



**NASA
Soil Moisture
Active Passive
(SMAP) Mission**

Introduction

**8th SMAP Cal/Val Workshop
Amherst, MA
June 20-22, 2017**



8th SMAP Cal/Val Workshop

- Logistics
- Overall Goal: Review the SMAP Cal/Val activities and specific issues that benefit from the input of the Cal/Val Working Group
 - *SMAP Project (DAART), ST, Cal/Val Partners, and collaborating scientists*



8th SMAP Cal/Val Workshop: Objectives

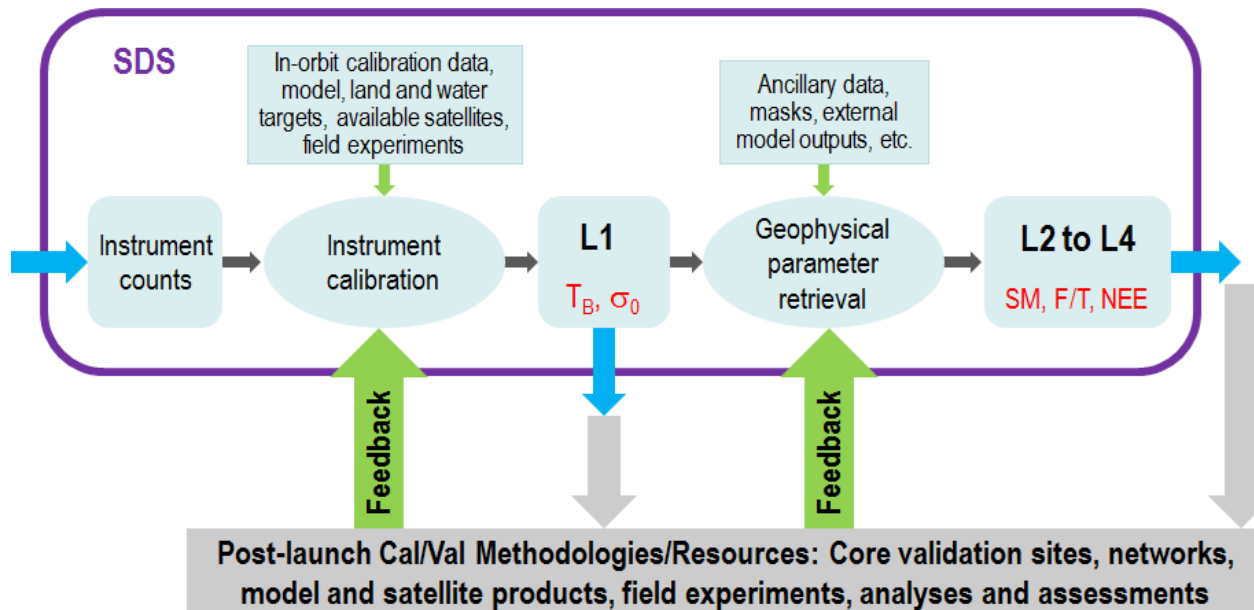


- Validation of new SMAP products
 - *Refine approaches and methodologies*
 - *Improve validation resources to satisfy the new products*
 - *Results: SP*
- Review the results of field experiments
 - *SMAPVEX16*
- Improve Cal/Val methodologies
 - *Identify what Cal/Val activities could help improve performance*
 - *Cal/Val Partners (upscaling, continuity, candidate to core)*
 - *New resources (NEON)*
- Re-examine retrieval approach in biomes with high levels of vegetation
- Plan future field experiments to address issues
 - *NISAR collaboration*
 - *SMAPVEX19*
 - *Site visit*

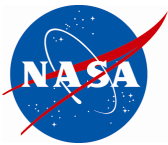
SMAP Cal/Val Post-Launch Focus



- Validating that the products meet their quantified requirements
 - *Calibrate, verify, and improve the performance of the science algorithms*
 - *Validate accuracies of the science data products as specified in L1 science requirements according to Cal/Val timeline*

