STAR GCOM-W1/AMSR2 PROJECT UPDATE AND STATUS

**STAR GCOM-W1 Project Team**
Presented by Paul Chang

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Outline

- Sensor Overview

- AMSR2 EDRs and Project Schedule

- Ongoing validation activities

- Long term monitoring and science maintenance

- Summary and Path Forward

AMSR2 Instrument Overview

General Information

- Launched: JAXA, 05/2012
- Swath: 1450 km
- EIA: 55°
- Rate: 40 rpm
- Instrument is healthy and performing well
- Ample fuel reserves
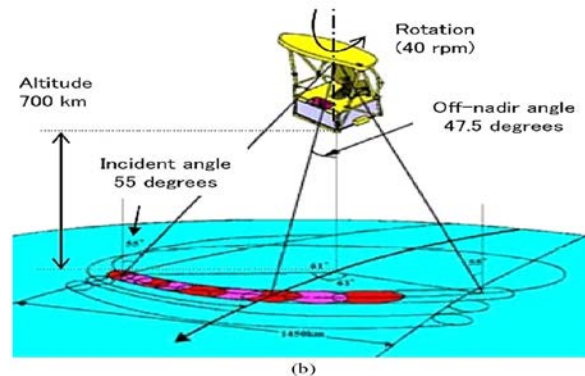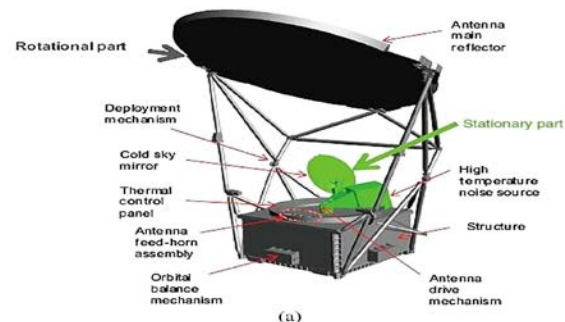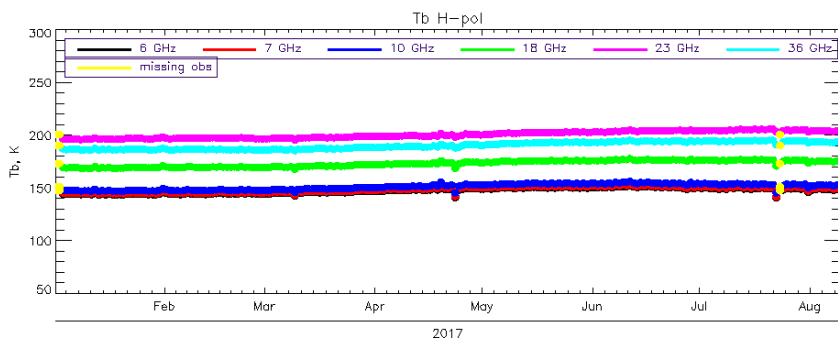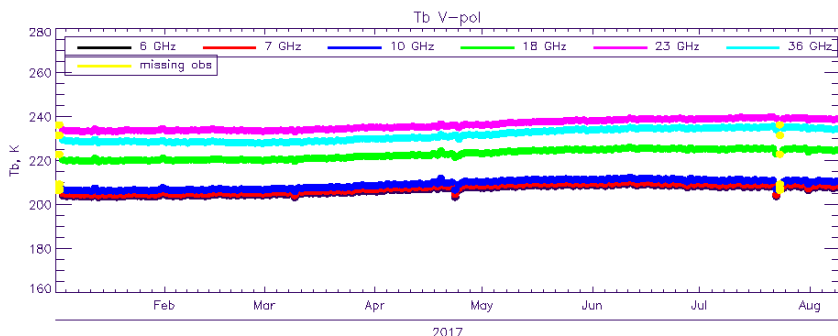
Center freq. (GHz)	Band width (MHz)	Beam width (3 dB, deg.)	Ground IFOV (km)	Sampling interval (km)
6.925/7.3	350	1.8	35 × 62	
10.65	100	1.2	24 × 42	
18.7	200	0.65	14 × 22	10
23.8	400	0.75	15 × 26	
36.5	1000	0.35	7 × 12	
89.0	3000	0.15	3 × 5	5

