



Overview of GCOM

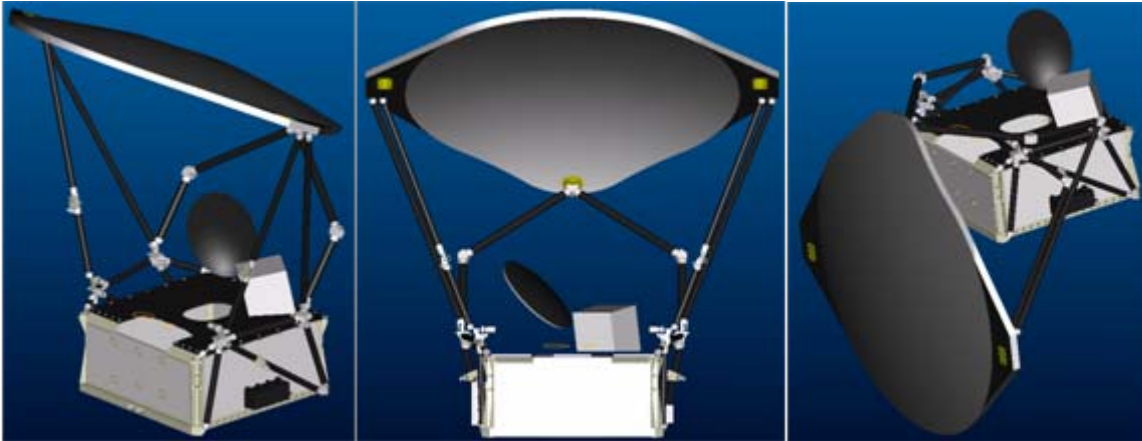


- JAXA has been proposing the Global Change Observation Mission (GCOM).
- GCOM will be:
 - Follow-on mission of ADEOS-II and AMSR-E on EOS Aqua.
 - Part of Japanese contribution to the GEOSS concept through satellite long-term climate change observation.

<i>GCOM-W & -C characteristics (TBD)</i>		
	<i>GCOM-W</i>	<i>GCOM-C</i>
<i>Design</i>		
<i>Orbit (TBD)</i>	<ul style="list-style-type: none"> • Sun-synchronous • Altitude: 699.6km • Inclination: 98.19deg • Ascending local time: 13:30 	<ul style="list-style-type: none"> • Sun-synchronous • Altitude: 798km • Inclination: 99.36deg • Descending local time: 10:30
<i>Instruments</i>	• AMSR follow-on Microwave imager	• SGLI Near-UV ~ TIR imager
<i>Launch Date</i>	JFY 2010	JFY 2011
<i>Mission Life</i>	5 years (×3 satellites; total 13 years)	
<i>Launch Vehicle</i>	H-IIA	

- GCOM consists of:
 - 2 medium size satellites: GCOM-W and GCOM-C
 - Multiple consecutive generations (e.g., 3 generations) with one year overlap to realize long-term (~ 15 years) homogeneous data records.
- GCOM-W1 (first generation) will carry the follow-on instrument of the Advanced Microwave Scanning Radiometer (AMSR).

Overview of GCOM-W/AMSR F/O



Overview of AMSR follow-on instrument (sensor unit) from concept study. Left and center figures indicate deployed condition of main reflector. Right figure shows stowed position.

Center frequency [GHz]	Band width [MHz]	Polarization	Beam width [deg] (Ground res. [km])	Sampling interval [km]
6.925 (TBD)	350	V and H	1.8 (35 x 62)	10
10.65	100		1.2 (24 x 42)	
18.7	200		0.65 (14 x 22)	
23.8	400		0.75 (15 x 26)	
36.5	1000		0.35 (7 x 12)	
89.0	3000		0.15 (3 x 5)	5

Major sensor parameters derived by assuming an orbit altitude of 700 km (same as Aqua satellite) and 2m antenna size.

- **Major Requirements**
 - Realize the earliest launch date to keep AMSR-E observation.
 - Keep Midori-II AMSR performance and (except 50GHz channels).
 - Improve calibration (particularly hot load) accuracy.
 - Mitigate RFI at C-band channels.

- **Other discussions (not adopted this time)**
 - Higher frequency channels for snow detection (e.g. 150, 183GHz).
 - Polarimetric channels (U and V at 18, 36GHz) for wind direction.
 - Enhancement of spatial resolution at lower frequency.

- **AMSR F/O instrument**
 - Deployable reflector system with diameter of 2.0 meters.
 - Frequency channel set identical to that of AMSR-E.
 - Improvement of HTS (hot load).
 - Frequency shift and/or sub-band configuration will be investigated.

