AMP/STAR FY20 TTA

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February 11, 2020

Highlights from the Science Teams

Suomi NPP and NOAA-20 Product Anomaly Investigation and Resolution

A major product anomaly occurred for both Suomi NPP and NOAA-20 starting on Jan 16, due to erroneous solar vectors generated in the operational data processing system. This anomaly significantly degraded all products that use the solar zenith angle, including the VIIRS reflective solar band, the Day/Night Band, the OMPS environmental products, and the shortwave infrared channels of the CrIS. After an extensive investigation, STAR scientists identified the root cause - a critical error in the JPL Planetary Ephemeris lookup table in the Common GEO module of the operational data processing system. A corrected lookup table has been generated and tested by STAR scientists, and delivered to the JPSS operations for further testing and implementation. This issue was resolved in the operational data stream once the new lookup table went into operations.

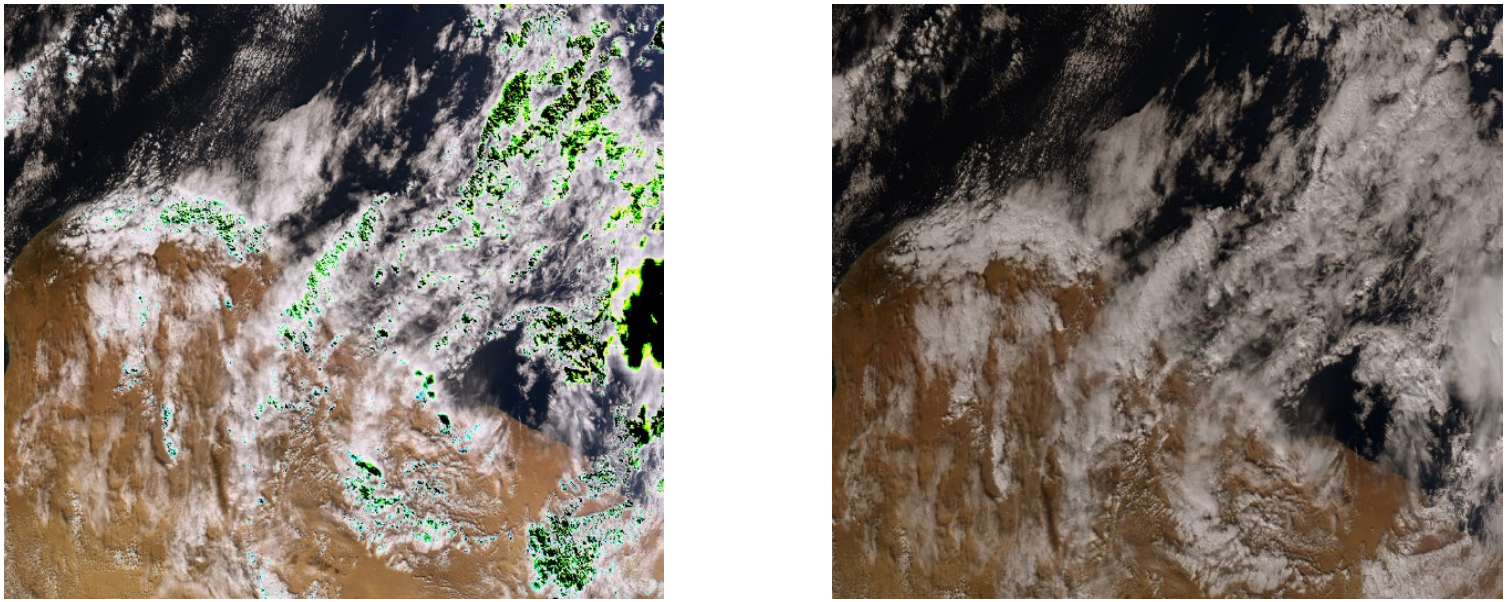


Figure. VIIRS true color imagery from during (left) and after (right) the anomoly

Highlights from the Science Teams

NUCAPS Team Preparing for AEROSE Validation Campaign 21 February – 11 March 2020

The NUCAPS Team is preparing for the upcoming AEROSE Cal/Val Campaign “Inter-hemispheric Atlantic Transit cruise from Barbados to Cape Town, 21 February to 11 March 2020” for NUCAPS validations using Dedicated Vaisala radiosondes, ozonesondes and Marine Atmospheric Emitted Radiance Interferometer (MAERI) data.

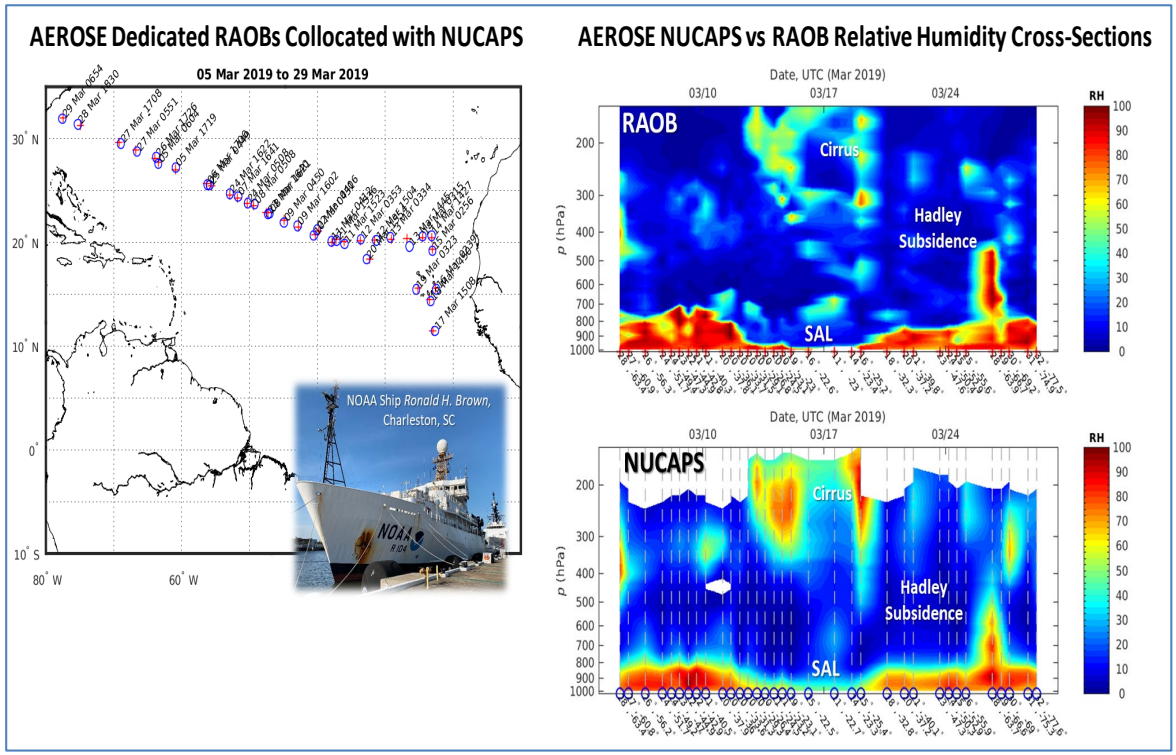


Figure. NUCAPS products perform very well based upon comparisons with dedicated RAOBs: In the figures on the right, both clearly capture the dry layers over the tropical Atlantic associated with the Saharan Air Layer (SAL) during last years fruitful AEROSE validation campaign. The figure on the left shows the location of the NOAA Ship track and numerous RAOBS collected.

Accomplishments

- Delivery Algorithm Packages (DAPs) - Mission Unique Products:

  Jan 16-17, 2020: JSTAR teams identified the root cause of a major product anomaly that occurred for both Suomi NPP and NOAA-20 starting 1/16/2020 0:00 UTC due to erroneous solar vectors: an error in the JPL Planetary Ephemeris table in the Common GEO module; a corrected table was generated, tested offline, and delivered to the IDPS operations

  1/31/2020: VIIRS SDR team provided a set of simulated JPSS-2 VIIRS SDR granules acquired during the pre-launch testing in environmental conditions expected on orbit to JSTAR EDR teams & ASSISTT team for potential J2 algorithm adjustment/testing

  1/29/2020: The Operational Implementation of the CrIS Polarization Correction (Mx8 TTO)

- DAPs - Enterprise Products:

  Complete SST records from NPP and N20, in two formats (L2P, swath projection; and L3U, 0.02º equal-grid uncollated), going back to 1 Feb 2012, and 5 Jan 2018, respectively have been generated at STAR and transitioned to PO.DAAC

  VIIRS Global Annual Surface Type AST-2018 is now ready for users to download from STAR FTP site (https://www.star.nesdis.noaa.gov/jpss/)

- January/February 2020 Calibration/Validation Maturity Review (2/6/2020):

  Active Fires Validated Maturity Review (M-Band & I-Band)

  SNPP/CrIS SDR Side-2 Validated Maturity Review

- IDPS Builds Checkouts:

  STAR submitted Block 2.2 Mx0 SOL deploy regression review/checkout data request on 1/22//2020

Accomplishments – JPSS Cal Val Supports

- NOAA-20/S-NPP Operational Calibration Support:
  - S-NPP Weekly OMPS TC/NP Dark Table Updates: 01/07/20, 01/14/20, 01/22/20, 01/28/20
  - NOAA-20 Weekly OMPS TC/NP Dark Table Updates: 01/07/20, 01/14/20, 01/22/20, 01/28/20
  - S-NPP Bi-Weekly OMPS NP Wavelength & Solar Flux Update: 01/14/20, 01/28/20
  - NOAA-20 Bi-Weekly OMPS NP Wavelength & Solar Flux Update: 01/07/20, 01/22/20
  - S-NPP Monthly VIIRS StrayLight LUTs Update: 01/07/20 (Jan), 01/29/20 (Feb)
  - S-NPP Monthly VIIRS LUT Update of DNB Offsets and Gains: 01/07/20 (Jan), 01/28/20 (Feb)
  - NOAA-20 Monthly VIIRS LUT Update of DNB Offsets and Gains: 01/07/20 (Jan), 01/28/20 (Feb)

Upcoming Cal/Val Maturity Reviews

- March, 2020 Maturity Review:
  - Provisional Maturity:
    NUCAPS CO_2 product (S-NPP & NOAA-20)
  - Full Validated Maturity:
    NUCAPS CH_4 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 CO_2 product (S-NPP & NOAA-20)

Upcoming Milestones/Deliveries

- 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:

- Mar-20: I-band Active Fires
- Sep-20: Initial J2-ready EDR DAPs (include NPP/N20 updates, all EDRs)
- Sep-20: Vegetation Health – N20 Final DAP
- Nov-20: Ocean Color – N20 Final DAP

FY20 STAR JPSS Milestones

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Algorithm Updates DAPs				
OMPS DAP: Remove VIIRS SnowIce and QST tile dependency (ADR8550)	Oct-19	Oct-19	10/28/19	
OMPS: J2 pre-launch sensor characterization report	Dec-19	Feb-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	Aug-20		
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		NDE Schedule
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		

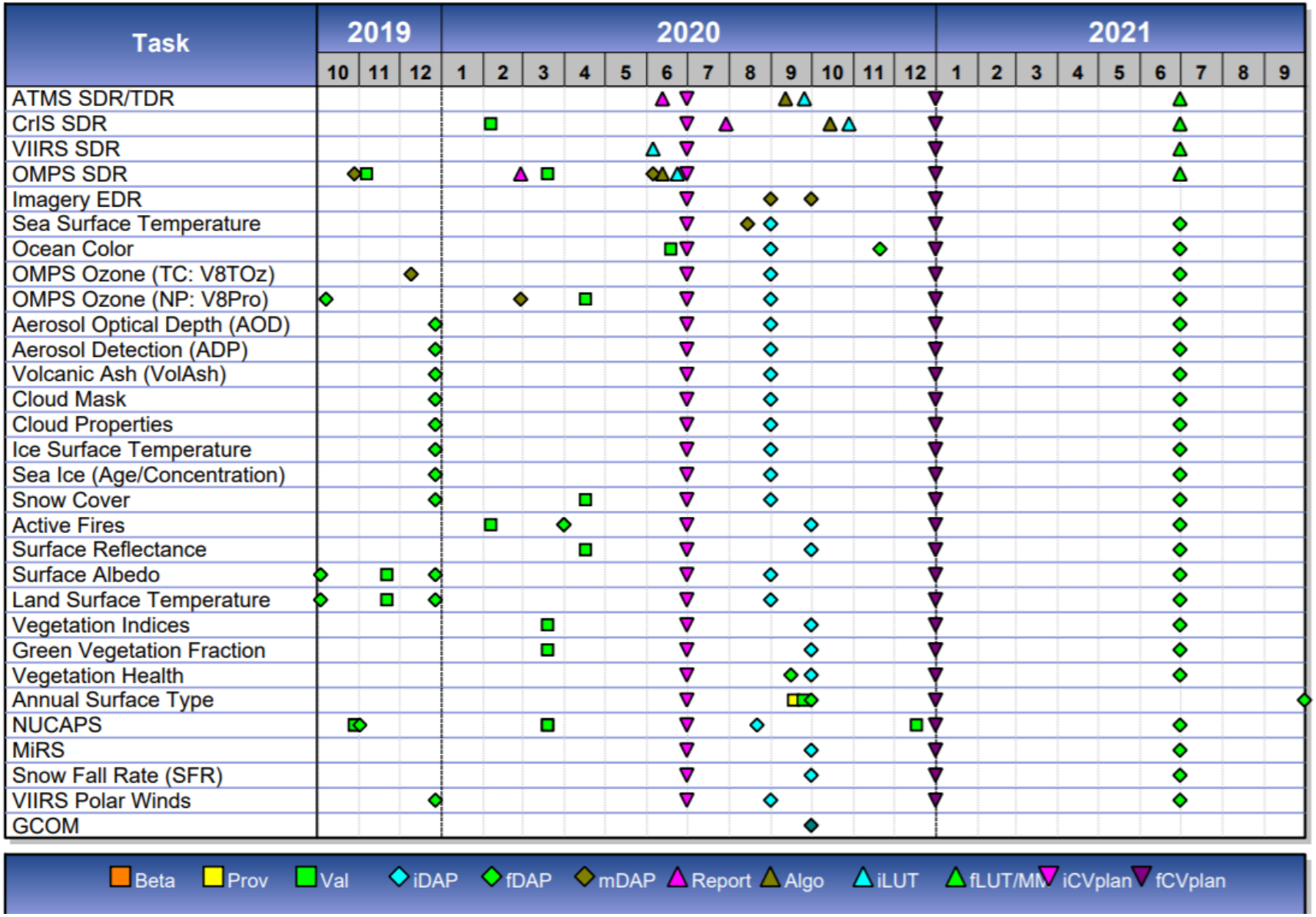
FY20 STAR JPSS Milestones

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		Alg. Refinements
N20 OMPS NP EDR (V8Pro) Full Validated Maturity	Jan-20	Apr-20		Alg. Refinements
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	
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	
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)	Re-use LUT after 12 months. The 12th NPP LUT will be Apr-20
NOAA-20: Weekly OMPS TC/NP Dark Table Updates	Weekly	Weekly	10/01/19, 10/08/19, 10/16/19, 10/22/19, 10/29/19, 11/05/19, 11/13/19, 11/19/19, 11/26/19, 12/03/19, 12/11/19, 12/17/19, 12/30/19, 01/07/20, 01/14/20, 01/22/20, 01/28/20	
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	
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 12th N20 LUT will be Dec-19
Monthly quad-chart report (all SDR/EDR products)	Monthly	Monthly	10/31/19, 11/30/19, 12/31/19, 01/31/20	
IDPS Mx build SOL and I&T deploy regression verfication review (bl2.1-Mx8/bl2.2-Mx0/1)	Nov-19 Mar-20 Jun-20	Nov-19 Mar-20 Jun-20	Mx8 I&T report: 11/13/19	
IDPS Cloud Implementation Verification (Based on Nov 2020 TTO)	Sep-20	Sep-20		