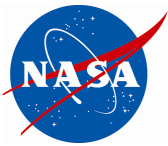


SMAP Cal/Val Methodologies

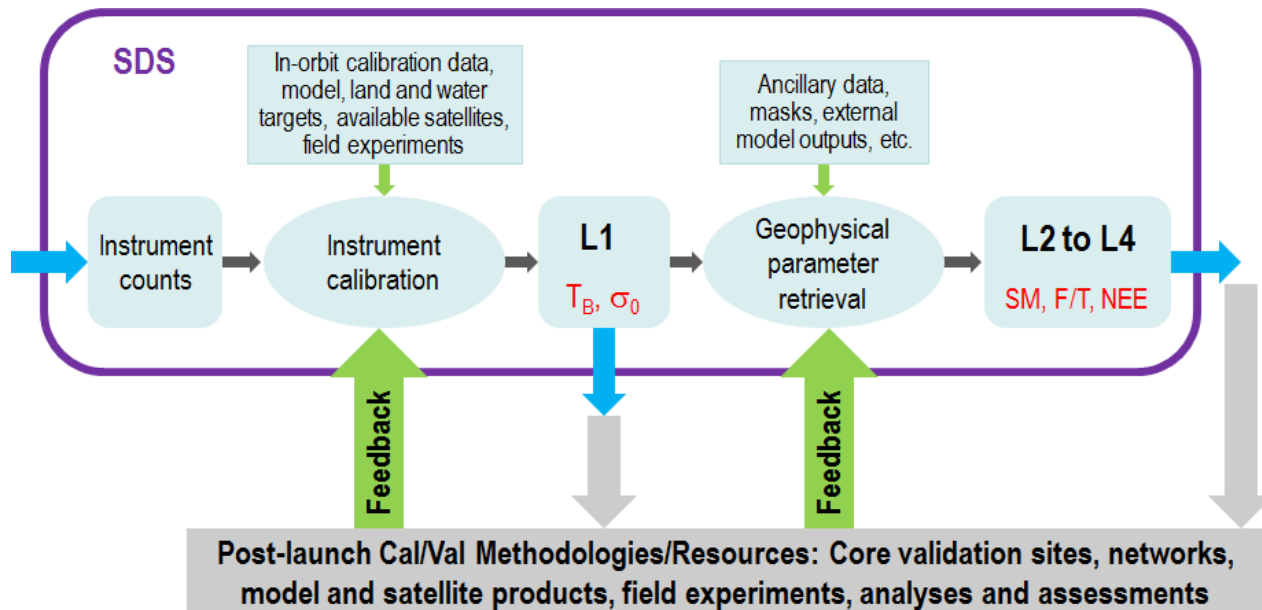


Methodology	Role
Core Validation Sites	Accurate estimates of products at matching scales for a limited set of conditions
Sparse Networks	One point in the grid cell for a wide range of conditions
Satellite Products	Estimates over a very wide range of conditions at matching scales
Model Products	Estimates over a very wide range of conditions at matching scales
Field Campaigns	Detailed estimates for a very limited set of conditions

SMAP Cal/Val Post-Launch Focus



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 - *Calibrate, verify, and improve the performance of the science algorithms*
 - *Validate accuracies of the science data products as specified in L1 science requirements according to Cal/Val timeline*



- The loss of the radar prompted the exploration of improved and new products This requires adapting the Cal/Val Plan.

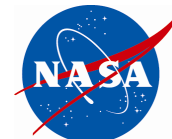


8th SMAP Cal/Val Workshop Agenda-Day 1



Session	Title	Authors
Opening		
8:00	Welcome	P. Siquera
8:15	Objectives	T. Jackson
8:30	NASA HQ and SUSMAP	J. Entin
8:45	Mission Status, New Products and Timeline	T.-H. You and S. Yueh
9:15	Science and Applications Update	D. Entekhabi and S. Yueh
9:45	Break	
Validating New Products and Product Updates and Plans		
10:00	Recalibration and Validation of the SMAP L-band Radiometer	J. Peng, S. Misra, J. Piepmeier, E. Dinnat, T. Meissner, D. Le Vine, G. De Amici, S. Yueh
10:20	Soil Moisture Passive Product Enhancements	S. Chan, R. Bindlish, T. Jackson, P. O'Neill
10:40	Calibration and Validation of the SMAP and Sentinel based Active-Passive High Resolution Soil Moisture Product	N. Das, S. Kim, S. Dunbar, T. Jagdhuber and D. Entekhabi
11:20	L3 Freeze/Thaw Products and Cal/Val Activities Summary	X. Xu, C. Derksen, S. Dunbar, A. Colliander, Y. Kim, J. Kimball
11:40	Lunch	
12:45	L4_SM Product Updates	J. Kolassa and R. Reichle
13:00	SMAP Level 4 Carbon (L4C) Product Assessment, Status and Plans	S. Kimball, L.A. Jones, J. Glassy, R. Reichle
Field Experiment Results		
13:15	SMAPVEX16 Overview	T. Jackson
13:20	Overview of SMAPVEX16-Iowa Ground Operations	M. Cosh, A. Colliander, T. Jackson, J. Prueger, J. Hatfield, B. Hornbuckle, J. Judge, T. Franz, J. Qu, W. Krajewski, A. Fisher
13:40	Iowa Tower Radiometer	J. Judge et al.
14:00	Soil Surface Roughness Measurements During SMAPVEX16-IA	B. Hornbuckle, W. Eichinger, V. Wallace, V. Walker, E. Yildirim, M. Cosh
14:15	SMAPVEX16-MB Data and Analysis	M. Friesen, J. Powers, K. Gottfried, H. McNairn, A. Pacheco, A. Merzouki
14:45	PALS SMAPVEX16	A. Colliander, S. Misra, M. Cosh, T. Jackson, et al.
15:15	SMAPEx Overview	J. Walker, T. Jackson
15:30	Discussion	
15:45	Break	
Validation Studies (Contributed)		
16:00	Water Contamination Correction for SMAP	J. Chaubell, S. Yueh, J. Peng
16:20	Soil moisture variability from hillslope to SMAP grid scale over Iowa	W. F. Krajewski, R. Mantilla, and N. Jadidoleslam
16:35	The hydrologic understory: soil moisture in the wetland habitat	C. Hatch, G. Davenport, M. Cosh, J. Koyen, C. Richardson, L. Winter, A. Hackman, B. Clement, and K. Ballantine
16:50	Enhancing the information content and utilization of SMAP products for agricultural applications	J. Bolten, S. Kumar, J. Santanello
17:05	Summary of the Day	

