Thursday February 6, 2020. As confirmed by the CrIS SDR Team and CrIS Users, the quality of the SNPP/CrIS SDR product is meeting the JPSS requirements and holds long-term stability. No major anomalies or caveats were identified. The products holds Validated Level quality: noise, spectral (within 2 ppm) (**Figure (1)**), geolocation (within 250 m) and radiometric uncertainty for all three bands are all within the requirements. User Feedback was received and presented during the Validated review from NOAA/NCEP, ECMWF, NRL, the NUCAPS Team and the NPROVS Team.
- Reviewed the Block 2.2 Mx 0 SOL CrIS Deploy Regression data to check a CrIS Geolocation Anomaly. Since the anomaly occurs under rare conditions and the check period does not include such a case and this implementation does no impact to the nominal operational CrIS Geolocation Product the recommendation is to proceed with the Mx0 regression on I&T.
- The CrIS SDR Team organized the CrIS SDR Splinter session at the 2020 JPSS/GOES PGRR Summit. This session included four major presentations dedicated to report improvements to CrIS SDR data products, progress on J2/CrIS TVAC activities, application of CrIS observations to track greenhouse gas trends (**Figure (2)**), the value of hyperspectral infrared sounding from Geostationary orbit and an approach for performing single footprint retrievals.

Overall Status:

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

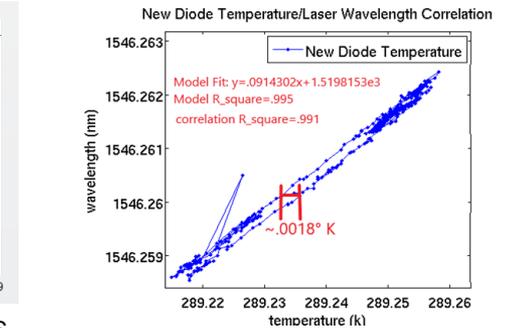
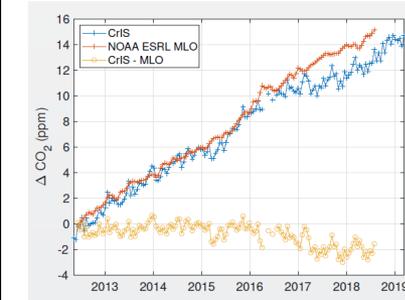
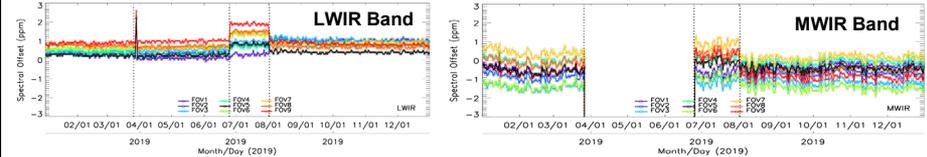
1. Project has completed.
2. Project is within budget, scope and on schedule.
3. Project has deviated slightly from the plan but should recover.
4. Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

1. Recent results derived from a quantitative analysis about the performance of the J2/CrIS neon lamp have shown that it holds a 4:1 margin against failure. This is about half the margin measured for the SNPP and NOAA-20 CrIS neon lamp. This result provides an insight about the low risk of the neon lamp to fail over the mission life. As shown in **Figure (3)** the mitigation study is in progress. This tries to estimate the metrology laser wavelength in the event of the failure of the neon lamp.

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		TVAC: Jan-20
J2 pre-launch evaluation tools development	Sep-20	Sep-20		
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-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		
J2 SDR data (based on TVAC) available for EDRs	Apr-20	Apr-20		
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		
Turn off Truncated Spectrum CrIS Data (ADR8761)	Sep-20	Sep-20		OSPO & Users
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20		
Annual CrIS SDR performance report	Feb-20	Feb-20	02/26/2020	
Verification of cloud implementation	Sep-20	Sep-20		
IDPS Mx build I&T deploy regression support:				
BL 2.1 Mx 8 I&T CrIS data review/checkout	Nov-19	Nov-19	11/12/19	
BL 2.2 Mx 0 I&T CrIS data review/checkout	Apr-20	Apr-20		
BL 2.2 Mx 1 I&T CrIS data review/checkout	Jul-20	Jul-20		

Highlights: (1) Assessment of the long-term spectral accuracy of the SNPP CrIS SDR Product, before and after the side switch on June 24, 2019.



- (2) CO₂ Anomalies retrieved using CrIS observations and compared against ESRL measurements. Credit to Larabee Strow. Presented during the CrIS Splinter Session.

- (3) Enhanced correlation between the metrology laser wavelength and the metrology laser physical temperature achieved after applying a correction to the metrology laser temperature.

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 2/23/2020
- Delivered for deployment in IDPS operations an updated S-NPP VIIRS DNB stray light correction LUT generated from the February 2020 data
- Actively participated in JPSS/GOES-R PGRR Summit with five poster presentations focusing on calibration/validation of VIIRS onboard S-NPP and NOAA-20 satellites
- Verified that the VIIRS SDR code changes that add Terrain Correction for Imagery EDR geolocation have been implemented in the IDPS Block 2.2 revision Mx0 and have not changed the VIIRS SDR geolocation products
- Analyzed VIIRS DNB nighttime observations over Libya 4, Libya 1, Dome C and Greenland sites at night to quantify the radiometric consistency between S-NPP and NOAA-20
- Analyzed VIIRS lunar measurements collected on 2/5/2020 to derive the lunar F-factors and to compare them with the solar calibration F-factors; Coordinated verification of predictions for the NOAA-20 VIIRS lunar calibration opportunities on 3/5/2020
- Generated and tested updated S-NPP VIIRS Geolocation LUTs that correct an increase in the SDR geolocation errors since a star tracker reset in March 2019

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			

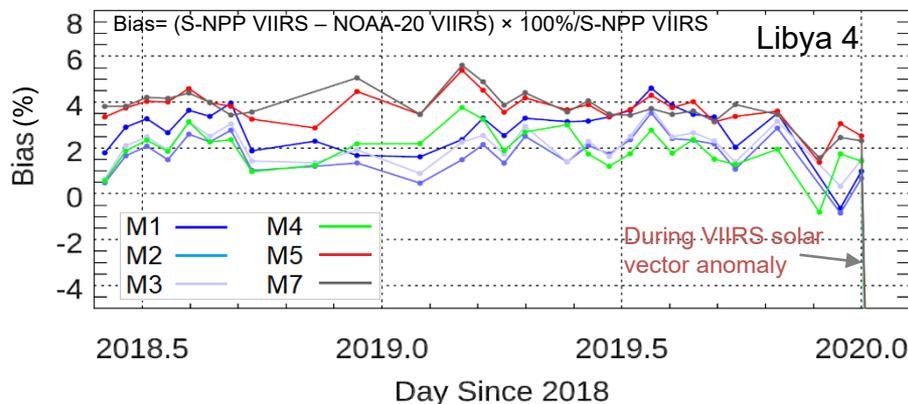
1. Project has completed.
2. Project is within budget, scope and on schedule.
3. Project has deviated slightly from the plan but should recover.
4. Project has fallen significantly behind schedule, and/or significantly over budget.

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	1/31/2020	
J2 pre-launch evaluation tools development	Sep-20	Sep-20		
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20		
Launch-ready LUTs (initial delivery)	Jun-20	Jun-20		
Algorithm Updates Review	Jun-20	Jun-20		
Simulated J2 SDR data available for EDRs	Jan-20	Jan-20	1/31/2020	
DAP: Lunar contamination (code & LUT updates)	Jun-20	Jun-20		
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20		
Annual VIIRS SDR performance report	Feb-20	Feb-20	2/28/2020	
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	11/06/2019	
BL2.2 Mx0 I&T VIIRS data review/checkout	Apr-20	Apr-20		
BL2.2 Mx1 I&T VIIRS data review/checkout	Jul-20	Jul-20		

Highlights:



VIIRS radiometric consistency derived by direct comparison of TOA reflectance trending over Libya 4 calibration site: large bias for M5 and M7 (~4%) is due to overestimation in S-NPP VIIRS calibration by nearly 2%, and after accounting this, NOAA-20 VIIRS TOA reflectance is consistently lower than S-NPP VIIRS by about 2%

Accomplishments / Events:

- Further verified NOAA-20 OMPS NP SDR calibration LUTs (e.g., stray light correction and wavelength registration)
- Generated 10 months of new NOAA-20 NP SDR data sets to support the validated review in March
- Validated the quality consistency of the new NOAA-20 NP SDR data using the 32-day average of differences between SNPP and NOAA-20
- Made regular weekly/biweekly deliveries for OMPS dark table, SNPP/NOAA-20 OMPS-NP wavelength and solar flux
- Analyzed the NASA dark table package to develop NOAA dark calibration algorithm
- Continued to analyze EV360 radiance features

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		

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

Issues/Risks: The top priority of the project is to achieve the validated review of NOAA-20 OMPS NP in March 2020. We are also experiencing the leave of one contractor from SDR team, causing some adjustment of the tasks. The last but not least, we are still working on getting the TVAC data.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity: OMPS-NP	Jan-20	Mar-20		Refer to Issue Note
J2 pre-launch test data (TVAC) review/analyze	Apr-20	Apr-20		
J2 pre-launch evaluation tools development	Sep-20	Sep-20		
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20		
Pre-launch sensor characterization report	Dec-19	Apr-20		Access/priority
Algorithm update based on pre-launch test data and other changes (e.g. APID, sampling frequency, FSW, and RDR)	Jun-20	Jun-20		
Launch-ready LUTs (initial delivery)	Jun-20	Jun-20		
Algorithm Updates Review	Jun-20	Jun-20		
J2 SDR data (based on TVAC) available for EDRs	Apr-20	Apr-20		
Remove VIIRS SnowIce and QST tile dependency (ADR8550/CCR4589)	Oct-19	Oct-19	10/28/19	8/1/19 to ASSISTT
NaN Values in SOMPS Products (ADR8526)	Jun-20	Jun-20		
High resolution SDR implementation (17km x 17km OMPS TC)	Aug-20	Aug-20		Jun-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		
BL2.2 Mx 1 I&T OMPS data review/checkout	Jul-20	Jul-20		

Highlights:

32-Day Nvalue Average Differences between SNPP and NOAA-20 NP SDR Data by using NOAA-20 NP operational (red) and new (blue) SDR data sets

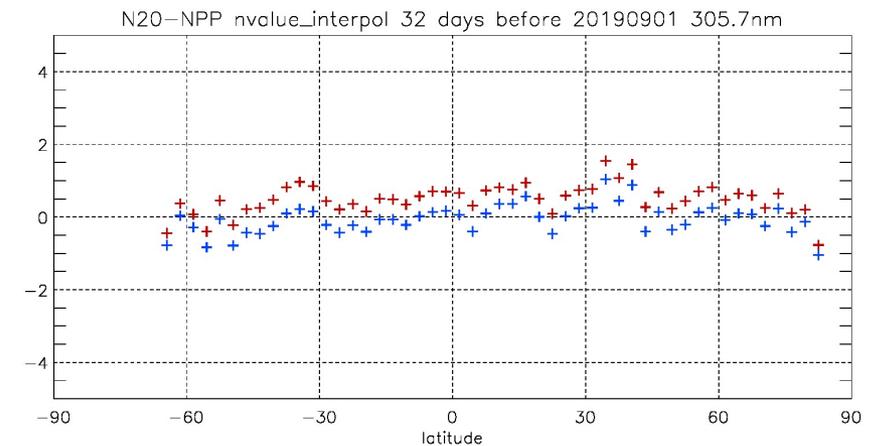


Fig. 1 Nvalue difference (32-day averages of the differences) between SNPP and NOAA-20 NP SDR at 305.7 nm, by using the operational (red) and new (blue) NOAA-20 NP SDR data sets. New data sets offer a better consistency for SNPP and NOAA-20 NP SDR data.