STAR JPSS Schedule



Color code:

Green: **Completed Milestones**

Gray: **Non-FY20 Milestones**

ATMS SDR

January, 2020

Accomplishments / Events:

- Kept analyzing JPSS-2 ATMS TVAC data and discussed the potential improvements in JPSS-3 ATMS TVAC testing procedure
- Prepared comprehensive JPSS-2 ATMS TVAC data analysis results report
- Generated ATMS 5.2/2.2 degree to 1.1 degree footpring size resampling coefficients and produced sample TDR/SDR data in order to explore the potential application improvement in hurricane product retrieval near scan edge
- Kept testing lunar intrusion correction algorithm to fix correction error in operational mode

Overall Status:

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

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

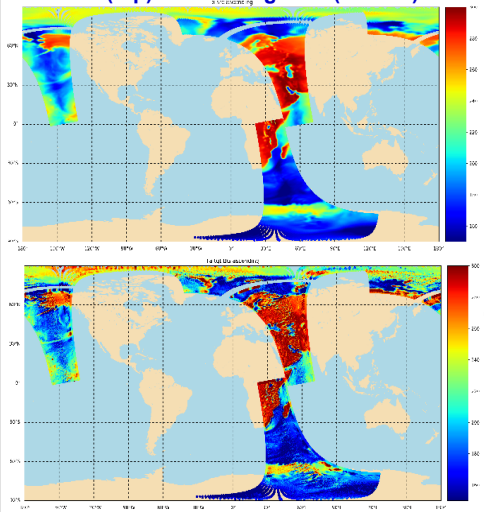
Issues/Risks:

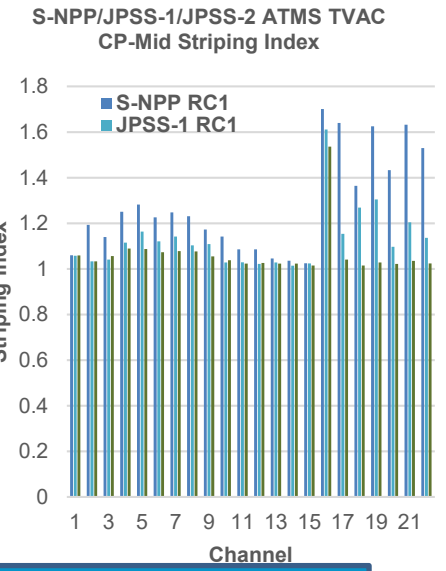
None

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		
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		

Highlights:

ATMS Channel 1 Resampling Comparison between original 5.2 deg data (top) and 1.1 deg data (bottom)





CrIS SDR

January, 2020

Accomplishments / Events:

- The S-NPP CrIS SDR Side-2 Validated Maturity Level Review has been scheduled for February 6, 2020. The major objective of the review is to demonstrate that the CrIS SDR Product meets the JPSS specification over a large and wide range of representative conditions after the side switch performed during June 2019.
- The Operational Implementation of the CrIS Polarization Correction was scheduler on January 29, 2020 at 1200 UTC. The impact on average is ~0.05 K, ~0.1 K, and ~0.2 K for CrIS three bands, Longwave, Midwave, and Shortwave respectively. **Figure (1)** shows the actual impact on CrIS channels assimilated at NCEP and ECMWF.
- The Operational CrIS SDR data processing was impacted by a duplicated record in the JPL Planetary Ephemeris LUT in the Common GEO module of IDPS/ADL. A new version of the LUT was implemented on Jan 17, 2020. The impact is shown in **Figure (2).**
- Progress is made in the mitigation effort for the possible failure of the J2/CrIS neon lamp late in the mission. Calculation of the laser wavelength would be derived from the laser diode temperature. A correction in the laser diode temperature is being applied.
- The J2/CrIS TVAC testing is in progress and expected to be completed in February 2020. Harris reported the current TVAC status, including the FOV3 brightness temperature anomaly, ILS results, the instrument NEdN and the co-registration performance. Results show that the instrument complies with the specifications. **Figure (3)** shows the performance of the NEdN at for Side 1 derived from the SDR product at FSR.

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.*

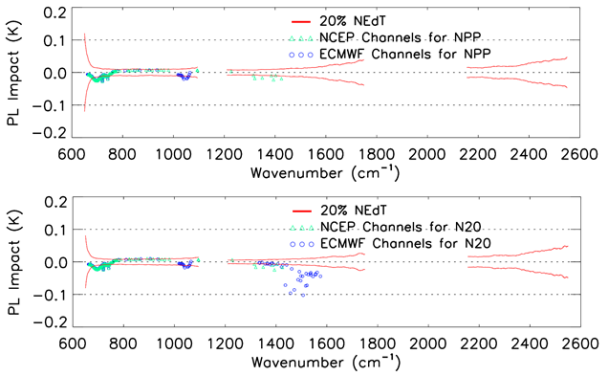
Issues/Risks:

1. A quantitative analysis of the J2/CrIS neon lamp is being performed to estimate its risk to fail late in the mission. Risk mitigation actions are in progress with proper communication between the vendor and the science team.

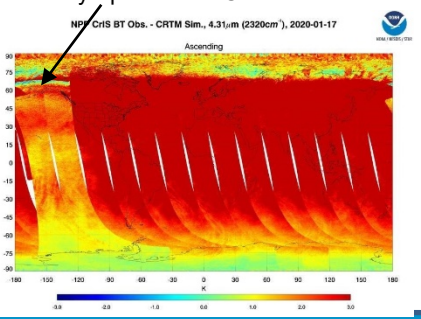
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
NPP (side-2) Validated Maturity	Feb-20	Feb-20	02/06/20	Prov + 6m
J2 pre-launch test data (TVAC) review/analyze	Apr-20	Apr-20		TVAC: Jan-20
J2 pre-launch evaluation tools development	Sep-20	Sep-20		
J2 Cal/Val Plan - draft 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		
Verification of cloud implementation	Sep-20	Sep-20		
IDPS Mx build I&T deploy regression support:				
BL2.1 Mx 8 I&T CrIS data review/checkout	Nov-19	Nov-19	11/12/19	
BL2.2 Mx 0 I&T CrIS data review/checkout	Apr-20	Apr-20		
BL2.2 Mx 1 I&T CrIS data review/checkout	Jul-20	Jul-20		

Highlights:

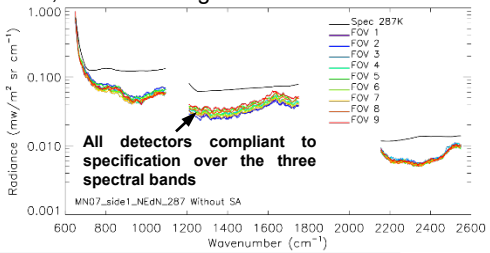
(1) The polarization correction impact on the SNPP and NOAA-20 CrIS channels assimilated by ECMWF and NCEP. Larger impact is observed over the MWIR. The 20% of NEdT has been included as a reference.



(2) Impact of the New JPL Planetary Ephemeris LUT.



(3) J2/CrIS Side-1 mission nominal noise at 287 K, after removing the ILS effect.



VIIRS SDR

January, 2020

Accomplishments / Events:

- Identified the root cause of a major product anomaly that occurred for both Suomi NPP and NOAA-20 starting 1/16/2020 0:00 UTC due to erroneous solar vectors: an error in the JPL Planetary Ephemeris table in the Common GEO module; a corrected table was generated, tested offline, and delivered to the IDPS operations
- Investigated increased S-NPP VIIRS DNB striping that appeared in nighttime operational SDR after flight software update on 1/8/2020: using the new moon DNB data acquired on 1/24/2020, developed an updated LUT that removed the strong striping artifacts; included the LUT in expedited delivery for deployed in IDPS operations
- 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 1/24/2020
- Delivered for deployment in IDPS operations an updated S-NPP VIIRS DNB stray light correction LUT generated from the February 2019 data
- Analyzed VIIRS lunar measurements collected on 1/6/2020 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 2/5/2020
- Provided, for potential EDR testing, a set of simulated JPSS-2 VIIRS SDR granules acquired during the pre-launch testing in environmental conditions expected on orbit

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			

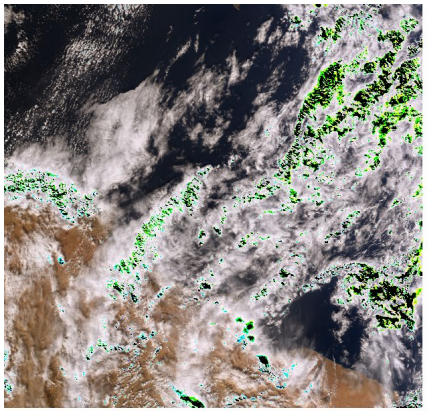
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

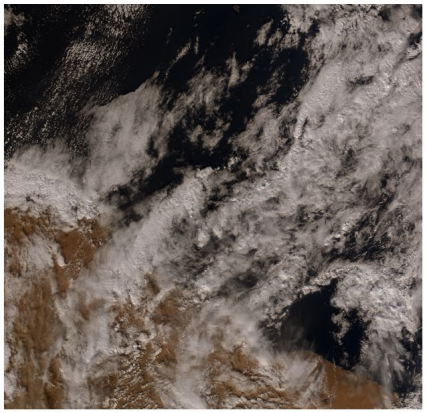
none

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		
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:



IDPS VIIRS SDR impacted by the solar vector anomaly



After correction of the solar vector anomaly

OMPS SDR

January, 2020

Accomplishments / Events:

- Further refined NOAA-20 OMPS NP day-1 calibration to improve solar calibration accuracy
- Generated new solar flux, wavelength shift and calibration coefficient data sets in 2019 to support the NOAA-20 NP SDR validated review
- Started to generate and validate the new data quality (Fig. 1 below)
- Worked on fixing the SNPP OMPS NM dark count zero shift issue in the IDPS in coordination with EDR and ICVS team together
- Made regular weekly/biweekly deliveries for OMPS dark table, SNPP/NOAA-20 OMPS-NP wavelength and solar flux
- Analyzed EV360 radiance anomaly in coordination with EDR and ICVS teams

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	Feb-20		Access issue
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		
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		

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: ***Due to SNPP and NOAA-20 OMPS NP bandpass discrepancy, much more SDR cal/val work are involved, which postpones the validating review. Additionally, one key calval scientist has been on sick leave since January 10, 2020 due to surgery***

Highlights:

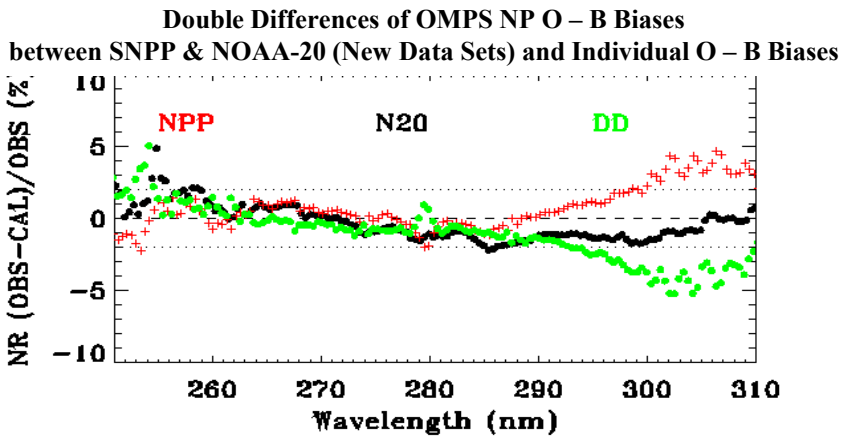


Fig. 1 Double differences of one-day averaged OMPS NP O – B radiometric biases between SNPP and NOAA-20, and individual O – B biases. The NOAA-20 NP O – B are computed using the newly generated SDR data sets. The new NOAA-20 NP SDR data show lower biases against the model simulations being better than NPP and meeting the requirements of 2%, except a few channels near 253nm

SDR Reprocessing

January, 2020

Accomplishments / Events:

- The frame of data dissemination interface for VIIRS reprocessed data is established and the interface is under internal testing
- New round of SNPP CrIS reprocessing is scheduled
- Preparation of a peer-review journal paper for SNPP SDR Reprocessing is ongoing (highlights)
- Transition of the reprocessed SNPP SDR data to NCEI/CLASS is ongoing
- The production of on-demand one-month (May 2016) Cloud mask (CM) using reprocessed VIIRS SDR is ongoing

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Optimize SDR reprocessing package	Sep-20	Sep-20		
Development of VIIRS reprocessed data dissemination interface	Sep-20	Sep-20		
Evaluation of impact of reprocessed VIIRS SDR data on cloud mask product	Sep-20	Sep-20		
Finish V2 SNPP CrIS reprocessing	Sep-20	Sep-20		
Develop reprocessing data website	Sep-20	Sep-20		
Analyze the quality of reprocessed data in a journal paper	Sep-20	Sep-20		
Evaluate the impact of reprocessed data on weather forecast (HWRF)	Sep-20	Sep-20		
Readme for reprocessed SNPP ATMS, CrIS, OMPS and VIIRS data	Sep-20	Sep-20		

Overall Status:

