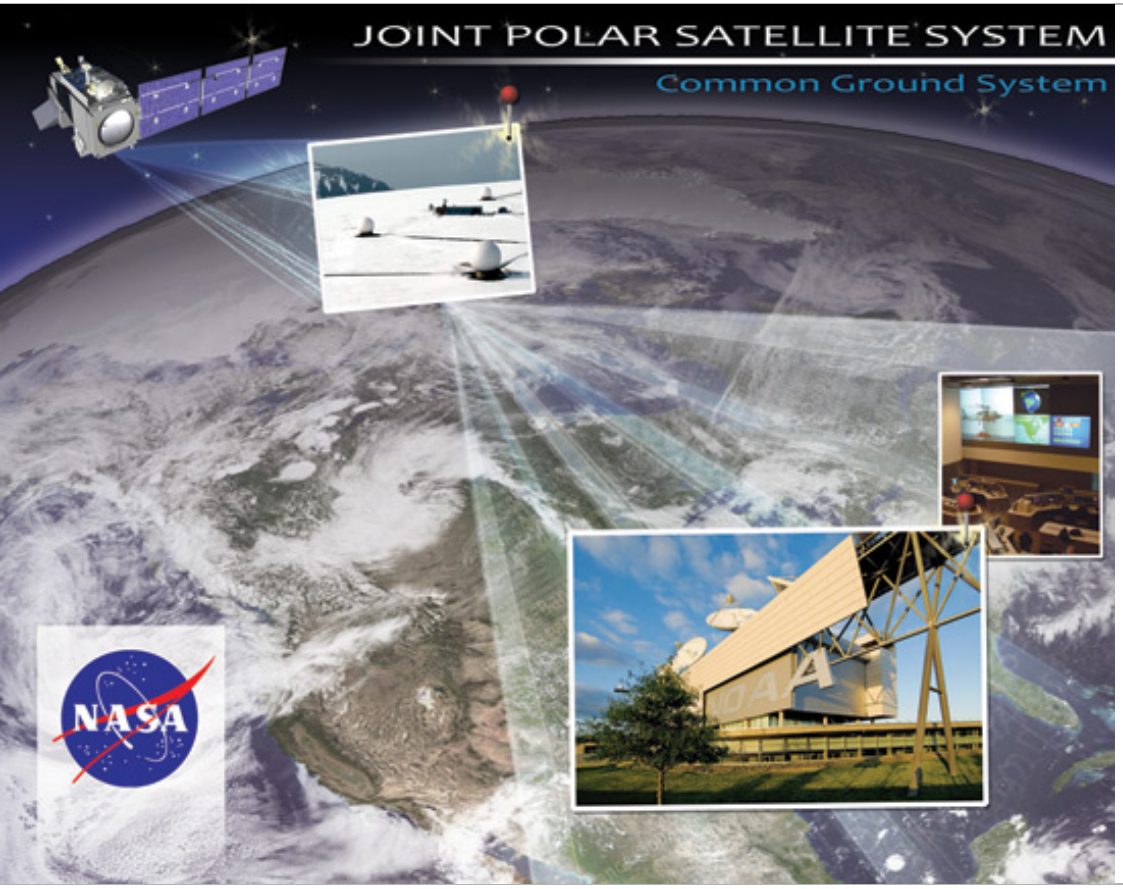

JPSS IDPS System JPSS-1 Readiness – IDPS Product Perspective

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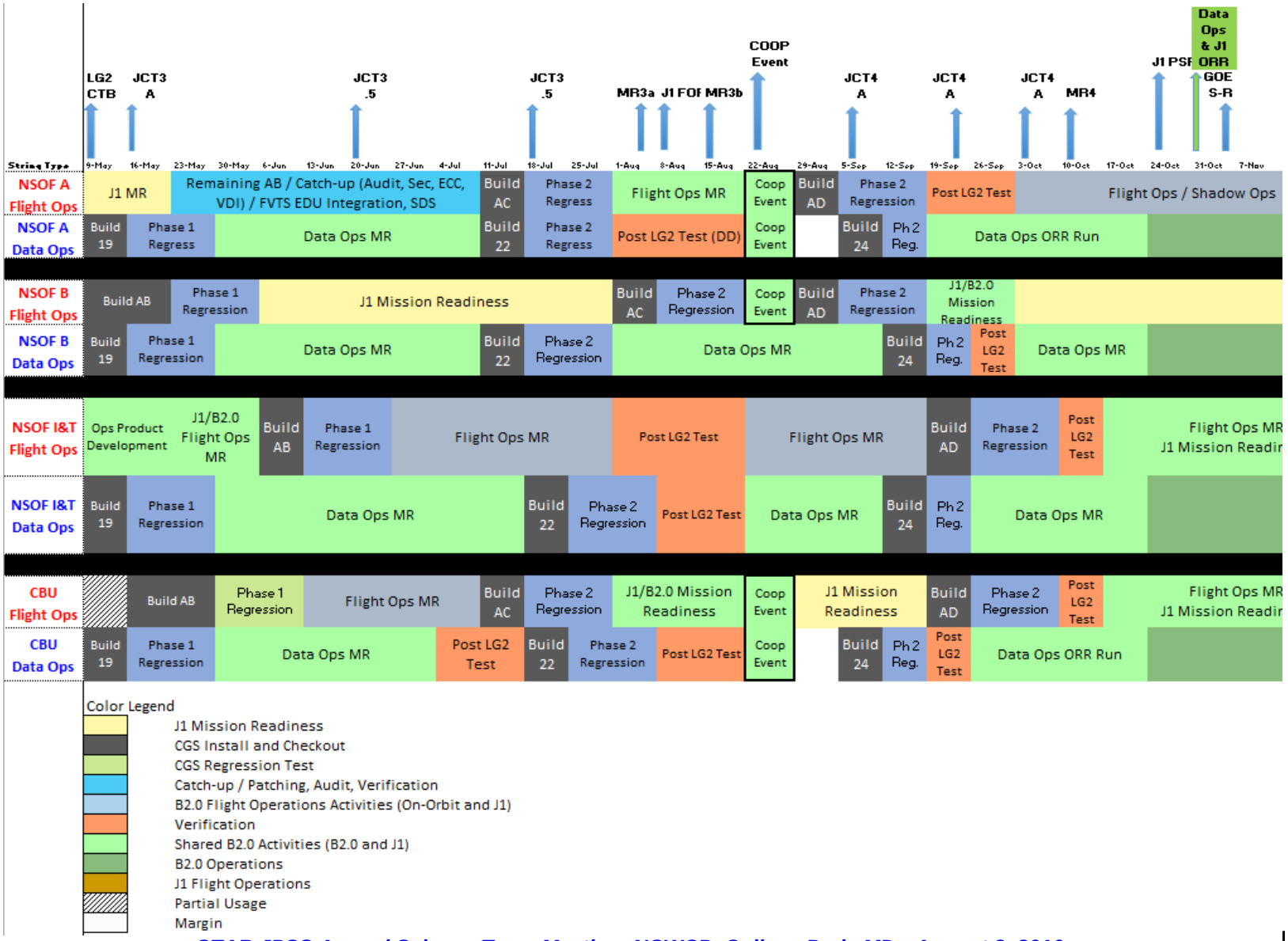
STAR JPSS
2016 Annual Science Team Meeting
NCWCP, College Park, MD
August 8, 2016

RAYTHEON COMPANY
INTELLIGENCE, INFORMATION AND SERVICES (IIS)
JPSS CGS PROGRAM
AURORA, COLORADO

Outline

- Block 2.0 – IDPS Milestones
- Block 2.0 – IDPS Build Plan
- Block 2.0 – ADL Build Plan
- ATMS Algorithm and SRS Updates
- CrIS Algorithm and SRS Updates
- OMPS Algorithm and SRS Updates
- VIIRS SDR/GEO Algorithm and SRS Updates
- VIIRS Imagery Algorithm and SRS Updates
- LG2 Test Analysis Results
- Post LG2 Test Event

Block 2.0 – IDPS Milestones



Block 2.0 - IDPS Build Plan (v77)

Time Frame	Build	Identifier	Linux shared CSI branch open for	COTS Upgrade Eval Complete	Final Code Cutoff	SegInt Nightly Checkout	Letter Build Date	PDR Generation	Letter Build Checkout Completed	Content	Milestone
PSAT	PSAT_13	I2.0.00.00.13	11/13/2015	11/12/2015	11/30/2015	12/1/2015	12/2/2015	N/A	12/9/2015	GPAT Critical PCRs OMPS Compression AMSR2	
	PSAT_14	I2.0.00.00.14	12/1/2015	12/1/2015	12/14/2015	12/15/2015	12/16/2015	N/A	12/18/2015	GPAT Critical PCRs	
	PSAT_15	I2.0.00.00.15	12/15/2015	12/22/2015	1/14/2016	1/15/2016	1/18/2016	1/20/2016	1/21/2016	JCT/ORR Critical PCRs	R3G2 25 Jan--22 Feb
	PSAT_16	I2.0.00.00.16	1/15/2016	1/18/2016	2/4/2016	2/5/2016	2/8/2016	2/11/2016	2/19/2016	JCT/ORR Critical PCRs M11 at night CrIS (FS) SDR	Targeted DRs 29 Feb-11 Mar
	PSAT_16.01	I2.0.00.00.16.01	N/A	N/A	3/15/2016	3/15/2016	3/15/2016	N/A	3/16/2016	PCR055913--Data Production Report Deliveries	LG2 TRR 24 Mar
	PSAT_17	I2.0.00.00.17	2/5/2016	2/22/2016	3/3/2016	3/4/2016	3/7/2016	3/10/2016	3/15/2016	VIIRS Sensor Char Oracle Failover: Connection Pooling JCT/ORR Critical PCRs	
	PSAT_18	I2.0.00.00.18	3/4/2016	3/7/2016	3/17/2016	3/18/2016	3/21/2016	3/24/2016	3/28/2016	JCT/ORR Critical PCRs Oracle Failover: DMS low-level DB auto retry	
	PSAT_19	I2.0.00.00.19	3/18/2016	3/28/2016	4/7/2016	4/8/2016	4/15/2016	4/17/2016	4/26/2016	JCT/ORR Critical PCRs ATMS Full Radiance	Phase 1 CGS Regression Development Release (4/25)
	PSAT_20	I2.0.00.00.20	4/8/2016	4/18/2016	4/28/2016	4/29/2016	5/2/2016	5/5/2016	5/17/2016	JCT/ORR Critical PCRs	
	PSAT_21	I2.0.00.00.21	4/29/2016	5/9/2016	5/19/2016	5/20/2016	5/23/2016	5/26/2016	6/6/2016	JCT/ORR Critical PCRs OMPS NP Table Updates	
	PSAT_22	I2.0.00.00.22	5/20/2016	5/30/2016	6/9/2016	6/10/2016	6/13/2016	6/16/2016	6/17/2016	JCT/ORR Critical PCRs	Phase 2 CGS Regression Development Release (7/11)
	PSAT22.01	I2.0.00.00.22.01	7/6/2016	7/6/2016	7/6/2016	7/6/2016	7/7/2016	7/7/2016	7/7/2016	VCID/APID Mapping Updates (CCR-1049)	
	PSAT_23	I2.0.00.00.23	6/10/2016	6/20/2016	6/30/2016	7/1/2016	7/4/2016	7/7/2016	7/8/2016	JCT/ORR Critical PCRs	
	PSAT_24	I2.0.00.00.24	7/1/2016	7/11/2016	7/21/2016	7/22/2016	7/28/2016	7/29/2016	8/1/2016	JCT/ORR Critical PCRs ATMS Sensor/Table Updates	Phase 3 CGS Regression Development Release (9/5) ORR Release
	PSAT_25	I2.0.00.00.25	7/22/2016	8/1/2016	8/11/2016	8/12/2016	8/15/2016	8/18/2016	8/19/2016	JCT/ORR Critical PCRs	
	PSAT_26	I2.0.00.00.26	8/12/2016	8/22/2016	9/1/2016	9/2/2016	9/5/2016	9/8/2016	9/9/2016	JCT/ORR Critical PCRs	
	PSAT_27	I2.0.00.00.27	9/2/2016	9/12/2016	9/22/2016	9/23/2016	9/26/2016	9/29/2016	9/30/2016	JCT/ORR Critical PCRs	
	PSAT_28	I2.0.00.00.28	9/23/2016	10/3/2016	10/13/2016	10/14/2016	10/17/2016	10/20/2016	10/21/2016	JCT/ORR Critical PCRs	
	PSAT_29	I2.0.00.00.29	10/14/2016	10/24/2016	11/3/2016	11/4/2016	11/7/2016	11/10/2016	11/11/2016	JCT/ORR Critical PCRs	ORR 10/28

Block 2.0 - ADL Build Plan (v9)

