



JPSS SENSOR DATA RECORD (SDR) SUMMARY

Decisions

Warnings

Impact Assessments

Specialty Forecasts – e.g.,
floods

Weather Forecasts e.g., 3-5 days

Baseline of Robust and Accurate Observations

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ATMS

- SNPP ATMS has a stable performance in orbit and all the parameters meet the specifications with large margins
- SNPP ATMS striping mitigation algorithm has been updated to further improve the data quality
- SNPP ATMS scan drive main motor current demonstrated large anomaly. Once-per-day scan reversal was implemented on August 24, 2015 and once-per-orbit scan reversal from July 25, 2016
- JPSS-1 ATMS flight unit spacecraft EMI testing shows significantly fluctuation in ch17 gain
- ATMS full radiance calibration was approved for implementation into IDPS. JPSS-1 ATMS PCT has been updated for operations

CrIS

- SNPP CrIS FSR SDRs are routinely generated and available to the public on the STAR FTP site
- SNPP CrIS instrument and SDR performances are very stable: no significant change in noise and gain
- J1 CrIS team has successfully completed S/C Electromagnetic Interference (EMI) test and is ready for Thermal Vacuum (TVAC) testing; the science team is ready to support instrument performance evaluation
- SDR algorithm/software is ready for operation to J1 CrIS

VIIRS

- All SNPP VIIRS SDRs meet or exceed requirement
- J1 VIIRS test program was completed successfully and provides high quality data to assess sensor performance
- J1 VIIRS SDR team has completed waiver studies
- Geolocation software code/LUTs are ready for operation to J1 VIIRS

OMPS

- SNPP earth view SDR and Geo-SDR for both SNPP OMPS NM and NP meet the requirement and are well defined for representative conditions
- SDR algorithms and their LUTs have been modified for J1 OMPS SDR processing
- J1 OMPS algorithms are tested for IDPS B2.0 and will be fully tested with JCT 3.5 and TVAC data

Major Risks/Issues and Mitigation

	Risk/Issues	Impact	Mitigation
ATMS	SNPP scan profile changes related to SD motor current anomaly	Missing data due to increasing the scan reversals	New SDR software for processing reversal scan data
	J1 1.4 GHz interference at channel 17/21	Data quality degradation	Radio Frequency Interference (RFI) mitigation algorithm
	J1 channel 17 gain fluctuation	Data quality degradation	Under investigation, synthetic ch17 from ch18/16.
CrIS	CrIS Fringe Count Error (FCE) correction module does not meet IDPS latency requirement and therefore is turned off	<p>No impact if FCE does not occur:</p> <ul style="list-style-type: none"> – Not a single FCE event has occurred so far for SNPP – The instrument is designed to avoid FCE and the J1 CrIS is expect not to have the FCE <p>If FCE occurs, the affected SDRs will fail without the correction module in operation</p>	IDPS should increase the processing power.
	Smaller FOV size and full spectrum coverage are not on the vendor's agenda for J3/J4 sensors	The smaller FOV size and full spectrum capability (no spectral gaps) will improve NWP and cross sensor calibrations	JPSS program should make decisions soon before it is too late for making hardware changes.
VIIRS	New moon and VIIRS Recommended Operating Procedure (VROP) 702&705 have to occur between L+50 & L+60 in order for J1 VIIRS Day/Night Band (DNB) to reach provisional maturity at L+90	J1 VIIRS/DNB will not reach provisional maturity without straylight correction (major artifacts in DNB imagery)	Request to schedule the VROPs within L+50&L+60 with new moon. Request fast track DNB straylight light and other LUTs delivery (1-2 week lead time).
	VIIRS SDR team computing and storage	Inadequate computing resources to perform intensive Cal/Val for J1 VIIRS, and other Cal/Val analysis for SNPP	The program needs to provide adequate computer servers and storage to the VIIRS SDR team to do the work.
	SNPP star trackers degrading (noise floor is increasing)	S/C attitude error > 1 degree that results in geolocation error > 14 km lately. Out of attitude knowledge specification on a daily basis.	The Attitude system (HW & SW) needs urgent maintenance (e.g. cool down trackers, give less weight to trackers in attitude solution). Prototyping approach to use gyro data to improved geolocation accuracy in these situations.
	Ocean Color (OC) team requires 0.1 to 0.2% Reflective Solar Band (RSB) calibration accuracy. If not, OC Near-Real-Time (NRT) product will not meet requirements	NRT ocean color users not using operational VIIRS SDR	Test OC F&H LUT and compare with operational and NASA versions. Resolve differences.
OMPS	SNPP NP wavelength seasonal variation	NP Ozone data accuracy	The sensor requirement was waived. But it will be fixed in SDR in further.