Accomplishments / Events:

- Developed ICVS GSICS portal to provide JPSS sensor data quality information for broader data users
- Fixed ICVS VIIRS TEB F-factor vs RSBAutoCal trending error
- Updated VIIRS vs ABI 29-day inter-sensor bias trending package
- Implemented NOAA-20/S-NPP CrIS SDR 32-day running mean direct bias monitoring
- Added CrIS laser wavelength difference and laser diode temperature monitoring products in ICVS web site to support CrIS cal/val activities
- Updated NOAA-20 vs S-NPP OMPS SDR inter-sensor bias module using 16-day averaged N-value to support OMSP SDR data maturity review
- Developed NOAA-20 vs S-NPP TDR/SDR 32-day running mean direct global bias trending monitoring plots
- Kept updating ICVS dynamic web site by adding multiple trending products within one monitoring window

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
<ul style="list-style-type: none"> ICVS Intersensor web site beta version (e.g., direct, CRTM, 3rd instrument as transfer) ICVS-J2 prototype beta version using J1 as proxy data ICVS-reprocessing tool prototype 	Dec-19	Dec-19		
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Develop a LEO-GEO GSICS portal (ABI. vs. CrIS, IASI and VIIRS) (new task) (beta version March 2020) 	Jun-20	Jun-20		
<ul style="list-style-type: none"> ICVS intersensor and reprocessing web site improvement (operational version) ICVS Interactive modules: operational version ICVS Module improvements (each instrument on both SNPP and NOAA-20) (with proper QCs in particular cloud mask over snow-free land) ICVS-AI modules for each instrument lifetime performance assessment: beta version OMPS geolocation error monitoring module 	Jun-20	Jun-20		
<ul style="list-style-type: none"> ICVS-AI modules for each instrument lifetime performance assessment: operational version 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	

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			

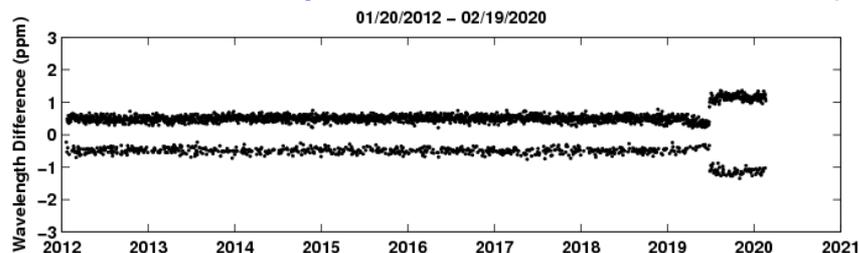
1. Project has completed.
2. Project is within budget, scope and on schedule.
3. Project has deviated slightly from the plan but should recover.
4. Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

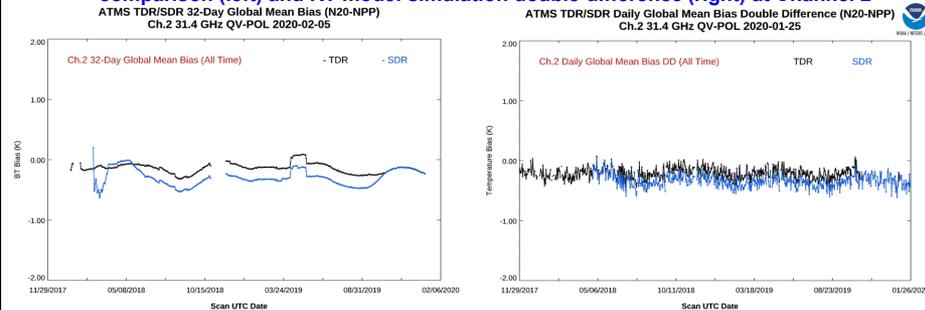
None

Highlights: Significantly contribute to STAR SDR Teams

NPP CrIS Laser Wavelength Bias between Odd & Even Neo Calibration Sweeps



NOAA-20 vs S-NPP ATMS TDR/SDR Inter-sensor Bias from 32-day running mean direct comparison (left) and RT model simulation double difference (right) at Channel 2



Accomplishments / Events:

- **Terrain-Corrected EDR Imagery:** The first (SOL) test data with terrain-corrected VIIRS has been verified as valid, and PPT slides were prepared to show the proper geo-location changes to the Imagery over the mountains of Norway. Further (I&T) test data will be available in late March.
- D. Hillger will give a presentation at part of an Imagery panel at the JPSS-GOES Summit. Being the VIIRS EDR Imagery Team lead, there will be emphasis on the use of VIIRS in the Arctic/polar regions, including animations of ice movements.
- **DNB-to-NCC LUT update:** The solar and lunar LUTs are nearing completion for NOAA-20, but with a significant change in gain values near the day-night terminator. This is a result of differences in the DNB values at those angles. Further analysis of the impact on VIIRS Imagery needs to be done.

Overall Status:

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

1. Project has completed.
2. Project is within budget, scope and on schedule.
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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		
Algorithm Updates Review	Jun-20	Jun-20		
N20 NCC LUT update	Sep-20	Sep-20		
All 16 M-bands as Imagery EDRs	Sep-21	Sep-21		Before J2 launch, JCT3
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		
BL2.2 Mx 1 I&T ATMS data review/checkout	Jul-20	Jul-20		

Highlights:

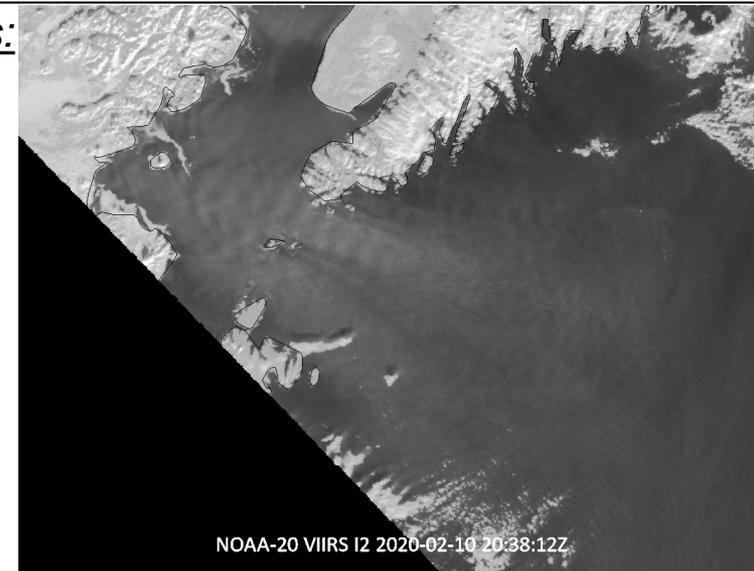


Figure: NOAA-20 VIIRS I2 image of visible sea spray caused by strong winds blowing between the islands of the Aleutian chain. See <https://satelliteliaisonblog.com/2020/02/13/alaska-sea-spray-on-10-feb-2020/>

Accomplishments / Events:

- ECM team developed a new LUT for VIIRS to increase confidently clear pixel detection over cold surfaces.
- ECM training with the latest CALIPSO/CALIOP products (Version 4) showed improvement at the terminator region and reported more confident cloud mask retrievals.
- ACHA team is testing a new method for deriving better cirrus cloud first guess values.
- DCOMP team is working on replacing PFAAST RTM calculations with RTTOV, which will provide all RTM related computations of forward model, in the IR and visible 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

Highlights: ECM Monitoring

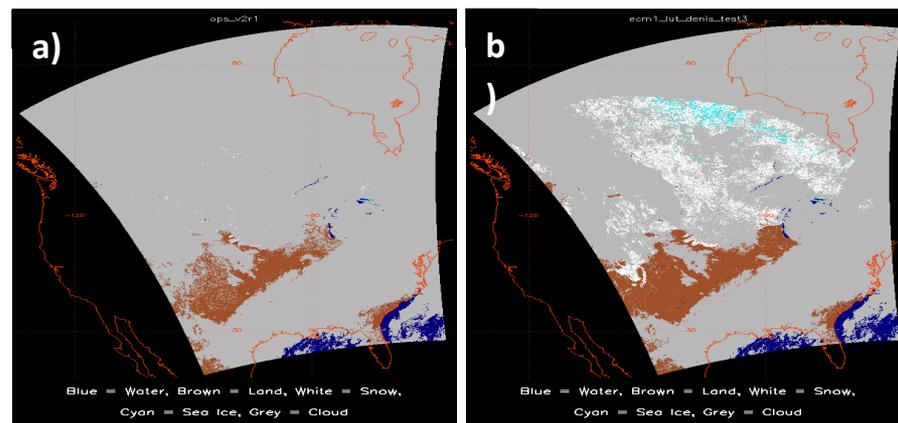


Fig. 1. a) Masked “probably clear”, “probably cloudy” and “confidently cloudy” (grey) using OPS ECM. Number of Snow pixels (white) is 25,255. b) The same but using ECM with the new LUT. Number of Snow pixels (white) is 1,479,008. The granule is for VIIRS/SNPP on December 10, 2019 between 1901 and 1911UTC.

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		
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Aug-20	Aug-20		
Algorithm Updates Review	Sep-20	Sep-20		
Algorithm update DAP to ASSISTT:				
<ul style="list-style-type: none"> 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 	Mar-20	Mar-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 tool and LTM webpage development/improvement	Sep-20	Sep-20		
Support Alaska Demo and ESRL usage	Sep-20	Sep-20		

Accomplishments / Events:

- The team prepared for JPSS-GOES-R summit and provided the users update on product status
 - ✓ Prepared long-term validation of VIIRS AOD and ADP products to demonstrate that the products are stable and accurate and can be used in operations
 - ✓ A draft paper on converting VIIRS AOD to surface PM2.5 is complete and going through internal review process
- Began working on revisions to heavy aerosol flagging and updating new surface reflectance database in the AOD algorithm

Overall Status:

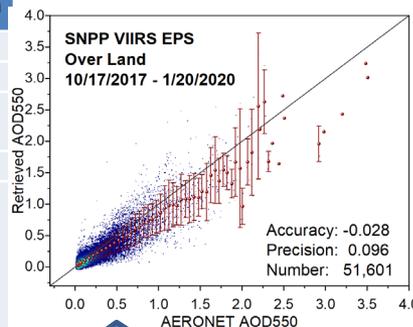
	Green ¹ (Completed)	Blue ² (On-Schedule)	Yellow ³ (Caution)	Red ⁴ (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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- Project is within budget, scope and on schedule.
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- Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

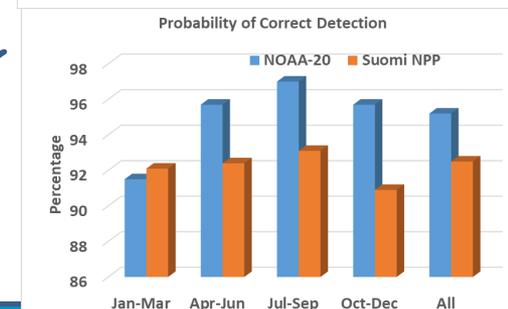
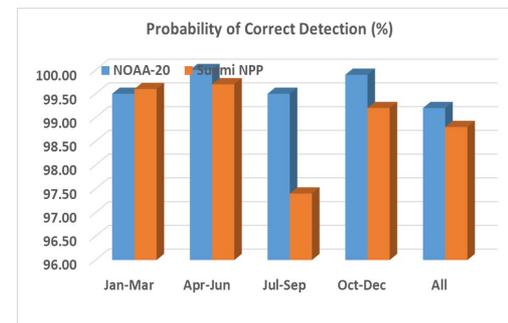
None

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		
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Aug-20	Aug-20		
Algorithm Updates Review	Sep-20	Sep-20		
Algorithm update DAP to ASSISTT:				
<ul style="list-style-type: none"> 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 	Mar-20	Mar-20	TBD	Work is ongoing
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		



AOD Validation

Validation of ADP. Top right for dust and bottom right for smoke



Accomplishments / Events:

- Added to list of known NOAA-20 observations of non-trivial ash clouds
- Began FY20 cal/val activities, including continuous assessment and comparisons to validation data
- Continued development of multi-sensor algorithms for end-end application (see highlight)
- Continued to stress (to anyone that will listen) that our volcanic ash requirements should be replaced by a holistic workflow that fully supports the International Airways Volcanic Watch and volcano monitoring

Overall Status:

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

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

Issues/Risks:

STAR management will be briefed on the challenges associated with transitioning from the enterprise algorithm to the multi-sensor based VOLcanic Cloud Analysis Toolkit (VOLCAT). VOLCAT will also likely become part of the second stage of the NESDIS cloud pilot (several related side meetings were held during the JPSS/GOES-R PG/RR Summit).

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		
J2 Cal/Val Plan - final delivery	Dec-20	Dec-20		
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Aug-20	Aug-20		
Final J2 ready DAP to NDE (include NPP/N20 updates)	Jun-21	Jun-21		
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	Mar-20	Mar-20		
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:



A screen capture of the web-based VOLCAT thermal output monitoring tool. The tool blends VIIRS data with geostationary satellite data to create time series of volcanic radiative power. Time trends in radiative power are used to alert users about rapid changes in volcanic activity. The above example is for Sabancaya volcano (Peru).

