

National Aeronautics and Space Administration



# Plans Cal/Val Phase I release

Soil Moisture  
Active Passive  
Mission  
**SMAP**

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Cal/Val Workshop 6

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Caltech  
Pasadena, CA





# Various calibration issues

- There are various terms that go in to the radiometer calibration – many of which are interconnected

$$T_{ap} = G_{pp} (\eta_v T_{ATOIp} + (1 - \eta_v) T_{Bblp} + \chi_{pq} T_{ATOIq} + \chi_{ps} T_{ATOIs} + \chi_{pr} T_{ATOIs}) + O_p + f(T_{Dsun}, T_{Rsun}, T_{Dgal}, T_{Rgal}, T_{Dmoon})$$

1. Gain calibration
  1. Noise-diode calibration
2. Offset calibration
  1. Front-end calibration
  2. Radome
  3. Reflector
3. Antenna Pattern Correction
  1. Spillover correction
  2. Cross-pol matrix correction
4. Reflected/Direct contribution
  1. Sun
  2. Galaxy
  3. Atmosphere
5. Faraday rotation correction
6. Geolocation correction
7. Sub-band calibration
8. RFI threshold
  1. Kurtosis Fullband
  2. Kurtosis Subband
  3. Cross Frequency
  4. Pulsed Detection
  5. 3<sup>rd</sup>/4<sup>th</sup> Stokes
9. Internal Cal check
  1. NEDT check
  2. Flagging check
10. TA drift calibration



# Priority List for Cal/Val Phase I release

Calibration Issue	Things to do	Person(s) in-charge
Relative calibration and Front-end Loss correction	Implement high resolution reflector/radome table	Sid, Jinzheng, Priscilla
	Assess drift observed during eclipse period	Sid, Jinzheng
	Update reflector/radome loss	
	Relative CSC/ocean/Antarctica/Land TA comparison	Sid, Jinzheng, Emmanuel
	Drift readjustment	Jinzheng
Absolute calibration	APC spillover correction	Emmanuel
	Absolute CS/ocean/Land comparison	Emmanuel, Jinzheng, Sid
	Gain/Offset readjustment	Jeff, Joel, Rajat
Algorithmic correction	Galactic correction readjustment	Giovanni, Jeff,
	Sun-glint correction readjustment	Thomas
Polarization correction	APC cross-pol contamination	
	3 <sup>rd</sup> Stokes calibration	David
	4 <sup>th</sup> Stokes calibration	Jeff
	RFI threshold 3 <sup>rd</sup> /4 <sup>th</sup> Stokes	Joel, Priscilla
Other issues	Gain filter change	Sid



# Validation Phase I release

- Validation process
  - SMOS/Aquarius/Dome-C comparisons
  - Evaluate individual error-budget terms
    - Some are easier than others to evaluate
  - Validation process different for land, ocean, ice
- Inputs to SDS – end of September – one month away!!
- Data release – end of October