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

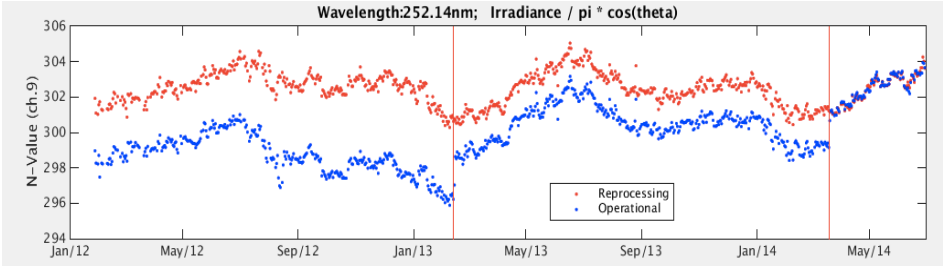
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

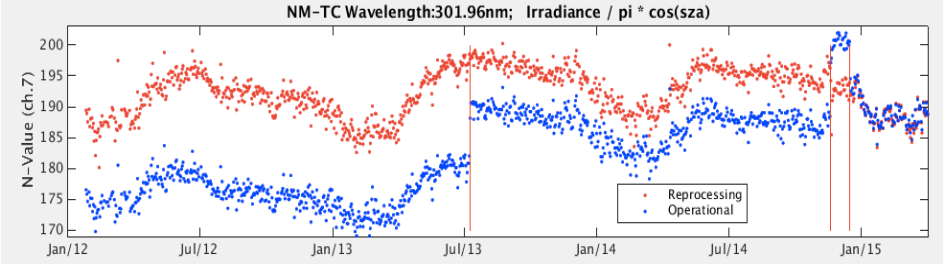
Highlights:

Trending of N-Value for S-NPP OMPS



2/12/2013 *3/18/2014*

2/12/2013: Start of weekly updates to NP dark LUT;
3/18/2014: NP stray light correction



7/10/2013 *11/21/2014* *12/18/2014*

7/10/2013: TC stray light temporary table update;
11/21/2014, 12/18/2014: TC stray light LUT update;

ICVS

January, 2020

Accomplishments / Events:

- Updated ICVS inter-sensor comparison web pages to include latest implemented NOAA-20/S-NPP onboard sensor bias trending plots
- Implement NOAA-20/S-NPP VIIRS SDR 32-day mean direct bias trending package
- Developed VIIRS vs GOES-16 ABI inter-sensor bias trending module to support NOAA-20/S-NPP VIIRS double difference bias trending package
- Developed NOAA-20 vs S-NPP OMPS SDR inter-sensor bias module using 16-day averaged N-value to support OMSP SDR data maturity review
- Characterized S-NPP ATMS CRTM simulation bias caused by different version so as to improve NOAA-20/S-NPP ATMS double difference, use model simulation results as transfer, trending accuracy
- Verified S-NPP solar vector anomaly from Jan. 16 to Jan 17. 2020
- 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
• 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		
• ICVS interactive modules: beta version • OMPS geolocation error development • Cloud mask module improvement using AI-based cloud detection algorithm: beta version	Mar-20	Sep-20		Low priority and schedule conflict with the new task
• Develop a LEO-GEO GSICS portal (ABI. vs. CrIS, IASI and VIIRS) (new task) (beta version March 2020)	Jun-20	Jun-20		
• 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		
• 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		

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			

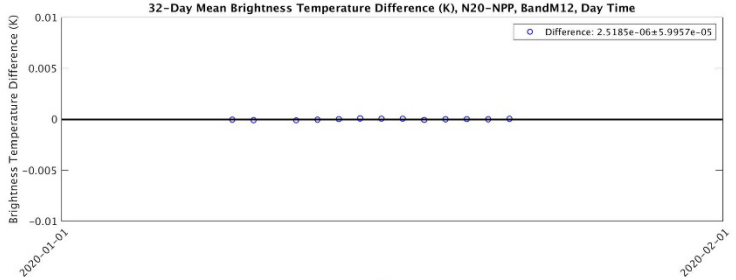
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

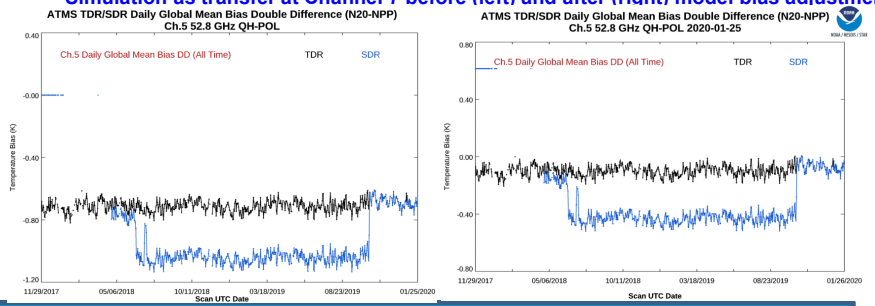
None

Highlights: Significantly contribute to STAR SDR Teams

NOAA-20 vs S-NPP VIIRS 32-day mean bias trending at M12 during day time



NOAA-20 vs S-NPP ATMS TDR/SDR Inter-sensor Double Difference Bias using RT Model Simulation as transfer at Channel 7 before (left) and after (right) model bias adjustment



VIIRS Imagery

January, 2020

Accomplishments / Events:

- **Terrain-Corrected EDR Imagery**: The terrain-correction code changes have been integrated into the ground software by Raytheon, and the first test data sets should be available soon for checkout by the Imagery Team.
- D. Hillger gave an oral presentation on VIIRS EDR Imagery terrain correction, as well as met with Raytheon ground-system attendees at AMS 2020 in Boston MA.
- **DNB-to-NCC LUT update:** The solar and lunar LUTs are still being developed for NOAA-20, with strong dependence on the current operational LUTs, because of their empirically-based values for airglow. While the lunar table is basically complete, the solar LUT is still under development. The new LUTs will need to be tested on DNB to check the resulting NCC compared to operational NCC. (D. Hillger, S. Finley, T. Kopp)

Overall Status:

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

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

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20		
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20		
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		
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:

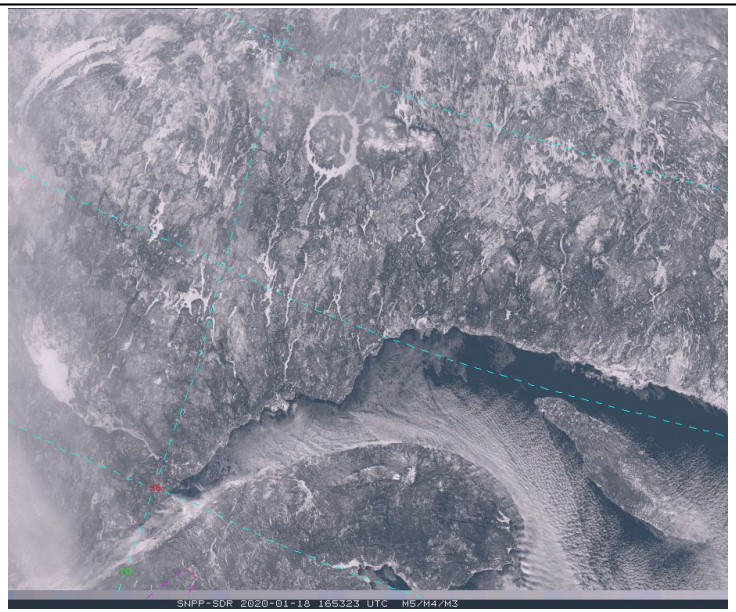


Figure: N20 true-color RGB image showing in particular the round ring of ice that is Manicouagan Reservoir/Lake in Québec, Canada, 18 Jan 2020.

Clouds

January, 2020

Accomplishments / Events:

- ECM team investigated impact of VIIRS SDR anomaly on cloud mask.
- ECM team had a monthly telecon with users addressing a proposed Lookup-Table update and cloud mask issues over snow and cold surfaces.
- ACHA team fixed failed cloud top height retrievals when the observed brightness temperature is very low.
- DCOMP team is preparing a new software interface aiming for a more flexible channel input structure.

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: ▪ 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		
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		

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

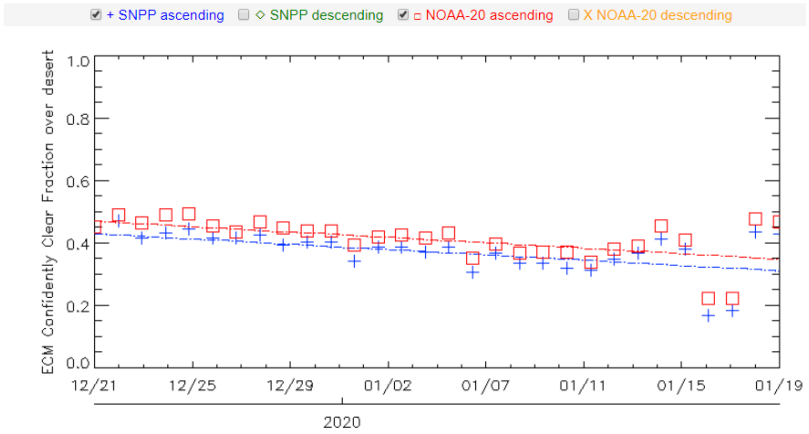


Fig. 1. Time series of ECM retrieved confidently clear fraction over desert. It shows a drop of ~30% of confidently clear fractions on January16th and 17th, 2020 during the SDR anomaly over the desert.

Aerosol

January, 2020

Accomplishments / Events:

- **Completed software development and collection of data (S-NPP and NOAA-20 VIIRS SDR and other data) needed for the update of AOD retrieval over bright land pixels.**
- **Evaluated the TROPOMI Aerosol Layer Height (ALH) product. Spatial coverage of aerosol plume in the ALH product was compared with that in the JPSS Enterprise of Aerosol Detection Product (ADP) and with CALIPSO Aerosol Layer Product. Results were presented at the Copernicus Sentinel-5 Precursor Validation Team Workshop in Frascati, Italy.**

Overall Status:

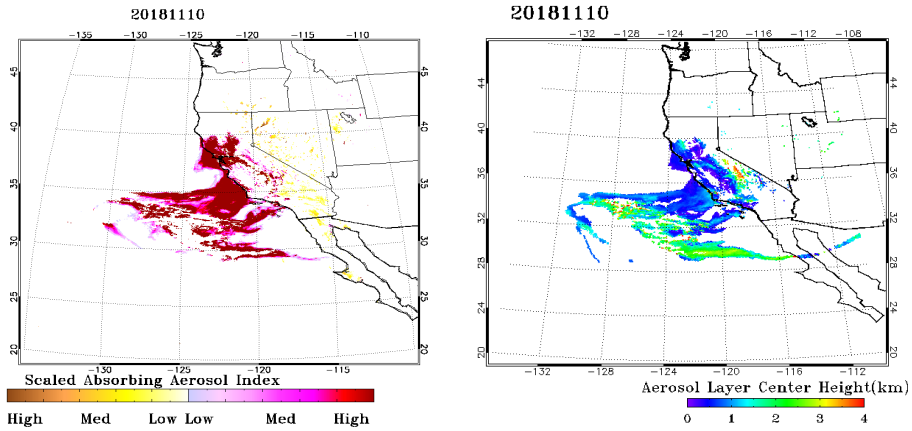
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget		X			
Technical / Programmatic		X			
Schedule		X			

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

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20		
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20		
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: ▪ 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		
Verification of direct readout EDRs	Sep-20	Sep-20		
Annual algorithms/products performance report	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		



Left: JPSS ADP smoke/dust flag showing scaled aerosol index on Nov 10 2019. *Right*: TROPOMI Aerosol Layer Height product on the same day.

Volcanic Ash

January, 2020

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 VIIRS/CrIS algorithm (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.*

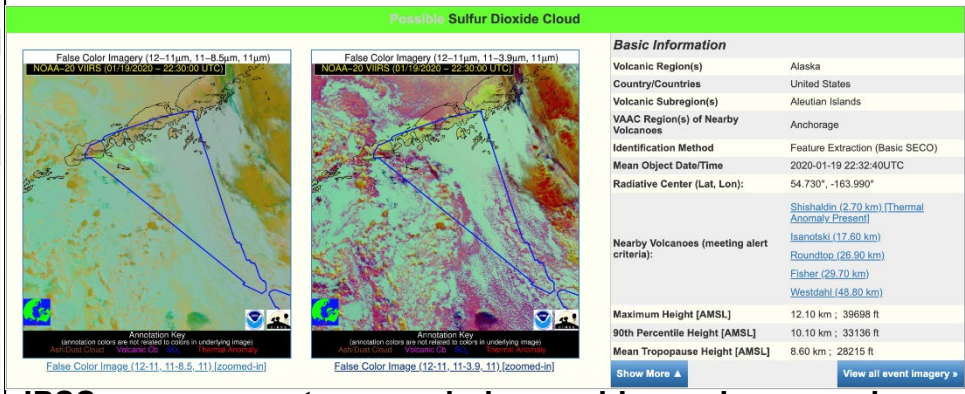
Issues/Risks:

In early 2020 (Feb or March), 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).

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		
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:

VOLCAT Volcanic Cloud Alert Report (based on NOAA-20 VIIRS+CrIS)



JPSS measurements, as a whole, provide much more value than can be extracted from a single sensor. The current ash EDR represents perhaps 1% of the value of JPSS for volcanic hazard applications.

Cryosphere

January, 2020

Accomplishments / Events:

- VIIRS NOAA-20 Sea Ice Products Captures a 400-mile sea ice lead (fracture) in the East Siberian Sea. (See figure.)
- The Cryosphere Team began working with a visiting postdoc at the National Snow and Ice Data Center (NSIDC, Boulder), Sang-Moo Lee, on multi-year ice (MYI) comparisons from AMSR2.
- The VIIRS cryosphere project, along with other cryosphere projects, was presented as part of the STAR Quarterly Program Review on January 29.

Overall Status:

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

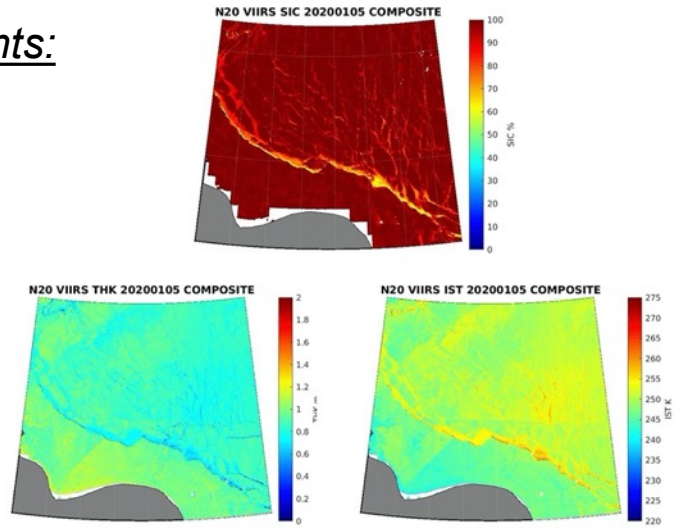
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity: Snow Cover (Binary Map & Snow Cover Fraction)	Apr-20	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: ▪ 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		
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:



NOAA-20 VIIRS sea ice concentration (top), thickness (bottom left), and ice surface temperature (bottom right) daily composites for 05 January 2020 showing a 400-mi long lead.