Build		IDPS Baseline Compatibility	IDPS Letter Build Date	ADL Letter Build Date	Content	Notes
ADL5.3_PSAT_22	ADL5.3_2.0.00.00.22	I2.0.00.00.22	6/17/2016	7/1/2016	JCT/ORR critical PCRs	Available on Common CM and media delivered
ADL5.3_PSAT_23	ADL5.3_2.0.00.00.23	I2.0.00.00.23	7/8/2016	7/22/2016	JCT/ORR critical PCRs	Available on Common CM and media delivered
ADL5.3_PSAT_24	ADL5.3_2.0.00.00.24	I2.0.00.00.24	8/1/2016	8/15/2016	JCT/ORR critical PCRs	
ADL5.3_PSAT_25	ADL5.3_2.0.00.00.25	I2.0.00.00.25	8/19/2016	9/2/2016	JCT/ORR critical PCRs	
ADL5.3_PSAT_26	ADL5.3_2.0.00.00.26	I2.0.00.00.26	9/9/2016	9/23/2016	JCT/ORR critical PCRs	
ADL5.3_PSAT_27	ADL5.3_2.0.00.00.27	I2.0.00.00.27	9/30/2016	10/14/2016	JCT/ORR critical PCRs	
ADL5.3_PSAT_28	ADL5.3_2.0.00.00.28	I2.0.00.00.28	10/21/2016	11/4/2016	JCT/ORR critical PCRs	
ADL5.3_PSAT_29	ADL5.3_2.0.00.00.29	I2.0.00.00.29	11/11/2016	11/25/2016	JCT/ORR critical PCRs	

ATMS Algorithm Updates

ADR	Title	Description	X-Ref	Build	Status
8224	Update JPSS-1 ATMS PCT with final instrument mounting matrix coefficients	Update instr2scMatrix coefficients in J1 ATMS PCT with post-dynamic measurement results.	474-CCR-16-2981	PSAT_xx	
8199	JPSS-1 ATMS PCT (Preliminary Version) Delivery	Preliminary version of JPSS-1 ATMS PCT is going to be delivered based on current NGES TVAC draft report. A good part of coefficients are still under revision. According to NASA flight	474-CCR-16-2955 PCR058549	PSAT_24	
8070	ATMS SDR: Triggering Logic Issues with (KAV/WG/Shelf) PRT Conversion Error QFs	As part of the RTN IDPS AAV verification activity, we tried at the factory to create a non-nominal condition to trigger these QFs, but we were unsuccessful. We believe there are	PCR052649		Rejected
8068	ATMS 8-17-2015 TDR/SDR outages related to scan reversal	From recent ATMS scan reversal event on Aug. 17, 2015, we found some unexpected TDR/SDR outages which lasted for at least 7 min.	PCR052498		Rejected
7966	ATMS Full Radiance Processing	Change ATMS calibration processing by full radiance instead of R-J approximation. This will affect both ATMS TDR and ATMS SDR.	474-CCR-15-2497 PCR053562 (PRO) PCR053563 (DPGD) PCR053564 (OAD)	PSAT_19	
7954	Correct errors in ATMS PCT warmBiasCorrection	In January, Joseph Lyu discovered, and Neal Baker confirmed, that the warmBiasCorrection coefficients (3x22 array) in the ATMS PCT are using the wrong values. They should be the values from the NPP Cal Data Book, but somehow other values are in place. This is a simple correction to restore the correct	474-CCR-15-2497 PCR053562 (PRO) PCR053563 (DPGD) PCR053564 (OAD)	PSAT_19	

ATMS Software Requirements Specification (SRS) Updates

- CCR-15-2745 - Update JPSS Algorithm Specifications– ATMS RDR/TDR/SDR Volume I and II
  - SRS Vol II update for QF19 (ATMS Data Gap Quality Flag) in Table 5.1.2-1 ATMS TDR Product Profile from CCR-15-2228 (ADRs 7820/7942)
- CCR-16-2991 - ATMS SDR - Corrections to SRS Parameter File (SRSPF)
  - SRSPF update to provide clarification of the ATMS "shelfPRT_ConvERR" QF triggering logic; driven by Block 2.0 Analysis and Verification (AAV) activity

CrIS Algorithm Updates (1/2)

ADR	Title	Description	X-Ref	Build	Status
8223	ADL BLK 2.0 cannot process J1 test data	The J1 test data are generated by the DRL STPS software in HDF5 format. First, ADL BLK 2.0 was not able to unpack the			
8210	CrIS Mounting Coefficients for J1	The mounting coefficients is a 3 X 3 rotation matrix. The coefficients are stored as part of the PCT input file.	474-CCR-16-2978	PSAT_26 (TBD)	
8209	ADL unpacker not working with J1 test data (15 granule file)	The J1 spacecraft level testing data are aggregated into 15 granules (60 scan, 8 minutes) file. The ADL unpacker in Block			
8188	Missing TLE	Raytheon uncovered a bug when the TLE files was older than 30 days in LGG testing. PCR 0571511 was submitted	PCR057151	PSAT_21	
8178	CrIS RDR of Block 1.2 and Block 2.0 differ	On 4/8/2016 IDPS generated CrIS SDR for block 1.2 and 2.0 at full spectral resolution as part of LGG testing. It was found			Closed
8175	CrIS SDR anomaly on 4/1/2016	CrIS SDR produced bad data for about 45 minutes on 4/1/2016 due to the in-track servo motor tilt error. A possible			Cancelled
8069	CrIS SDR: Issues with CrIS SDR DS/ICT Spectral Stability Calculation when missing DS/ICT packets	The purpose of this ADR is to document the following issue and agree on a path forward to understand/fix it: The Issue:	PCR053286 (Blk 1 - rejected) PCR052650 (Blk 2)	PSAT_22	
8057	Inconsistent DQI in FCE module	The FCE module was delivered on 08/2015. These 2 tests were performed: 1) run the original J1 code with the FCE module turned OFF, 2) Run the J1 code with FCE module turned ON	474-CCR-16-2979 DR4481 DR7487	PSAT_26 (TBD)	
8001	CrIS Incorrect FOR set to 32	One granule was incorrectly set to FOR =32. However, the CrIS SDR processing did not calculate the product for 9 granules.on	DR7571		Cancelled
7982	Change maxLunarRadiance to an array and check all bands for lunar intrusion	In the PCT file, the parameter named maxLunarRadiance has the value 10.0 (float32). This value should be changed into	474-CCR-16-2979 DR4481	PSAT_26 (TBD)	
7968	CrIS SDR FOV Remapping	In CrIS SDR, the geolocation parameters are remapped such that FOV 1 to FOV 3, 3 to 1, 4 to 6, 6 to 4, 7 to 9, and 9 to 7.	474-CCR-16-2979 DR4481	PSAT_26 (TBD)	
7951	Geolocation Issue-Orbital Inclination differs from TLE	Given S/C position R and velocity V vectors, the orbital inclination (i) is			Cancelled
7895	CrIS Concurrent Archival Full Spectral SDR and Operational Truncated Spectral SDR	For Block: 2.0 The current IDPS Block 1.2 produces CrIS truncated spectral (TS) SDR, and that SDR is a key product. We must continue to produce the TS SDR until the Program has validated that transition to a full spectral (FS) SDR may be accomplished	474-CCR-15-2536 PCR051646 (OAD) 474-CCR-15-2278 PCR048581 (Parent) PCR048586 (PRO)	PSAT_16	Closed

CrIS Algorithm Updates (2/2)

ADR	Title	Description	X-Ref	Build	Status
7850	CrIS SDR Spectral Ringing	The CrIS SDR spectral IDPS outputs are seen to demonstrate ringing, where ringing is defined as noticeable amplitude oscillations (positive to negative). Initial observation of CrIS SDR spectral ringing was made prior to CrIS SDR Validated	474-CCR-15-2395 DR7851 DR7926 474-CCR-15-2304	Post J1 Launch (TBD)	
7487	Reorder CrIS Calibration Equations	Update CrIS SDR software to reorder the calibration equations to improve the accuracy of the SDR product.	474-CCR-16-2979 DR4481	PSAT_26 (TBD)	
7486	CrIS High Resolution Processing	Update CrIS SDR software to support reading the high resolution RDR data and produce high resolution SDR data Impact Statement: Without this improvement only low	474-CCR-15-2278 PCR048586 (PRO)	SAT_06	Closed
7445	CrIS SDR: Impulse Noise Count Threshold Issues in the CrIS PCT/Code	While performing analysis work for the "PCR035944/DR7363 CrIS Incorrect Impulse Noise Count", I found the following issue: The CrIS PCT: CrIS-SDR-	PCR049994 (Blk 2) PCR036519 (Blk 1 - rejected) 474-CCR-16-2895 (SRS DD Vol II)	PSAT_13	Closed
4508	Earth spectra quality flag set to degraded when FCE detected	Considering only the event where an Earth spectrum has a FCE and it has been	PCR029555	Post J1 Launch (TBD)	
4481	Fringe count error correction algorithm does not work for cold Earth scenes.	The CrIS SDR ATBD (D443773 Rev D) on page 51 states: "..(CrIS) SDR algorithm uses only the positive square root term in the denominator of phase extraction function, equation (14), to	474-CCR-16-2898 474-CCR-16-2985 (SRS)	PSAT_26 (TBD)	

CrIS SRS Updates (1/2)

- CCR-15-2536 - Update CrIS SDR OAD for Full Spectral Resolution Values-One Section
  - Update to OAD Section 2.1.1.2 to account for updated wavelengths, bin numbers, etc. per CrIS FSR SDR updates per CCRs 15-2278 and 15-2446
- CCR-15-2587 - Update the SRSPF for CrIS Full Spectral Resolution SDR
  - Update to SRSPF to account for updated QF conditions per CrIS FSR SDR updates per CCRs 15-2278 and 15-2446
- CCR-16-2814 - ALG SRS CrIS RDR_SDR Vol I&II
  - Multiple updates, e.g., tables, QF logic, etc.; driven by CrIS Science Team and Raytheon
- CCR-16-2895 - Remove Field Impulse Noise – ADR 7445
  - Update to SRS Vol II “Data Dictionary” to per updated software implementation per ADR 7445/PCR049994

CrIS SRS Updates (2/2)

- CCR-16-2979 - CrIS SDR update for inconsistent DQI - ADR 8057
  - Update to SRS Vol II “Data Dictionary” per updated software implementation per CCR 16-2979
- CCR-16-2985 - Update 474-00448-01-03 SRS for CrIS FCE Exception
  - Update to SRS Vol I to indicate that the activation of fringe count error processing, per CCR 16-2898, will be deferred until the optimization of the algorithm meets latency.
- CCR-16-2992 - CrIS SDR - Corrections to SRSPF
  - SRSPF update to provide clarification of the CrIS “ICT Spectral Stability” QF triggering logic; driven by Block 2.0 Analysis and Verification (AAV) activity

OMPS EV SDR Algorithm Updates

ADR	Title	Description	X-Ref	Build	Status
8225	OMPS Dark Cal transition to GRAVITE	Weekly OMPS Dark Count Ground-PIs are currently manually produced, tested, and put through the Fast Track CCR process.			
8212	OMPS NP J1 prelaunch tables - v2	Deliver the second version of the OMPS NP J1 prelaunch tables based on further analysis of prelaunch test data.	474-CCR-16-2963	PSAT_xx (TBD)	
8211	OMPS TC J1 prelaunch tables - v2	Deliver the second version of the OMPS TC J1 prelaunch tables based on further analysis of prelaunch test data.	474-CCR-16-2962	PSAT_xx (TBD)	
8198	Short granules and offset granules between OMPS NP and NM	We have implemented an aggregator in the OMPS NM SDR processing and plan to use it to allow expanded content in			
8159	OMPS NP J1 prelaunch tables - v1	Deliver the initial version of the OMPS NP J1 prelaunch tables based on analysis of prelaunch test data.	474-CCR-16-2849 PCR057419 (DPGD)	PSAT_21	
8158	OMPS TC J1 prelaunch tables - v1	Deliver the initial version of the OMPS TC J1 prelaunch tables based on analysis of prelaunch test data.	474-CCR-16-2848 PCR057417 (DPGD)	PSAT_23	
8139	OMPS Nadir Profiler table updates for S-NPP Block 2.0	Tables compatible with the Block 2.0 OMPS Nadir Profiler algorithm are needed.	474-CCR-16-2765 PCR057152	PSAT_20	
8088	OMPS Nadir Mapper table updates for Block 2.0	Three new tables were provide for the OMPS Nadir Mapper for Block 1.2 in CCR 15-2547.	474-CCR-16-2764 PCR056817	PSAT_20	
7826	OMPS TC Wavelength GND-PI and Solar irradiance LUT fields values in the CDFCB are	A functional test of a Wavelength GND-PI update and OSOL LUT uncovered fields that were out of bound. These fields are	474-CCR-15-2546 PCR051639 (PRO DPGD, Blk	SAT_10	Closed
7825	OMPS NP SDR Wavelength GND-PI inconsistent field values in the XML	A functional test of a Wavelength GND-PI update for CCR 2053, uncovered fields that seemed out of bound and an	474-CCR-15-2546 PCR051639 (PRO DPGD, Blk	SAT_10	Closed
7340	TC EV SDR pre-processor to ingest high-resolution data	The current J1 plans include the generation of high-resolution data. In particular, the plans include a 3D flexible data cube	474-CCR-15-2432 (Phase 2) PCR051556 (PRO)	SAT_13, SAT_14	
7249	JPSS -1 Algorithm Improvements: Mandated: OMPS NP SDR	The OMPS NP SDR cal/val team has identified JPSS-1 algorithm improvements mandated in the Level 1 RD. This DR serves as	PCR051582 (PRO) 474-CCR-15-2469 (Phase 2)	SAT_13, SAT_14	
7248	JPSS-1 Algorithm Improvements: Mandated: OMPS NTC SDR	The OMPS NTC SDR cal/val team has identified JPSS-1 algorithm improvements mandated in the Level 1 RD. This DR	474-CCR-15-2432 (Phase 2) PCR051556 (PRO)	SAT_13, SAT_14	

