

Committee for Operational Processing Centers (COPC) Meeting

10-JPSS-1 LAUNCH & EARLY ORBIT ACTIVITIES

Arron Layns
Algorithm Management Project Lead

Joint Polar Satellite System
National Environmental Satellite, Data, and Information Service
U.S. National Oceanic and Atmospheric Administration
U.S. Department of Commerce

November 7, 2017



Preparing for Launch: JPSS-1









JPSS Program Data Products

VIIRS (26 EDRs) AP, RDR, SDR

EDRs

Active Fires Albedo (Surface) Aerosol Optical Thickness Aerosol Particle Size Parameter

Cloud Base Height
Cloud Cover/Layers
Cloud Effective Particle Size
Cloud Optical Thickness
Cloud Top Height

Cloud Top Pressure Cloud Top Temperature Cloud Mask

Ice Surface Temperature

Imagery

CERES¹
AP, RDR

Land Surface Temperature Ocean Color/Chlorophyll Quarterly Surface Type

Sea Ice Characterization Snow Cover Surface Type Suspended Matter Vegetation Indices Green Vegetation Fraction

Polar Winds Sea Surface Temperature

Vegetation Health Index Suite

CrIS (5 EDRs)

AP, RDR, OSDR

EDRs: Carbon Dioxide (CO₂)
Carbon Monoxide (CO)
Infrared Ozone Profile
Methane (CH₄)

Outgoing Longwave Radiation

CrIS/ATMS (2 EDRs)

EDRs: Atm Vertical Temperature Profile
Atm Vertical Moisture Profile

ATMS (11 EDRs)

AP, RDR, SDR, OTDR

EDRs: Cloud Liquid Water Imagery Land Surface Emissivity Land Surface Temperature Moisture Profile Rainfall Rate Sea Ice Concentration Snow Cover Snow Water Equivalent Temperature Profile Total Precipitable Water AMSR2 (11 EDRs)³

AP, RDR, SDR, TDR

EDRs:

Cloud Liquid Water Imagery Precipitation Type/Rate Total Precipitable Water Sea Ice Characterization

Snow Cover/Depth Snow Water Equivalent Soil Moisture

Surface Type

Sea Surface Wind Speed

Sea Surface Temperature

KEY

AP - Application Packet

RDR – Raw Data Record

SDR – Sensor Data Record

TDR – Temperature Data Record EDR – Environmental Data Record

Products with Key Performance Parameters

OMPS-Nadir (2 EDRs) OMPS-N AP, RDR, SDR

EDRs: O₃ Total Column
O₃ Nadir Profile

OMPS-Limb² OMPS-L AP, RDR

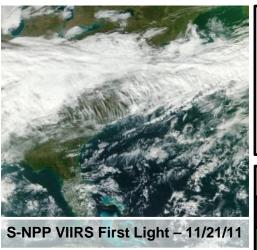


JPSS-1 Data Release Plan



Launch Date: November 10, 2017

		Phas	ing with S-NPP	Orbit Raising	Final Orbit (Half-Orbit Separation)						
Instrument Activation, Outgassing, PLTs – Intensive Cal/Val							Long-term Cal/Val				
S	DRs										
EI	DRs										
Lau	unch	L+10D – li	nstrument Activation	L+36D	L+55D	L+3M	L+6M	L+9M			
Operations Handover to NOAA – L+3M											
HRD L+3D – Cautionary use until products are declared Provisional/Operational											
SMD	GRAVITE Access restricted to GRAVITE account holders										
	CLA	CLASS Access restricted to approved CLASS users until products are declared Provisional/Operational									
	IDPS	IDPS/NDE/PDA Access restricted to Cal/Val & Beta users until 30-Day Flow completion (L+103) & SPSRB									



Approximate Times for JPSS-1 First Public Images

Advanced Technology Microwave Sounder

Visible Infrared Imaging Radiometer Suite (VIS/NIR & DNB)

Cross-track Infrared Sounder

Visible Infrared Imaging Radiometer Suite (SW/MW & LW IR)