Active Fires

January, 2020

Accomplishments / Events:

- Worked with the JSTAR Mapper team to incorporate the new Persistent Anomaly flag in the product visualization system
- Performed product intercomparison of one full year of data for validated maturity review
- Analyzed the frequency of various false alarms from persistent anomalies
- Worked with the FIREX-AQ team to upload the VIIRS I-band products for three sectors to the campaign website

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.*

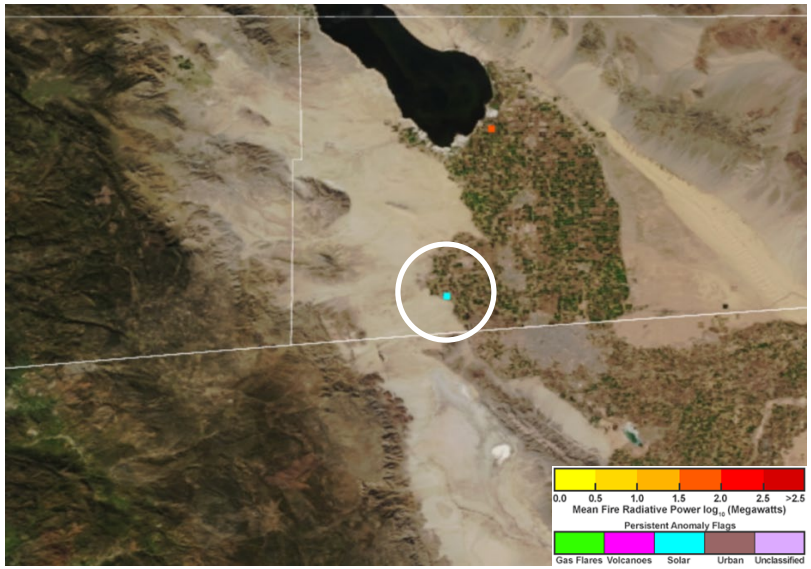
Issues/Risks:

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	Mar-20		
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		
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20		
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20		

Highlights:

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



An example of a flagged false detection from a solar farm in the M-band product on NOAA-20, 1/15/2020

Surface Reflectance

January, 2020

Accomplishments / Events:

- Worked with OSPO to assess the impact of the data anomaly on January 16-17
- Worked with NASA to start testing the code change for high aerosol flag

Overall Status:

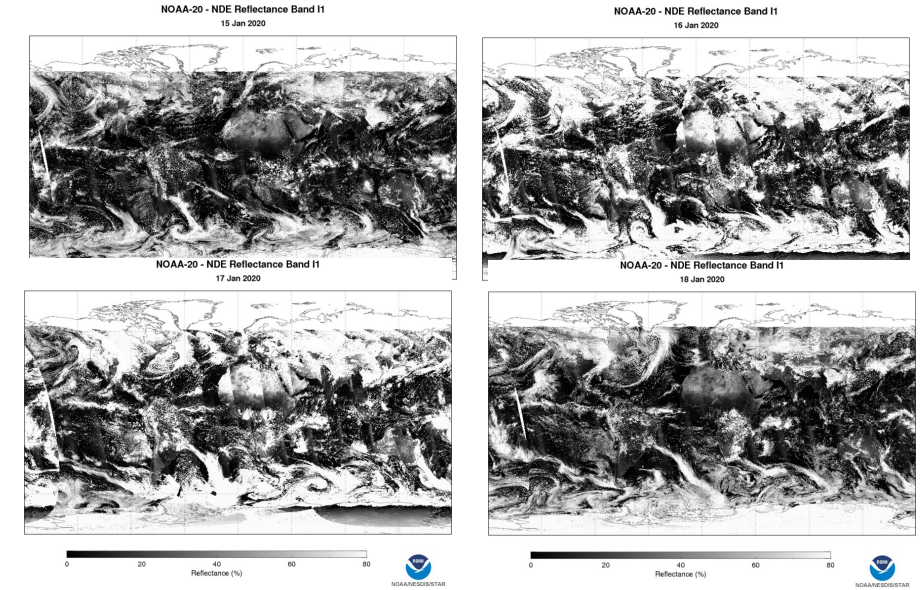
	Green[1] (Completed)	Blue[2] (On-Schedule)	Yellow[3] (Caution)	Red[4] (Critical)	Reason for Deviation
Cost / Budget			X		Temporary funding delay
Technical / Programmatic			X		Large data volume for validated analysis
Schedule			X		Delay validated review

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 preparation for validated review. Low impact on product performance.

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: ▪ 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		
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:



NOAA-20 VIIRS I1 band surface reflectance on January 15-18

Surface Type

January, 2020

Accomplishments / Events:

- Downloaded and processed S-NPP and NOAA-20 VIIRS observations acquired in January 2020 to create daily mosaics (up to the writing of this report).
- Continue to generate monthly composites from the daily mosaics.
  - Monthly composites from May 2019 to August 2019 have been produced and evaluated.
- Continue to collect high resolution products and other reference data for calibrating and validating classification algorithms and products.

Overall Status:

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

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

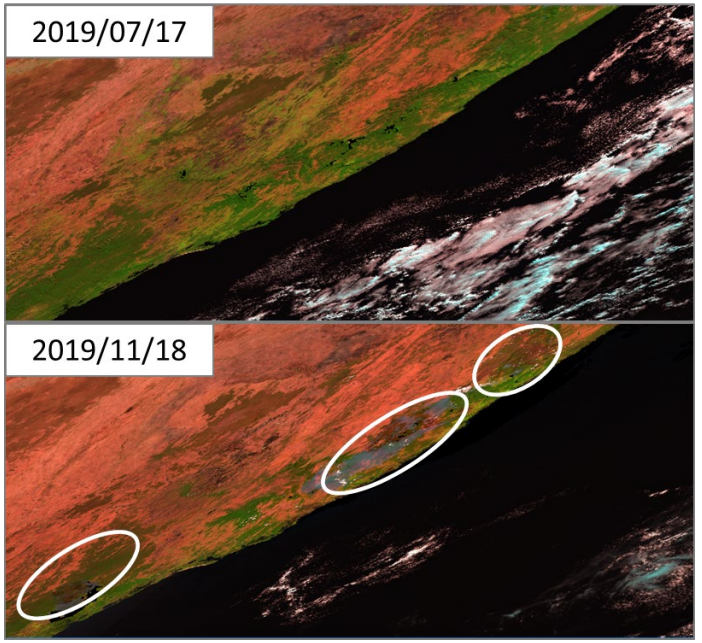
Issues/Risks:

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		
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)				
▪ 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:

2019 is probably the worst fire year for Australia. It has been reported that more than 80,000 km^2 has burned since the blaze began, which is much larger than the area burned during the devastating 2019 Amazon fires. A comparison of a VIIRS image acquired on Nov. 18, 2019 to a July image shows three large patches of burned areas along the east coast stretching from Brisbane to Sydney.



Land Surface Temperature

January, 2020

Accomplishments / Events:

- Deep dive analysis of the LST difference between SNPP and NOAA20. It includes the analysis of the angular effect on temperature based on the simulation database (Slide 2); investigation of the impact of angular effect, view time difference and solar angle effect within a satellite repeating cycle i.e 16-day (Slide 3). In addition, the LST diurnal effect is also analyzed. (Slide 4)
- Updated the VIIRS LST validation over snow surface. The data from GMD (highlights) and SURFRAD radiation network (Slide 5) was used in this study.
- Studied on the angular correction using SNPP and NOAA20 measurements.

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: ▪ 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		
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			

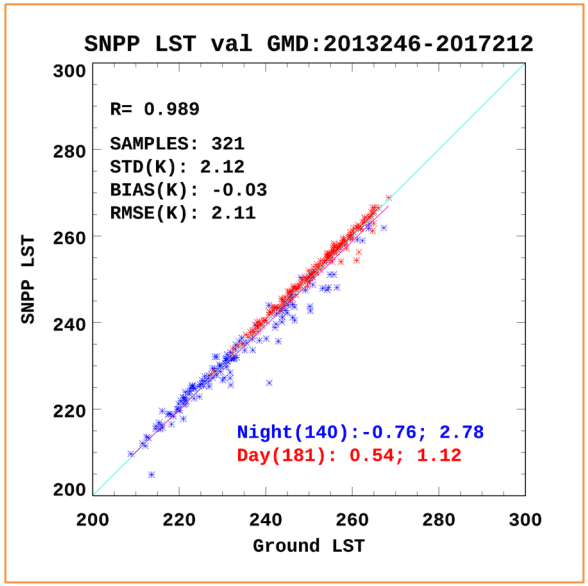
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

Schedule change due to the government shutdown

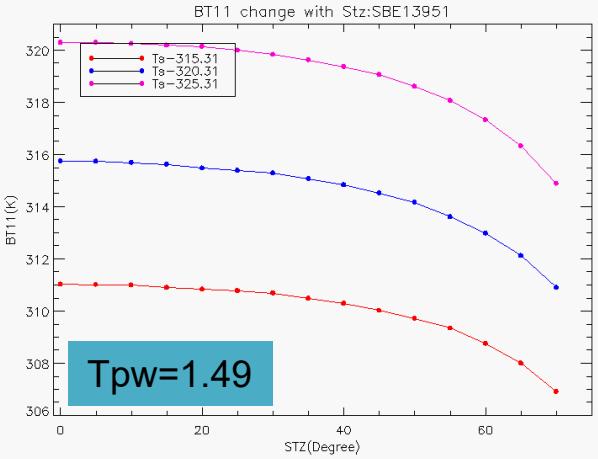
Highlights:

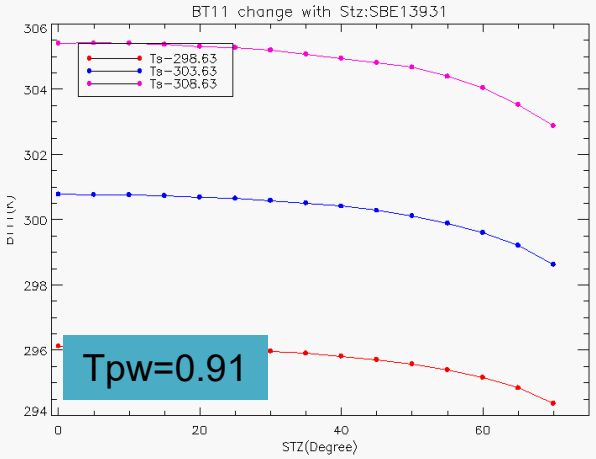
LST Validation over snow surface

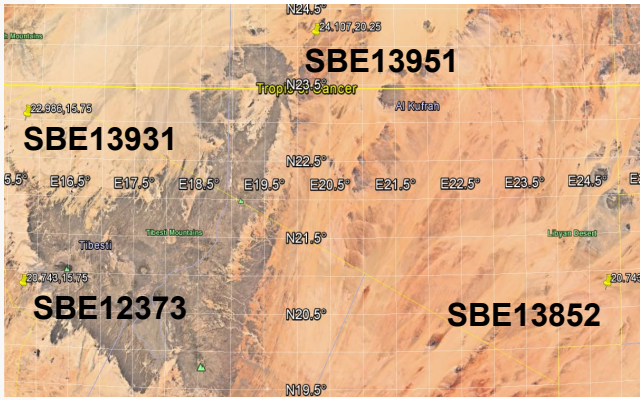


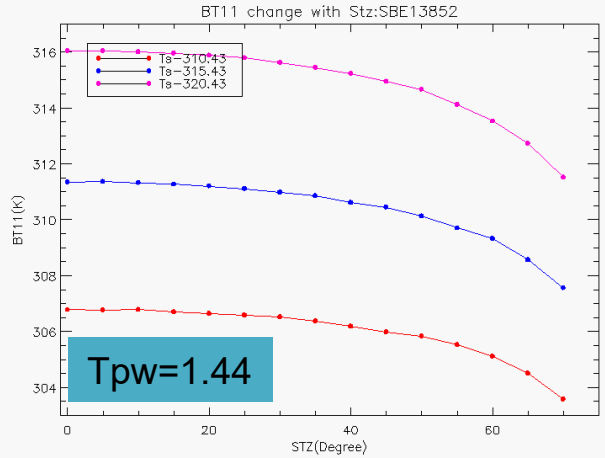
- Enterprise SNPP VIIRS LST comparison with GMD measurement over Summit site in Greenland for time period from Sep. 2013 to Jul. 2017
- Additional cloud screening applied
- Daytime LST outperforms nighttime LST.

