

## Report on the JCSDA Microwave Sensors Working Group Breakout Session

Co-Chairs: Fuzhong Weng (NOAA/NESDIS) and Steve Swadley (NRL)

JCSDA 8<sup>th</sup> Science Workshop, UMBC, May 4-5, 2010



# **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**

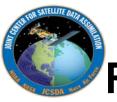
- New Sensors (Operational)
  - NPP/ATMS
  - MIS

### 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
- Acquarius
- SMAP
- Windsat
- AMSR-E
- TRMM/TMI
- Non-US Sensors
  - FY3 MWRI, MWTS, MWHS
  - SMOS
  - Mega-Tropiques MADRAS



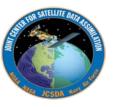
Recommendations: Accelerated Uses of Cloudy and Rain-affected radiances

- 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?

- Any feedback on the workshop itself?
  - Presented materials should be coordinated with WG co-chairs

<sup>-</sup> Yes, all roles