Ozone Mapping Profiler Suite

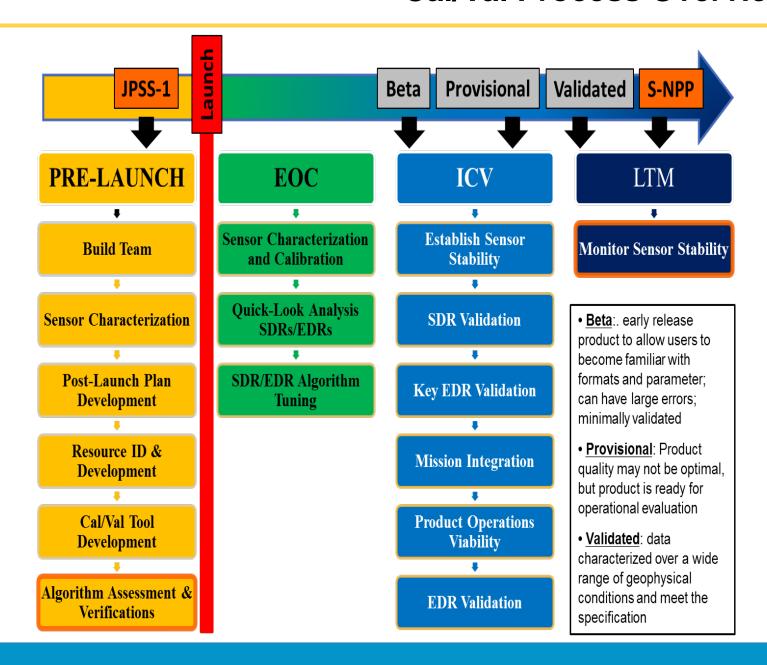
L+57 Days

L+57 Days

Phasing Outgassing Validated Maturity
Orbit Raising Initial Checkout External Distribution
Final Orbit Provisional Maturity Internal Distribution



Cal/Val Process Overview



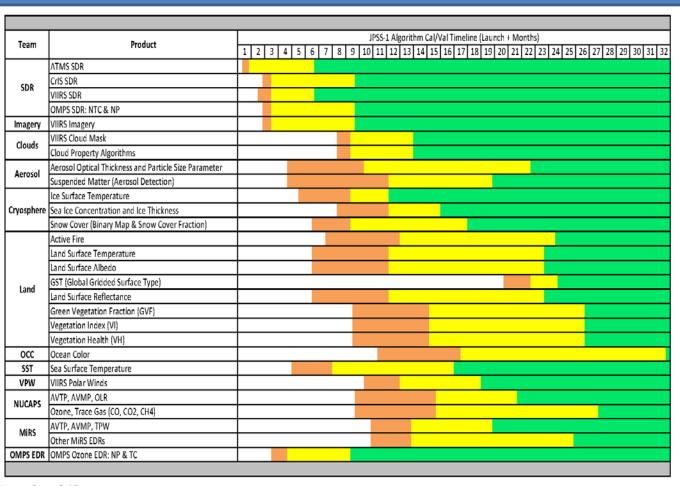


JPSS-1 Cal Val Timeline

Validated

All Products follow the NESDIS Satellite Products and Services Review (SPSRB) process to be made Operational to the user community.

EDRs will be made available operationally once they reach Provisional Maturity.



Beta

Provisional

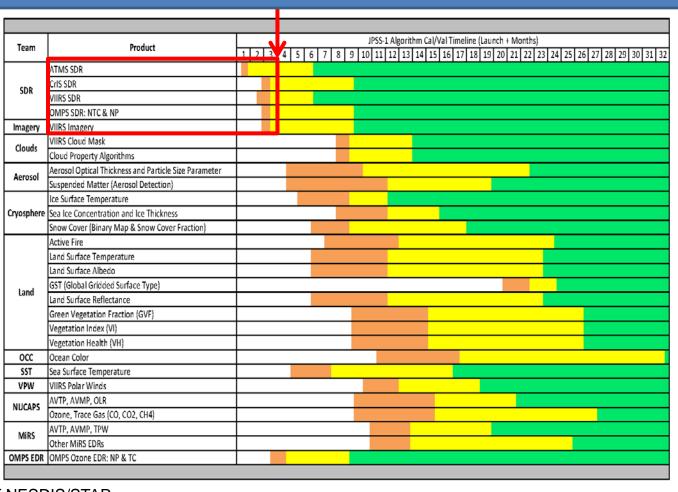


JPSS-1 Cal Val Timeline

Validated

All SDRs and VIIRS Imagery EDRs are expected to be ready for operations by L+90 days (includes KPP-related reformatting requirements).