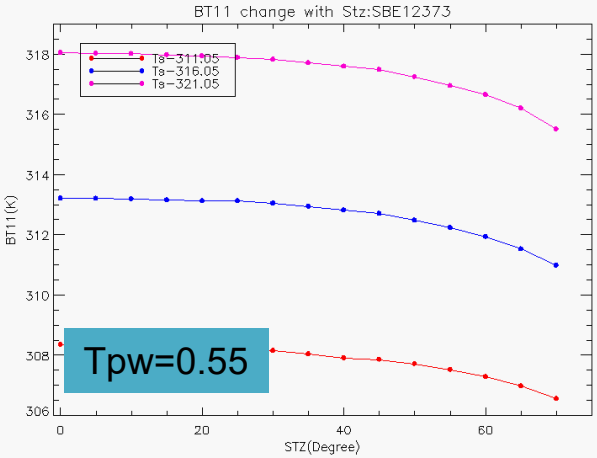
Angular effect on temperature







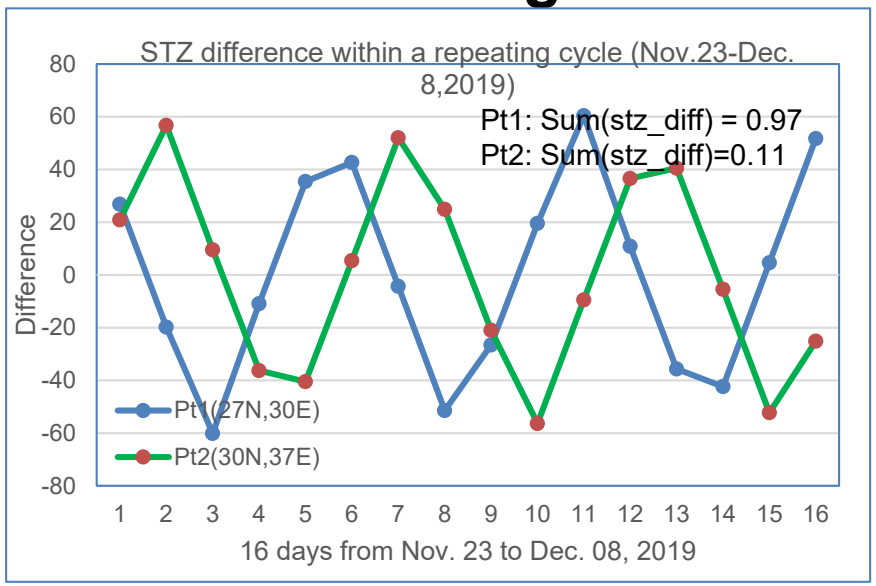


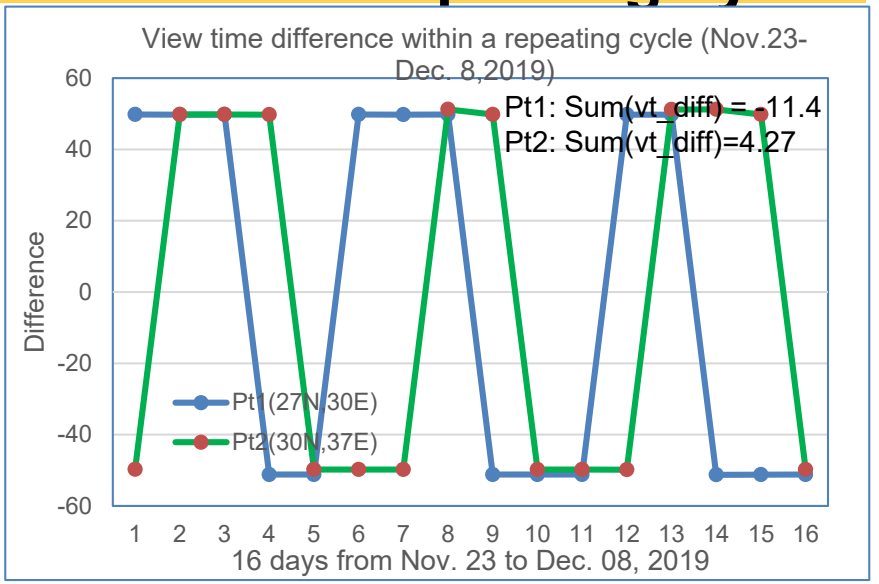


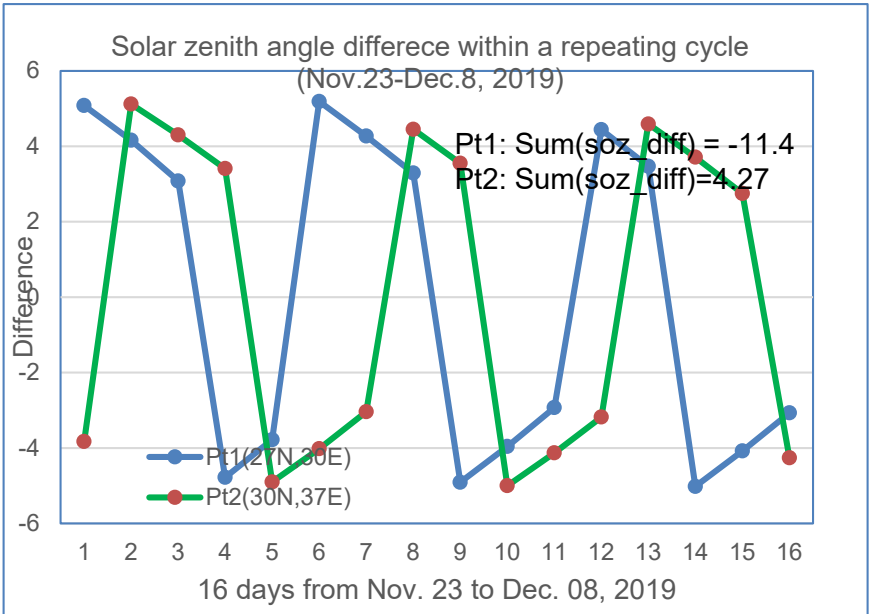
Generally the BT decreases with satellite view zenith angle. It means when satellite views the same location at different angles, it got the largest brightness temperature at nadir. The maximum LST difference happens when N20 is at its nadir view but NPP is not. Similarly the minimum LST difference happens when NPP is at its nadir overpass. Decreasing ratio is related to water vapor and temperature.

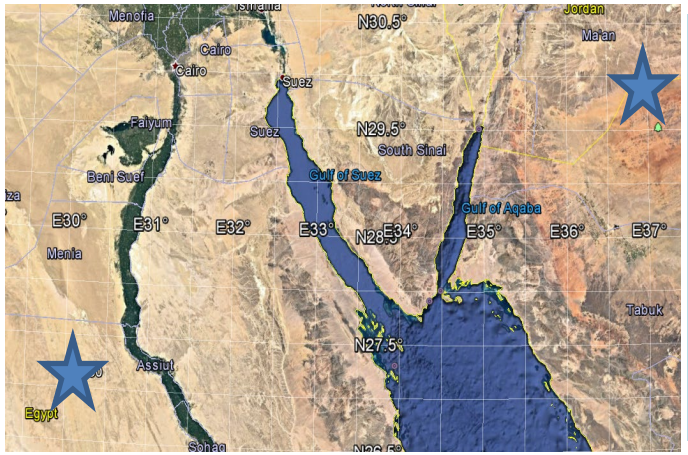
- The simulation data were used to demonstrate the effect
- Several profiles in north Africa were selected (top right)
- The relationship between angle and brightness temperature were plotted (left).

Impact of angular effect, view time difference and solar angle effect within a satellite repeating cycle





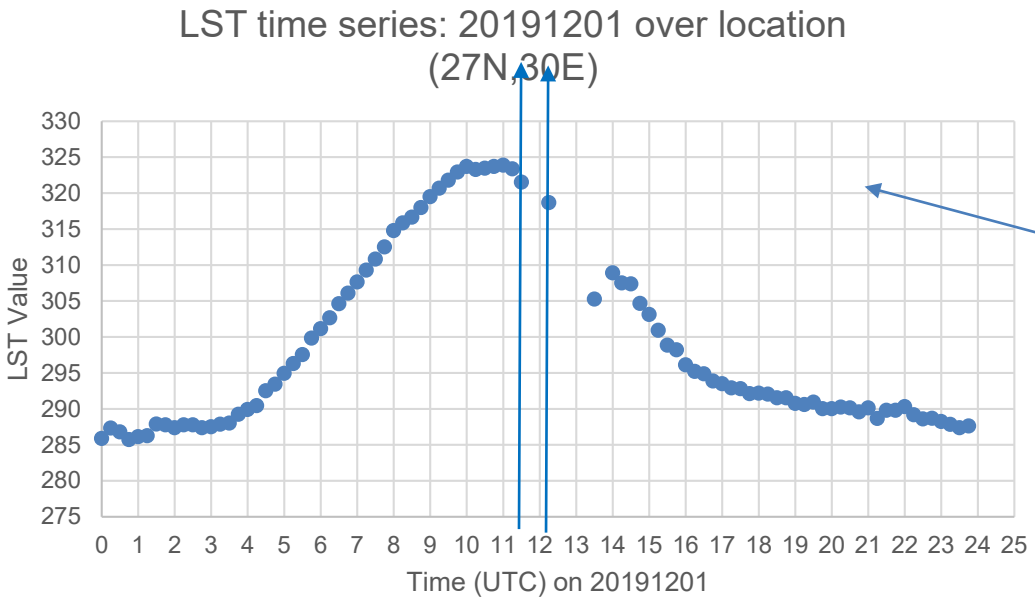




Satellite view angle effect is generally canceled; solar zenith angle and view time differences are reduced within 16-day cycle comparing to daily results.

Two points were selected over desert area located at (27N, 30E) and (30N, 37E) for the full data availability within a 16-day repeating cycle from Nv.23 to Dec.8, 2019. The average satellite zenith angle, view time and solar angle difference is investigated within a 16 cycle

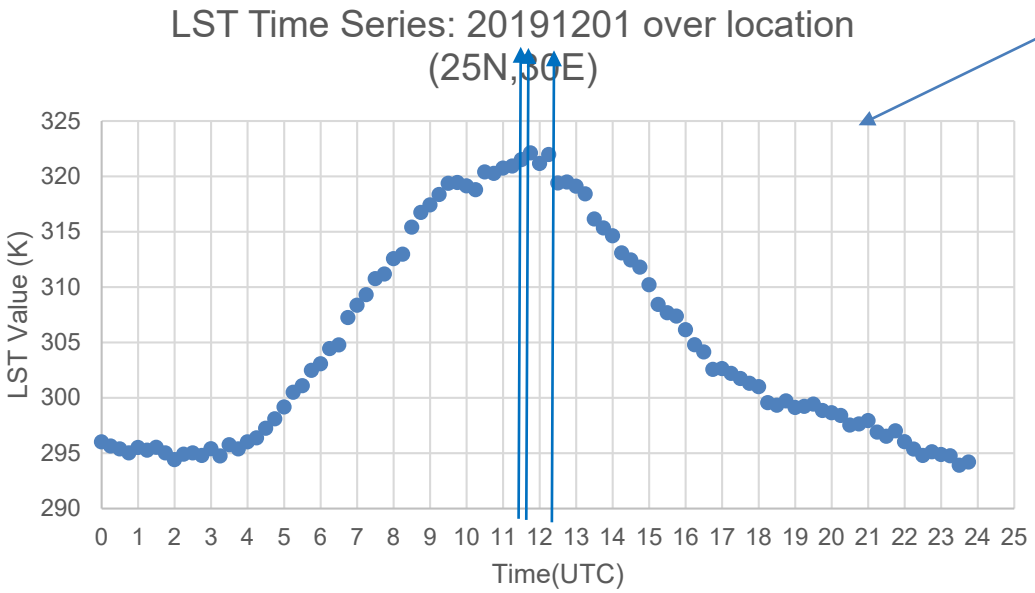
LST diurnal impact



Overpass time
J01: 12:30UTC
NPP:11:40UTC

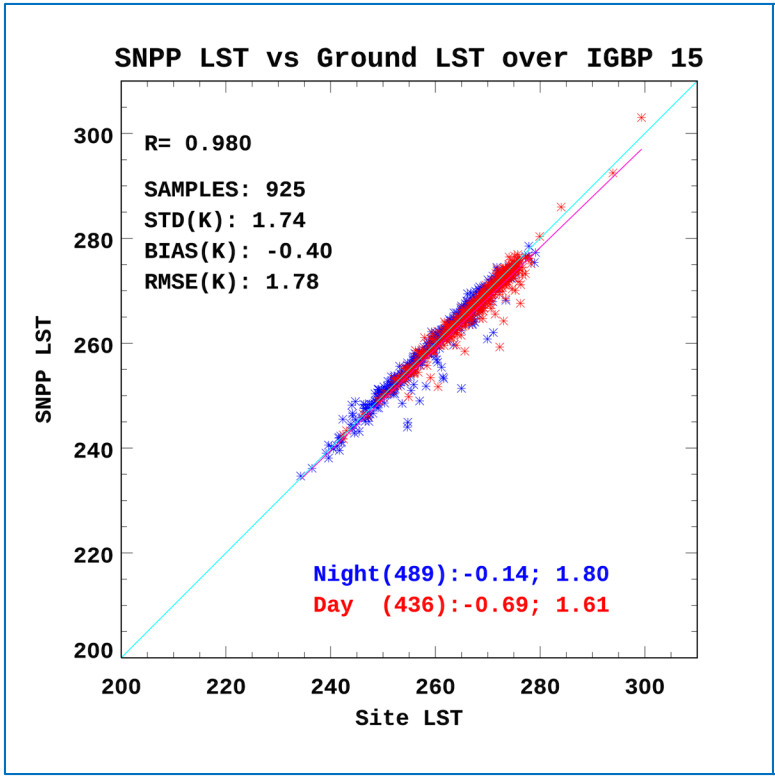
LST:
11:30 321.5 K
12:15 318.66K

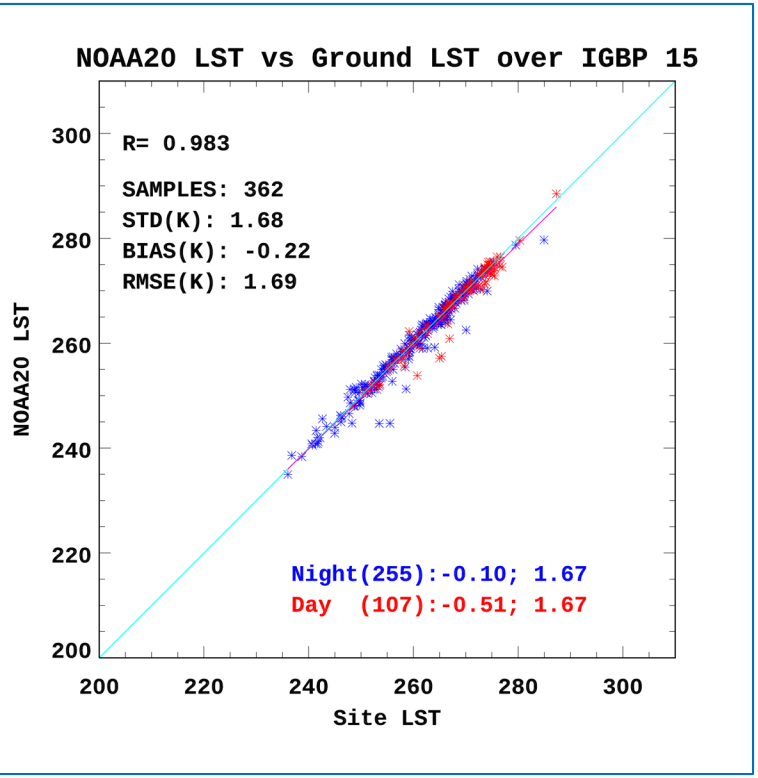
LST:
11:30 321.49K
11:45 322.1K
12:30 319.38K



The daily time series plot is based on SEVIRI LST at every 15 minutes. The NOAA20 overpass and NPP overpass time is around the LST peak time. The LST difference can reach to about 3K within 50 minutes.