Recent Status: Project

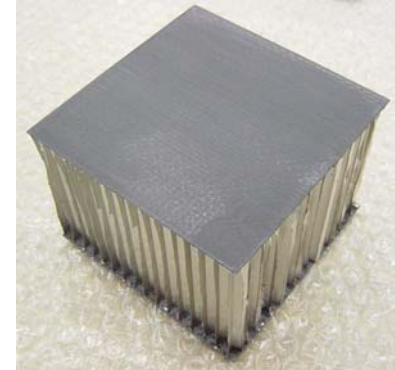


- *Project status*
 - *In the summer of 2006, GCOM-W1 (first generation) plan was proposed to the Space Activities Commission of Japan (SAC) and approved to proceed to the next phase (research and development phase).*
 - *GCOM-W1 will not carry the microwave scatterometer.*
 - *JAXA is preparing for the internal review process to launch the formal GCOM-W1 project from JFY 2007.*
 - *Current target launch year is JFY 2010.*
- *R&D status*
 - *JAXA internal teams and satellite manufacturers have been working on concept design of satellite system.*

Recent Status: AMSR F/O

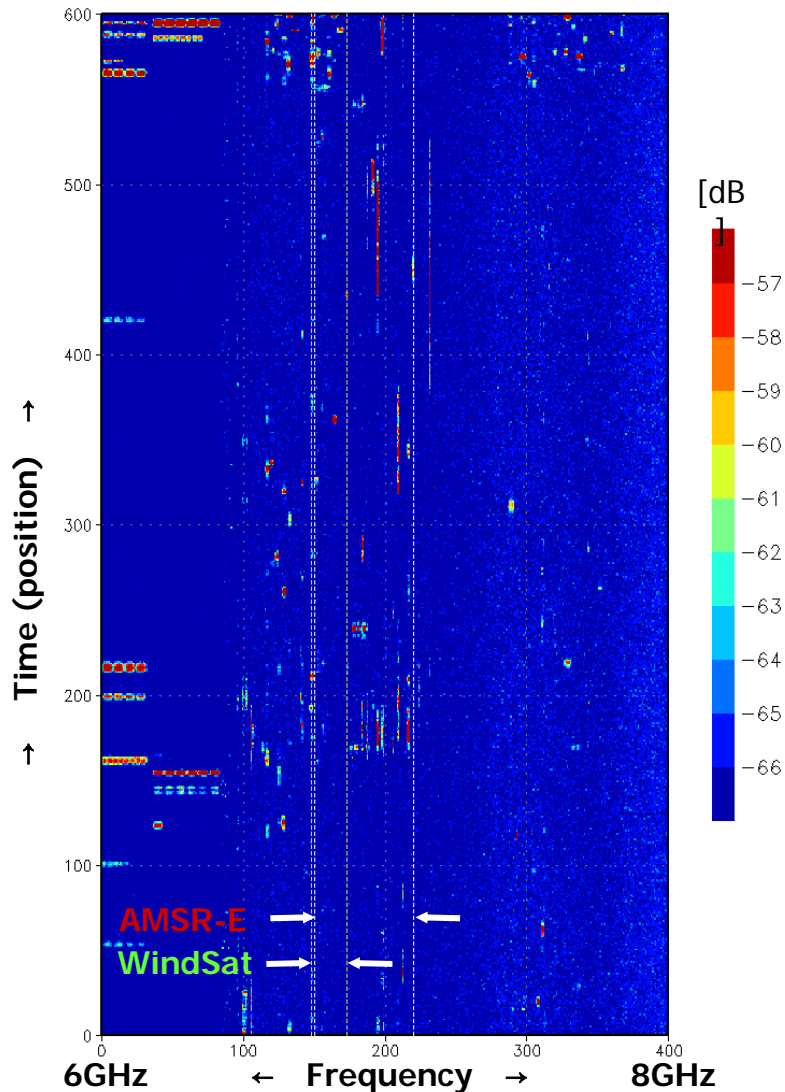


- *R&D status (cont'd)*
 - *For the AMSR follow-on instrument, investigation and prototyping have been started for critical items.*
 - *Improvement of hot-load calibration system (heating mechanism changed)*
 - *Vacuum vapor deposition test of main reflector*
 - *C-band RFI mitigation issue (see next)*
 - *Aging effect of diode detectors (1000-hr burn in test)*
 - *Evaluation of replacement for the end-of-life parts (e.g., 89GHz MMIC)*
 - *Interface design between AMSR follow-on and GCOM-W satellite.*



Test samples of CFRP-Honeycomb sandwich panel. Before vapor deposition (upper) and after vapor deposition (lower) were shown.

Resent Status: RFI issue



Examples of RFI spectra obtained on November 28 (Kanto Koshinetsu area). Bandwidths of AMSR-E and WindSat are indicated on the figure. It seems that less RFI signals in WindSat bandwidth is consistent with satellite data.



- *Due to the resource limitation, 2 sub-bands are now being discussed for AMSR F/O instrument.*
- *6.9GHz (350MHz) + 7.3GHz (350MHz) experimental channel*
 - *Probably no improvement of RFI areas, but RFI flagging is possible.*
 - *Safer to keep current success of 6.925GHz for measuring SST.*
- *7.3GHz center, 175MHz 2 sub-bands*
 - *Potential to decrease RFI, but RFI in this frequency range is uncertain.*
 - *Possible contradiction with RR footnote.*