SMAP Algorithms and Cal/Val Workshop

Oxnard, CA, USA

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Satellite Resources and Their Role in SMAP Cal/Val

Satellite Products Cal/Val Priorities

- Pre-launch: Participate in the ALOS, SMOS, Aquarius, and GCOM-W missions
  - Validation of SMAP algorithms
  - RFI
  - Establish cross-reference between mission products
- Post-launch
  - Exploiting the sensor products (T_B and σ^o) from SMOS and Aquarius as cal/val resources
  - Exploiting the soil moisture products from SMOS, GCOM-W, EUMETSAT, and SAOCOM as validation resources
    - These sensor products should be produced **independently** from the SMAP project

Pre-Launch SMAP Science Data Product Validation

Data Product	Description	Satellite Products
L1B_S0_LoRes	Low Resolution Radar s^o in Time Order	Aquarius
L1C_S0_HiRes	High Resolution Radar s^o on Earth Grid	
L1B_TB	Radiometer T_B in Time Order	SMOS, Aquarius
L1C_TB	Radiometer T_B on Earth Grid	
L3_SM_HiRes_3km	Radar Soil Moisture on Earth Grid	PALSAR
L3_SM_40km	Radiometer Soil Moisture on Earth Grid	SMOS, AMSR-E
L3_SM_A/P_10km	Radar/Radiometer Soil Moisture on Earth Grid	SMOS
L3_F/T_HiRes	Freeze/Thaw State on Earth Grid	PALSAR
L4_SM	Soil Moisture Model Assimilation on Earth Grid	SMOS
L4_C	Carbon Model Assimilation on Earth Grid	

Post-Launch SMAP Science Data Product Validation

Data Product	Description	Satellite Products
L1B_S0_LoRes	Low Resolution Radar s^o in Time Order	Aquarius
L1C_S0_HiRes	High Resolution Radar s^o on Earth Grid	PALSAR, SAOCOM
L1B_TB	Radiometer T_B in Time Order	SMOS, Aquarius
L1C_TB	Radiometer T_B on Earth Grid	SMOS
L3_SM_HiRes_3km	Radar Soil Moisture on Earth Grid	SAOCOM
L3_SM_40km	Radiometer Soil Moisture on Earth Grid	SMOS, GCOM-W
L3_SM_A/P_10km	Radar/Radiometer Soil Moisture on Earth Grid	
L3_F/T_HiRes	Freeze/Thaw State on Earth Grid	
L4_SM	Soil Moisture Model Assimilation on Earth Grid	SMOS
L4_C	Carbon Model Assimilation on Earth Grid	SMOS, MODIS/NPP

Perspectives from Other Missions

- SMOS
- GCOM-W
- Aquarius
- …….

Summary

- Pre-launch: Participate in the ALOS, SMOS, Aquarius and GCOM-W missions
  - Validation of SMAP algorithms
  - RFI
  - Establish cross-reference between mission products
- Post-launch
  - Exploiting the sensor products (T_B and $\sigma^{o)}$ from SMOS and Aquarius as calibration resources
  - Exploiting the soil moisture products from SMOS and GCOM-W as validation resources