Accomplishments / Events:

- Validation of NOAA-20 VIIRS NDE Ice Surface Temperature continues with a relatively new set of surface temperature measurements from a NASA P-3 aircraft using a downward-pointing KT-19 pyrometer (see figure).
- The Cryosphere Team participated extensively in the JPSS/GOES-R Proving Ground/Risk Reduction Summit in College Park, MD, 24-18 February 2020.
- Walt Meier (National Snow and Ice Data Center and a part of the Cryosphere Team) attended the JAXA GCOM-W AMSR2 Science Team meeting in Tokyo, 20-22 January and presented an update on the NOAA sea ice products.

Overall Status:

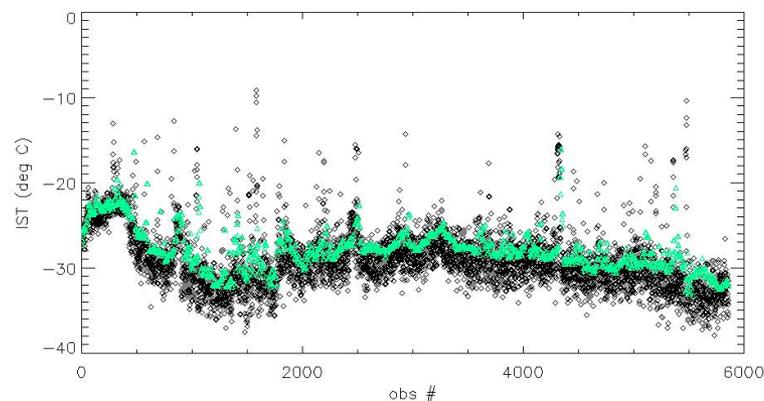
	Green ¹ (Completed)	Blue ² (On-Schedule)	Yellow ³ (Caution)	Red ⁴ (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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

Issues/Risks:

None

Highlights:



IST measurements from the KT-19 pyrometer aboard the IceBridge aircraft (in black), and from the NOAA-20 NDE IST product (in green).

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity: Snow Cover (Binary Map & Snow Cover Fraction)	Apr-20	Apr-20		Cover Winter
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 to NDE (include NPP/N20 updates)	Aug-20	Aug-20		
Algorithm Updates Review	Sep-20	Sep-20		
Algorithm update DAP to ASSISTT:				
<ul style="list-style-type: none"> ▪ 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 	Mar-20	Mar-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		

Accomplishments / Events:

- Presented validated maturity material for the NOAA-20 M-band and I-band products on February 6, 2020
- Worked with STAR ASSIST, OSPO and NDE to work out final details of the delivered I-band product (e.g. file naming convention, persistent anomaly tracking file configuration)

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		OSPO / NDE implementation

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 DAP (I-Band)	Mar-20	Apr-20		Code review
Final DAP (I-Band)	Sep-20	Sep-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 to NDE (include NPP/N20 updates)	Sep-20	Sep-20		
Algorithm Updates Review	Sep-20	Sep-20		
Algorithm update DAP to ASSISTT: ▪ I-band algorithm improvements	Jun-20	Jun-20		
ATBD update	Dec-19	Jan-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:

An example of cross comparisons between VIIRS active fire data and aircraft observations during the FIREX-AQ campaign.

Top: MASTER IR detection with 20m pixels from the DC8 at 21:57Z and ~8000 m AMSL altitude.

Bottom: VIIRS fire detections at 21:57:30 Z



Courtesy of Joshua Schwarz, NOAA ESRL

Accomplishments / Events:

- Implemented algorithm change for high aerosol flag in the STAR environment
- Compared current operational, NASA and NOAA versions for constancy and correct implementation of the high aerosol patch
- Worked with NASA partner on granule subsetting tool for validation

Overall Status:

	Green ¹ (Completed)	Blue ² (On-Schedule)	Yellow ³ (Caution)	Red ⁴ (Critical)	Reason for Deviation
Cost / Budget			X		Temporary funding delay
Technical / Programmatic			X		Large data volume for validated analysis
Schedule			X		Delay validated review

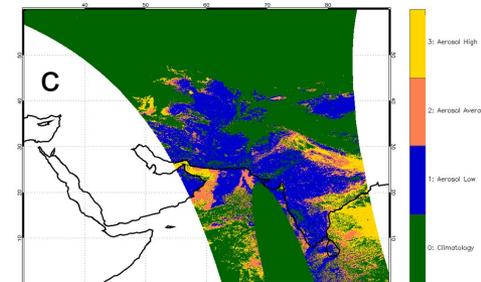
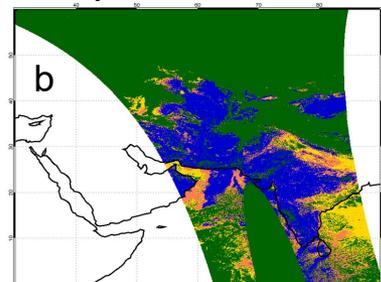
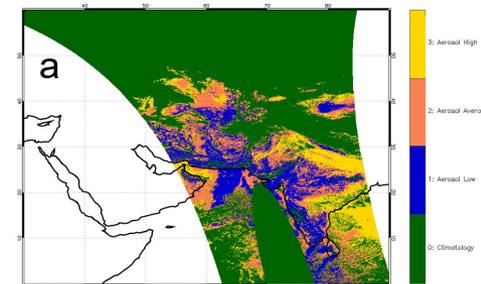
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Issues/Risks: delay in preparation for validated review. Low impact on product performance.

Highlights:

NOAA-20 VIIRS Surface Reflectance QF7, bits 2-3 (aerosol) on January 31, 2020

- a: current operational product;**
- b: NASA ST product with aerosol patch;**
- c: STAR implementation of the aerosol patch**



Credit: Mike Wilson, IMSG@STAR

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity	Apr-20	Apr-20		
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 to NDE (include NPP/N20 updates)	Sep-20	Sep-20		
Algorithm Updates Review	Sep-20	Sep-20		
Algorithm update DAP to ASSISTT:				
<ul style="list-style-type: none"> ▪ 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		
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		

Accomplishments / Events:

- Downloaded and processed S-NPP and NOAA-20 VIIRS observations acquired in February 2020 to create daily mosaics (up to the writing of this report).
 - Redownloaded and reprocessed January 2020 data affected by an unexpected change in the solar vector
- Continue to generate monthly composites from the daily mosaics.
 - Monthly composites from Sept. 2019 to Dec. 2019 have been produced and evaluated.
- Presented a poster on VIIRS surface type products at the JPSS/GOES-R Proving Ground/Risk Reduction Summit.

Overall Status:

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

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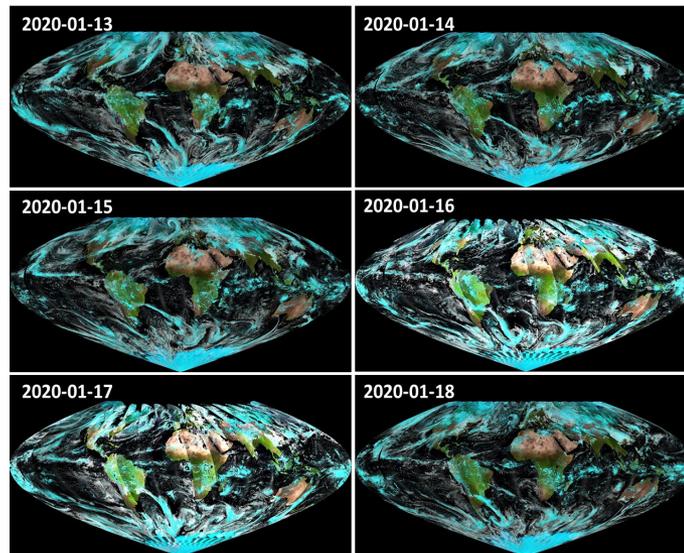
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
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		
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)				
<ul style="list-style-type: none"> Download AST18 from JSTAR web Chain-run to make sure the delivery works for the down-stream products Deliver AST18 DAP to NDE 	Aug-20	Aug-20		With JRR DAP

Highlights:

An unexpected change in the solar vector resulted in erroneous VIIRS data for both Jan 16 and 17 of 2020. The global daily mosaics for these two days appeared much brighter than previous days. This problem affected data acquired by both S-NPP and NOAA-20. It was fixed on Jan. 17, and the observations affected by this anomaly have been reprocessed.



Accomplishments / Events:

- Investigated the issue of abnormal LST pattern reported by the LST user. It is found that it is caused by the cloud mask. Have reported the issue to the cloud mask team. (slide 2)
- LST angular correction using SNPP and N20 measurement based on three kernel model. Further tests are undergoing (slide 3).
- Investigated the JPSS 2 SDR test data. It is found not suitable for scientific LST algorithm test. (slide 4)
- The global gridded LST was successfully implemented on NDE OPS. The OPS data was investigated. No issues were found. (Highlights)
- Provided the 10 year average emissivity data to OSPO for GOES15 LST generation.
- Presented a poster titled “Enterprise VIIRS LST Production for JPSS Mission: Validation and Application” at the JPSS/GOES PGRR Summit conference

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		
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Aug-20	Aug-20		
Algorithm Updates Review	Sep-20	Sep-20		
Algorithm update DAP to ASSISTT:				
<ul style="list-style-type: none"> ▪ 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	Mar-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		

Overall Status:

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

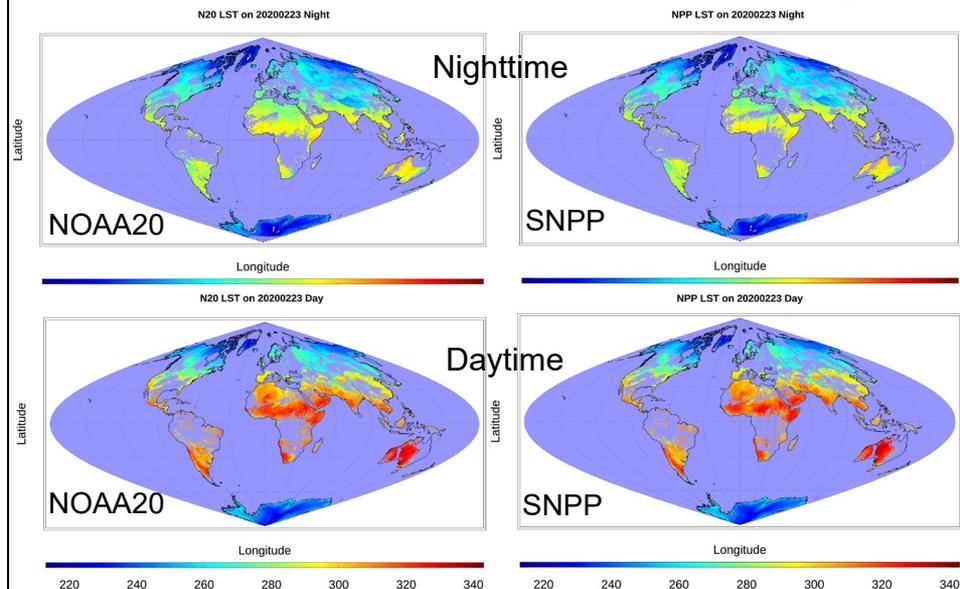
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Issues/Risks:

Schedule change due to the government shutdown

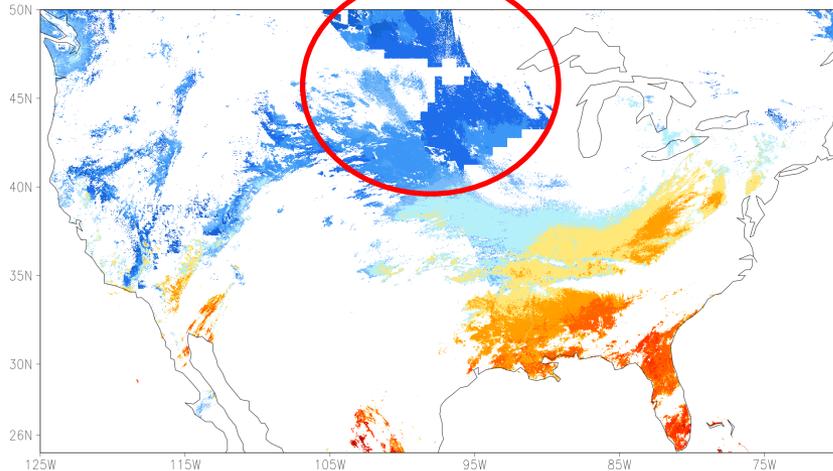
Highlights:

NDE operational L3 VIIRS LST Image



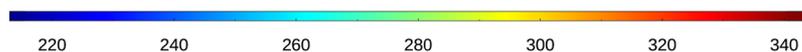
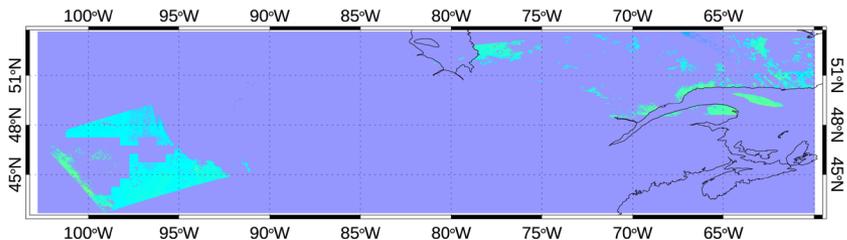
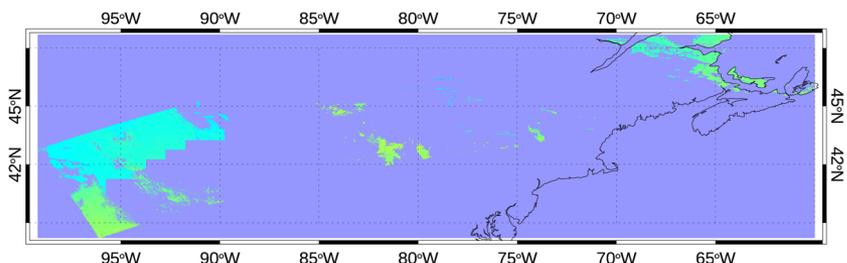
Issues found in LST product

VIIRS LST (Day) for 331 of 2019

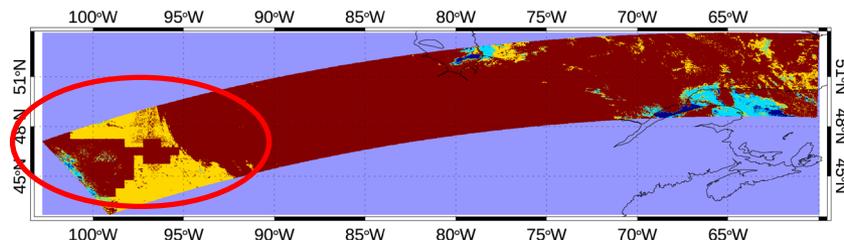
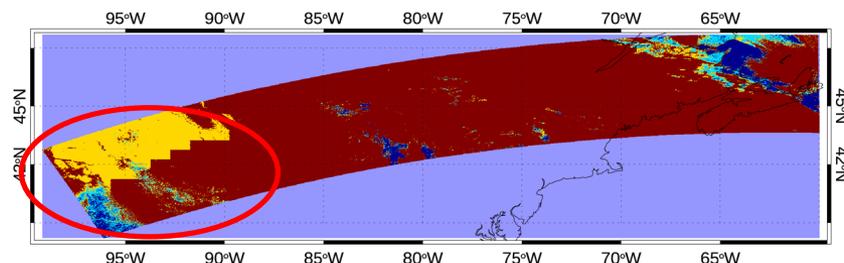


Soil moisture group reported the abnormal LST pattern as shown in red circle. We investigated the issue and found that the pattern comes from the cloud mask. We checked the recent NDE data in 2019 and found that the problem happens more or less nearly everyday after 2019274.

LST(OPS) on d20191127_t1808232_e1809474_b41887 UTC



Cloud on d20191127_t1808232_e1809474_b41887 UTC





LST Angular Correction

Three kernel approach

$$\frac{T(\theta_v, \theta_i, \Delta\phi)}{T_0} = 1 + A\phi(\theta_v) + D\varphi(\theta_v, \theta_i, \Delta\phi)$$

Emissivity kernel $\phi(\theta_v) = 1 - \cos(\theta_v)$

Solar kernel $\varphi(\theta_v, \theta_i, \Delta\phi) = \sin(\theta_v) \cos(\theta_i) \sin(\theta_i) \cos(\theta_i - \theta_v) \cos(\Delta\phi)$

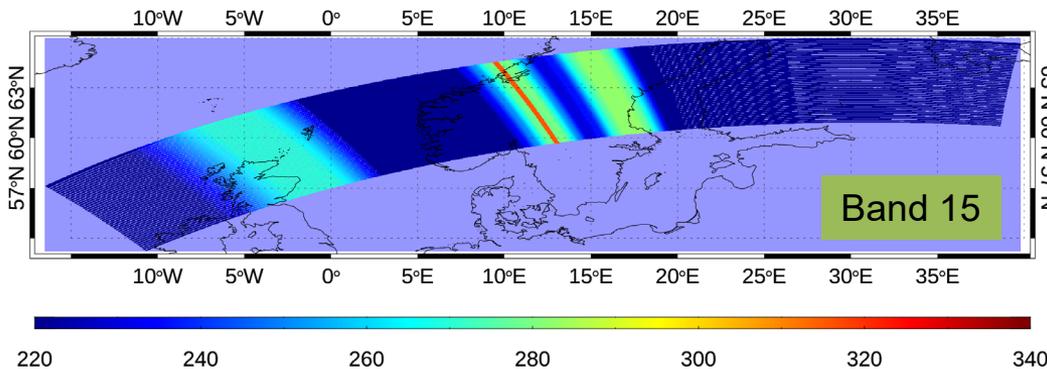
where: $T_0 = T(\theta_v=0)$ is LST in the nadir direction at $g = 0$. θ_v is satellite view zenith angle, θ_i solar zenith angle; $\Delta\phi$ - sun view relative azimuth angle

- The first term, 1, has the sense of a basic “isotropic kernel” that should be corrected by two other kernels;
- “emissivity kernel,” related to observation angle anisotropy;
- “solar kernel” related to spatial inhomogeneity of surface heating and shadowing of different parts of the land surface and its cover, it is equal to 0 at nighttime;
- A and D are coefficients. that should be estimated from observations. These coefficients depend on land topography and the land cover structure.

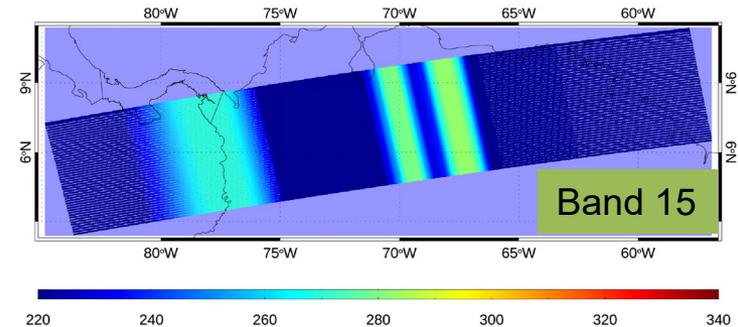
date	samples	aCoef	const	bias	rmse
20191123	2033094	-0.0053	0.0534	0	1.1731
20191124	2117829	-0.0052	0.0175	0	1.143
20191125	2121030	-0.0054	0.0676	0	1.1692
20191126	2109457	-0.0051	0.1737	0	1.1901
20191127	2162087	-0.005	0.105	0	1.1539
20191128	2161461	-0.0055	0.0578	0	1.1485
20191130	2281947	-0.0056	0.0641	0	1.1362
20191201	2180158	-0.0056	0.1719	0	1.132
20191202	2173941	-0.0057	0.1599	0	1.1293
20191203	2314932	-0.0052	0.1116	0	1.1426
20191204	2332678	-0.0052	0.1205	0	1.1852
20191205	2358636	-0.0051	0.0656	0	1.225
20191206	2339594	-0.005	0.1403	0	1.1786
20191207	2278983	-0.0049	0.1496	0	1.1623
20191208	2095040	-0.005	0.0913	0	1.1704
date	samples	dCoef	const	bias	rmse
20191123	2635938	0.0018	-0.0869	0	1.7904
20191124	2722589	0.0027	-0.1714	0	1.8043
20191125	2810649	0.002	0.1642	0	1.5607
20191126	3106414	0.0023	0.0522	0	1.8076
20191127	3106324	0.0016	0.0174	0	1.621
20191128	3207613	0.002	-0.0385	0	1.5913
20191129	3355392	0.0025	0.001	0	1.588
20191130	2560816	0.0014	0.1816	0	1.6183
20191201	2530950	0.0014	0.2556	0	1.8404
20191202	3270878	0.0022	0.0043	0	1.8916
20191203	2959082	0.0008	-0.2954	0	1.5217
20191204	3336414	0.0024	-0.0906	0	1.764
20191205	3317753	0.0019	-0.071	0	1.5188
20191206	3088772	0.0019	0.0025	0	1.5542
20191207	3112236	0.0034	0.0477	0	1.5303
20191208					1.5579

Brightness temperature Image for band 15 and band 16

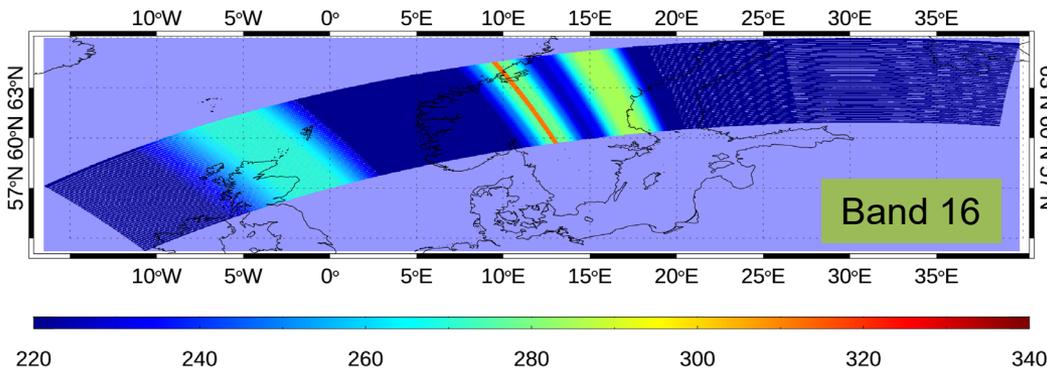
BT11 on d20170624_t1139468_e1141115_b29313 UTC



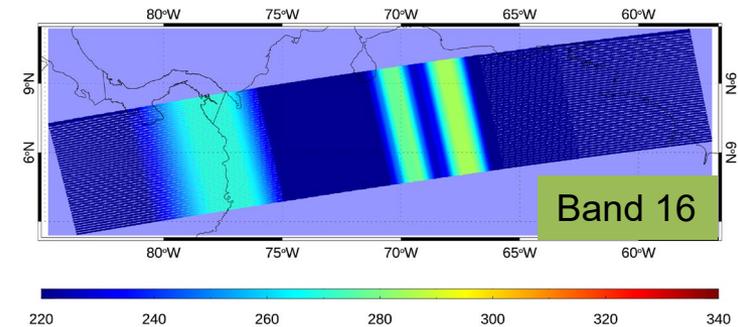
BT11 on d20170721_t1803389_e1805018_b29700 UTC



BT12 on d20170624_t1139468_e1141115_b29313 UTC



BT12 on d20170721_t1803389_e1805018_b29700 UTC



- The brightness temperature for band 15 and band 16 are not of real Earth scene, but rather artificial and laboratory scene.
- Limited value range in the test data
- The proxy SDR is not suitable for the scientific LST algorithm test but rather for the engineering test.