LST Validation over snow surface using SURFRAD





The data covers the six sites in SURFRAD for the time period from Feb. 01, 2012 to Oct. 15, 2019 for SNPP and Jan. 6, 2018 to Oct. 15, 2019 for NOAA20.

Seasonal snow cover information is obtained from the LST quality flag (IGBP 15 represents snow cover).

The result is affected by the cloud contamination where the site LST is found warmer than the cloud top temperature. More outliers are found at nighttime than daytime.

Surface Albedo

January, 2020

Accomplishments / Events:

- Investigated the influencing factors of the S-NPP and VIIRS albedo difference under different retrieval paths (highlight and Slide #2 #3)
- Integrated the updated in situ daily mean albedo calculation algorithm in local monitoring system and validation attempts (Slide # 4)
- Analyzed the sensitivity of albedo on Solar zenith angle by applying the enterprise algorithm on GOESR observations (Slide #5)
- Assessing the L3 composition algorithm on blended SNPP and JPSS-1 observations

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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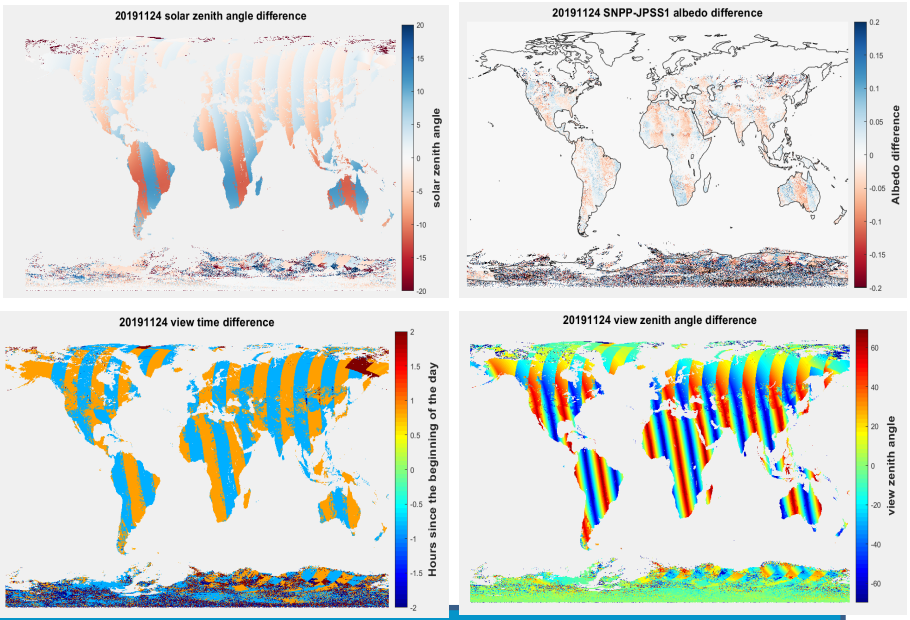
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity	Nov-19	Nov-19	11/21/19	
Validation of global gridded SURFALB product (B/P/V ?)	Sep-20	Sep-20		
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20		
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20		
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: ▪ 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		
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20		
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20		

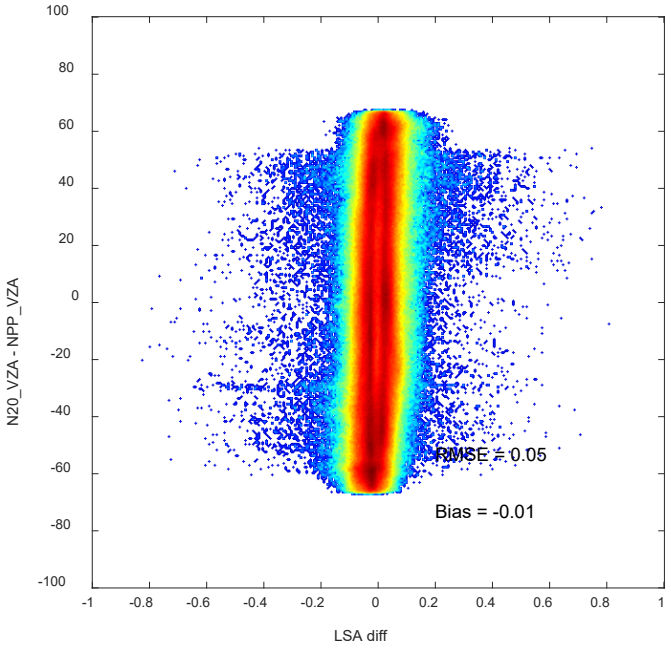
Highlights:

NOAA-20 vs S-NPP VIIRS albedo and related factors



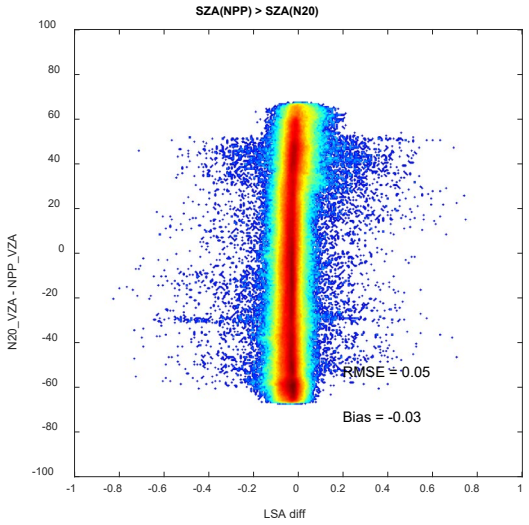
NOAA-20 and S-NPP difference factors

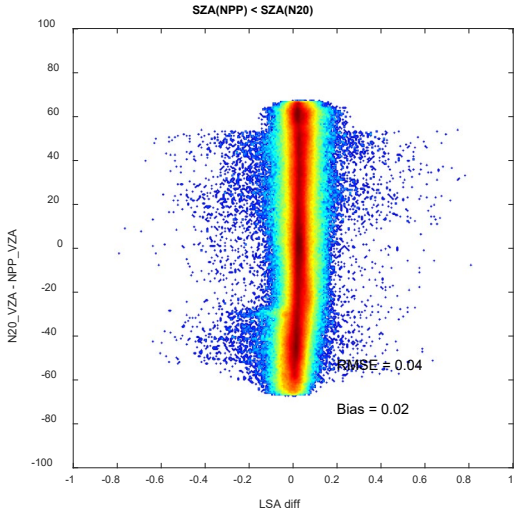
Generic LUT retrieval path



The generic LUT was trained with data for all surface types and all four aerosol types.
The albedo difference between N20 and NPP keeps generally stable between view zenith angle, only shows slight variation correlation at large view zenith angles due to the apparent FOV difference related uncertainty.
The interesting thing is the SZA related bias. When SNPP has larger SZA than N20, the retrieved albedo is also larger, vice versa.

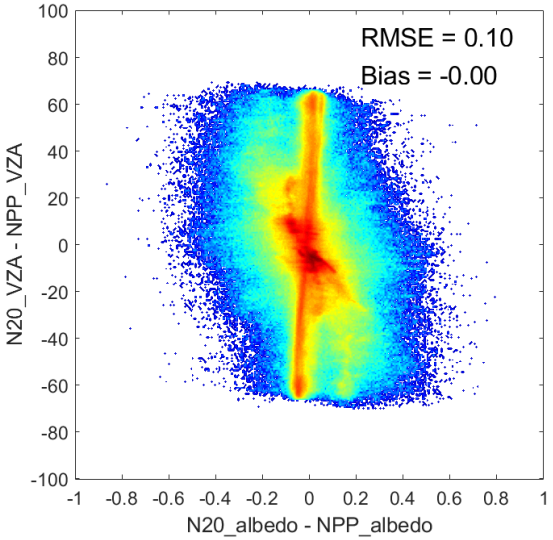
Assuming the similar calibration accuracy of L1b data from both SNPP and NOAA-20, the retrieved daily mean albedo should be the same ideally. Then the difference between the retrieved albedo is only related to the LUT quality and geometric difference.



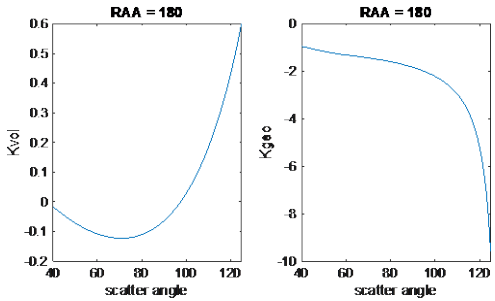


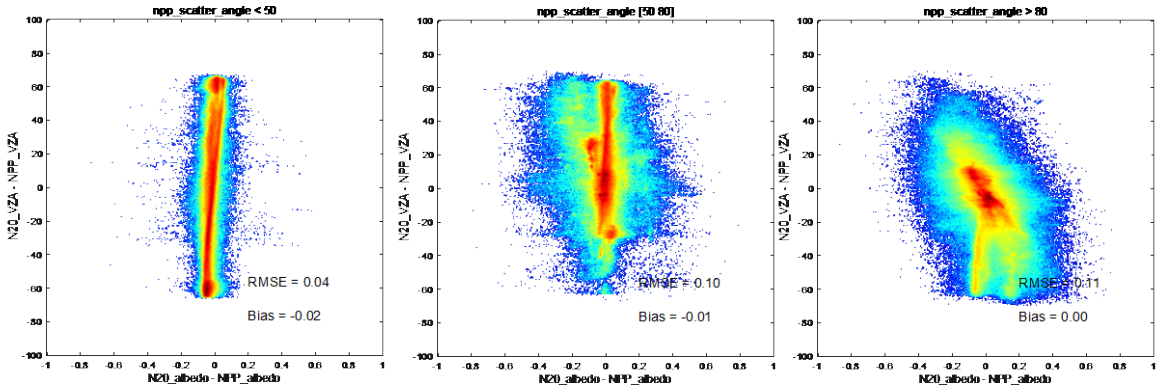
NOAA-20 and S-NPP difference factors

the Desert LUT retrieval path



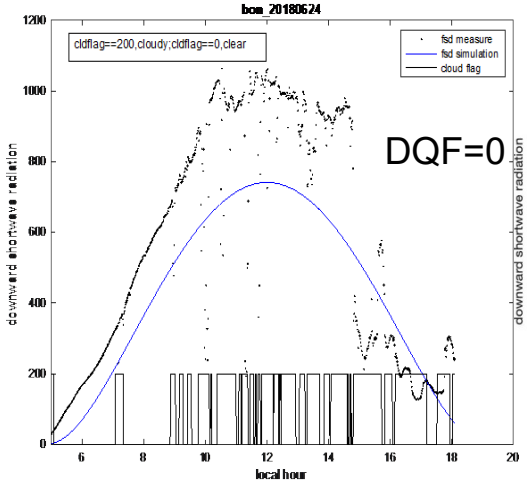
The generic LUT was trained with data for desert and desert aerosol type.
The desert albedo difference between N20 and NPP shows some clustered pattern.
The clusters were separated through the scatter angle between incident direction and view direction. When $\xi > 80$, the albedo difference demonstrates a linear relationship with view zenith angle difference.
This is closely related to the forward scattering feature of desert surface. When the RAA is 180°, the difference of two kernel functions to the scatter angle are all large.