- CCR-16-vvvv/ADR zzzz - J1 OMPS Sensor Mounting Coefficients (PSAT_xx (TBD))

OMPS EV SDR SRS Updates

- CCR-15-2629 - OMPS NP SDR Correct SRSPF
  - SRSPF update to provide clarification of the NP LIN CORR QF triggering logic and removal of MISS Fill condition; driven by Block 2.0 Analysis and Verification (AAV) activity
- CCR-15-2630 - OMPS TC SDR Correct SRSPF
  - SRSPF update to provide clarification of the TC LIN CORR QF triggering logic and clarification/correction of MISS and VDNE Fill conditions; driven by Block 2.0 Analysis and Verification (AAV) activity
- CCR-15-2731 ALG SRS Vol II OMPS TC RDR_SDR
  - Multiple table updates per updated software implementation per CCRs 15-2283 and 15-2546
- CCR-16-2818 ALG SRS OMPS Nadir RDR_SDR Vol I&II
  - Multiple table updates driven by OMPS Science Team and Raytheon

VIIRS SDR/GEO Algorithm Updates (1/9)

ADR	Algorithm	Title	Description	X-Ref	Build	Status
8226	SDR	Is the VIIRS DNB radiation thresholding working?	The huge discrepancy between adjacent pixels in a largely uniform cloud-top background suggests that the SAA threshold			
8208	GEO	Calculate Bounding Box numCrosses and numQuadrants issues (PCR054702)	During a testing event, received an invalid number of dateline crossings message	PCR054702		
8197	SDR	VIIRS SDR Update for J1 Radience Limits	J1 VIIRS radiance limits are expected to be different from SNPP radiance limits due in part to the absence of RTA degradation			
8196	GEO	SNPP spacecraft z-axis off nadir 17 degrees during orbit adjust maneuvers	SNPP and the follow-on JPSS spacecraft perform orbit adjustment maneuvers to maintain the orbit configuration for			
8176	GEO	Erroneous timestamp step limits in VIIRS Geo LUT document from Ops values	In 474-00001-08_JPSS-CDFCB-X-Vol-VIII_0124, Table 3.2.1.4.80-1, we found errors in two entries in the VIIRS SDR GEO PARAM PC			
8164	GEO	VIIRS GEO QF2 erroneously described in OAD	The GEO QF2 in Table 13 is erroneously described.			
8161	SDR	J1 VIIRS Prelaunch LUTs: Version 2	Deliver the first update (version 2) of the J1 Prelaunch LUTs based on prelaunch test data analysis, and inputs from the data working group, the vendor, and the flight project	474-CCR-16-2859 474-CCR-15-2589 (DR 7996)	PSAT_xx	
8160	GEO	Sector rotation flagging in SNPP VIIRS ground SW will set FILLs in J1 VIIRS SDR(Cal)/Geo	The existing SNPP VIIRS SDR (Cal + Geo) code will set FILLs to the J1 VIIRS Cal and Geo products, rendering the J1 VIIRS	474-CCR-16-2890 PCR057420	PSAT_21	
8137	GEO	Spacecraft Diary drops and subsequent Two Line Element use in IDPS 2016 updates and	TLE use continues on a regular basis and the VIIRS Geolocation team believes this should be made a Mission	Mission DR#?		
8059	SDR	VIIRS SDR radiometry error when saturated thermal band pixels are included in on-board aggregation	Single gain bands are aggregated on-board for scan angles from Nadir to about 45 degrees. In the case of thermal bands when viewing very hot fires, the M15 and other bands saturate			
8047	SDR	J1 Prelaunch LUTs: Version 0	Deliver the initial version of the J1 Prelaunch LUTs based on prelaunch test data analysis, and inputs from the data			
8036	GEO	VIIRS GEO Code Change to Accommodate J1 DNB Agg Mode Change	JPSS J1 VIIRS DNB has anomalous non-linear response at high scan angles based on prelaunch testing. The flight project has	474-CCR-15-2590		
8018	GEO	J1 VIIRS Geo SCE SideB HAM mirror LUT Missing	For NPP VIIRS geolocation LUTs, resolution of DR 4737 made a field in the LUT, namely, poly_coef_tel for converting the telescope encoders to angles from one-dimensional to two-			

VIIRS SDR/GEO Algorithm Updates (2/9)

ADR	Algorithm	Title	Description	X-Ref	Build	Status
8012	SDR	Update VIIRS-SDR-CAL-AUTOMATE-LUT to put RSBAUTOCAL for F, H, and DNB LGS Gain in Automated Mode	After thorough analysis of the H factors, F factors, and DNB LGS Gain values from RSBAUTOCAL in manual mode, the Aerospace RSBAutoCal development team has determined that these calibration objects will be ready to be switched to automated	474-CCR-15-2608 PCR053550	Mx8.11.03	
7996	SDR	J1 VIIRS DNB calibration LUTs for DNB Option 21 (Option 26): Version 0	Deliver the initial version of the J1 DNB Calibration LUTs for Option 21 (Option 26) based on prelaunch test data analysis,	474-CCR-15-2589 PCR055094	PSAT_17	
7755	SDR	VIIRS SDR include band M11 in nighttime operations	Intro: Need to support the Nightfire Algorithm, currently using DNB,	474-CCR-14-2020 PCR054867	PSAT_16	

- CCR-16-qqqq/ADR nnnn - J1 VIIRAS Sensor Mounting Coefficients (PSAT_xx (TBD))

VIIRS SDR/GEO Algorithm Updates (3/9)

- CCR-14-1681 VIIRS SDR DQTT Update & DQN Activation - DR 7140
  - VIIRS SDR DQTTs (22 bands: 5 I-Band “I1-I5”, 16 M-Band “M1-M16” and DNB) were updated under CCR 14-1681
  - The Updated 22 DQTTs were delivered to OPS I&T under WR-24737 on 2015-07-29 18:26:43z (5 I-Band and 16 M-Band) and 2015-07-29 22:34:42z (DNB); Mx8.10
  - RTN IDPS OAA analyses that drove the current DQTT values were based on data from:
    - CLASS: Oct'12 (Mx6.4), Jan'13 (Mx6.5)
    - Factory GISF I&T w/ enabled DQTTs: Mar'13 (Mx6.6)
  - RTN MST-MDA performed a high-level analysis using 2-wk worth of VIIRS SDR bands and generated DQNs (11/12/15 - 11/30/15); Mx8.10
  - The MST-MDA analysis shows bands DNB, I3 [RSB, D], M7 [RSB, D/N], M8 [RSB, D/N], M9 [RSB, D], M10 [RSB, D/N] and M11 [RSB, D], being the heavy hitters WRT DQN generation

VIIRS SDR/GEO Algorithm Updates (4/9)

- CCR-14-1681 VIIRS SDR DQTT Update & DQN Activation - DR 7140 (Cont.)
  - The MST-MDA study collected other associated granule-level information, e.g., Day/Night Status, Ascending/Descending Orbit, Graceful Degradation Condition, Maneuver Status, RDR-related information (% Erroneous, % Missing and % Not Applicable)
  - The “High Volume” DQN trend for the band sub-set was not observed in the conducted tests/analyses during the 2012/2013 (Mx6.4 – Mx6.6) data collection periods
  - For DNB, this trend is known and expected due to the negative impact of the Stray Light Correction (SL Corr) on the quality of the produced DNB SDR

VIIRS SDR/GEO Algorithm Updates (5/9)

- CCR-14-1681 VIIRS SDR DQTT Update & DQN Activation - DR 7140 (Cont.)
  - RTN IDPS OAA in-depth analysis (in progress; on and off depending on other competing priorities) focuses on identifying any correlation/dependency b/n the “High Volume” DQN trend for the listed bands and other factors/inputs as:
    - VIIRS SDR updates b/n Mx6.6 and Mx8.11 that would have impacted the logic for some of the lower-pixel-level QFs that feed into the pixel-level “SDR Quality” QF
    - “Day vs Night” granule status and if code updates were implemented that would have affected SDR Fill Value behavior
    - Updated DQTT values and whether some value relaxation is needed for some of the bands
    - Other factors
  - Once the “culprit” factor(s) is(are) identified and if it’s determined that code update/DQTT value update is required, OAA will communicate the findings to the VIIRS SDR Science team and NASA IDPS and receive their feedback and recommendation

VIIRS SDR/GEO Algorithm Updates (6/9)

- CCR-14-1681 VIIRS SDR DQTT Update & DQN Activation - DR 7140 (Cont.)
  - RTN IDPS OAA in-depth analysis (in progress; on and off depending on other competing priorities) focuses on identifying any correlation/dependency b/n the “High Volume” DQN trend for the listed bands and other factors/inputs as:
    - VIIRS SDR updates b/n Mx6.6 and Mx8.11 that would have impacted the logic for some of the lower-pixel-level QFs that feed into the pixel-level “SDR Quality” QF
    - “Day vs Night” granule status and if code updates were implemented that would have affected SDR Fill Value behavior
    - Updated DQTT values and whether some value relaxation is needed for some of the bands
    - Other factors
  - Once the “culprit” factor(s) is(are) identified and if it’s determined that code update/DQTT value update is required, OAA will communicate the findings to the VIIRS SDR Science team and NASA IDPS and receive their feedback and recommendation

VIIRS SDR/GEO Algorithm Updates (7/9)

- Missing S/C Diary Packets and TLE Usage in GEO Generation
  - Downlink from the S/C interleaves, or multiplexes, the Diary APs (APIDs 0, 8 and 11) with all other data streams, e.g., Sensor Science/CAL APs.
  - Space link VCID 0 contains the Diary APIDs, and other APIDs are sent on other channels
  - Ground link from Svalbard interleaves, or multiplexes, the Diary APs with all other data streams
  - IDPS ING assembles the Diary APIDs into Diary RDRs
  - Missing S/C Diary APs can be due to the S/C Downlink, C3S to IDPS or/and IDPS ING
  - If the missing S/C Diary APs are retransmitted to ING, ING would create repaired S/C Diary RDRs
  - Depending on the length “period” of the missing S/C Diary A&E APs, if the gap is small enough, then IDPS PRO SW could employ interpolation from neighboring packets to compensate for the missing A&E APs, a combination of interpolation and TLE usage could be used (larger gap), or only TLE is used (much larger gap)

VIIRS SDR/GEO Algorithm Updates (8/9)

- Missing S/C Diary Packets and TLE Usage in GEO Generation (Cont.)
  - IDPS GEO QF "A&E Availability Status" is triggered accordingly to indicate nominal case (value of zero; S/C Diary is used), or missing S/C A&E APs (values of 1, 2, or 3)
  - IDPS PRO SW uses the TLE (provided by CGS C3S once/day), propagates using SGP4 and creates ephemerides (EPH only no ATT; perfect attitude is assumed "Zero RPY")
  - If S/C Diary APs are missing or arrive late WRT to sensor Science/CAL APs, then, triggered SDR Controller (based on available sensor Science RDR) forces triggered corresponding GEO product to use TLE due to the absence of the corresponding S/C Diary RDRs
  - Repaired S/C Diary RDR (e.g., A2) will NOT trigger the creation of an A2 GEO granule. If it happens that a repaired VIIRS SCI RDR is created and that repaired VIIRS SCI RDR caused the tasking of the SDR controller, then a repaired GEO granule will be created that may use that repaired S/C Diary RDR

VIIRS SDR/GEO Algorithm Updates (9/9)

- Missing S/C Diary Packets and TLE Usage in GEO Generation (Cont.)
  - To fix the problem of sync_ing the downlinked S/C Diary with the downlinked Science/Instrument data JSH PCR PCR058497 is created.
  - As part of IDPS effort to reduce A2 generation, IDPS ING is updating RDR release timing CFG (PCR058806) and evaluating the impact of adding the S/C Diary to the Science SDR Workflow Preconditions (PCR038616)

VIIRS SDR/GEO SRS Updates (1/2)

- CCR-16-2993 - VIIRS SDR-Corrections to SRSPF
  - SRSPF update to provide clarification on the triggering of the “SDR Quality” QF to remove the condition of “SDRQual - No Calibration when saturation occurs;” driven by Block 2.0 Analysis and Verification (AAV) activity
- CCR-16-2891 – VIIRS SDR Correct SRSPF (ADR 7995)
  - SRSPF update to provide clarification on the triggering of the GEO “Automatic” QF to remove the 'degraded' condition and state that the QF is only set when the HAM/RTA Encoder flag is set to 'Bad' or ‘Missing' data; driven by Block 2.0 Analysis and Verification (AAV) activity
- CCR-16-2768 - ALG SRS VIIRS RDR_SDR Vol I & II
  - Multiple Vol II updates driven by VIIRS Science Team and Raytheon:
    - Update Radiance and Reflectance/Brightness Temperature Bounds/Ranges & Quality Flag inconsistencies per CCRs 15-2345 and 15-2321
    - VIIRS GEO update to accommodate J1 DNB Agg Mode Change per CCR 15-2590
    - Scan Controller Electronics Side QF per CCR 12-0730