Milestones and Deliverables

	Milestones	Deliverables
ATMS	SNPP ATMS antenna emission correction J1 RFI correction software J1 ATMS Provisional Maturity	Source codes for IDPS implementation PCA software for IDPS implementation Products to be delivered on L+90 days
CrIS	J1 CrIS Beta SDR	Products to be delivered on L+68 days
	J1 CrIS Provisional SDR	Products to be delivered on L+90 days
	J1 Validated SDR	Products to be delivered on L+270 days
	CrIS mounting matrix final version	PCT files to be delivered by the end of 2016
VIIRS	J1 VIIRS test program was completed successfully as scheduled	Extensive amount of high quality data to assess sensor performance
	J1 DNB Aggregation Mode code change	J1 SDR software including DNB Option21 mitigation approach
	J1 VIIRS LUTs needed for on-orbit calibration	Delivered LUTs for J1 VIIRS
	All 15 J1 VIIRS waivers were approved by NASA/NOAA review board	Report and mitigation plan
	Water vapor band trade study	Water vapor band trade study report
	Geolocation CPM transition web and DBMS interface	Online system for monitoring VIIRS geolocation performance
	DNB VROP (702 + 705) calibration reanalysis	LUTs, code and report for DNB calibration
	Solar diffuser surface roughness induced degradation model	Model and paper on SRRS model for spectral dependent SD degradation
	VIIRS Remote Sensing Special issue	28 journal papers
OMPS	J1 OMPS Provisional SDR	Products to be delivered in 2017 Post Launch Test (PLT) to Intensive Cal/Val (ICV) phase
	J1 OMPS Validated SDR	Products to be delivered in 2018 ICV to Long Term Monitoring (LTM) phase

Future Plans/Improvements

ATMS

- SNPP ATMS reflector emission correction algorithm will be tested and submitted for operational implementation. Study ATMS scan reversal operations and its impacts on SDR data quality
- For the J1 mission, the team will update PCT with new coefficients, carry out additional testing data analysis, investigate SRF pass band imbalance mitigation
- The team will support post-launch Cal/Val activities for J1 ATMS to reach provisional and continue afterwards

CrIS

- For the J1 mission, the team will analyze the S/C TVAC data, support validation of the operational SDR software, execute post-launch Cal/Val plan and provide the Beta, Provisional and Validated SDR products on schedule
- The team will continue working to address the issues of Finite Impulse Response (FIR) convolution correction, LW FOV5 cold scene anomaly, polarization, and FCE latency
- SNPP CrIS observation approaches 5 years; the team will analyze the history of the data and continue monitoring its performance and SDR health

VIIRS

- The team will support post-launch Cal/Val for J1 VIIRS to reach provisional and continue afterwards
- The team will support J1-J4 preparation (will finalize the list of J1 lessons learned, and Hardware/Software Improvements to be implemented for future builds, e.g. J2-4)
- VIIRS Cal/Val improvements include: RSB solar calibration with lunar correction and test/compare F-LUT from OC group for re-processing/operation; DNB Calibration with onboard and VROP 702-705; Calibration algorithm update for Thermal Emissivity Bands (TEBs) to resolve Warm-Up and Cool-Down (WUCD) deviations and cold-bias for M15; Maintenance on attitude system of SNPP with additional gyro data due to the degradation of Star tracker

OMPS

- The team will support post-launch Cal/Val for J1 OMPS to reach provisional and continue afterwards
- The team will support the OMPS Limb Profiler SDR algorithm preparation for J2 and beyond
- OMPS Cal/Val improvements include: completion of SDR data reprocessing the up-to-dated calibration LUTs and algorithm in OMPS SDR life-cycle with upgraded IDPS system B2.0, correction of SNPP NP wavelength thermal sensitivity, and production of SNPP high spatial resolution data