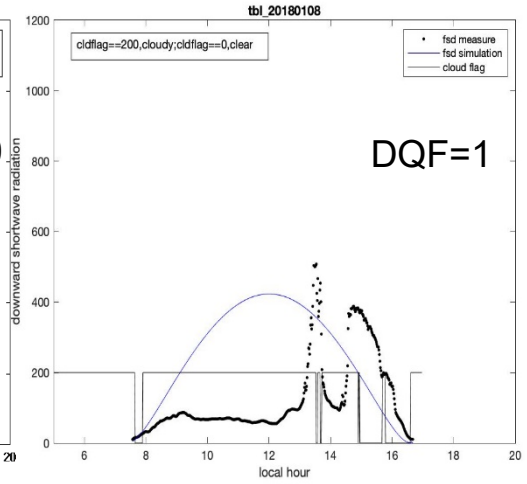


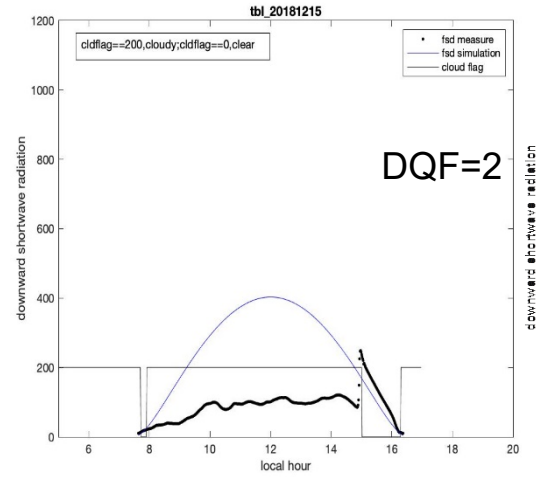


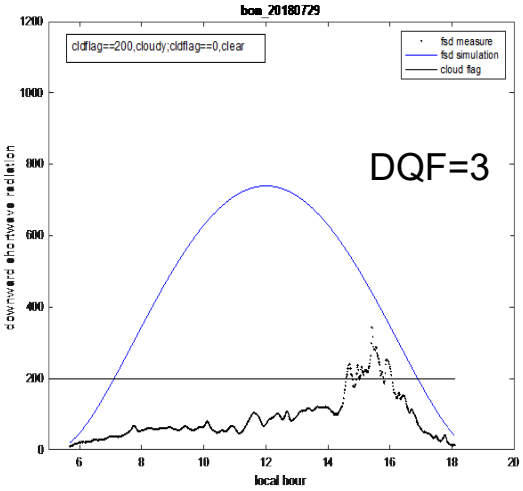
The in-situ daily mean albedo algorithm

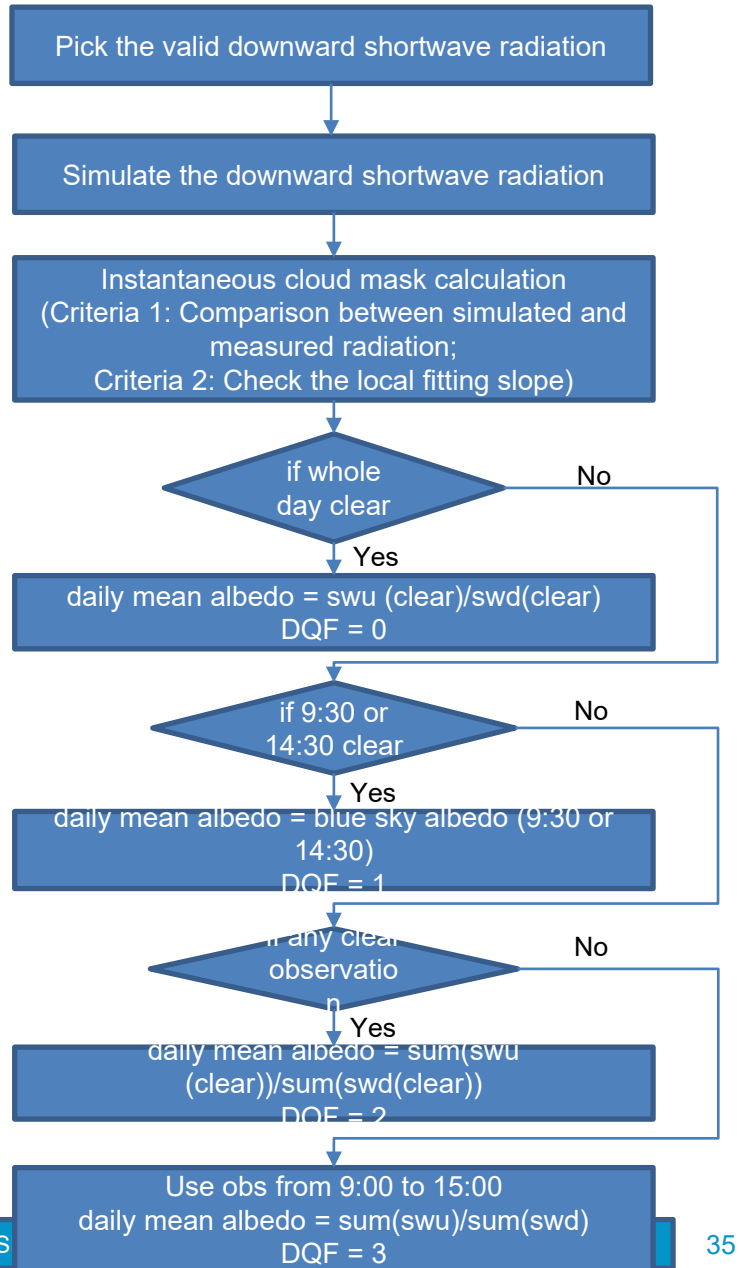
The upgraded in-situ daily mean albedo algorithm can provide surface daily mean albedo value with quality flag, and a byproduct of instantaneous cloud flag from SURFRAD downward radiation measurement.







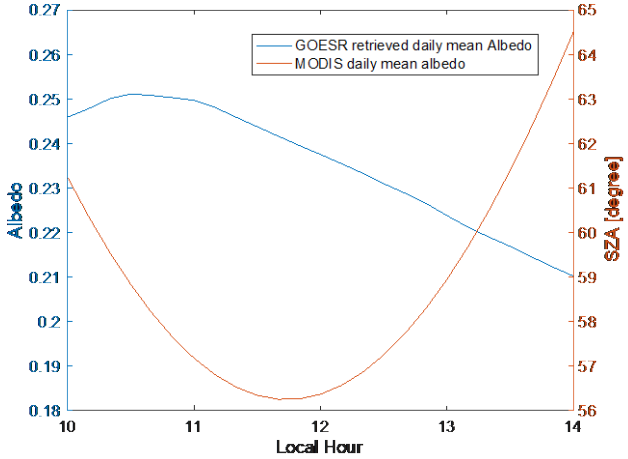




The benefits from combining the morning observations

Enhance the variation of solar zenith angles

If blended the morning and afternoon observations, the variation range of solar zenith angles would be expanded, which will absolutely enhance the information since 1) the sensitivity of albedo to SZA (right figure); 2) the increase of clear-sky observation counts.
GOESR observations around the Boulder, CO site (100*100 pixels) was used to calculate daily mean albedo using VIIRS generic LUT. It can be seen the retrieved albedo variation with SZA is apparent.



- Increasing clear-sky observations

Using Boulder, CO site as an example, combining morning observations can increase the clear-sky observation counts from 44% to 70%.

Boulder, CO	Morning Clear	Morning Cloudy
Afternoon Clear	123	39
Afternoon Cloudy	94	109

NVPS
(Vegetation Index & Green Vegetation Fraction)

January, 2020

Accomplishments / Events:

- Data analysis for Vegetation Index and Green Vegetation Fraction validated readiness review is in progress.
- Additional PhenoCam site data were obtained for VI and GVF validation.
- Preparation of posters for JPSS/ GOES-R Proving Ground/ Risk Reduction Summit is also in progress.

Overall Status:

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

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

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity	Feb-20	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: ▪ 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		
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Sep-20		
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20		
Deep-dive analysis for the anomaly watch	Sep-20	Sep-20		

Highlights:

Additional PhenoCam sites for VI and GVF validation

Name	Lat	Lon
archboldavir	27.1761	-81.2196
arsgreatbasinltar098	43.1675	-116.7132
arsmorris1	45.6167	-96.1269
austincary	29.738	-82.2188
bullshoals (DB_1000 ROI)	36.5628	-93.0666
cafboydnorthltar01	46.7551	-117.1261
elverde	18.3207	-65.8199
glees (EN_2000 ROI)	41.3644	-106.2394
goodwater (AG_1001 ROI)	39.2285	-92.1194
humnokericec	34.5889	-91.7517
huyckpreserveny (EN_1000 ROI)	42.5266	-74.1587
imcrkfen	68.6058	-149.311
kansas	39.0561	-95.1907
lacclair	46.9521	-71.6696
laclaflamme (EN_1000 ROI)	47.3227	-71.1215
merbleue	45.4094	-75.5187
montebondonegrass	46.0147	11.0458
nahuku	19.4152	-155.2384
nationalelkrefuge	43.4889	-110.7378
ninemileprairie (GR_2000 ROI)	40.868	-96.8221
niwot5 (EN_1000 ROI)	40.0329	-105.547
oakville	47.8993	-97.3161
oregonMP	44.4523	-121.5574
robinson	37.4671	-83.1576
russellsage	32.457	-91.9743
sevilettagrass	34.3604	-106.7002
shenandoah	38.6167	-78.35

Vegetation Health

January, 2020

Accomplishments / Events:

- The 6 VH pages related to "Percentage of Drought Area by administrative regions" were improved based on task monitor's suggestion: 1) Add option to display Percentage of Drought area derived from "VCI", "TCI" or "VHI" (Default is "VHI"). 2) Re-design the layout of the pages so that legends are not covered by lines (Highlighted);
- Tested EMD correction approach for three rounds;
- Rearranged data storage for VH products;
- Routinely maintained the VH data base and web site;

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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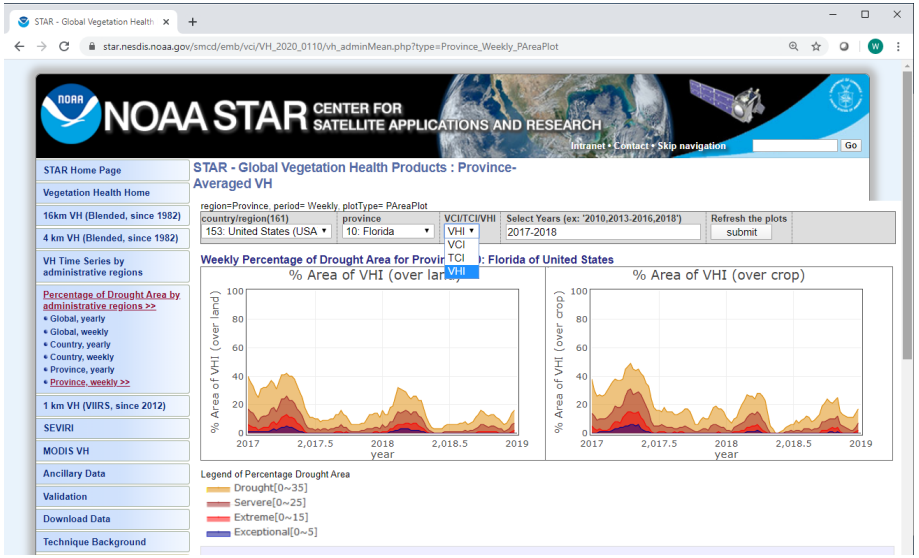
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
N20 Final DAP	Mar-20	Mar-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		
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: Newly Updated 6 VH Webpages



Ocean Color

January, 2020

Accomplishments / Events:

- **Ocean Color Team delivered DINEOF sample product to CoastWatch for service to downstream users.** Some metadata adjustments are being iterated between OC and CoastWatch. Data expected to be released to public in January 2020.
- **Two external cal/val teams presented updates on science on 12 December:**
  - **Chuanmin Hu (USF)** presented "Red tide monitoring: Are VIIRS and MODIS data products consistent?"
  - **ZhongPing Lee (UM-Boston)** presented, "Validation of Rrs Products of NOAA SNPP VIIRS and NOAA20 for the NOAA Cal/Val Cruise in September 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:

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

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity	Jun-20	Jun-20		
N20 Final DAP to CoastWatch	Nov-20	Nov-20		Cpmbine with init J2 DAP?
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20		
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20		
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		
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:

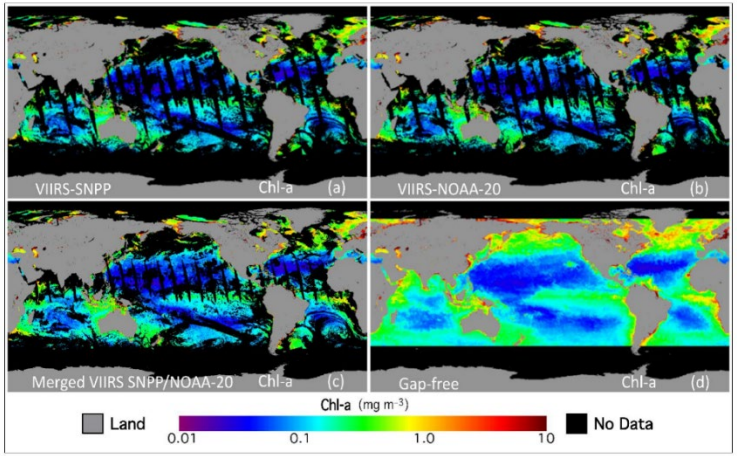


Figure: This sequence of global maps above show VIIRS-measured chlorophyll a (Chl a) concentrations on 29 July 2019 from (a) SNPP, (b) NOAA-20, (c) the merged Chl a image, and (d) the gap-free Chl a image. Chl a concentrations are in milligrams per cubic meter. Sample files were delivered to CoastWatch who will serve data publically.

Sea Surface Temperature

January, 2020

Accomplishments / Events:

- The solar zenith angle anomaly on 16-17 Jan 2020 degraded quality of SST product. This is because the wrong sun angle was used to incorrectly attribute part of daytime data as nighttime, and incorrect SST algorithm was selected and resulted in large errors.
- The attached time series of nighttime standard deviation shows a spike on those days. Corresponding coverage jumped to 18.5% from typical 17% (and corresponding daytime coverage dipped to ~16% from typical 18%). Many daytime pixels were erroneously attributed as nighttime.
- Work is underway to reprocess the two erroneous days, and repopulate in the PO.DAAC and NCEI archives.
- All project milestones (see table below) are on track.

Overall Status:

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

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

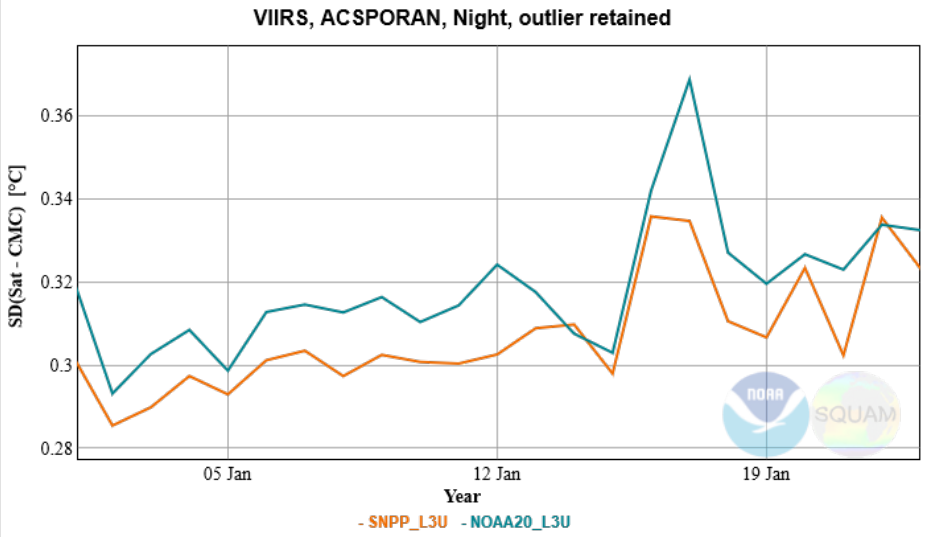
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Updated DAP (ACSPO 2.80, implement thermal fronts. improvements to support data fusion, J2 readiness)	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		ACSPO 2.80
Algorithm Updates Review	Sep-20	Sep-20		
Complete VIIRS RAN2 archival with PO.DAAC & NCEI	Aug-20	Aug-20	Dec-19: DAAC	
Verification of direct readout EDRs	Sep-20	Sep-20		
Annual algorithms/products performance report	Feb-20	Feb-20		
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		

Highlights:

www.star.nesdis.noaa.gov/sod/sst/squam/



VIIRS Polar Winds

January, 2020

Accomplishments / Events:

- The VIIRS polar winds project, along with other wind projects, was presented as part of the STAR Quarterly Program Review on January 29.
- The possibility of generating VIIRS winds at McMurdo, Antarctica, is being examined. For years only MODIS winds have been generated there. However, VIIRS data are being acquired, albeit infrequently.

Overall Status:

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

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

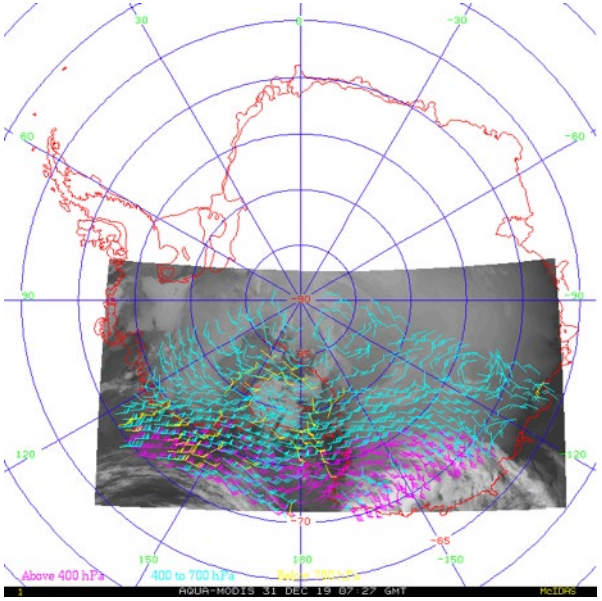
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20		
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20		
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		
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:

Aqua MODIS polar winds produced at McMurdo, Antarctica, on 31 December 2019.