VIIRS SDR/GEO SRS Updates (2/2)

- CCR-16-2767 - VIIRS RDR_SDR Correct SRSPF
  - SRSPF updates driven by Block 2.0 Analysis and Verification (AAV) activity:
    - Add in APIDs 827 and 828 for VIIRS DNB
    - Correction and clarification to QF logic
    - Correction to Fill values for certain fill conditions
- CCR-15-2510 – SRSPF Updates for VIIRS M11 at Night

VIIRS Imagery Algorithm Updates

ADR	Title	Description	X-Ref	Build	Status
8161	J1 VIIRS Prelaunch LUTs: Version 2	Deliver the first update (version 2) of the J1 Prelaunch LUTs based on prelaunch test data analysis, and inputs from the data working group, the vendor, and the flight project. VIIRS SDR Science team to create updated version of the J1 Prelaunch	474-CCR-16-2859 474-CCR-15-2589 (DR 7996)	PSAT_xx	
7257	JPSS-1 Algorithm Improvements: Recommended: VIIRS Imagery	The VIIRS Imagery EDR cal/val team has provided recommendations for JPSS-1 algorithm improvements. This DR serves as a tracking and	DR4653		

VIIRS Imagery SRS Updates

- CCR-15-2626 - VIIRS Imagery Correct SRSPF
  - SRSPF update to provide clarification on the usage of MISS and ELINT Fill values; driven by Block 2.0 Analysis and Verification (AAV) activity
- CCR-16-2776 - ALG SRS VIIRS Imagery Vol I & II
  - Multiple Vol II updates driven by VIIRS Science Team and Raytheon:
    - Update Radiance and Reflectance/Brightness Temperature Bounds/Ranges & Quality Flag inconsistencies per CCRs 15-2345 and 15-2321
    - Add previously missed processing coefficient format for the VIIRS Near Constant Contrast Imagery PCT VIIRS-NCC-EDR-AC

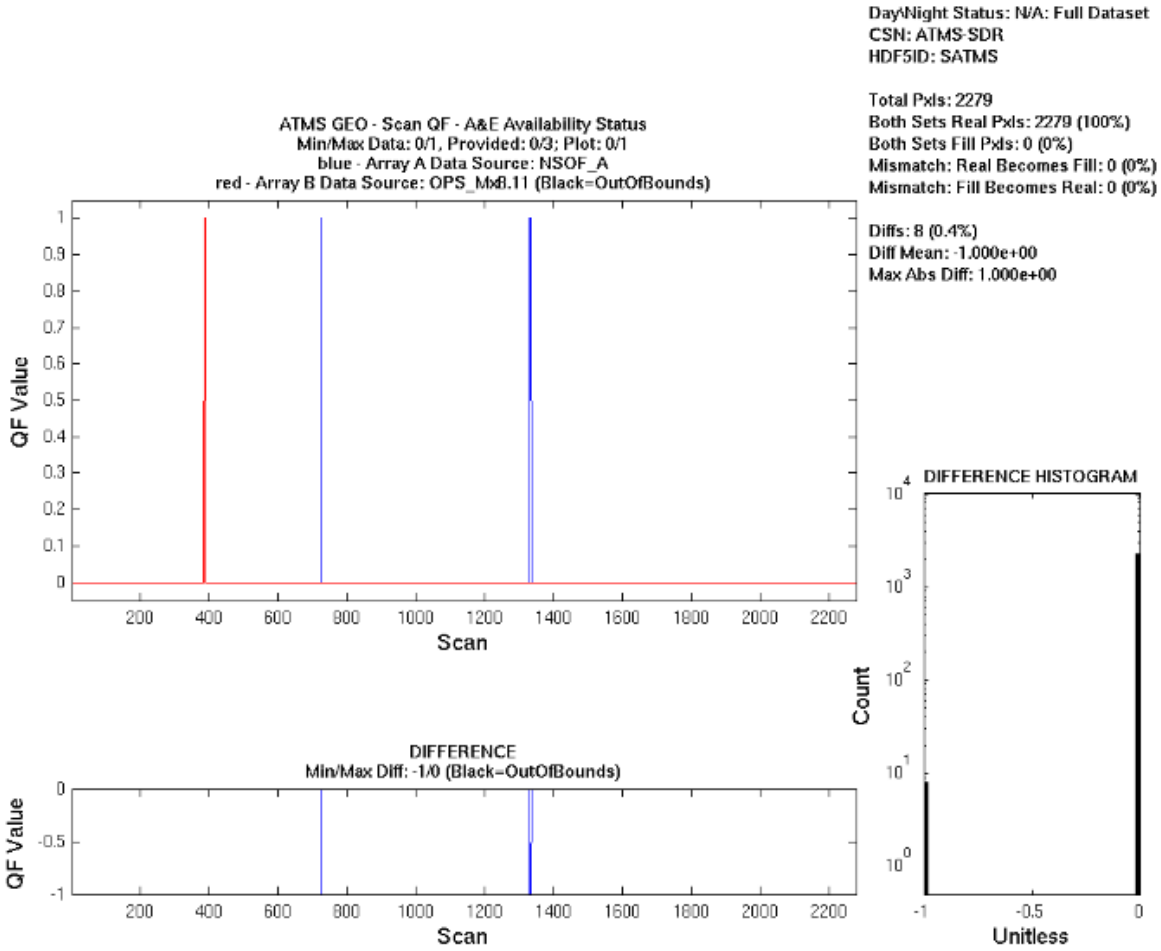
LG2 Test Analysis Results ATMS (1/5)

- ATMS TDR, SDR and GEO products from Block 2 LG2 (PSAT 16 based) “NSOF-A, NSOF-B, NOSF-I&T, CBU” and Block 1 OPS “Mx8.11” are analyzed (B2B).
- For SNPP configuration, 190 ATMS granules are generated from each of the Block 2 LG2 strings, i.e., NSOF-A, NSOF-B, NOSF-I&T, CBU and collected from Block 1 OPS “Mx8.11”, for Apr 5th, 2016, orbit 22999
  - Gran #1:
    - GATMO-SATMS-TATMS_npp_d20160405_t1027210_e1027526_b22999
  - Gran #190:
    - GATMO-SATMS-TATMS_npp_d20160405_t1208063_e1208379_b22999
- For J01 configuration “Time and/or Space Shifted SNPP-Proxy,”190 ATMS granules are generated from each of the Block 2 LG2 strings, i.e., NSOF-A, NSOF-B, NOSF-I&T, CBU
  - Gran #1:
    - GATMO-SATMS-TATMS_j01_d20160404_t2146196_e2146513_b04613
  - Gran #190:
    - GATMO-SATMS-TATMS_j01_d20160404_t2327076_e2327393_b04613

LG2 Test Analysis Results ATMS (2/5)

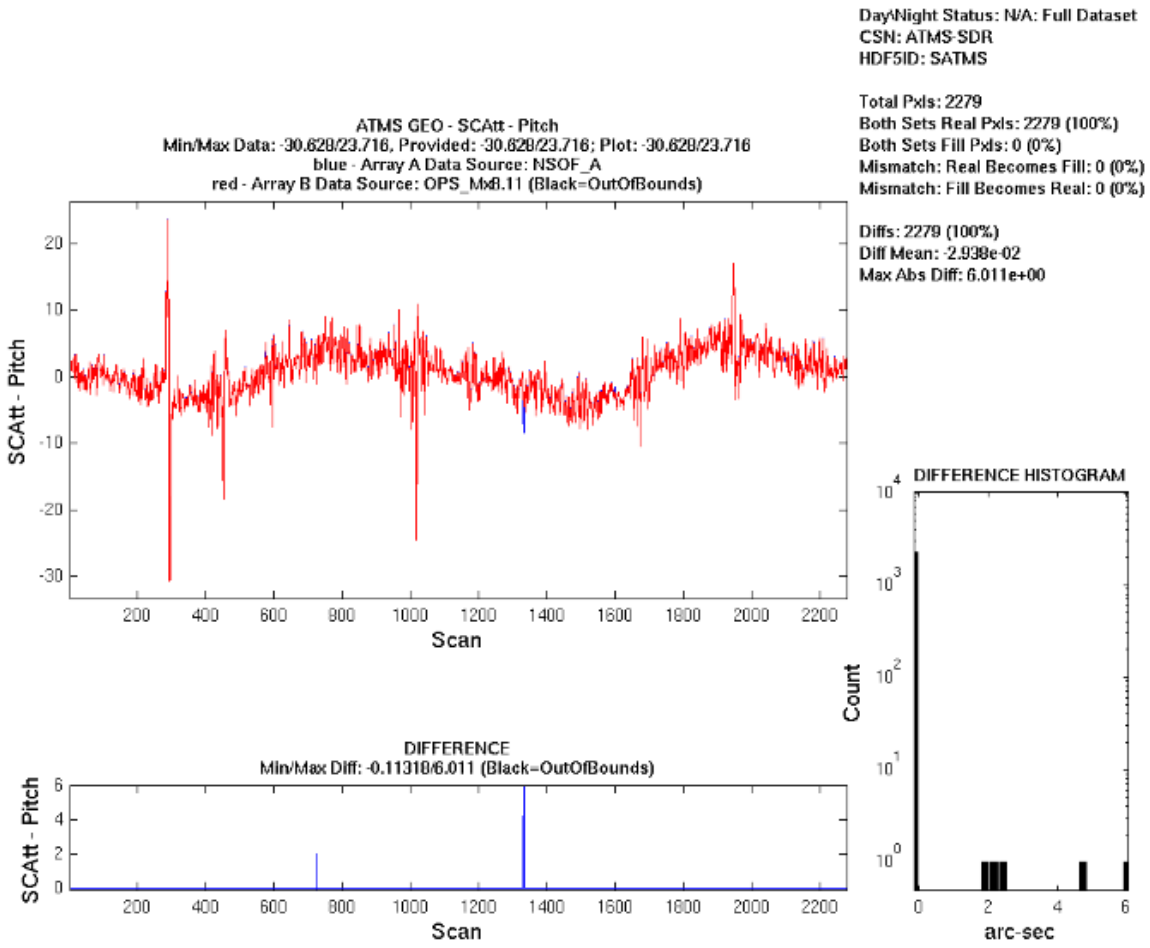
- SNPP-related Analyses
  - GEO Product
    - The following plot for the “ATMS GEO QF - A&E Availability Status” shows two issues:

1. For some scans, QF is triggered with value of 1, indicating missing S/C Diary A&E packets (blue is for NSOF-A granules; red is for OPS “Mx8.11” granules). However, since the QF is triggered with value of 1, then, the gap caused by the missing S/C Diary A&E packets is small enough, such that, interpolation using information from the neighboring packets is employed (i.e., no TLE usage)
2. The difference plot shows that, for some scans “8 scans,” QF is triggered differently, i.e., difference of -1/+1. Thus, corresponding GEO field differences would be expected (see next slide)



LG2 Test Analysis Results ATMS (3/5)

- SNPP-related Analyses (Cont.)
  - GEO Product (Cont.)
    - The following plot for the “ATMS GEO S/C Attitude - Pitch” shows the corresponding differences WRT to the differences observed in the “ATMS GEO QF - A&E Availability Status”
    - The table in the next slide shows a summary of the corresponding differences in the GEO fields



LG2 Test Analysis Results ATMS (4/5)

- SNPP-related Analyses (Cont.)
  - GEO Product (Cont.)
    - The shown differences in the GEO fields are due to:

1. Differences in scans where S/C diary A&E packets are missing → Differences in S/C Att fields (RPY, S/C Position, S/C Velocity)
2. Platform-related machine precision level differences
3. Differences between NOVAS-C 2.0.1 (in OPS Mx8.11) and NOVAS-C 3.1 library suites and the replacement of the IDPS-standalone geometrical/trigonometrical functions/calculations with corresponding NOVAS-C 3.1-provided functions/calculations (in PSAT 16).

Product	Diffs	MaxAbsDiff	Diff Mean
GEO - Beam Latitude CH 1 K-Band	99695	4.18E-04	-6.58E-07
GEO - Beam Latitude CH 2 Ka-Band	99644	4.22E-04	-6.81E-07
GEO - Beam Latitude CH 3 V-Band	99980	4.12E-04	-6.50E-07
GEO - Beam Latitude CH 16 W-Band	100090	4.16E-04	-6.70E-07
GEO - Beam Latitude CH 17 G-Band	99848	4.18E-04	-6.76E-07
GEO - Beam Latitude	99848	4.18E-04	-6.76E-07
GEO - Beam Longitude CH 1 K-Band	52018	3.00E-03	4.04E-06
GEO - Beam Longitude CH 2 Ka-Band	52074	1.10E-03	4.02E-06
GEO - Beam Longitude CH 3 V-Band	51909	2.36E-03	4.05E-06
GEO - Beam Longitude CH 16 W-Band	52189	2.07E-03	4.04E-06
GEO - Beam Longitude CH 17 G-Band	51781	1.39E-03	4.02E-06
GEO - Beam Longitude	51781	1.39E-03	4.02E-06
GEO - Solar Zenith Angle	185228	3.97E-04	-1.64E-07
GEO - Solar Azimuth Angle	149005	1.38E-03	3.75E-07
GEO - Satellite Zenith Angle	163448	7.32E-04	2.07E-07
GEO - Satellite Azimuth Angle	210588	1.83E-01	-2.51E-06
GEO - Height	1	1.00E+00	-1.00E+00
GEO - Satellite Range	68651	2.63E+01	1.08E-02
GEO - SCAtt - Roll	2279	1.20E+00	8.06E-04
GEO - SCAtt - Pitch	2279	6.01E+00	-2.94E-02
GEO - SCAtt - Yaw	2279	2.52E+00	-1.47E-03
GEO - SCPos - XComp	4	5.00E-01	-5.00E-01
GEO - SCPos - YComp	2	2.50E-01	-2.50E-01
GEO - SCPos - ZComp	4	5.00E-01	-3.75E-01
GEO - SCVel - XComp	4	7.32E-04	4.27E-04
GEO - SCVel - YComp	3	2.44E-04	8.14E-05
GEO - SCVel - ZComp	4	9.77E-04	7.32E-04
GEO - Scan QF - A&E Availability Status	8	1.00E+00	-1.00E+00

LG2 Test Analysis Results ATMS (5/5)

- SNPP-related Analyses (Cont.)
  - TDR and SDR Products
    - ZERO differences in all TDR/SDR fields and QFs.