Accomplishments / Events:

- Tested the v1 VIIRS blended albedo algorithm at albedo-level(Slide #2)
- Launched the long-term-monitoring (LTM) site (Highlight)
- Surface albedo climatology revision (Slide #3)
- Evaluated the enterprise L3 product
- Detected some albedo discontinuity related to LUT and climatology which is in investigation
- Submitted the FY2020 proposal to CICES
- Attended the JPSS/GOES-R PGRR Summit

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			

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

Issues/Risks:

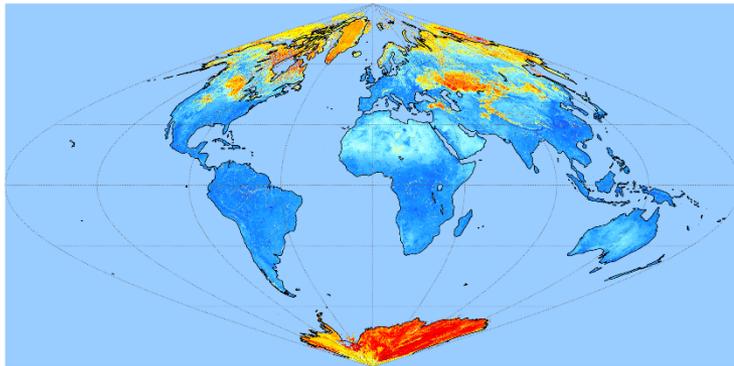
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity	Nov-19	Nov-19	11/21/19	
Validation of global gridded SURFALB product (B/P/V ?)	Sep-20	Sep-20		
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20		
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20		
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Aug-20	Aug-20		
Algorithm Updates Review	Sep-20	Sep-20		
Algorithm update DAP to ASSISTT:				
<ul style="list-style-type: none"> Improve the heterogeneity uncertainty analysis method Refining the 1-km climatology LSA 	Mar-20	Mar-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:

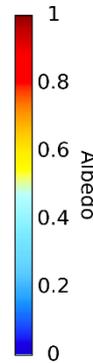
https://www.star.nesdis.noaa.gov/smcd/emb/land/jps1_lsa.php

Blended VIIRS albedo from JPSS1 and SNPP

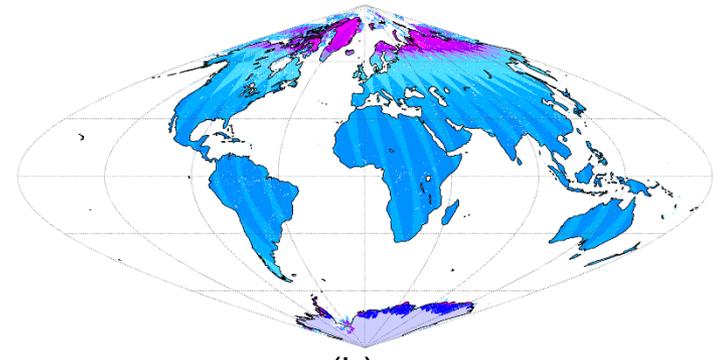
BLENDDED VIIRS Global Albedo (L3 local): Feb 21 2020



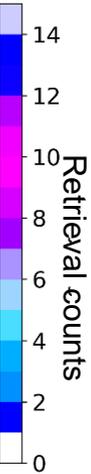
(a)



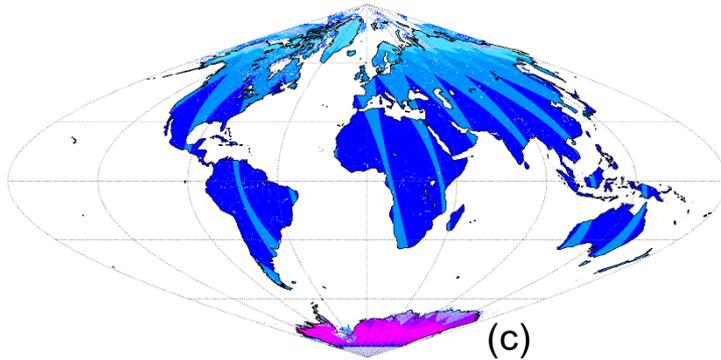
BLENDDED VIIRS Albedo Retrieval Counts: Feb 21 2020



(b)

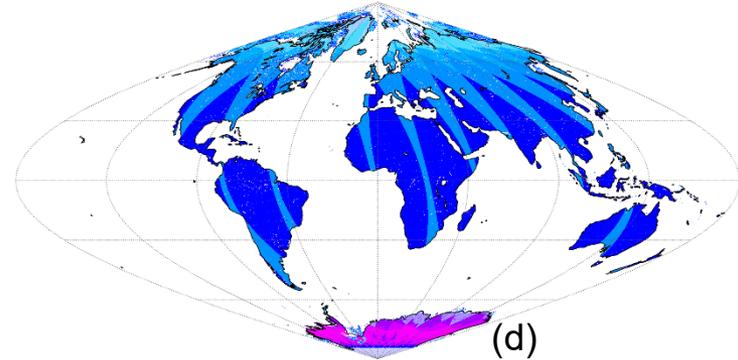


JPSS1 VIIRS Albedo Retrieval Counts: Feb 21 2020



(c)

NPP VIIRS Albedo Retrieval Counts: Feb 21 2020



(d)

If blending the JPSS1 and SNPP L2 albedo retrievals into the L3 composition algorithm, the benefits include: 1. provide more repeat observations (*figure b-d*) to reduce the outliers; 2. increase the fraction of high-quality retrievals and clear-sky albedo coverage. In this experiment, we tried to produce L3 composited albedo from both JPSS1 and SNPP (*figure a*) albedos, the result does seem more continuous than each single-satellite VIIRS albedo product.

- **Background:** The albedo climatology, which is the multiple year albedo average for each pixel, is generated from MODIS albedo product. It is used for filtering VIIRS clear sky retrieval results to get the all-sky continuous surface albedo in a year. The old version has data inconsistency issue at polar regions.
- **Summary:** After interpolating values in polar nights and smoothing, the climatology data over polar regions are improved. Data interpolation and smooth are processed pixel by pixel, and the spatial comparison between two versions makes sure the processes are stable at the regional scale.

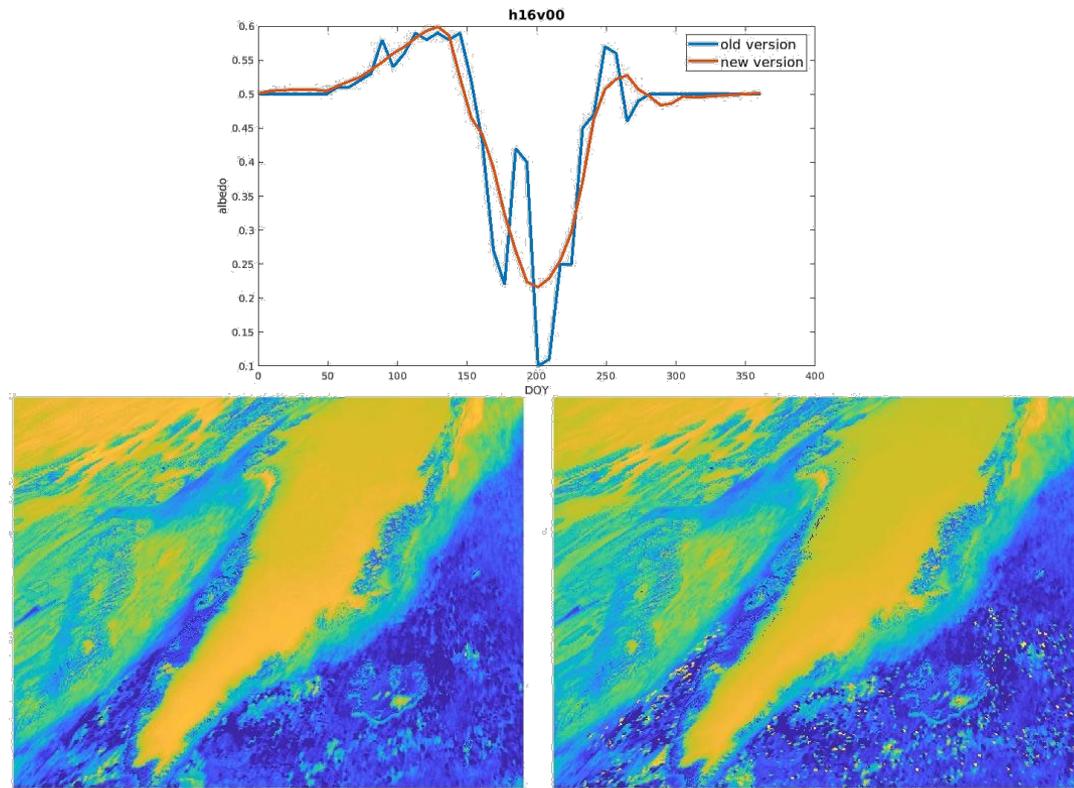


Figure. Spatial and temporal variation of the old (left) and new (right) version of albedo climatology.

Accomplishments / Events:

- Data analysis for Vegetation Index and Green Vegetation Fraction validated readiness review is in progress.
- Posters describing VI and GVF algorithm science and software implementation presented at JPSS/ GOES-R Proving Ground/ Risk Reduction Summit.

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:

See attached slides

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity	Feb-20	Mar-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		
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:				
<ul style="list-style-type: none"> ▪ 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		

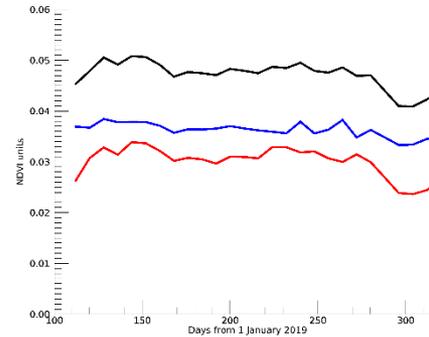
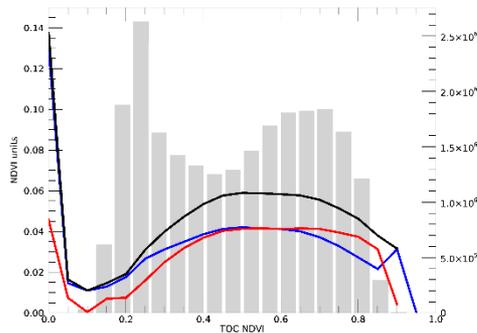
NDE vs. NASA NPP VIIRS VI (high quality pixels)

- Global NPP vegetation indices (TOC NDVI and TOC EVI) generated by NDE were compared to global vegetation indices generated at NASA using NPP VIIRS data.
- Accuracy, precision, and uncertainty were generated for the whole data set stratified by NDE VI value and for each individual weekly NASA global scene individually to generate a time series.
- Accuracy and precision were within specified values for the entire time series and for all stratifications except for high TOC EVI values, where there are few pixels.

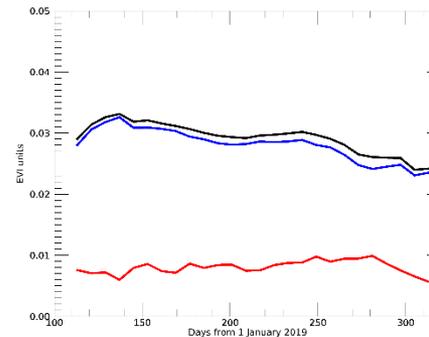
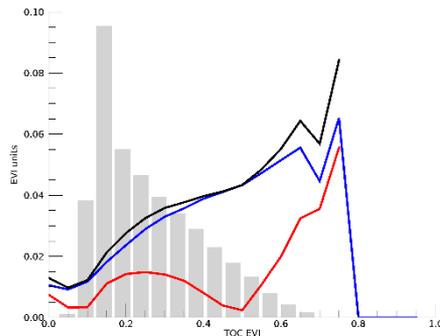
Stratified by NDE VI value

Time series

TOC NDVI



TOC EVI



Accuracy
Precision
Uncertainty

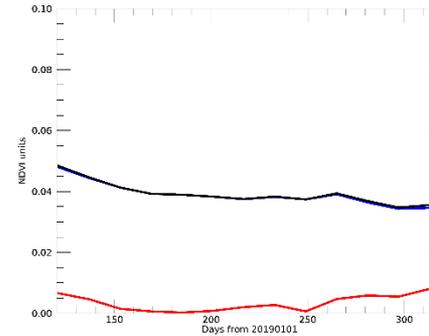
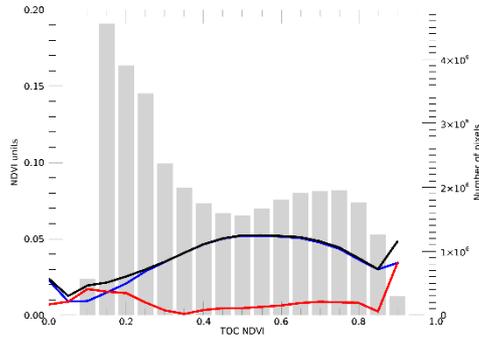
NDE NPP VI vs MODIS (high quality pixels)

- Global NPP vegetation indices (TOC NDVI and TOC EVI) generated by NDE were compared to global vegetation indices generated using MODIS data
- Accuracy, precision, and uncertainty were generated for the whole data set stratified by NDE VI value and for each individual biweekly MODIS global scene individually to generate a time series.
- Accuracy and precision were within specified values for the entire time series and for all stratifications except for high TOC EVI values, where there are few pixels.

