



Report on the

JCSDA Microwave Sensors Working Group Breakout Session

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Science Priority

1 Increase use of MW data in NWP Assimilation

- a) Moisture Channels
- b) Better use of the lower peaking channels over land as well as ocean
- c) Cloud and Precipitation affected radiances
- d) Upper Atmosphere (40 km and above)

2 Increased MW Sensor Monitoring

- a) Sensor NEDT, warm load, shelf temperatures, etc., monitoring and trending
- b) OB-BK TDR/SDR monitoring and trending
- c) OB-BK EDR monitoring and trending

3 Understanding Biases

- a) Sensor biases
- b) Forward Model Biases
- c) Develop physically based correction algorithms
- d) Pre-Flight characterization of sensor

4 Forward Model Development

- a) Validation in support of 1-3 above
- b) Rapid prototyping for new sensors



Sensor Priority

- **New Sensors (Operational)**
 - **NPP/ATMS**
 - MIS
- **Follow-on sensors (Operational)**
 - Metop-B,C AMSU and MHS
 - DMSP-F18,19, 20 SSMIS
 - JPSS/ATMS (C1, C3, etc)
- **Research sensors**
 - GPM
 - **GCOM-W AMSR2**
 - Aquarius
 - SMAP
 - Windsat
 - AMSR-E
 - TRMM/TMI
- **Non-US Sensors**
 - **FY3 MWRI, MWTS, MWHS**
 - SMOS
 - **Mega-Tropiques MADRAS**



Recommendations: Accelerated Uses of Cloudy and Rain-affected radiances

- Error covariance matrices characterized by cloud and rain types
- Continue the work of tangent and adjoint process and make codes available for all partners



Recommendations on GPS/RO Specific

- GPS – IR water vapor: need to investigate the bias in dry atmospheric condition
- How does assimilating of GPS affect the bias correction of other sensors?
- Use GPS measurements to characterize microwave sounding instruments, especially for upper level sounding channels
- In the boundary layer, refractivity is a better operator for super reflection
- Dedicated person for GPS/RO data bufring



Questions to the breakout groups

- Based on this workshop, how would you rate the JCSDA activities in your area of expertise?
 - **Very robust**
- What recommendations do you have for JCSDA management to strengthen its activities in your areas (if needed)
 - Long term, short term, specific funding issues, collaboration on specific projects, other

JCSDA should consider investment of a consolidated website for sensor monitoring (Geo instruments, foreign instruments and Bias correction and QC

- What is the role of your JCSDA Working Group and how could (or should) it evolve?
 - **Yes, all roles**
- Any feedback on the workshop itself?
 - **Presented materials should be coordinated with WG co-chairs**