LG2 Test Analysis Results CrIS (1/10)

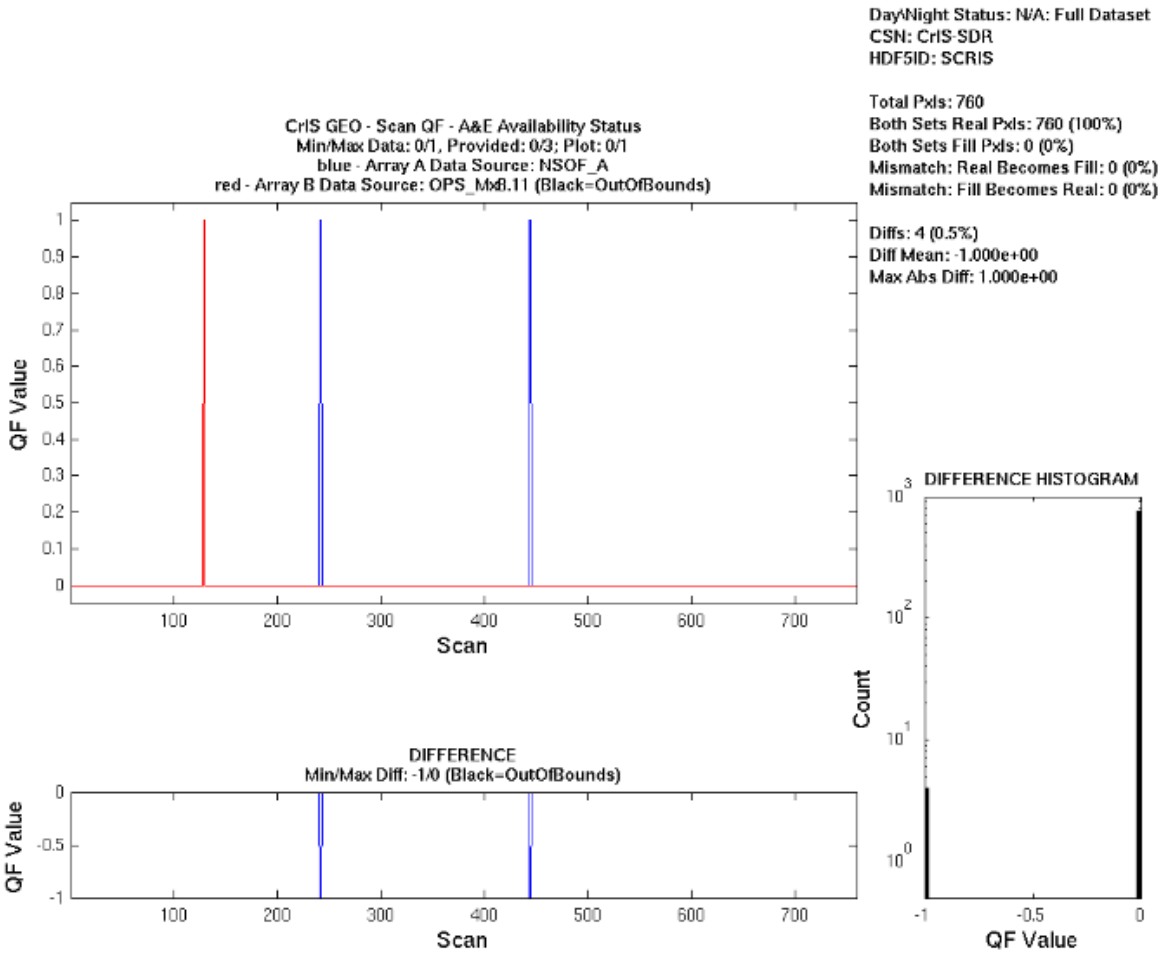
- CrIS SDR [TSR SDR “SCRIS” and FSR SDR “SCRIF”, where applicable] and GEO products from Block 2 LG2 (PSAT 16 based) “NSOF-A, NSOF-B, NOSF-I&T, CBU” and Block 1 OPS “Mx8.11” are analyzed (B2B).
- For SNPP configuration, 190 CrIS granules are generated from each of the Block 2 LG2 strings, i.e., NSOF-A, NSOF-B, NOSF-I&T, CBU and collected from Block 1 OPS “Mx8.11”, for Apr 5th, 2016, orbit 22999
  - Gran #1:
    - GCRSO-<SCRIF*>-SCRIS_npp_d20160405_t1027209_e1027507_b22999
  - Gran #190:
    - GCRSO-<SCRIF*>-SCRIS_npp_d20160405_t1208089_e1208387_b22999

  *FSR SDR “SCRIF” is not applicable to Block 1 OPS “Mx8.11”
- For J01 configuration “Time and/or Space Shifted SNPP-Proxy,”190 CrIS granules are generated from each of the Block 2 LG2 strings, i.e., NSOF-A, NSOF-B, NOSF-I&T, CBU
  - Gran #1:
    - GCRSO-SCRIF-SCRIS_j01_d20160404_t2146265_e2146563_b04613
  - Gran #190:
    - GCRSO-SCRIF-SCRIS_j01_d20160404_t2327065_e2327363_b04613

LG2 Test Analysis Results CrIS (2/10)

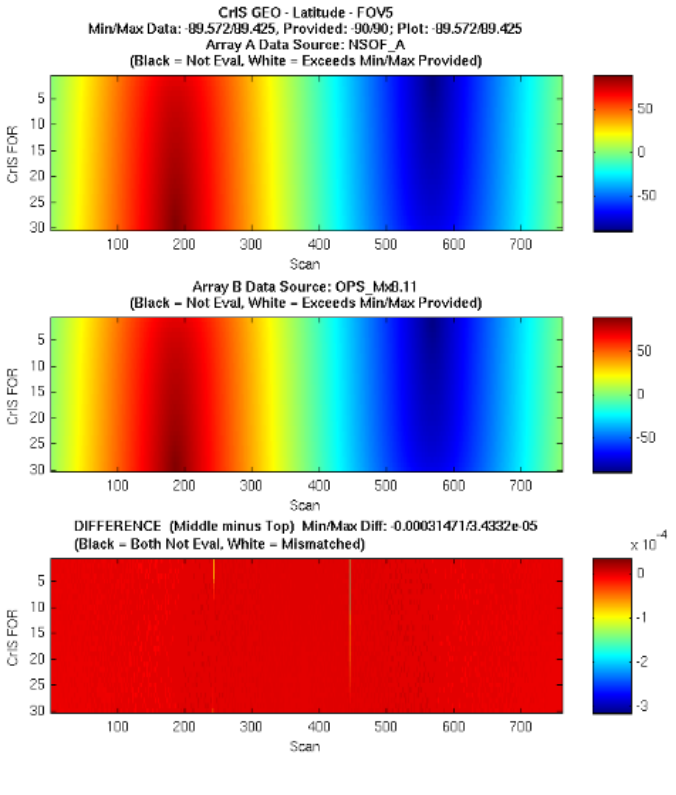
- SNPP-related Analyses
  - GEO Product
    - The following plot for the "CrIS GEO QF - A&E Availability Status" shows two issues:

1. For some scans, QF is triggered with value of 1, indicating missing S/C Diary A&E packets (blue is for NSOF-A granules; red is for OPS "Mx8.11" granules). However, since the QF is triggered with value of 1, then, the gap caused by the missing S/C Diary A&E packets is small enough, such that, interpolation using information from the neighboring packets is employed (i.e., no TLE usage)
2. The difference plot shows that, for some scans "4 scans," QF is triggered differently, i.e., difference of -1. Thus, corresponding GEO field differences would be expected (see next slide)



LG2 Test Analysis Results CrIS (3/10)

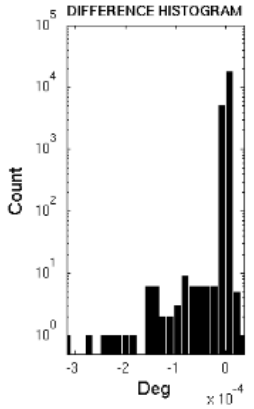
- SNPP-related Analyses (Cont.)
  - GEO Product (Cont.)
    - The following 2 plots for the “CrIS GEO S/C Attitude - Yaw” and “CrIS GEO – Latitude – FOV5” show the corresponding differences WRT to the differences observed in the “CrIS GEO QF - A&E Availability Status”
    - The tables in the next slide show summaries of the corresponding differences in the GEO fields

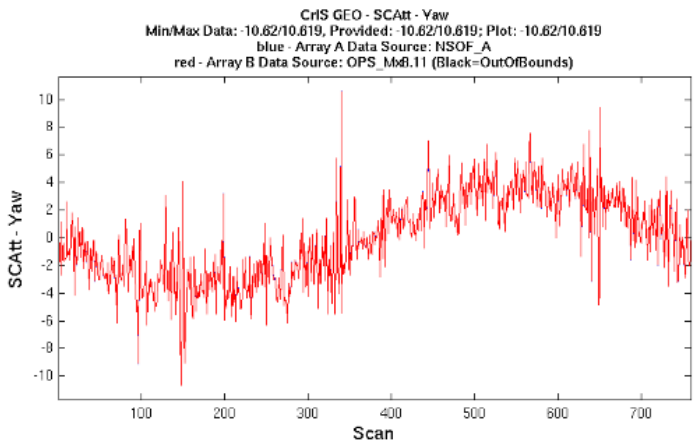


DayNight Status: N/A: Full Dataset
CSN: CrIS-SDR
HDF5ID: SCRIS

Total Pxls: 22800
Both Sets Real Pxls: 22800 (100%)
Both Sets Fill Pxls: 0 (0%)
Mismatch: Real Becomes Fill: 0 (0%)
Mismatch: Fill Becomes Real: 0 (0%)

Diffs: 10338 (45.3%)
Diff Mean: -5.469e-07
Max Abs Diff: 3.147e-04

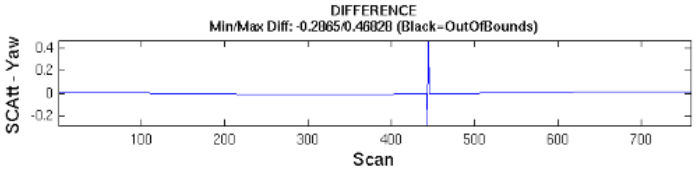


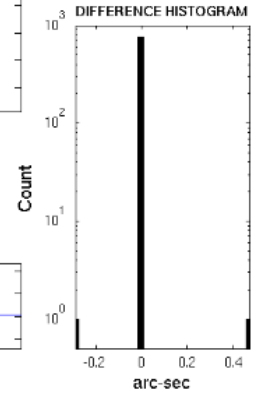


DayNight Status: N/A: Full Dataset
CSN: CrIS-SDR
HDF5ID: SCRIS

Total Pxls: 760
Both Sets Real Pxls: 760 (100%)
Both Sets Fill Pxls: 0 (0%)
Mismatch: Real Becomes Fill: 0 (0%)
Mismatch: Fill Becomes Real: 0 (0%)

Diffs: 760 (100%)
Diff Mean: 2.426e-04
Max Abs Diff: 4.683e-01





LG2 Test Analysis Results CrIS (4/10)

- SNPP-related Analyses (Cont.)
  - GEO Product (Cont.)
    - The shown differences in the GEO fields are due to:

1. Differences in scans where S/C diary A&E packets are missing → Differences in S/C Att fields (RPY, S/C Position, S/C Velocity)
2. Platform-related machine precision level differences
3. Differences between NOVAS-C 2.0.1 (in OPS Mx8.11) and NOVAS-C 3.1 library suites and the replacement of the IDPS-standalone geometrical/trigonometrical functions/calculations with corresponding NOVAS-C 3.1-provided functions/calculations (in PSAT 16).

