

Land Report Back

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MODIS Land Team - 2001 Post Launch

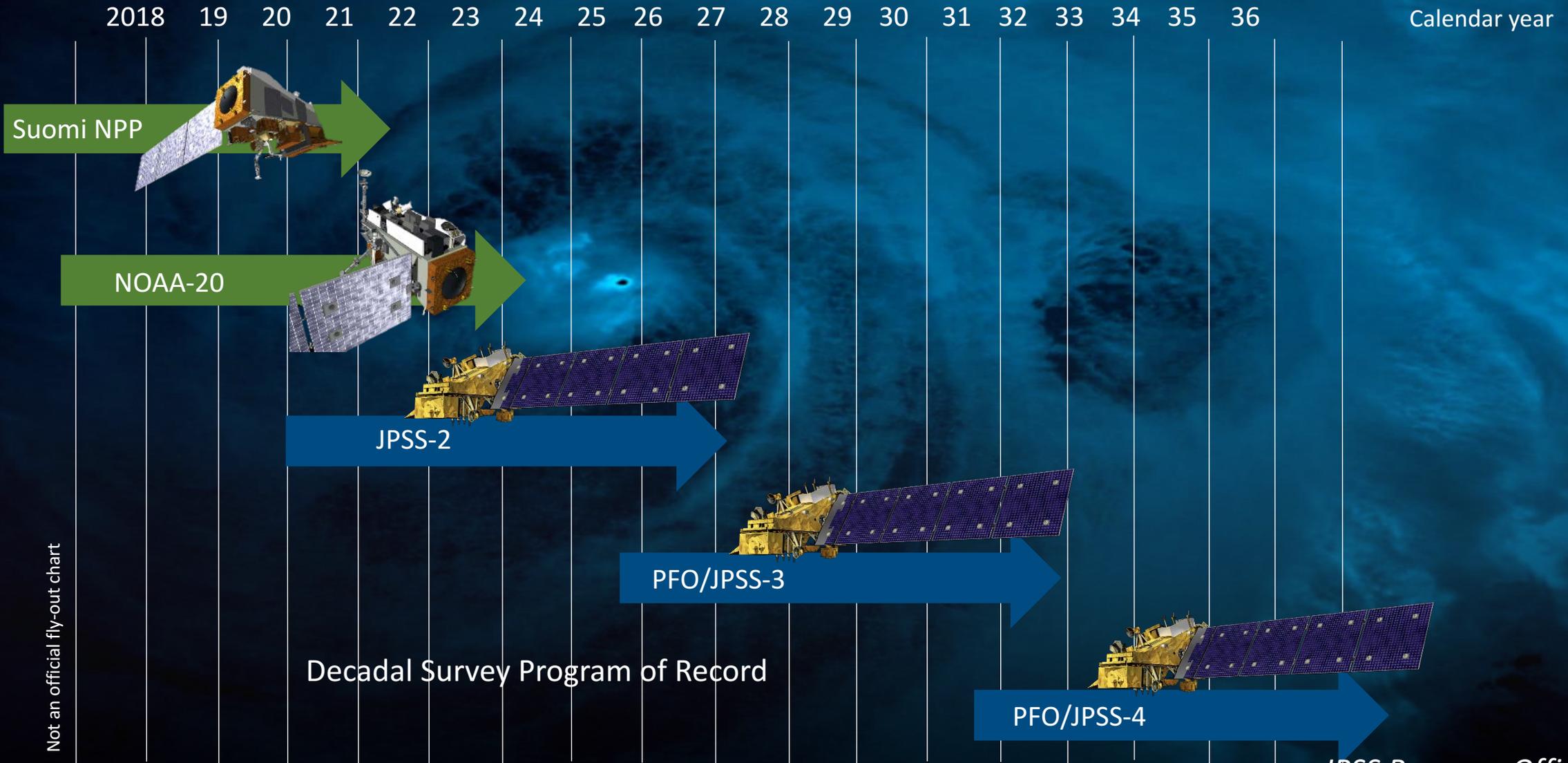
Science Team Members / Science Data Support Team / DAAC Reps

MODIS / VIIRS Land Team 2008





“Goal: Earth System Data Records - Continuity (MODIS to VIIRS2038)”