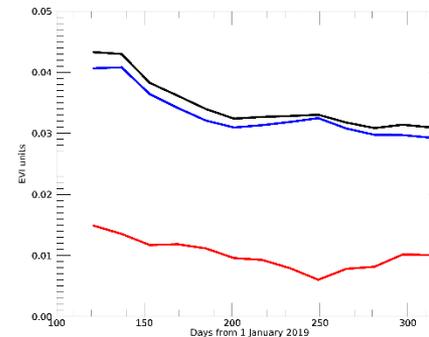
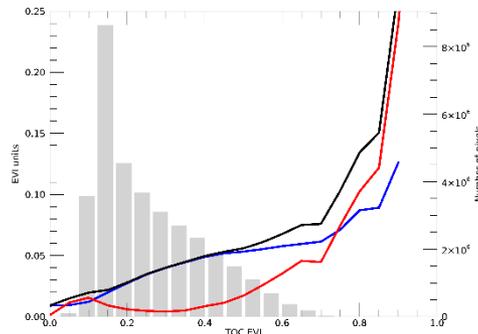
Stratified by NDE VI value

Time series

TOC NDVI



TOC EVI

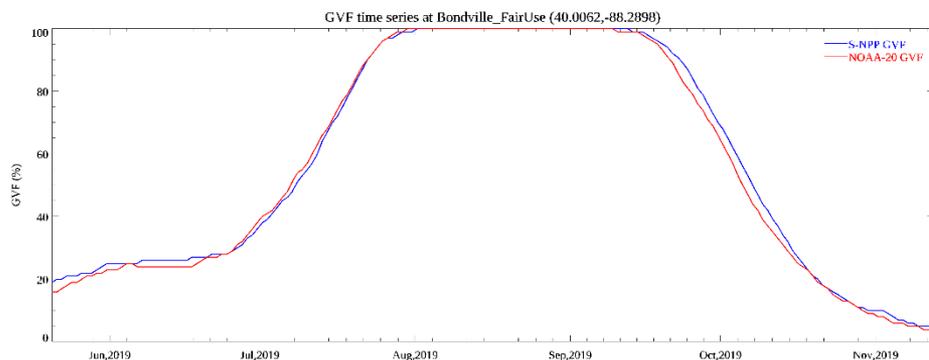


Accuracy
Precision
Uncertainty

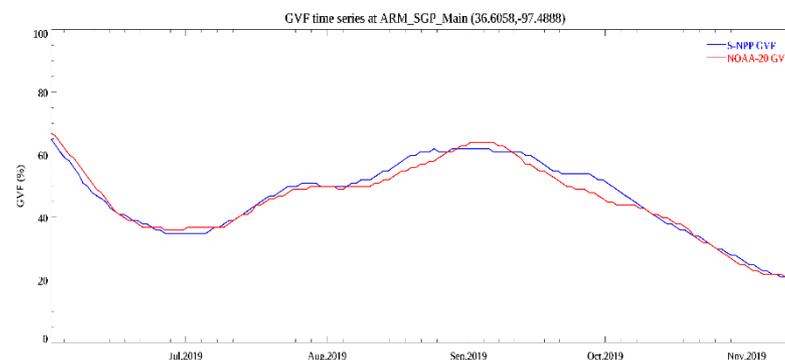
NOAA-20 and NPP GVF comparison time series

- Time series of Green Vegetation Fraction generated at NDE from NOAA20 data were compared to GVF time series generated from NPP data at individual sites.
- These time series are well correlated, with similar seasonal cycles and maximum/ minimum values.

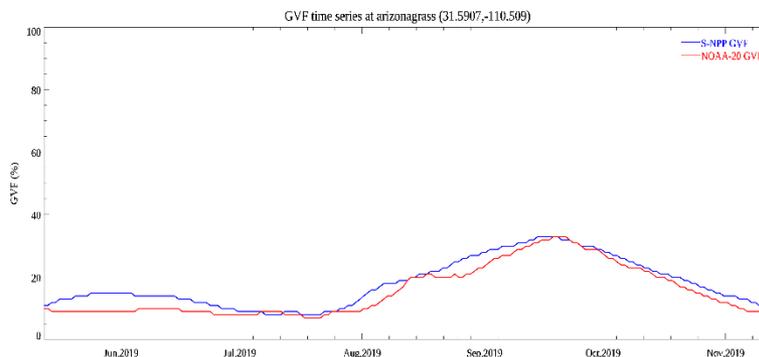
Bondville



ARM SGP Main



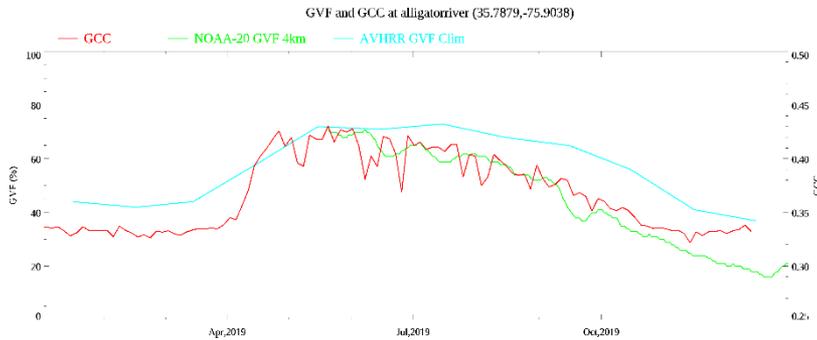
Arizona grass



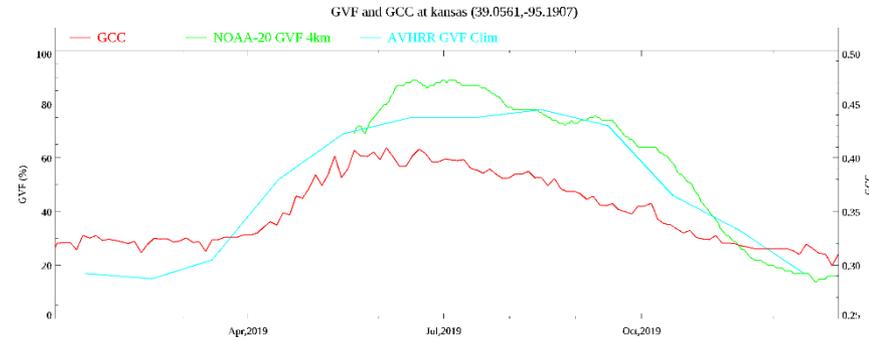
NOAA20 GVF vs. PhenoCam GCC time series

- NDE NOAA20 GVF time series at multiple sites were compared against AVHRR GVF climatology and PhenoCam Green Chromatic Coordinate.
- Seasonal cycles of NOAA20 GVF and PhenoCam GCC are similar.
- GVF and GCC are different variables, so magnitudes are not expected to be similar.

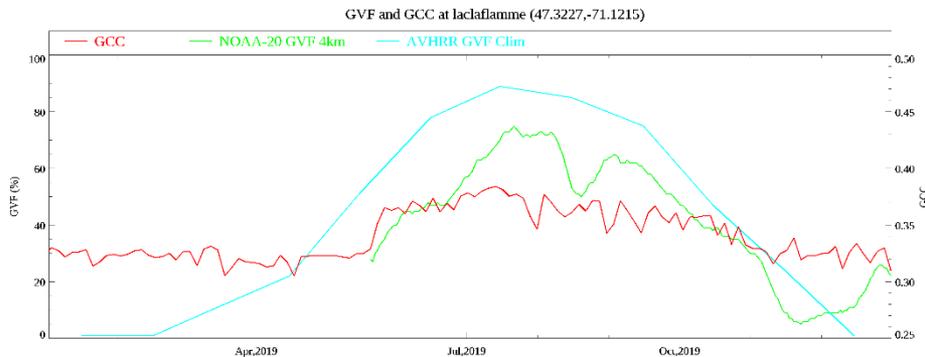
Alligator River



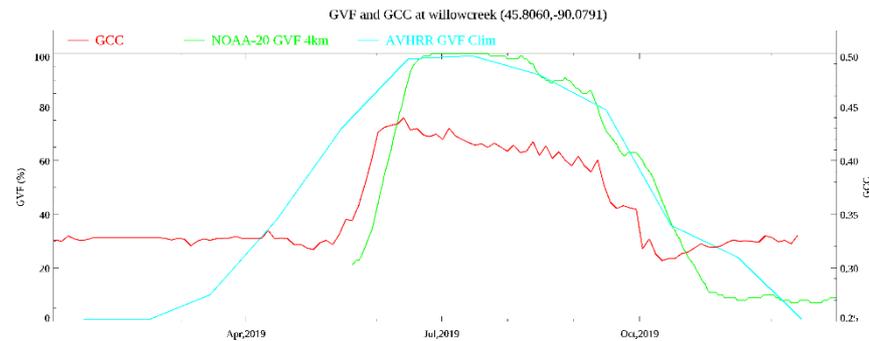
Kansas



Lac LaFlamme



Willow Creek



Accomplishments / Events:

- Improved VH webpages' contents and layout;
- The paper entitled "Near 40-year drought trend during 1981-2019 earth warming and food security", by Felix Kogan, Wei Guo, and Wenze Yang, was accepted and published in the journal Geomatics, Natural Hazards and Risk (Highlighted);
- Successfully went through JPSS2 daily DAP;
- Attended JPSS/GOSE-R Ground Prove Risk Reduction Summit, and presented our work;
- It was reported that there was some error in latitudinal coverage of winter SM and VH data, the major reason was tested and confirmed;

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: Drought Trend Paper Published

GEOMATICS, NATURAL HAZARDS AND RISK
2020, VOL. 11, NO. 1, 469-490
<https://doi.org/10.1080/19475705.2020.1730452>



OPEN ACCESS

Near 40-year drought trend during 1981-2019 earth warming and food security

Felix Kogan^a, Wei Guo^b and Wenze Yang^b

^aCenter for Satellite Applications and Research, National Oceanic and Atmospheric Administration, National Environmental Satellite Data and Information Services, College Park, USA; ^bIMSG, College Park, USA

ABSTRACT

Following the 2014 report of the International Panel on Climate Change (IPCC), Earth surface has been warming up since the mid-18th century. From the late 1970s, Earth warmed up intensively, leading to unusual environmental, economic and social events. An intensive 19th century's, Earth warming has speeded up ice melting and sea level rise, increased water shortage and drought intensity. Expected drought intensification and expansion would reduce crop production, deteriorating food security and intensifying poor population's hunger. Since climate warming is continuing, we estimate long-term interaction between global warming and high-resolution drought tendencies and its consequences for global and regional food security. This paper develops and investigates satellite-derived 38-year high-resolution drought data sets and evaluate their trends, during 1981-2018. Drought was estimated using satellite-based Vegetation Health (VH) method. The results indicated that for the entire globe, hemispheres and the main grain-producing countries (China, USA and India) drought has not intensified and expanded during 38-year, while the global temperature anomaly has strongly increased. Since drought has not intensified and expanded during strong global warming, food security in the next few years is likely to remain at the level of the most recent decade.

ARTICLE HISTORY

Received 29 December 2019
Accepted 11 February 2020

KEYWORDS

Global warming; drought trend; NOAA-AVHRR data; Vegetation Health indices

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
N20 Final DAP	Sep-20	Sep-20		Combine with init 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		
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Sep-20	Sep-20		With final N20
Algorithm Updates Review	Sep-20	Sep-20		
Algorithm update DAP to ASSISTT: ▪ Algorithm updates/improvements	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		

Accomplishments / Events:

Ocean Sciences Meeting, 16-21 Feb, San Diego

Oral presentations

- Shi and Wang, Characterization of Inherent Optical Properties (IOPs) over Global Coastal and Inland Waters from VIIRS Ocean Color Observations
- Wang, Jiang, Liu et al. Near-Real-Time Multi-Sensor Global Ocean Color Data and Applications
- Liu and Wang, VIIRS High Spatial Resolution Ocean Color Data Derived Using the Deep Convolutional Networks

Poster presentations

- Son, Wang Jiang, et al., Water Quality and Bio-optical Properties Measured from the Geostationary and Polar-Orbiting Ocean Color Sensors in the Northwestern Pacific Region
- Wei, Wang, et al., Remote sensing of shallow-water bathymetry: leveraging multispectral ocean color observations

JPSS GOES-R PGRR Summit, 24-29 Feb, NCWCP, Ocean and Coastal Initiative

- Menghua Wang, invited speaker and panel member; Posters by Son et al. and Wei et al.