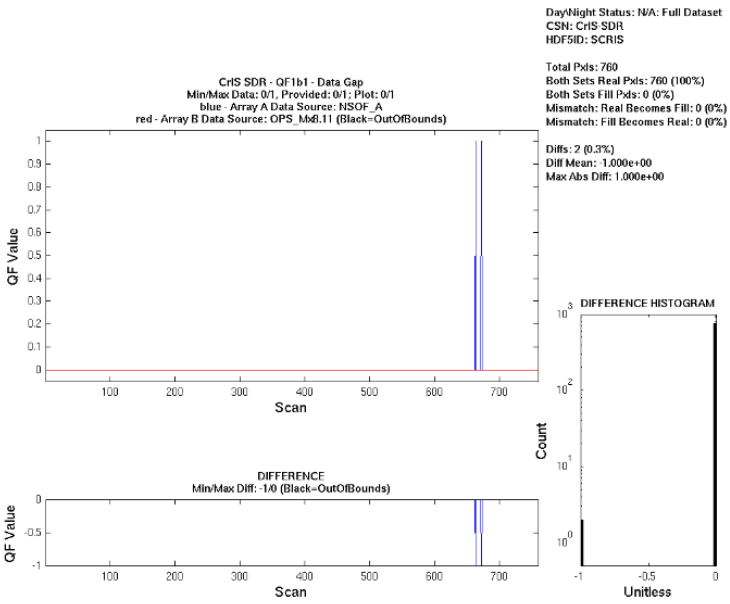
Product	Diffs	MaxAbsDiff	Diff Mean
GEO - Latitude - FOV1	10367	3.20E-04	-5.18E-07
GEO - Latitude - FOV2	10467	3.24E-04	-5.62E-07
GEO - Latitude - FOV3	10411	3.26E-04	-5.04E-07
GEO - Latitude - FOV4	10377	3.11E-04	-5.65E-07
GEO - Latitude - FOV5	10338	3.15E-04	-5.47E-07
GEO - Latitude - FOV6	10442	3.20E-04	-5.74E-07
GEO - Latitude - FOV7	10361	3.03E-04	-5.72E-07
GEO - Latitude - FOV8	10307	3.09E-04	-5.69E-07
GEO - Latitude - FOV9	10386	3.11E-04	-5.64E-07
GEO - Longitude - FOV1	5398	4.77E-04	4.57E-06
GEO - Longitude - FOV2	5396	6.94E-04	4.82E-06
GEO - Longitude - FOV3	5280	4.58E-04	4.56E-06
GEO - Longitude - FOV4	5370	4.58E-04	4.58E-06
GEO - Longitude - FOV5	5316	4.50E-04	4.74E-06
GEO - Longitude - FOV6	5302	4.41E-04	4.78E-06
GEO - Longitude - FOV7	5241	4.41E-04	4.80E-06
GEO - Longitude - FOV8	5353	4.35E-04	4.79E-06
GEO - Longitude - FOV9	5261	4.23E-04	4.90E-06
GEO - SolarZenithAngle - FOV1	19297	3.05E-04	-1.77E-07
GEO - SolarZenithAngle - FOV2	19382	3.05E-04	-1.92E-07
GEO - SolarZenithAngle - FOV3	19394	3.20E-04	-2.26E-07
GEO - SolarZenithAngle - FOV4	19284	2.90E-04	-1.68E-07
GEO - SolarZenithAngle - FOV5	19291	3.05E-04	-1.83E-07
GEO - SolarZenithAngle - FOV6	19367	3.05E-04	-1.26E-07
GEO - SolarZenithAngle - FOV7	19309	2.90E-04	-2.30E-07
GEO - SolarZenithAngle - FOV8	19357	2.90E-04	-1.34E-07
GEO - SolarZenithAngle - FOV9	19324	2.90E-04	-2.46E-07
GEO - SolarAzimuthAngle - FOV1	15559	5.42E-04	3.76E-07
GEO - SolarAzimuthAngle - FOV2	15456	6.94E-04	2.59E-07
GEO - SolarAzimuthAngle - FOV3	15533	5.19E-04	1.63E-07
GEO - SolarAzimuthAngle - FOV4	15463	5.21E-04	3.21E-07
GEO - SolarAzimuthAngle - FOV5	15513	5.09E-04	3.18E-07
GEO - SolarAzimuthAngle - FOV6	15564	5.00E-04	3.36E-07
GEO - SolarAzimuthAngle - FOV7	15594	5.00E-04	2.25E-07
GEO - SolarAzimuthAngle - FOV8	15574	4.90E-04	3.63E-07
GEO - SolarAzimuthAngle - FOV9	15526	4.81E-04	2.58E-07

Product	Diffs	MaxAbsDiff	Diff Mean
GEO - SatelliteZenithAngle - FOV1	17260	1.70E-03	8.74E-07
GEO - SatelliteZenithAngle - FOV2	17140	1.71E-03	9.06E-07
GEO - SatelliteZenithAngle - FOV3	17241	1.71E-03	9.55E-07
GEO - SatelliteZenithAngle - FOV4	17302	1.66E-03	-4.61E-07
GEO - SatelliteZenithAngle - FOV5	17268	1.68E-03	-3.42E-07
GEO - SatelliteZenithAngle - FOV6	17340	1.69E-03	-2.93E-07
GEO - SatelliteZenithAngle - FOV7	17369	1.63E-03	-1.69E-06
GEO - SatelliteZenithAngle - FOV8	17639	1.64E-03	-1.59E-06
GEO - SatelliteZenithAngle - FOV9	17294	1.65E-03	-1.63E-06
GEO - SatelliteAzimuthAngle - FOV1	22166	2.16E-02	4.17E-06
GEO - SatelliteAzimuthAngle - FOV2	22173	1.74E-02	-2.80E-07
GEO - SatelliteAzimuthAngle - FOV3	22091	2.43E-02	-4.16E-06
GEO - SatelliteAzimuthAngle - FOV4	22227	5.76E-02	2.58E-05
GEO - SatelliteAzimuthAngle - FOV5	22207	2.12E-02	-5.63E-07
GEO - SatelliteAzimuthAngle - FOV6	22231	6.25E-02	-2.76E-05
GEO - SatelliteAzimuthAngle - FOV7	22282	2.14E-02	2.69E-06
GEO - SatelliteAzimuthAngle - FOV8	22211	1.72E-02	-8.05E-07
GEO - SatelliteAzimuthAngle - FOV9	22231	1.94E-02	-4.34E-06
GEO - SatelliteRange - FOV1	6999	2.40E+01	4.69E-03
GEO - SatelliteRange - FOV2	7004	2.30E+01	9.58E-03
GEO - SatelliteRange - FOV3	7018	2.20E+01	6.89E-03
GEO - SatelliteRange - FOV4	6706	2.28E+01	-5.72E-03
GEO - SatelliteRange - FOV5	6757	2.19E+01	-9.62E-04
GEO - SatelliteRange - FOV6	6808	2.10E+01	4.50E-04
GEO - SatelliteRange - FOV7	6690	2.16E+01	-1.74E-02
GEO - SatelliteRange - FOV8	6758	2.08E+01	-1.72E-02
GEO - SatelliteRange - FOV9	6728	1.99E+01	-1.36E-02
GEO - Scan QF - A&E Availability Status	4	1.00E+00	-1.00E+00
GEO - SCAtt - Roll	760	1.00E+00	4.37E-04
GEO - SCAtt - Pitch	760	2.16E+00	-3.16E-02
GEO - SCAtt - Yaw	760	4.68E-01	2.43E-04
GEO - SCPos - XComp	2	5.00E-01	-5.00E-01
GEO - SCPos - YComp	1	2.50E-01	2.50E-01
GEO - SCPos - ZComp	1	5.00E-01	-5.00E-01
GEO - SCVel - XComp	2	4.88E-04	3.66E-04
GEO - SCVel - YComp	1	2.44E-04	2.44E-04
GEO - SCVel - ZComp	2	9.77E-04	7.32E-04

LG2 Test Analysis Results CrIS (5/10)

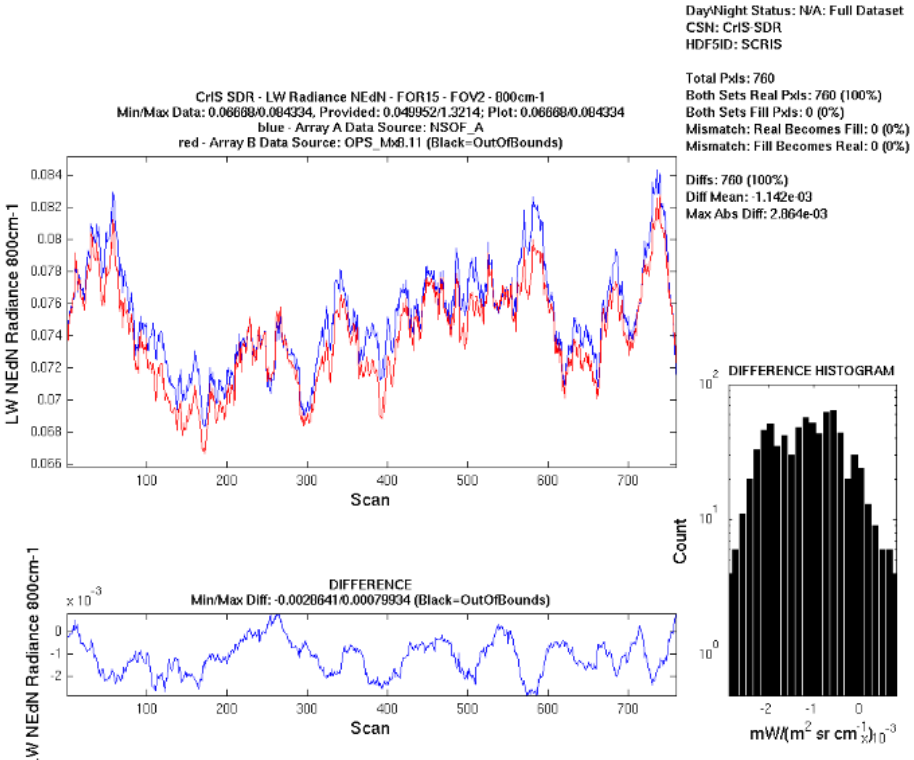
- SNPP-related Analyses (Cont.)
  - SDR Product (TSR SCRIS)
    - The following table lists the SDR fields and QFs that have differences. For each field and QF, the table lists the "Max Abs Diff" and "Diff Mean" values.
    - The found SDR fields and QF differences are due to:
      1. Differences in the QF1b1 "Data Gap" as shown in the following plot.
      2. Platform related difference (Blk 1 AIX vs. Blk 2 Linux):
         - BE vs. LE
         - Compiler and Complier Flag differences
         - OS differences
         - COTS differences
         - Math library differences
      3. Differences due to "CCR-15-2278/CCR-15-2446/DRs 7895 & 7486 – CrIS Full Spectral SDR Updates, "still producing only TSR SDR" that were implemented in Blk 2:
         - Updated the way the resampling laser wavelength was updated for each neon calibration.
         - Updated the NEdN algorithm to include spectral calibration.
         - The Blk 1 CMO AUX is split to 2 AUX files:
           - » CrIS-Correct-Matrix-AUX
           - » CrIS-SDR-ENGPKT-BACKUP-AUX
      4. Serial execution of CrIS SDR in Blk 1 vs parallel execution in Blk 2
    - The plots in the next 5 slides show examples of the differences in the SDR fields.

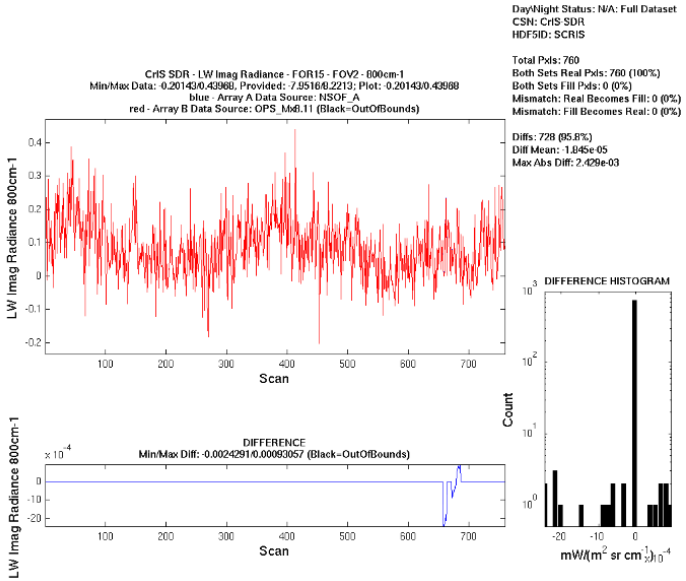
Product	MaxAbsDiff	Diff Mean
LW Real Radiance	8.52E-02	1.28E-05
LW Imag Radiance	8.77E-02	7.86E-05
LW Radiance NEdN	1.08E-01	1.23E-04
MW Real Radiance	9.58E-03	5.42E-06
MW Imag Radiance	1.10E-02	1.28E-05
MW Radiance NEdN	1.35E-02	1.13E-04
SW Real Radiance	1.41E-03	9.55E-07
SW Imag Radiance	1.28E-03	1.56E-06
SW Radiance NEdN	1.02E-03	2.48E-05
DS Window Size	3.00E+00	2.75E+00
ICT Window Size	4.00E+00	1.58E+00
DS Symmetry	8.44E+01	8.44E+01
DS Spectral Stability	2.56E-03	2.31E-06
ICT Spectral Stability	3.89E-03	1.62E-05
ICT Temperature Stability	2.71E-04	2.21E-05
ICT Temperature Consistency	5.87E-05	4.77E-05
Monitored Laser Wavelength	1.75E-04	6.92E-06
Measured Laser Wavelength	7.35E-05	-7.35E-05
Resampling Laser Wavelength	5.61E-05	3.65E-06
Valid PRT Temp No	1.00E+00	1.00E+00
QF1b1 - Data Gap	1.00E+00	-1.00E+00