Discussion for LAND Break Out

- **Goal: Earth System Data Records - Continuity (MODIS to VIIRS2038)**
 - **Data product/algorithm identification, including gaps for each mission/sensor**
 - **SIPS resources needed, tied to Category 1 and Category 2 data products**
 - **NO ADDITIONAL MAJOR SIPS RESOURCE ISSUES IDENTIFIED FOR NEW PRODUCT SELECTIONS.**
- **Continuity to JPSS – was in original solicitation and was tabled. SIPS have processing funds for EOS data product continuity as per the last SIPS meeting, but question is to whether the PIs could work assessment of JPSS-1 data products with small investment...**
 - **YES FOR SOME PRODUCTS – e.g. SURFACE REFLECTANCE - IN PROCESS.**
 - **WHILE AQUA + S-NPP OPERATING ONLY SOME PRODUCTS WOULD NEED JPSS-1 AS WELL**
 - **S-NPP VIIRS > JPSS-1 AS A FOCUS FOR NEXT FUNDING CYCLE ?**
- **SIPS were not included but if they were recompeted, and there was the opportunity for the competing institutions/SIPS to come in with an expansion of capability to support, say, non-NASA satellite data processing, would this be helpful or useful or not welcome at all?**
 - **YES - e.g. SENTINEL 3A/B APPEARS A VIABLE LAND REPLACEMENT FOR TERRA MODIS (2022) BUT MORE EVALUATION IS NEEDED – and METOP Follow-On**
 - **NEED FOR GREATER SCIENCE CAPACITY AT THE SIPS (follow the OCEAN MODEL)**
 - **INCREASING COMPLEXITY - multi-sensor processing**
 - **WHEN SIPS ARE RECOMPETED THEY WILL NEED TO EXPAND WITH A NEXT-GEN INFRASTRUCTURE - ALIGNED WITH 'ESDIS' PLANNING**





Discussion for LAND Break Out

- **Reprocessing – “staged delivery”**
 - **LAND TEAM DOES THIS ROUTINELY 6>61>7**
- **ATBD process, old, new, evolution of ideas? ATBD/Data Product Documentation and Reviews: Documentation on web sites lacking for Sensor/Team/ATBDs/Data – new (and existing?) users (especially in the applied/operational world) need to find the details**
 - **LAND TEAM APPROACH - ATBD FOR STANDARD PRODUCT SELECTION - USER GUIDES PRIOR TO DAAC DISTRIBUTION**
 - ***NEED TO ENSURE USER GUIDES CURRENT AND EASILY ACCESSIBLE (SIPS/MAST TO REVIEW)***
 - ***EXPLORING MERGING OF MODIS AND VIIRS LAND WEB SITES***
- **Quantify instrument and measurement performance (e.g. calibration, stability)**
 - **MCST and VCST continuity**
 - ***YES – NEED TO BETTER UNDERSTAND ROLES and STAFFING AND POSSIBLE CAPACITY FOR TAKING ON SOME VALIDATION SUPPORT***
 - **Need to be able to VALIDATE our space-based estimated Earth system properties**
 - **AGREED BUT HAS TO BE REFLECTED IN PI BUDGETS**
 - ***CLEAR STATEMENT OF VALIDATION STATUS NEEDS TO BE SHOWN (WEB PAGES)***
 - **Acquired from multiple sensors / datasets - Aerosols, Clouds, Ocean Chemistry/Biology – PACE (and land capabilities?) + EV’s and DS?**
 - **ACCURACY SHOULD BE A CRITICAL ASPECT OF NEW FUSION PROPOSALS**





Discussion for LAND Break Out

- **Suomi NPP VIIRS – “assessments” of continuity data products (& new)**
- **Are all VIIRS created equal (MODIS-T v. MODIS-A) if continuity to JPSS**
 - **YES BUT ONCE TERRA IS GONE (2022) THEN SOME PRODUCTS WILL REQUIRE AN AM SOLUTION – S3A/B**
- **Does VIIRS have the capability to produce all MODIS/EOS continuity data products?**
 - **If it does not, what is the solution?**
 - **If it does, then great, but there may be challenges to producing a given product (no PI to maintain/improve, time needed for assessment and continuity, etc.)**
 - **YES IT DOES - SUGGEST THE OUTSTANDING NEEDS BE HIGHLIGHTED IN THE NEXT ROUND**
- **Uncertainties associated with data products (more to come...)**
 - **YES QUANTIFICATION SHOULD EXPECTED FOR ALL FULLY FUNDED PRODUCTS**
 - **UNCERTAINTIES SHOULD BE POSTED FOR EACH PRODUCT**
- **NOAA Data products – different? Better? Worse? Funding?**
 - **SOME ALGORITHMS (FIRE, SR) ARE THE SAME – DATA ACCESS DIFFERENT**
 - **NOAA ANNUAL SURFACE TYPE NEEDS EVALUATING BY LAND PI'S**
 - **EXPLORING A FUNDED PARTNERSHIP WITH NOAA FOR JPSS 1 > 4 FOR LAND PRODUCTS AND DATA SERVICES TO MEET BOTH NOAA AND NASA NEEDS – WAS PROPOSED. THERE WAS SOME SCEPTICISM THAT THIS COULD HAPPEN**
 - **NOAA MOVING TO ENTERPRISE ALGORITHM DEVELOPMENT (Common Code Base)**