Full day "splinter" Ocean Color Side Meeting, 26 Feb, ESSIC Building (agenda and talks to be linked on STAR/JPSS Meeting Page). Presentations by:

- OC Science Team members, external academic cal/val team members, OSPO, and CoastWatch.
- Paul DiGiacomo lead a Group Discussion / Q&A
- Plans discussed for upcoming field campaigns and data analyses of past campaigns

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity	Jun-20	Jun-20		
N20 Final DAP to CoastWatch	Nov-20	Nov-20		Cprbine 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		
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Aug-20	Aug-20		CoastWatch ?
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		
Complete the Sixth VIIRS ocean color dedicated cruise	Apr-20	Apr-20		
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		

Overall Status:

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

1. Project has completed.
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Issues/Risks:

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

Highlights:

Time (hr)	Duration (min)	Presenter	Title
VIIRS Ocean Color CalVal Side Meeting			
2020 STAR JPSS/GOES-R Proving Ground Risk Reduction Summit			
Wednesday, 26 February 2020			
University of Maryland ESSIC building, 5825 University Research Ct, Conference Room #4102, College Park, MD 20740			
REMOTE ACCESS:			
WEBEX - TBD Meeting number (access code): 738 440 288			
Meeting password: PhdKPTpH554			
Join meeting			
AUDIO - TBD +1-202-860-2110 United States Toll (Washington D.C.)			
+1-646-992-2010 United States Toll (New York City)			
Global call-in numbers			
Presenter			
Title			
Before 0900			
Arrive, find ESSIC #4102			
Ocean Color - OC VIIRS EDR			
0900-1030			
900	5	Wang, Menghua	Opening remarks, welcome
905	20	Wang, Menghua	MSL12 updates and Ocean Color EDR Team activities
925	15	Mikkelsen, Karlis	New products on OCView (or another title/topic)
940	15	Wei, JianWei	Remote sensing of shallow water bathymetry
955	10	Cheng, Zhaohui	Operational (near real-time) OC update
1005	10	Lance, V.	Update - Ocean Color at CoastWatch
1015-1030			BREAK (15 min)
1030-1145			Ocean Color - VIIRS EDR Cal/Val PI reports, part I
1030	15	Voss, Ken (U. Miami)	PI's should include status of publications related to VIIRS cruises
1045	15	Ondruszek, Mike (NOAA/STAR)	Update on MOBY-Refresh and MOBY products
1100	15	Ladner, Sherwin (Stennis)	Cruise(1) Overview and Optical in situ Validation
1115	15	Gilerson, Alex (CCNY)	WavCIS (CSI06) Maintenance and Issue Timeline and Evaluation of NOAA VIIRS performance.
1130	15	Hu, Chuanmin (USF)	CCNY VIIRS validations at the Long Island Sound Coastal Observatory (LISCO) and on cruises
1145 to 1315			Evaluation of VIIRS performance in coastal waters and in its capacity to detect dark water and harmful algal blooms
1315 - 1445			LUNCH (90 min) On your own
1315	15	Lee, ZhongPing (UMB)	PI's should include status of publications related to VIIRS cruises
1330	15	Tufillaro, Nick (OSU); /Ragan, Matthew (USC)	Consistent VIIRS AOP and IOP products and Application of IOPs products
1345	15	Johnson, Carol (NIST)	Validation of VIIRS ocean color products for the US West Coast
1400	15	Goes, Joaquim (LDEO)	NIST update
1415-1430			BREAK (15 min)
1430 - 1510			Ocean Color and Ocean Remote Sensing at NOAA
1430	10	DiGiacomo, Paul	Remarks
		Discussion: DiGiacomo, Paul and Wang,	
1440	30	Menghua and Group	Group Discussion, Q&A
1510-1700			Ocean Color - OC VIIRS in situ program
1510	25	Facilitator: Ondruszek, M. (NOAA/STAR)	Group: data workshop/future cruise planning/publications status
1700			ADJOURN

Accomplishments / Events:

- Development of L3S (gridded super-collated) products underway
- 4 lines of L3S products are being developed: afternoon JPSS VIIRS (NPP/N20) and mid-morning Metop AVHRR FRAC (MA/B/C) ("PM" & "AM", respectively), separately for Night & Day
- Experimental production of PM and AM L3Ss in STAR commenced in Jan 2020 and was presented at the JPSS/GOES-R Proving Ground Summit in College Park, 24-28 Feb 2020. Users from Fisheries & NOS requested the product.
- We figuring out how to produce the L3S's operationally. VIIRS "PM" line is NDE and appears more straightforward. The AVHRR FRAC "AM" are processed at OSPO, from Metop-A and -B only. Metop-C will go into the yet non-existent cloud.

Overall Status:

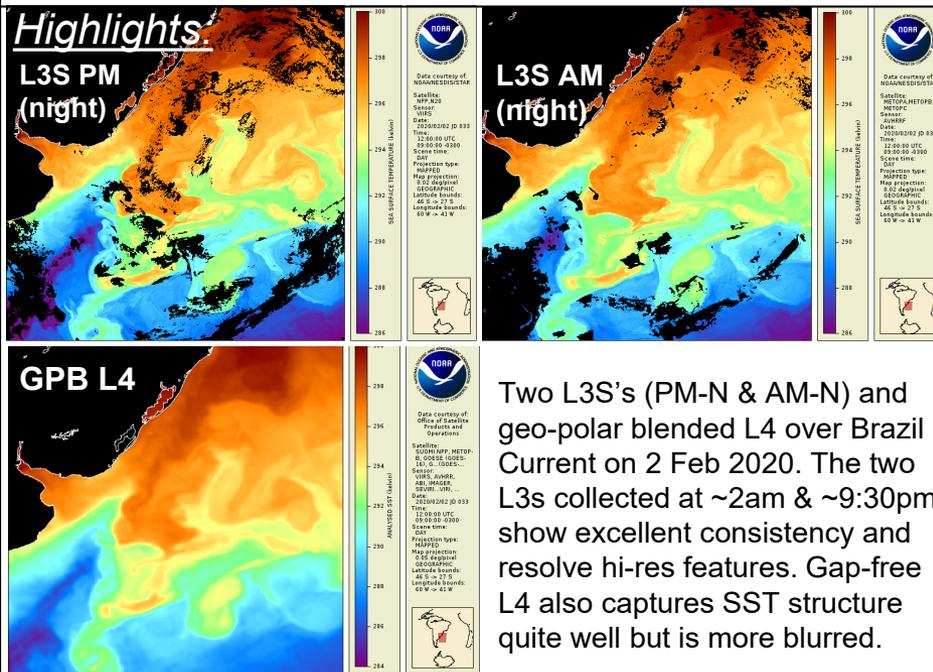
	Green ¹ (Completed)	Blue ² (On-Schedule)	Yellow ³ (Caution)	Red ⁴ (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Updated DAP (ACSP0 2.80, implement thermal fronts, improvements to support data fusion, J2 readiness)	Sep-20	Sep-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 to NDE (include NPP/N20 updates)	Sep-20	Sep-20		ACSP0 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		



Accomplishments / Events:

- The JPSS Tandem wind product (S-NPP plus NOAA-20) expands coverage over the Northern and Southern Hemispheres (see figure).

Overall Status:

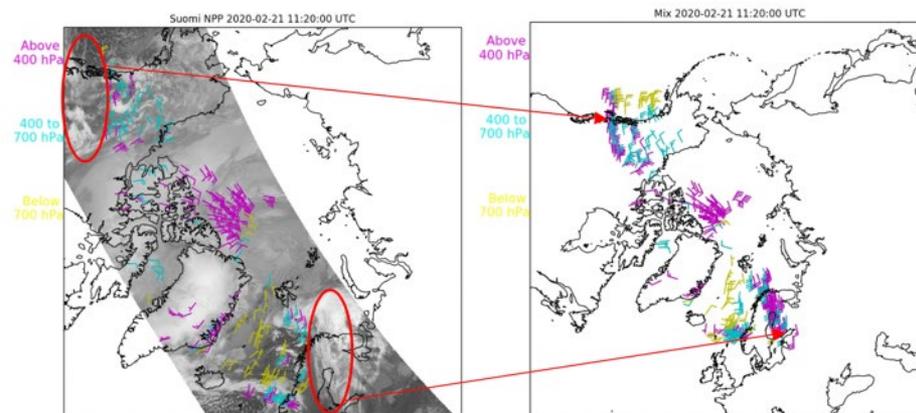
	Green ¹ (Completed)	Blue ² (On-Schedule)	Yellow ³ (Caution)	Red ⁴ (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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

Issues/Risks:

None

Highlights:



The NOAA-20/S-NPP tandem winds expand coverage to lower latitudes.

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		
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Aug-20	Aug-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		

Accomplishments / Events

- Continued preparations for the upcoming S-NPP/NOAA-20 CH4 validated maturity S-NPP/NOAA-20 CO2 provisional reviews, and addressing action items identified in the last validated maturity review. Some of the algorithm optimizations included, (1) implementing updated MW-only climatology to improve MW-only retrievals over polar regions, (2) implementation of super-saturation flag as part of QA for improved temperature and water vapor retrievals, (3) CH4 quality flags, channel selection for CO2, and recent CO2 a-priori updates.
- Progressed towards NUCAPS implementation for MetOp-C, (a) SARTA wrapper Implementation at STAR for MetOp-C, collection of Focus day data sets for tuning and regression, and code updates related to all-sky and clear regression and tuning LUT development.
- Successfully presented user validation results for S-NPP CrIS SDR Side-2 validated Review held on February 6, 2020. The evaluation revealed that S-NPP global maps show spatial consistency as well as error consistency with the NOAA-20 EDR products.
- Initial results of new CO2 a-priori implementation showed expected positive changes in the CO2 retrieval. Favorably, the a-priori implementation did not affect any of the other retrieval products such as the Temperature 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			

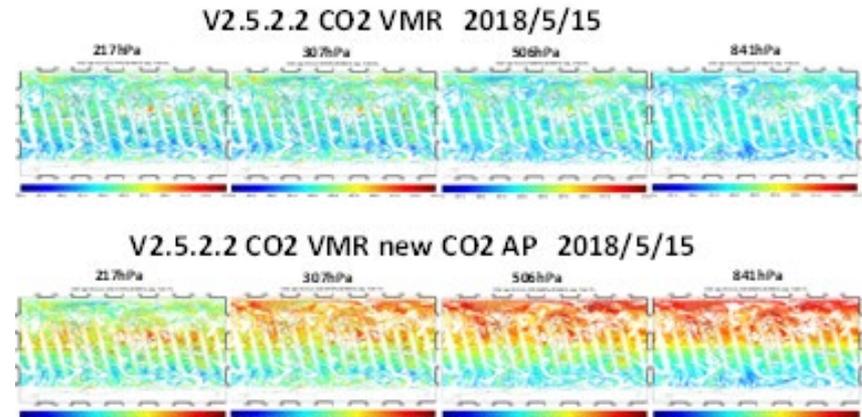
- Project has completed.
- Project is within budget, scope and on schedule.
- Project has deviated slightly from the plan but should recover.
- Project has fallen significantly behind schedule, and/or significantly over budget.

Issues/Risks:

Metop C NUCAPS delivery has been postponed to FY2020, TBD.