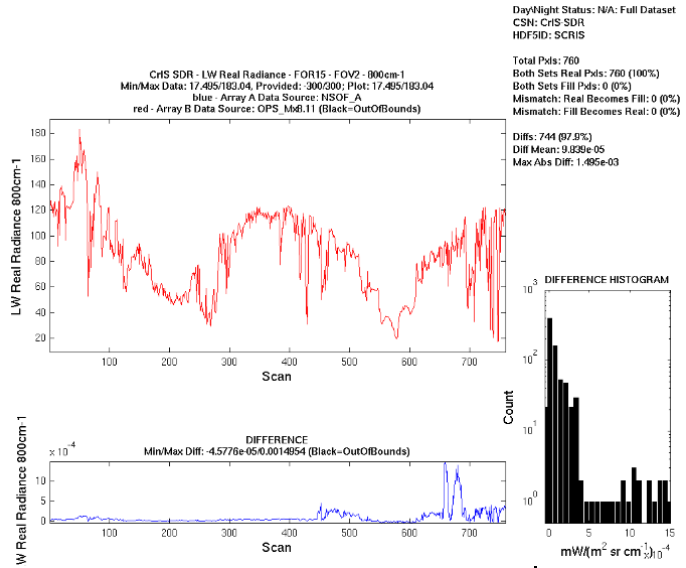


LG2 Test Analysis Results CrIS (6/10)

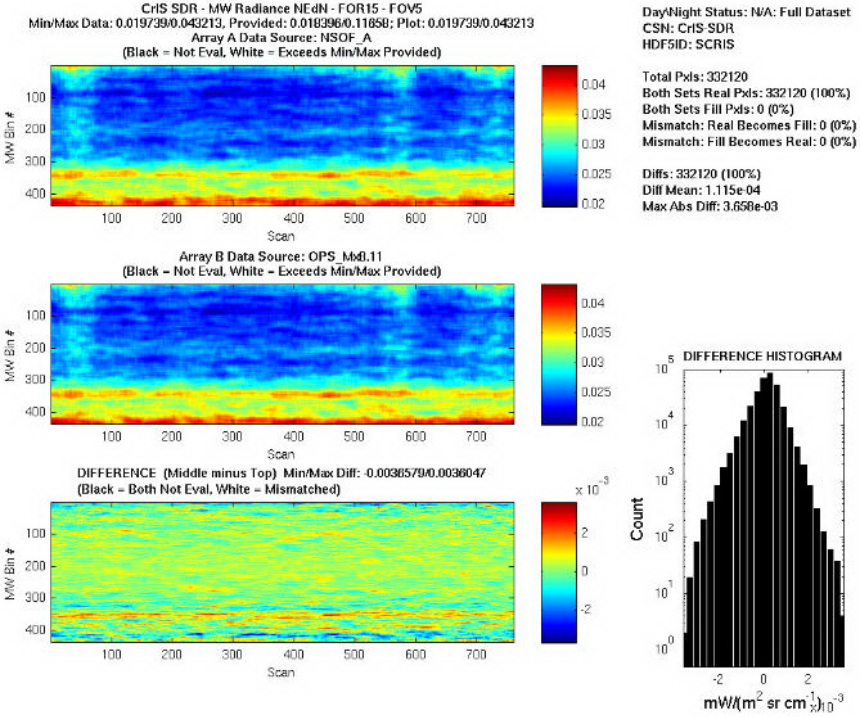
- SNPP-related Analyses (Cont.)
  - SDR Product (TSR SCRIS) (Cont.)
    - LW – Real Radiance, Imaginary Radiance – Pronounced differences are driven by the differences in the QF1b1 “Data Gap” (Ex: Imaginary Radiance) and due to CCR-15-2278/CCR-15-2446 updates (Ex: Real Radiance and Radiance NEdN)

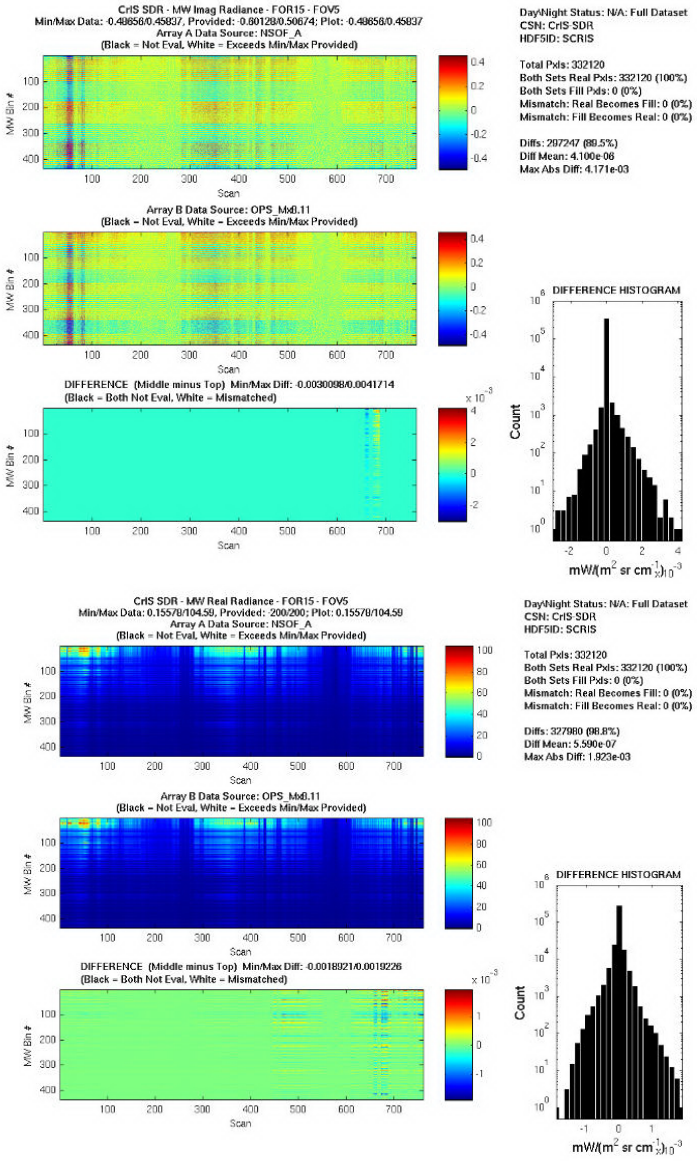






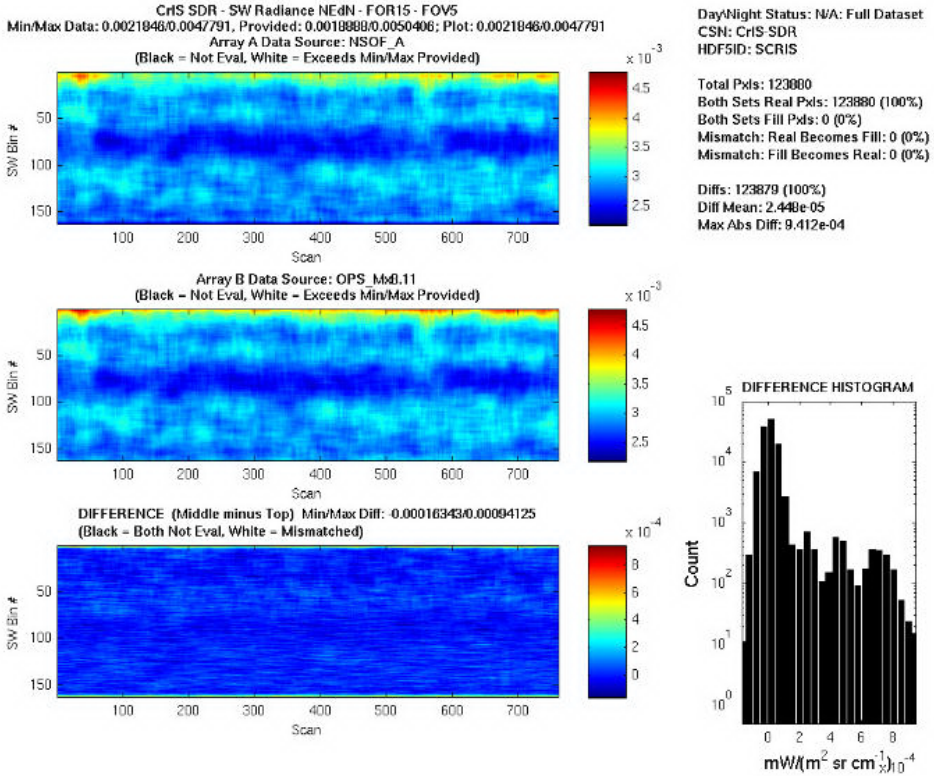
- SNPP-related Analyses (Cont.)
  - SDR Product (TSR SCRIS) (Cont.)
    - MW – Real Radiance, Imaginary Radiance – Pronounced differences are driven by the differences in the QF1b1 “Data Gap” (Ex: Imaginary Radiance) and due to CCR-15-2278/CCR-15-2446 updates (Ex: Real Radiance and Radiance NEdN)

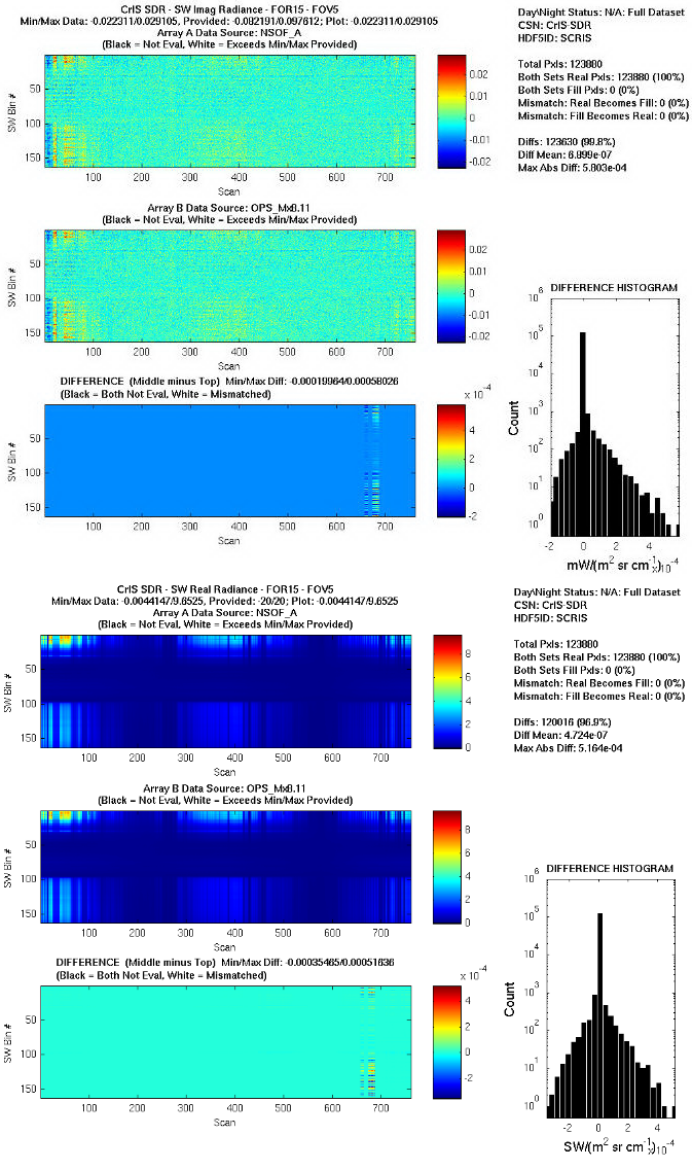




LG2 Test Analysis Results CrIS (8/10)