Assumes nominal conditions post-launch.



Beta

Provisional



JPSS-1 KPPs Cal/Val Timeline

Launch		Post-Launch Test	Operations							
	L+10 to L+10 Spacecrift erformance Tests L+10 to L+43 Instrument Activation and Outgassing L+43 to L+68 Instrument Testing		L+68 to L+90 Instrument "Operationally Ready" L+85 to L+90 Operational Acceptance & Handover to NOAA/OSPO	3-months	3-months					
	L+90 d L+6 m L+9 m									
ATMS	L+11: Initial Power-On RDR/SDR Check TDR to		L+36: Provisional onversion; TDR/SDR Bias Char; Geo Accuracy Eval; PCT u	L+6M update as needed Validated						
CrIS	L+12: Initial Power-On L+12 to L+43: Outgassing L+43: Door Deploy		L+68: Beta RDR/SDR Check; Upload EngPkg		ovisional v; Geo Check; Noise y Upload EngPkg	L+9M Validated				
VIIRS	L+10: Initial Po L+10 to L+43: Ou L+24: Nadir Door Open; L+45: O	utgassing RDR/	L+60: Beta SDR Check; DNB aggregation mode Verify; Geo Accuracy; Noise and SNR analy	L+90: Provisional cy; Lunar Cal; LUTs update V		iM ated				
OMPS	L+10: Initial F L+10 to L+44: L+44: Diffuser \	Outgassing	L+68: Beta RDR/SDR Check; Dark Cals; Solar Cals; EV Co-location Tests; Noise Char	L+90: Provisional Weekly Dark Cals; Bi-Weekly Soloar Cals; LUTs update		L+9M Validated				
Imagery	L+10: Initial Power-On L+10 to L+43: Outgassing L+24: Nadir Door Open; L+45: Cryoradiator Door Open		L+70: Beta Verify requirement; Verify spatial resolution;	L+90: Provisional Analyze Imagery quality; Determine strining, banding, noise		L+9M Validated				

Pre-Beta Beta **Provisional** Validated

striping, banding, noise



JPSS-1 Cal Val Timeline

Validated

Provisional

All other EDRs will roll-out as they mature.

This is a conservative schedule. After launch and the initial calval of the SDRs, we will revisit the EDR timeline and accelerate where possible.