STAR JPSS



STAR Joint Polar Satellite System Website

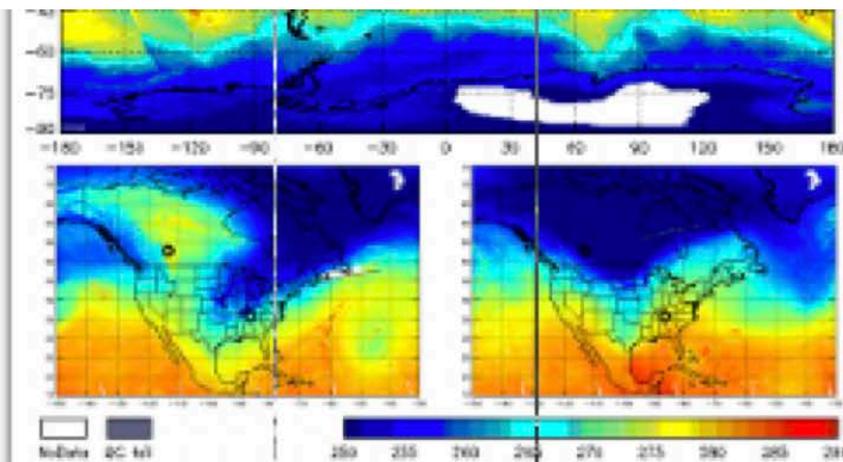
Maintaining the continuity of climate observations and critical environmental data from the polar orbit — Increasing the timeliness and accuracy of severe weather event forecasts

JPSS Instruments/SDRs

- ATMS
- CrIS
- VIIRS
- OMPS

Environmental Data Records

- Ocean Products
 - Sea Surface Temperature
 - Ocean Color
- Land Products
 - Active Fires
 - Land Surface Temperature
 - Surface Albedo
 - Surface Type
 - Surface Reflectance
 - Vegetation Index
 - Green Vegetation Fraction
 - Vegetation Health
- Cryosphere Products
 - Snow Cover
 - Sea Ice
 - Ice Surface Temperature



Top map:
Over global
on January
16, 2018.

Bottom:
Over North
America on
Jan 26 (left)
and Jan 11
(right), 2018.

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Latest JSTAR Updates

[Hurricane Florence](#)

[N-20/SNPP Equator Crossing](#). Credit: VIIRS SDR science team.

Detail data available at [STAR - FTP site](#).

08/22/2018: [NOAA-20 VIIRS Imagery EDR Validated Maturity!](#)

07/06/2018: [NOAA-20 ATMS TDR/SDR Validated Maturity!](#)

06/15/2018: [NOAA-20 VIIRS SDR Validated Maturity!](#)

[NOAA-20 First Light Images](#) :

ATMS: VIIRS: VIIRS TEB: CrIS: OMPS NM: OMPS NP:

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VIIRS Land Product		Availability	Algorithm	Access	QA	Spatial Resolution	Temporal Resolution
NOAA	Active Fires	IDPS: 04/03/2012-06/28/2017 NDE: 03/15/2016-	MODIS Heritage Algorithm	CLASS	Two-dimensional Quality Assessment (QA) array (various bits)	750m	Daily
	Land Surface Temperature	08/10/2012-	Split-Window Regression Algorithm (Yu et al., 2005)	CLASS	3 Separate Quality Flags (8 bits)	750m	Daily
	Surface Albedo	11/21/2014-	Direct Estimation Algorithm (Wang et al., 2013)	CLASS	3 Separate Quality Flags (8 bits)	750m	Daily
	Surface Reflectance	11/28/2012-	MODIS Heritage Algorithm	CLASS	Land Quality Flag	375/750m	Daily
	Vegetation Index	05/02/2012-	MODIS Heritage Algorithm	CLASS	4-byte Quality Flag	1km/4km	Daily/Weekly/Bi-weekly
	Snow Cover	10/15/2012-	Binary snow cover: MODIS SnowMap algorithm Snow cover fraction: IDPS: aggregated 2x2 binary snow retrievals NDE: NDSI-based (MODIS heritage algorithm) and visible reflectance-based algorithm	CLASS	Quality Flag (indicating which consistency test was not passed)	375m	Daily
	Sea Ice	10/15/2012-	Sea Ice Characterization IDPS: Nighttime energy	CLASS	4-byte Quality Flag	750m	Twice-daily