NUCAPS Products

January, 2020

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.
- Preparing for the upcoming AEROSE Cal/Val Campaign "Inter-hemispheric Atlantic Transit cruise from Barbados to Cape Town, 21 February to 11 March 2020" for NUCAPS validations using Dedicated Vaisala radiosondes, ozonesondes and Marine Atmospheric Emitted Radiance Interferometer (MAERI) data.
- Continued preparing on user validations for S-NPP CrIS SDR Side-2 validated Review scheduled for February 6, 2020.

Overall Status:

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

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

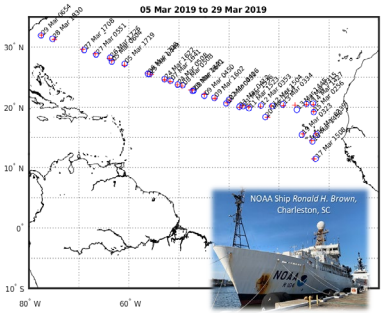
Issues/Risks:

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

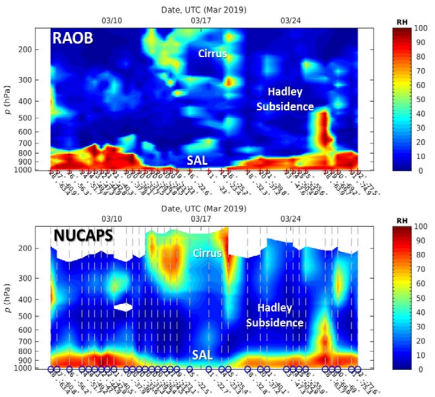
Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Validated Maturity: CH4 (S-NPP & NOAA-20)	Feb-20	Mar-20		Combine F/M
Provisional Maturity: CO2 (S-NPP & NOAA-20)	Feb-20	Mar-20		Combine F/M
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20		
J2 Cal/Val Plan - 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: ▪ 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		
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

AEROSE Dedicated RAOBs Collocated with NUCAPS



AEROSE NUCAPS vs RAOB Relative Humidity Cross-Sections



NUCAPS products and dedicated RAOBs: When compared to dedicated RAOBs, NUCAPS is seen to capture dry layers over the tropical Atlantic associated with the Saharan Air Layer (SAL). The NUCAPS team is preparing for upcoming AEROSE Cal/Val Campaign as part of NUCAPS product validations with Dedicated Vaisala radiosondes, ozonesondes and Marine Atmospheric Emitted Radiance Interferometer (MAERI) data.

MiRS Products

January, 2020

Accomplishments / Events:

- Began validation tests in preparation of the annual N20 validation update. To date, all official products validated show no change in performance compared with one year earlier (see example).
- MiRS team attendance at AGU Fall meeting (2 poster presentations) and AMS Annual Meeting (2 oral presentations). Material presented on the following subjects: an experimental version of MiRS optimized for TCs (MiRS-TC), use of MiRS SWE in a national hydrology model, an AI approach to estimating the ATMS radiometric bias correction, and validation status of MiRS N20/ATMS.

Overall Status:

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

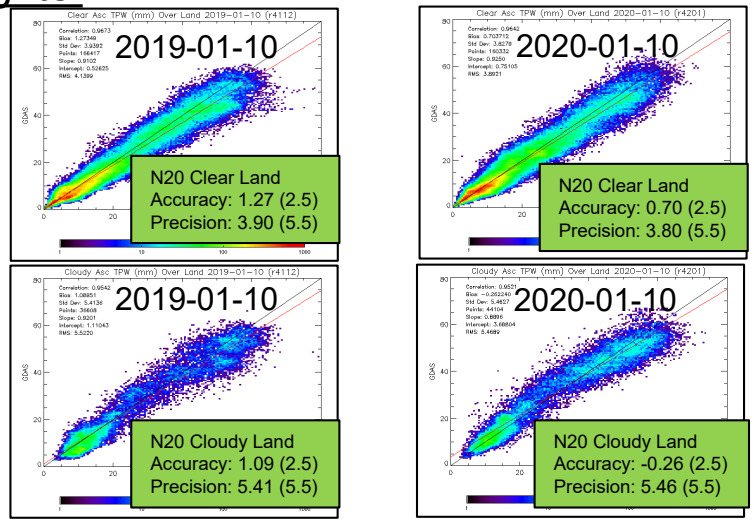
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
J2 pre-launch test/proxy data review/analyze	Sep-20	Sep-20		
J2 Cal/Val Plan - draft delivery	Jun-20	Jun-20		
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: ▪ 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		
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:



N20 TPW over land retrieval performance compared with GDAS analyses from 2019-01-10 (left) and 2020-01-10 (right). Results indicate no change in performance with accuracy and precision requirements being met. Requirements are in parentheses.

Snowfall Rate

January, 2020

Accomplishments / Events:

- The SFR team monitored the performance of the ATMS and MHS SFR algorithms that have the new bias correction and discovered a discontinuity issue with the MHS algorithms. A method was developed to remedy the problem. It appears to be effective based on a comprehensive study on the algorithms for each of the four MHS satellites (including Metop-C).
- A unified ATMS and MHS SFR processing system is being developed to replace the separate systems currently run in operation. Compared to the existing systems, it will be much more efficient to maintain and update the new system. However, this is a time-consuming task due to the amount of work required to revamp the entire system. The unified system will be completed and delivered to STAR MiRS team for integration in the first week of February.

Overall Status:

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

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

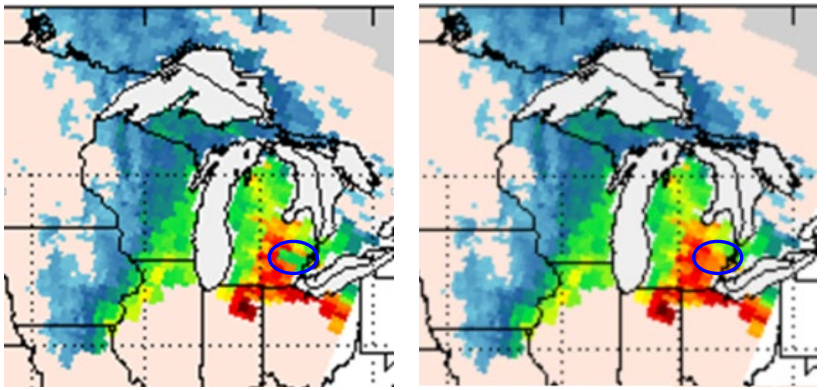
Issues/Risks:

None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Annual algorithms/products performance report	Feb-20	Feb-20		
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:

NOAA-19 SFR, January 18, 2020



The initial bias corrections for MHS SFR retrievals had a discontinuity issue as shown in the blue circle (left). A method has been developed to effectively remedy the problem (right).

OMPS Ozone

January, 2020

Accomplishments / Events:

Developing and testing V8Pro table and code adjustments for higher fidelity bandpass models.
Developing V8TOz enterprise package for GSICS intercomparisons.
Maintaining and improving Ozone EDR monitoring and overpass websites and products.
Identified OMPS NP SDR errors from Earth-view 360 orbits.
Troubleshooting OMPS LP implementation at NDE.

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

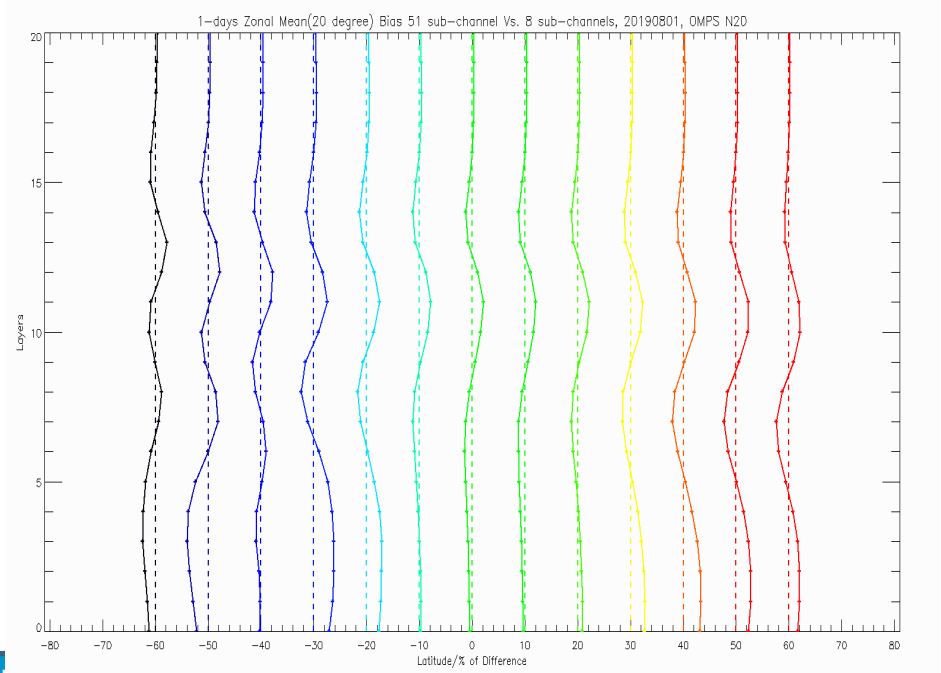
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

Code Changes for OMPS V8Pro EDR on path to maturity will not be implemented at NDE until Jan 2020. Adjustments for SDR changes TBD.

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	Feb-20		Dec-19: ORR
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		With Aug-20 DAP
V8TOz with Cloud top optical centroid algorithm	Aug-20	Aug-20		With Aug-20 DAP
Annual algorithms / products performance report	Feb-20	Apr-20		V8Pro changes
NOAA-20 and S-NPP cross-calibration/comparison	Sep-20	Jun-20		
Cal/Val visualization and LTM tool development/improvement	Sep-20	Sep-20		

Profile changes versus latitude from higher fidelity bandpass model for single scattering calculations



GCOM-W1 Products

January, 2020

Accomplishments / Events:

- Activities continue with NESDIS IA and JPSS to discuss AMSR3 and AMSR2 progress/plans
  - Learned that AMSR-3 was approved by JAXA for a 2023 launch date!
- Continued product cal/val; all products meeting requirements
- Planning for participation in the JAXA GCOM PI meeting on January 20, 2020
- Several presentations/posters highlighting GCOM products presented at AMS Annual Meeting (Boston, January 2020)
- 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.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

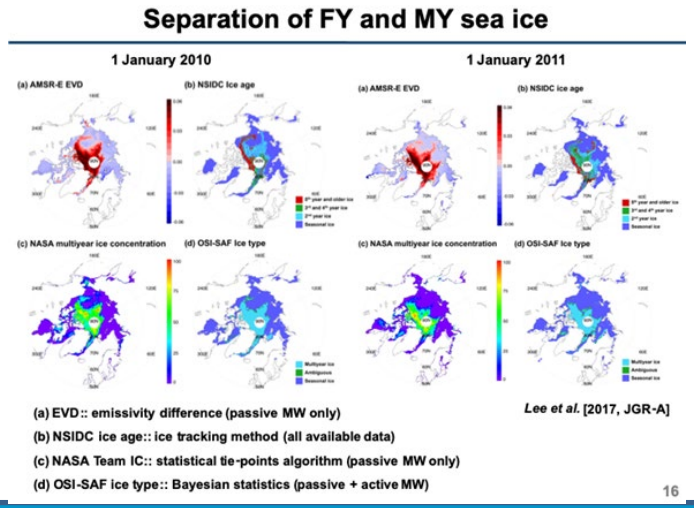
None

Milestones	Original Date	Forecast Date	Actual Completion Date	Variance Explanation
Annual report on AMSR2 algorithms and data products performance	Feb-20	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	

Highlights:

Sea-Ice Investigations (provided by Jeff Key)

Through collaborations with NSIDC, a new method of computing MYI concentration is being exploited to compare various ice products, including the ice type data from the EUMETSAT Ocean and Sea Ice Satellite Application Facility (OSI-SAF) and the NOAA AMSR2 MYI product.



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

January, 2020

Accomplishments / Events:

- Continued routine compilation of NPROVS collocation datasets, approximately 30,000 individual comparisons per day
- Processed collocated observations from the ongoing ARM / GRUAN /JPSS Radiosonde Inter-comparison VALidation (RIVAL) campaign.
- Continued to monitor the distribution of FY20 funds for JPSS / ARM Special radiosonde program to relieve field supply shortages.
- Provided assessment of experimental Artificial Intelligence (AI) sounding EDR under development at STAR
- Provided retrospective case study assessment of Southern Hemisphere Sudden Stratospheric Warming Event using NUCAPS soundings **(Highlight)**
- The EDR LTM team finalized the VIIRS NDE Land Surface Temperature (LST) images for NPP and NOAA-20 and installed on STAR LTM web site. **(Highlight).**

Overall Status:

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

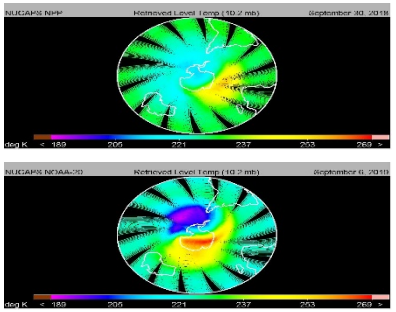
1. *Project has completed.*
2. *Project is within budget, scope and on schedule.*
3. *Project has deviated slightly from the plan but should recover.*
4. *Project has fallen significantly behind schedule, and/or significantly over budget.*

Issues/Risks:

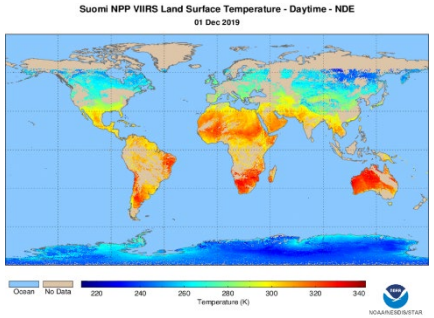
None

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, H20) 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 temperature fields (polar projection) at 10hPa (25km) during September 2018 (upper) and September 2019 (lower) highlight the historic 2019 Southern Hemisphere stratospheric warming event (red) underlying the disastrous Australian brush fires in December.



· VIIRS daytime NDE Land Surface Temperature (LST) image from December 1, 2019 from NOAA-20.