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity: CH4 (S-NPP & NOAA-20)	Feb-20	Mar-20		Combine F/M
Provisional Maturity: CO2 (S-NPP & NOAA-20)	Feb-20	Mar-20		Combine F/M
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 to NDE (include NPP/N20 updates)	Aug-20	Aug-20		
Algorithm Updates Review	Sep-20	Sep-20		
Algorithm update DAP to ASSISTT:				
<ul style="list-style-type: none"> Optimization of CO related look up tables Improve NOAA-20 CH4/CO2 algorithms J2 HEAP algorithm 	Jun-20	Jun-20		
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



NUCAPS off-line retrieval before (top) and after (bottom) implementing the new CO2 a-priori. The new CO2 a-priori showed expected positive results. Verification of these results with truth data sets is in progress. Implementation of CO2 a-priori did not affect any of the other retrieval products

Accomplishments / Events:

- Completed annual N20 products performance report. All official products validated show no change in performance compared with one year earlier (Validation slides are included in separate attachment).
- Worked on software extension in MiRS for JPSS-2 processing. To facilitate this a data converter was also written in IDL that takes Level 1 ATMS data from NOAA-20 (GATM, SATM, TATM files) and creates JPSS-2 proxy data files by converting metadata in each file to that for JPSS-2. This permits doing one-to-one comparisons of MiRS retrievals from NOAA-20 to those from the proxy JPSS-2 (NOAA-21) data. Preliminary results indicate that the extension is working properly and JPSS-2 retrievals are identical to NOAA-20. See highlights.

Overall Status:

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

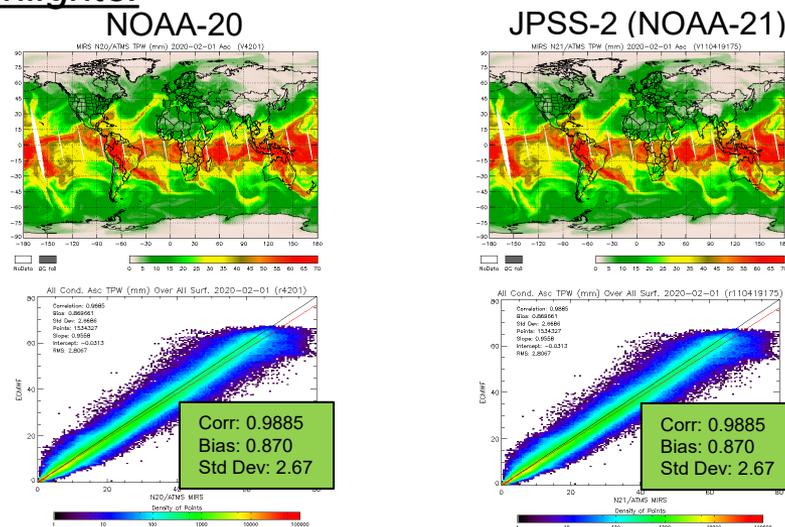
- Project has completed.
- Project is within budget, scope and on schedule.
- Project has deviated slightly from the plan but should recover.
- Project has fallen significantly behind schedule, and/or significantly over budget.

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		
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:				
<ul style="list-style-type: none"> Optimize MiRS for NOAA-20 and SNPP SFR integration; Algorithm test and verification 	Jul-20	Jul-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:



Comparison of MiRS global TPW retrievals from NOAA-20 (left) and proxy JPSS-2 (NOAA-21) data (right). Figures show identical results as difference statistics with ECMWF analysis are exactly the same (bottom).

Accomplishments / Events:

- A new Snowfall Rate (SFR) processing system has been built and delivered to the STAR MiRS team for integration. It is a much more advanced system compared to the operational version currently in use: i) it is a unified ATMS and MHS processing system whereas the existing setup requires separate systems for different sensors; ii) advanced design allows much more efficient system maintenance and update; iii) the package includes Metop-C SFR delivery; iv) the SFR algorithms have been updated with new bias correction for all five satellites: NOAA-20, S-NPP, NOAA-19, Metop-A, and Metop-B. The update significantly improves the quality of the SFR product. The revamped system is the result of several months of development effort and a major milestone for the SFR team.
- A side meeting was held with several Alaska users during the JPSS/GOES-R PGRR Summit. In addition, a poster was presented at the Summit about the recent enhancement to the JPSS SFR 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			

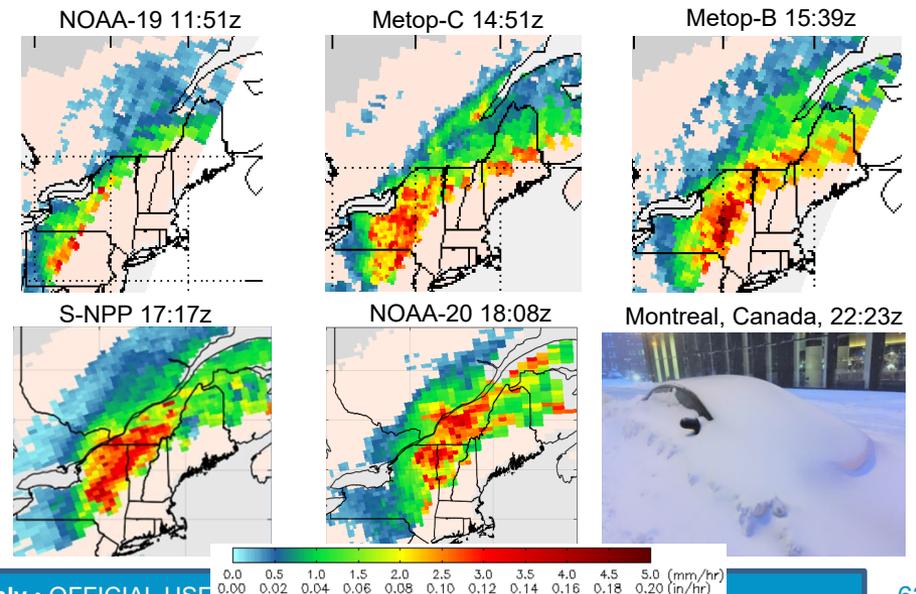
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2. Project is within budget, scope and on schedule.
3. Project has deviated slightly from the plan but should recover.
4. Project has fallen significantly behind schedule, and/or significantly over budget.

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		
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20		
Deliver updated SFR package to MiRS team	Jun-20	Jun-20		
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20		
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Sep-20	Sep-20		
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 from February 7, 2020



Accomplishments / Events:

Developing and testing V8Pro table and code adjustments for higher fidelity bandpass models.

Revising soft calibration for new V8Pro results.

Prepared Operational Briefing for NOAA-20 V8Pro.

Developing a V8TOz enterprise package for GSICS comparisons and GOME-2 Cloud application.

Participated in Atmospheric Composition Summit.

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:

Code Changes for OMPS V8Pro EDR on path to maturity will not be implemented at NDE until April 2020.

Korea Launches GEMS instrument to measure atmospheric composition from Geostationary Orbit



Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity: V8Pro	Jan-20	Apr-20		Bandpass differences
Limb SDR and EDR to operations	Feb-20	Apr-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		
Initial J2 ready DAP to NDE (include NPP/N20 updates)	Aug-20	Aug-20		
Algorithm Updates Review	Sep-20	Sep-20		
RT Tables with Wavelengths, Bandpasses	Mar-20	Mar-20		
V8TOz with Cloud top optical centroid algorithm	Aug-20	Aug-20		With Aug-20 DAP
Annual algorithms / products performance report	Feb-20	Feb-20	Feb-20	
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Jun-20		
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20		

Accomplishments / Events:

- Activities continue with NESDIS IA and JPSS to discuss AMSR3 and AMSR2 progress/plans
- Continued product cal/val; all products meeting requirements
- Several presentations/posters highlighting GCOM products presented at the JPSS/GOES Summit.
- Portions of GCOM system under consideration for EPS-SG MWI

Overall Status:

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

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

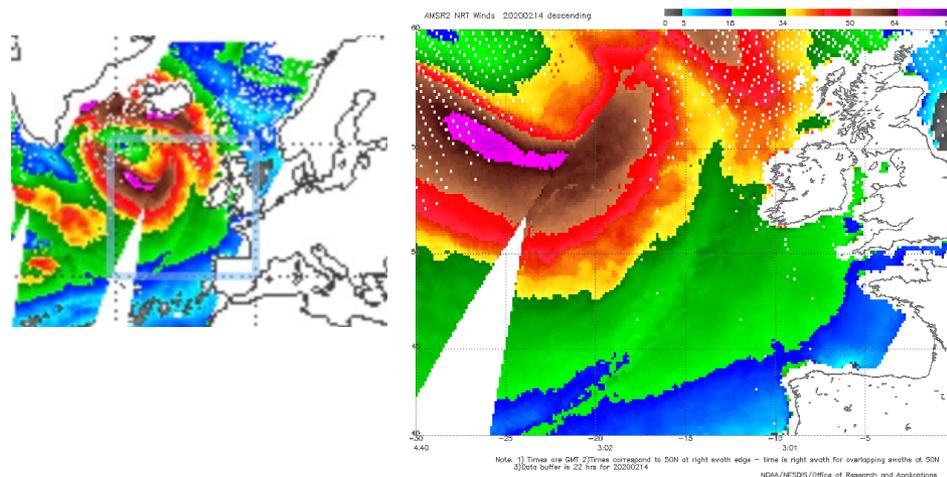
None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Annual report on AMSR2 algorithms and data products performance	Feb-20	Feb-20	Feb-20	
Algorithm Cal/Val	Sep-20	Sep-20		
Algorithm improvement/bug fix	Sep-20	Sep-20		
Deliver updated algorithm DAP to NDE	Sep-20	Sep-20		
Long-term monitoring tool/website development/improvement	Sep-20	Sep-20		
Complete reprocessing of entire mission dataset of AMSR2	Sep-20	Sep-20	Dec-19	

Winter Storm Dennis (February 14, 2020)

Highlights:

AMSR2 wind speeds from winter storm Dennis that wreaked havoc throughout the UK and northern Europe. The Ocean Winds flight experiment was underway at this time and a variety of microwave remote sensing equipment was flown into Dennis aboard the NOAA P-3 aircraft.



Accomplishments / Events:

- Continued routine compilation of NPROVS collocation datasets, approximately 30,000 individual comparisons per day
- Processed collocation datasets from the ongoing ARM / GRUAN /JPSS Radiosonde Inter-comparison VALidation (RIVAL) campaign.
- Still waiting FY20 funds for JPSS / ARM Special radiosonde program, field shortage persist; funds for FY20 AEROSE radiosondes received.
- Provided assessment of NUCAPS soundings including at NPP Side-B Maturity Review and Australia Brush Fire campaigns (**Highlight**)
- Provided draft report on NUCAPS sounding case study during recent (historical) Southern Hemisphere Sudden Stratospheric Warming.
- The EDR LTM team has begun producing the VIIRS NDE Aerosol Optical Depth (AOD) and Smoke/Dust Detection products in near real-time on JSTAR Mapper for NPP and NOAA-20 (**Highlight**)

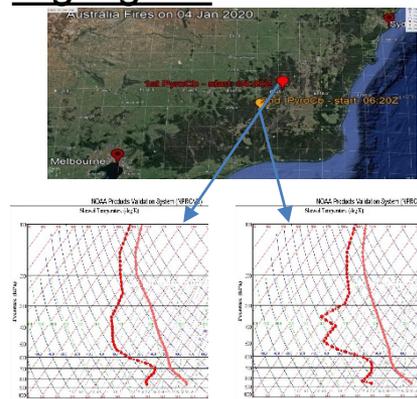
Overall Status:

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

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

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
LTM				
Maintain / expand existing EDR LTM web pages and mappers and provide monthly reports	Sep-20	Sep-20		
NPROVS				
Provide COSMIC (C2) geophysical profiles (T, H2O) assessment	June 20	June 20		
Provide NPROVS User Guide final / approved document [Q4] and updated NPROVS Publication approved draft for submission [Q4]	Sept 20	Sept-20		
Facilitate and provide assessment report supporting R2O transition of NUCAPS for MetOp-C (Q3).	June 20	June 20		

Highlights:



NUCAPS SNPP temperature and moisture profiles (lower) at “Pyro” targets on January 4, 2020 in southeastern Australia (upper) show vertical structure conducive to convection and fire intensification;

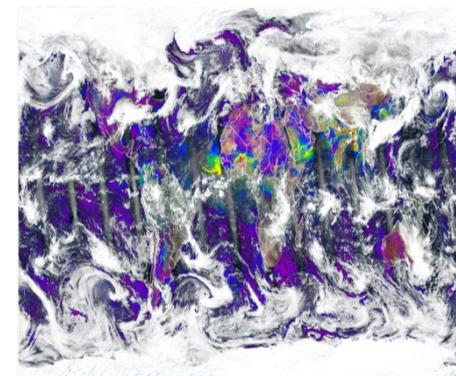


Image of VIIRS NDE Aerial Optical Depth (AOD) from SNPP on March 4, 2020; image products are available in near real time for SNPP and NOAA-20