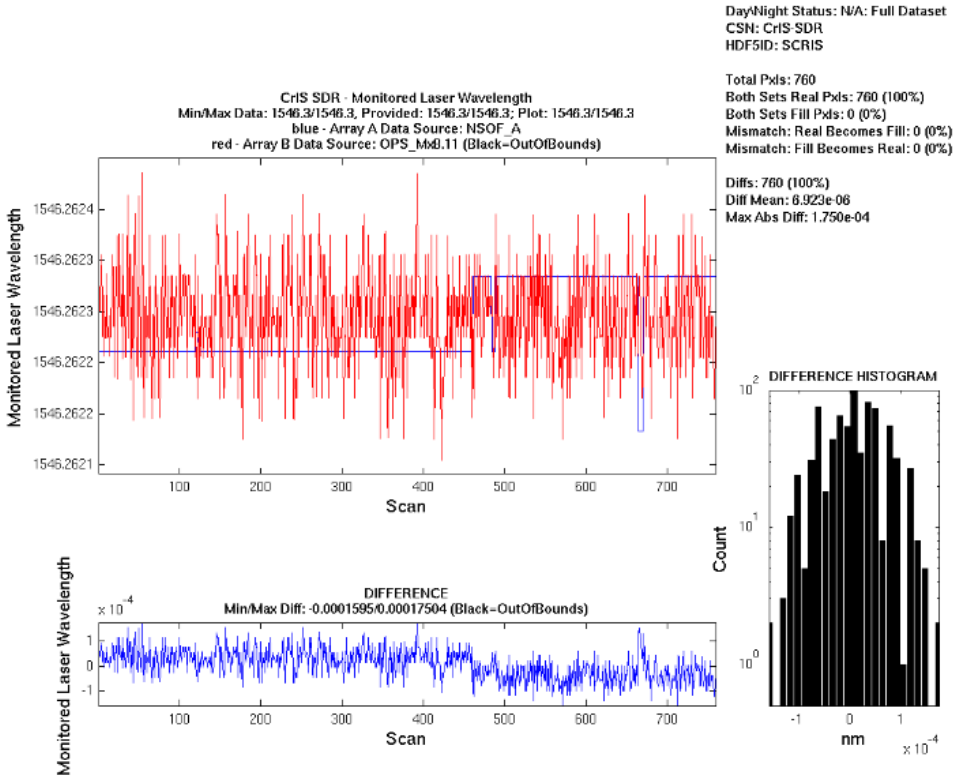
- SNPP-related Analyses (Cont.)
  - SDR Product (TSR SCRIS) (Cont.)
    - SW – Real Radiance, Imaginary Radiance – Pronounced differences are driven by the differences in the QF1b1 “Data Gap” (Ex: Imaginary Radiance) and due to CCR-15-2278/CCR-15-2446 updates (Ex: Real Radiance and Radiance NEdN)

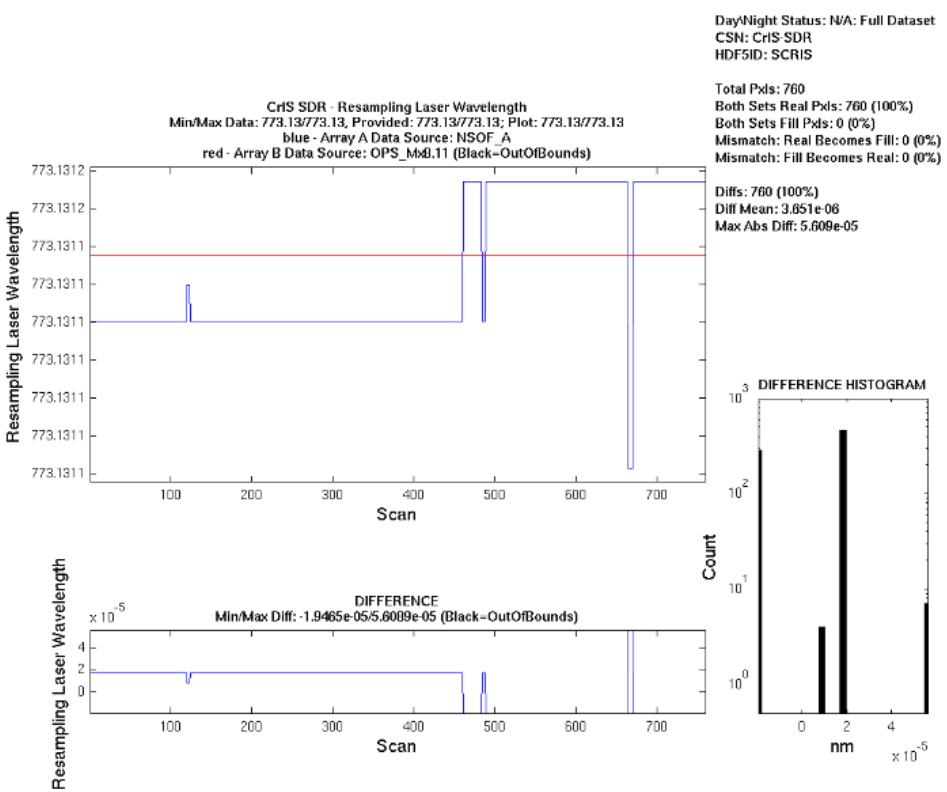




LG2 Test Analysis Results CrIS (9/10)

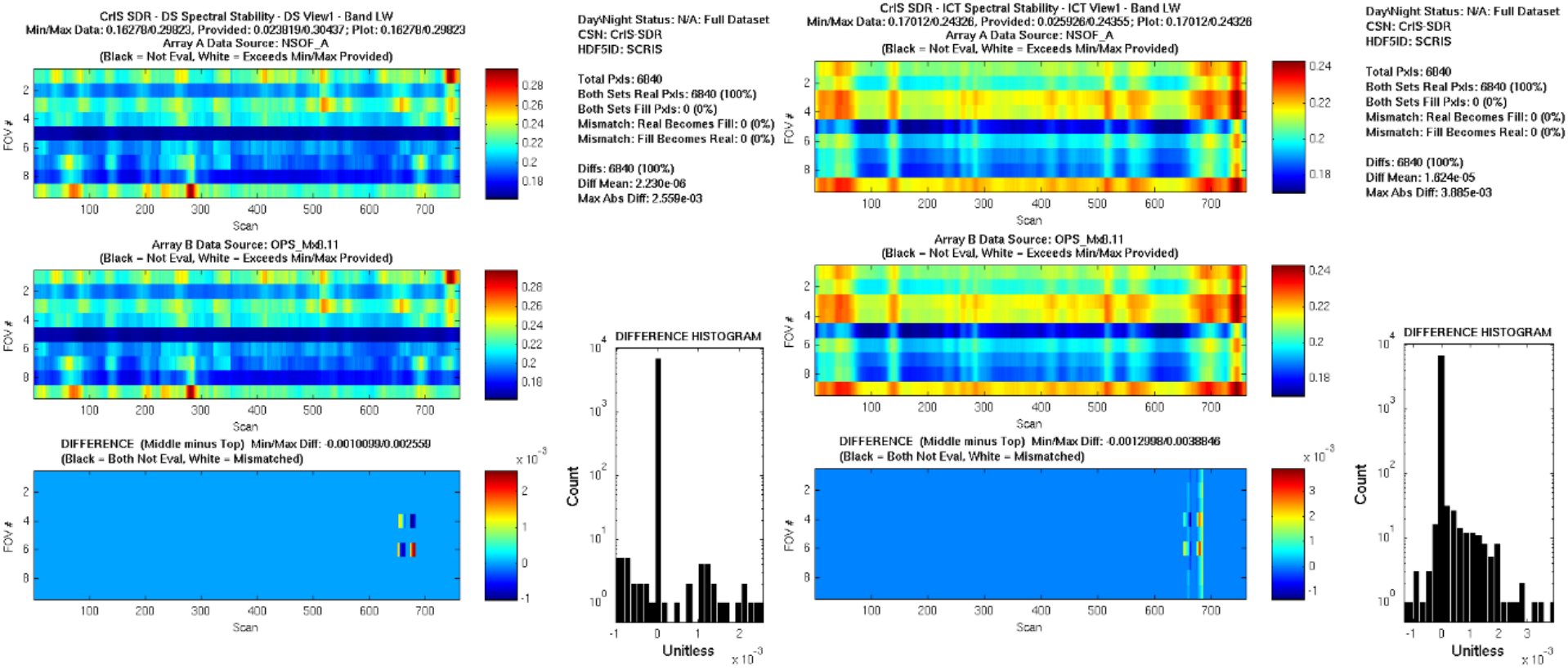
- SNPP-related Analyses (Cont.)
  - SDR Product (TSR SCRIS) (Cont.)
    - Monitored and Resampling Laser Wavelengths – Pronounced differences are due to CCR-15-2278/CCR-15-2446 updates





LG2 Test Analysis Results CrIS (10/10)

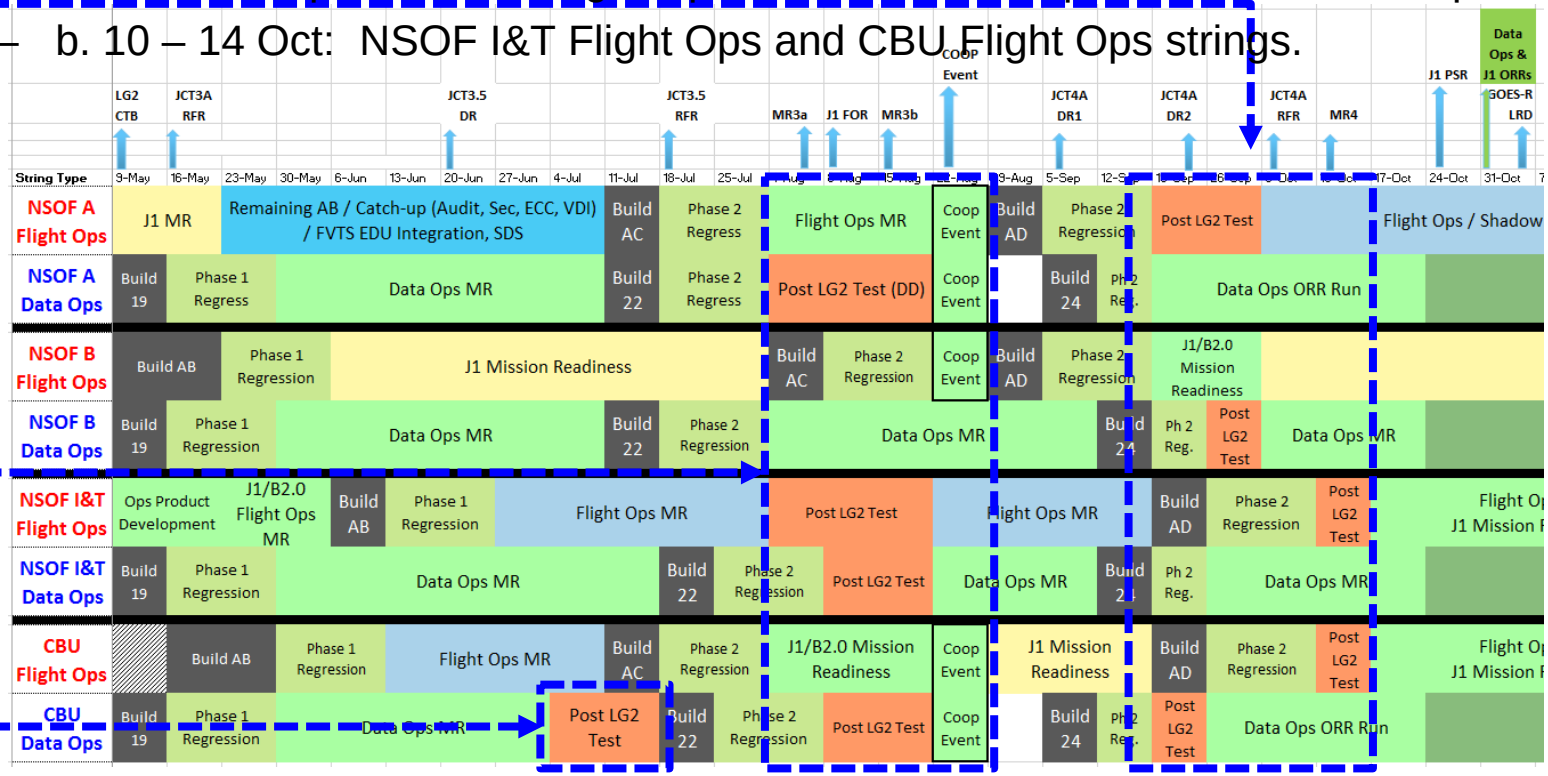
- SNPP-related Analyses (Cont.)
  - SDR Product (TSR SCRIS) (Cont.)
    - DS and ICT Spectral Stabilities – Pronounced differences are driven by the differences in the QF1b1 "Data Gap"



Post LG2 - Test Groups

Credit: JPSS Block 2.0 Post LG2 Group 2 Kickoff Meeting

- Group 1: July (5-15) event on CBU Data Ops String
- Group 2: August (1-26) utilizing NSOF A Data Ops ; NSOF I&T Flight Ops and Data Ops; and CBU Data Ops Strings
- Group 3:
  - a. 19 – 30 Sep: NSOF A Flight Ops, NSOF B Data Ops, and CBU Data Ops Strings
  - b. 10 – 14 Oct: NSOF I&T Flight Ops and CBU Flight Ops strings.



Post LG2 - Group 2 Data Sources

Credit: JPSS Block 2.0 Post LG2 Group 2 Kickoff Meeting

- **Data Source**
  - SMD: Live NPP & GCOM, 17-day time shifted J01
    - NOTE: The "2-day" dataset is a subset of the 17-day (same source data), used temporarily due to storage device issue at McMurdo
  - TLM: Live NPP, primarily PSS for J01
  - No additional specialty canned datasets in Group2
  - Data configuration: SGE1->JSHAO->IDPA
    Better look at data/configuration in the quicklook in the MCP as well as data request slide

- **J1 Dataset Expectations**
  - Base Source is ROOD NPP data from April 2014, validated dataset. Data characterization posted and expected results posted here: https://jpss-erooms.ndc.nasa.gov/eRoom/JPSSGround/GroundSEITWorkingGroups/0_593fe
  - Full VCID/APID coverage for S/C, ATMS, CrIS, OMPS, VIIRS, CERES
  - Scene content is from April and data is timeshifted with SOS/HALT, so geolocation will not be accurate nor will science quality