Current Comparison Needed

NASA	Active Fires	L2: 2012/01/19- L3: 2011/10/28-	MODIS Heritage Algorithm	LP DAAC	MODIS Heritage QA	750m/1km	Daily
	Land Surface Temperature	L2: 2011/10/28- L3: 2012/01/18-	MODIS Heritage Algorithm	LP DAAC	MODIS Heritage QA	1km	Twice-daily/Daily/8-day
	BRDF/Albedo	2011/10/28-	MODIS Heritage Algorithm	LP DAAC	MODIS Heritage QA	500m/1km/0.05 degree	Daily
	Surface Reflectance	2012/01/19-	MODIS Heritage Algorithm	LP DAAC	MODIS Heritage QA	500m/1km/0.05 degree	Daily/8-day
	Vegetation Index	2012/01/17- (16-day) 2012/01/01- (Monthly)	MODIS Heritage Algorithm	LP DAAC	MODIS Heritage QA	500m/1km/0.05 degree	16-day/Monthly
	Snow Cover	2012/01/19-	MODIS Heritage Algorithm	NSIDC DAAC	MODIS Heritage QA	375m	Daily
	Sea Ice Cover	2012/01/19-	MODIS Heritage Algorithm	NSIDC DAAC	MODIS Heritage QA	750m	Daily
	Ice Surface Temperature	2012/01/19-	MODIS Heritage Algorithm	NSIDC DAAC	MODIS Heritage QA	750m	Daily



Discussion for LAND Break Out

- **Orphaned algorithms and other activities that were not recommended/proposed: Do we continue to produce these without an algorithm PI to manage?**
 - **LAND SIPS WILL MANAGE ORPHANED PRODUCTS**
 - **SOME WILL REAPPLY NEXT ROUND**
 - **For the products that we can attempt MODIS to VIIRS continuity, sounds as if many of these efforts are pushing ahead; however, quality assessments are underway in parallel, and it may be some time....**
- **Algorithm developers and validation investigators should continue to address important deficiencies in key data products (uncertainties)**
- **Evolution to measurement teams and blend with MODIS-VIIRS Team (w/other mission teams)**
 - **MEASUREMENT TEAMS (FOR EACH 'ESSENTIAL' NASA MEASUREMENT) – WILL REQUIRE A MAJOR REORGANIZATION AND TEAM FUNDING (EOS-ERA LIKE FUNDING / IDS ARRANGED MARRIAGES – LINKING SCIENCE AND DATA)**
 - **THE MISSION TO MEASUREMENT AGENDA IS FLAWED IF THE MONEY IS TIED TO MISSIONS EG JPSS-1 DISCUSSION**
 - **MAYBE – THE 'ESSENTIAL' NASA MEASUREMENTS AND ASSOCIATED MULTI-INSTRUMENT MEASUREMENT TEAMS SHOULD BE UNDER A NEW R&A / DATA PROGRAM ELEMENT (REPLACING/BEYOND THE CURRENT 'MEASURES')**
 - **COORDINATED TEAM PROPOSALS?**



HDF4>HDF5 and User Format Requests

- ESDIS Solutions needed to Format Changes
- Conflicting demands for Science Team

Land Team Suggestions for Next Round

- Needs further discussion – some initial ideas
 - Move mature VIIRS Land Products to Senior Review – Evaluate Current Senior Review Maintenance Proposals to seek efficiencies with MODIS Maintenance
 - Separate ‘Informed’ Reviews for the MODIS VIIRS Science and the Data Products Panels - circulate white paper on product use and needs.
- Land Measurement Team Workshop planned for late Spring 2019
 - To discuss product status and needs
 - Science Users and Data Producers

Dr. Runnings suggestion

- See a smooth end of lifefor Terra
- The data products should address NASA ESS priorities
- Where are the big ES Science questions and assoc. data needs discussed
 - Is it time for an IWG revisit ?
- Decadal Survey Science (35 questions - collapsed to 6 areas)
 - Coupling of the water and energy cycles.
 - Ecosystem Change.
 - Extending and Improving Weather and Air Quality Forecasts.
 - Reducing Climate Uncertainty and Informing Societal Response.
 - Sea Level Rise.
 - Surface Dynamics, Geological Hazards and Disasters.