STAR GAASP Development

- GCOM-W1 AMSR2 Algorithm Software Processor (GAASP) development :
- Products
  - Microwave Brightness Temperature (MBT)
  - Total Precipitable Water (TPW)
  - Cloud Liquid Water (CLW)
  - Sea Surface Temperature (SST)
  - Sea Surface Wind Speed (SSW)
  - Precipitation Type/Rate (PT/R)
  - Snow Cover/Depth (SC/D)
  - Snow Water Equivalent (SWE)
  - Sea Ice Characterization (SIC)
  - Soil Moisture (SM)

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Project Schedule Overview

- As of September 27, 2016 all products were formally designated as operational

- Since June 2013: Products available in near real-time to users (NHC, JTWC, NRL, etc.) via the GAASP on the STAR GCOM-W1/AMSR2 product development and validation system

- Discontinuities were found the level 1 files that were introduced by the IDPS granules. This necessitated moving to full orbit contacts through IDPS which which was implemented in NDE 2.0 with IDPS B2.0.
  - Currently NDE is ingesting AMSR RDRs and processing to Level 1 locally utilizing JAXA provided software

- All NOAA GCOM-W1/AMSR2 products being distributed via PDA

- Updates delivered annually or as required in response to issues such as sensor aging, calibration updates, etc.:
  - Includes updates and enhancements to existing EDRs

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Ongoing Validation Activiites

» Collocation of numerical model, objective analysis and satellite data with GCOM-W1/AMSR2 measurements

» Collocation of in-situ data from gauges and field experiments

» Statistical analysis of AMSR2 brightness temperature measurements (level 1 products) utilizing CRTM to characterize residual calibration errors that will impact higher level products

» Statistical analysis of NOAA AMSR2 level 2 products

» Responding to user feedback and questions

» STAR quality monitoring and product display for visual analysis of NOAA AMSR2 products

  » http://manati.star.nesdis.noaa.gov/gcom/

» STAR AMSR2 EDR quick look product page

» http://www.star.nesdis.noaa.gov/jpss/EDRs/products_gcom.php

Long Term Monitoring and Science Maintenance

» Extend validation datasets (spatially and temporally collocated numerical model and satellite data) to account for seasonal and annual trends.

» Collect in-situ data from relevant field experiments to support validation and quality assurance not possible by utilizing existing satellite or numerical model datasets. For example, characterization of product performance in extreme environmental conditions (tropical and winter storms) generally require specialized datasets.

» Algorithm sustainment, such as, updates to the algorithms when quality issues are identified in operation or when Level 1 processing updates are implemented by JAXA

» Other event-driven anomalies, such as, channel loss, sensor degradation, which will impact the measurements and thus the derived products

Summary & Path Forward

- Implement EDR improvements and enhancements resulting from ongoing validation activities and user feedback into GAASP updates
- Calibration updates, product updates and continued monitoring and quality control
  - Continue working with JAXA on Level 1 calibration improvements
    - NOAA-JAXA GCOM-W1/AMSR2 technical exchange meeting scheduled for Nov. 2017
  - Address JAXA updates to Level 1 processing software as needed
  - Continue validation and product monitoring and implement product updates as needed
  - User product training and outreach
- Provide support to JAXA as appropriate to help them realize a GCOM-W1 follow-on mission.
- Reprocessing of NOAA AMSR2 Level 2 products
  - Provide consistently processed products covering the entire mission dataset (5+ years) to support longer term product validation and utilization in seasonal/annual environmental monitoring and prediction.
- Evaluating change from Reynolds to CMC SST analyses for ancillary data input to GAASP
- Update wind speed product with an emphasis on improving high wind performance.