8th SMAP Cal/Val Workshop Agenda-Day 2



Session	Title	Authors
Validation Methodology Status		
8:30	Core Validation Sites	A. Colliander and T. Jackson
8:45	Application of Triple Collocation for SMAP Validation	W. Crow and F. Chen
9:05	NEON's Soil Moisture Measurements and Potential for Scaling	E. Ayres
9:25	NEON Terrestrial Observation System Vegetation Measurements and Integration with Remote Sensing	C. Meier
9:45	NEON Discussion	
9:55	Satellite Intercomparisons	R. Bindlish, Y. Kerr
10:30	Break	
Cal/Val Partners Analyses and Plans		
10:45	Status on the USDA-ARS Watersheds for SMAP	M. Cosh et al.
11:15	The TxSON data set: Soil Moisture at Nested Scales	T.G. Caldwell, R. Casteel, M.H. Young, T. Bongiovanni, B.R. Scanlon, M.H. Cosh, T.J. Jackson, A. Colliander and S. Yueh
11:35	Meso-scale Eurasia Soil Moisture Soil Temperature Networks: Tibet-Obs and Twente	Y. Zeng, Z. Su, R. van der Velde, D. Zheng, S. Lu, L. Dente
11:55	Argentina	M. Thibeault
12:15	Lunch	
13:15	NISAR Mission Overview	P. Siquera
13:35	NISAR Ecology	P. Siquera
13:55	NISAR Cal/Val Plan	B. Chapman
14:15	Discussion	
14:30	Break	
Validation Studies (Contributed)		
14:45	Soil Moisture Validation Plan for WCOM	J. Shi
15:05	Use of ground-based radiometers for L-Band Freeze/Thaw retrieval in a boreal forest site	A. Roy, O. Sonnentag, C. Derksen, P. Toose, C. Pappas, A. Mavrovic, A. Royer, A. Berg, T. Rowlandson, W. Helgason, A. Barr, and A. Black
15:20	Evaluation of seven satellite-based soil moisture products using the CRN and COSMOS Networks	S. Stillman and X. Zeng
15:35	An intercomparison of soil moisture derived from SMAP and SMOS over the Semiarid Brazilian areas	F. Paredes, E. Zamoraâ, and H. Barbosa.
15:50	Effects of vegetation cover and potential evaporation on soil drying rates: A comparison between SMAP, GPS-IR, and NLDAS-NOAH	E. Small, P. Shellito, K. Larson, and C. Roesler
16:05	A neural network approach to retrieve and assimilate SMAP soil moisture	J. Kolassa, R. Reichle, Q. Liu, S. Alemohammad, and P. Gentine
16:20	Assimilation of L-band soil moisture brightness temperatures (TB) into the soil, vegetation and snow (SVS) scheme within the Canadian land data assimilation system (CaLDAS)	M. Abrahamowicz, M. Carrera, B. Bilodeau, N. Alavi, S. Belair, A. Russell and X. Wang
16:35	Modeling of UAVSAR data soil moisture retrieval through dielectric changes in soil and vegetation	S. Kim and M. Arii
16:50	Disaggregating of passive microwave soil moisture using land surface temperature and vegetation data	Bin Fang, and Venkat Lakshmi
17:05	Classification based on polarimetric parameters: an example using ALOS 2 images over the Pampa's Core Site	M. Palomeque, S. Bustos Revol, D. Dadamia, E. de Luca, R. Edrosa, M. Guerrieri, J. Mogadouro, L. Romaldi, M. Thibeault

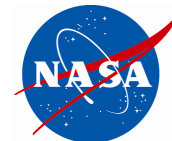


8th SMAP Cal/Val Workshop Agenda-Day 3



Session	Title	Authors
Retrieving Soil Moisture for Biomes with High Levels of Vegetation		
8:30	Forest emission at L-band: Modeling, applications and the experience of SMOS	P. Ferrazzoli, C. Vittucci, L. Guerriero, Y. Kerr, P. Richaume
9:10	Passive Sensing of Soil Moisture over Forested Terrain	R. Lang
9:50	Break	
10:00	Remote Sensing Theory of Vegetation Canopy using 3D Numerical Solutions of Maxwell Equations for SMAP Applications	H. Huang, L. Tsang, E. G. Njoku, and A. Colliander
10:20	Radiometer-Based Surface Soil Moisture Including Higher-Order Soil-Canopy Interactions	A. Feldman, R. Akbar and D. Entekhabi
10:40	Planning for SMAPVEX19	T. Jackson, J. Kimball, S. Misra, et al.
Discussion and Summary		
12:00		T. Jackson
Visit to Harvard Forest		
13:00	Return by 18:00	

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