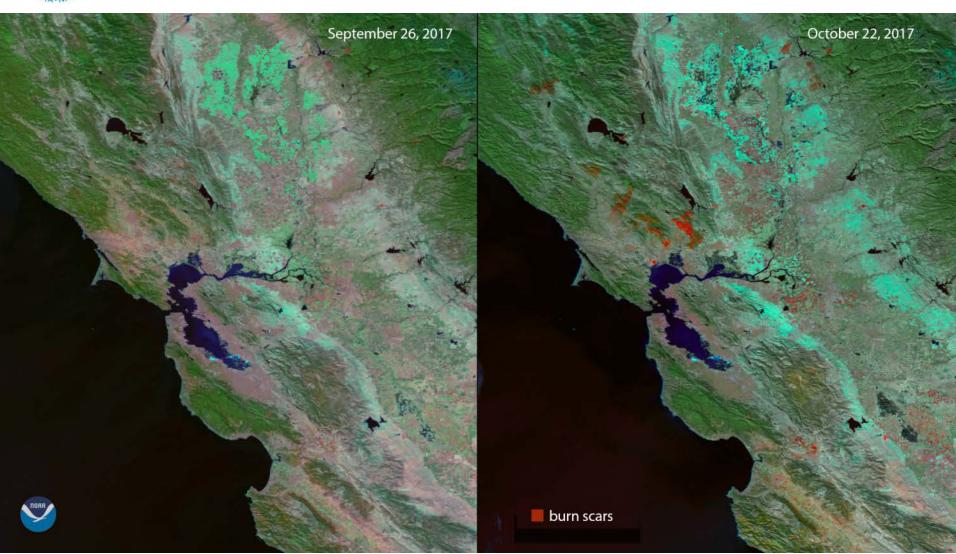
Summary



- NESDIS will be generating and distributing all required Data Products from both S-NPP and JPSS-1
- We welcome interested users to attend our lifecycle reviews (e.g., Algorithm Readiness/Product Maturity Reviews, Operational Readiness Reviews, etc)
- CalVal Plans for all data products available here: https://www.star.nesdis.noaa.gov/jpss/Docs
- NESDIS is transitioning to higher quality, Enterprise Algorithms for all EDRs. This transition is nearly complete for S-NPP only remaining products not in operations are the land products (surface reflectance, vegetation indices, land surface temperature, and land surface albedo).
 - JPSS-1 will not require a transition because Enterprise Algorithms will be used to generate the data products.
- JPSS-1 is expected to be as good as or better than S-NPP.
- JPSS-1 Data Products are expected to be promoted to operations and reach higher levels of maturity faster than on S-NPP.



California Wildfires Leave Burn Scars





Thank You!



Timeline: Launch to Operational Handover

L+9 to L+91 L+9 to L+57L+27 to $\sim L+91$ Instrument Instrument Activation JPSS-1 Instruments Commissioning and Outgassing "Operationally Ready" CERES: L+56 L+0 to L+9Initial Power-On **Door Deployments** ATMS: L+27 ATMS: N/A L+10 VIIRS: L+57 ATMS: JPSS-1 Launch CERES Covers Open: OMPS: L+91 CERES: L+10 \sim L+90 L+55 CrIS: L+82 CrIS: L + 10 Spacecraft Bus CrIS Door Deploy: L+54 OMPS L+9 OMPS Diffuser Open: Commissioning Remaining Instrument JPSS-1 VIIRS: L+9 L+57 Calibration Maneuvers Handover to VIIRS CRD Deploy: L+54 Spacecraft NOAA/OSPO VIIRS NAD Deploy L+24 Satellite Outgassing Subsystem Characterization & **Performance Tests** ATMS: N/A Trending **Instrument Testing** CERES: L+10 to L+54 ATMS: L+10 to L+71 CrIS: L+10 to L+54 CERES: L+10 to L+17 $\sim L + 85$ OMPS: L+9 to L+57 CrIS: L+54 to L+82 **Operational** VIIRS: L+9 to L+54 VIIRS: L+9 to L+76 Acceptance & OMPS: L+9 to L+91 **Handover Review** Campaign to Attain Final Orbit * ATMS Roll Calibration Maneuvers

Dependent on JPSS-1 final orbit attainment campaign



JPSS-1 Pre-Handover Data Release Plan

(Updated 10/31/2017; Based on Nov 10, 2017 Launch Date)

- Stored Mission Data (SMD)
 - Government Resource for Algorithm Verification, Independent Test, and Evaluation (GRAVITE): Access controlled by accounts. Calibration/Validation (Cal/Val) users primary access starting from instrument turn-on.
 - Comprehensive Large Array-data Stewardship System (CLASS): Restricted access until data reaches provisional maturity. Users can request early access through the CLASS help desk. AMP Lead is approver of early-access requests.
 - IDPS/NDE/PDA Ops: No JPSS-1 data distribution on NDE/PDA ops until 30 day test is complete or if OSPO is directed to do otherwise
 - Once 30 day test is complete and SPSRB approves each product is ready for operations, JPSS-1 products will be promoted to Ops (starting with KPPs).
 - IDPS/NDE/PDA I&T: J1 data will flow on I&T from instrument turn-on.
 - Approved CalVal Users (STAR, EMC, NCO, OSPO/PALs, EUMETSAT) have access as soon as the instruments are turned-on and products are generated.
 - Approved Beta Consumers (557th WW, AWIPS, AWIPS-DD) have access on completion of the beta validation period.
- High Rate Data (HRD)/Direct Readout (DRO) Data
 - Downlink starts at L+3 days and instrument data will flow once each one is turned-on.
 - Restricted use until NOAA releases First Light, Cautionary use until products are declared provisional/operational