Agency Report from Japan Aerospace Exploration Agency (JAXA) for GHRSST-XV

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JAXA's Contributions to GHRSST

- JAXA develops SST instruments onboard several satellites
  - Past
    - OCTS (ADEOS), GLI (ADEOS-II), AMSR (ADEOS-II)
  - Current
    - **AMSR-E (Aqua), AMSR2 (GCOM-W)**
  - Future
    - SGLI (GCOM-C) in JFY2016
- JAXA operates joint mission satellites which has SST instruments
  - Current
    - **TMI, VIRS (TRMM), GMI (GPM Core)**
- JAXA has operated the GHRSST server (Japanese RDAC) to distribute JAXA's SST products in GDS format.
  - produced from JAXA instruments and other agency's instruments

Major Activities since GHRSST-XIV (1/2)

- JAXA Data policy change
  - Recently, JAXA's data policy regarding environmental satellite data (including GCOM-W and GPM) has been changed for free distribution.
  - Now, we can provide our dataset on RDAC to GDACs for third party distribution and commercial use without restriction.
- AMSR2 SST near-real-time data distribution started
  - In April 2014, we started distribution of AMSR2 SST in GDS 2.0 in near-real-time (available 3-6 hour after observation) from JAXA GHRSST server
- AMSR-E L1B in slow rotation mode data is available
  - Distributed to public through GCOM-W Research Product web site.
- TRMM/VIRS turned off
  - Due to satellite bus battery anomalies and considering operational priority, VIRS turned off since March 21, 2014.
  - Currently, battery is normal status, but TRMM science team has made the decision that for the time being, the VIRS instrument will remain off for safety.

Major Activities since GHRSST-XIV (2/2)

- GPM Core Observatory launch
  - On Feb 27, 2014 (UTC), JAXA and NASA launched the GPM Core Observatory from JAXA Tanegashima Space Center.
  - DPR (developed by JAXA) and GMI (developed by NASA) showed good performance and data will be released to public soon.
  - JAXA is working on developing GMI SST in the region lower than 10 degC for release in JAXA GHRSST server.
- GCOM-C/SGLI to be launched in Japanese Fiscal Year 2016.
  - Thermal Infrared 250m/500m resolution around coastal area is available (1km in the offshore ocean)
- GCOM-W follow/on discussion
  - Still in planning phase. Still difficult to discuss “follow-on” (budget, strategy of space policy)
  - Possibility of availability of scatterometer is being discussed with NASA/JPL and ISRO.

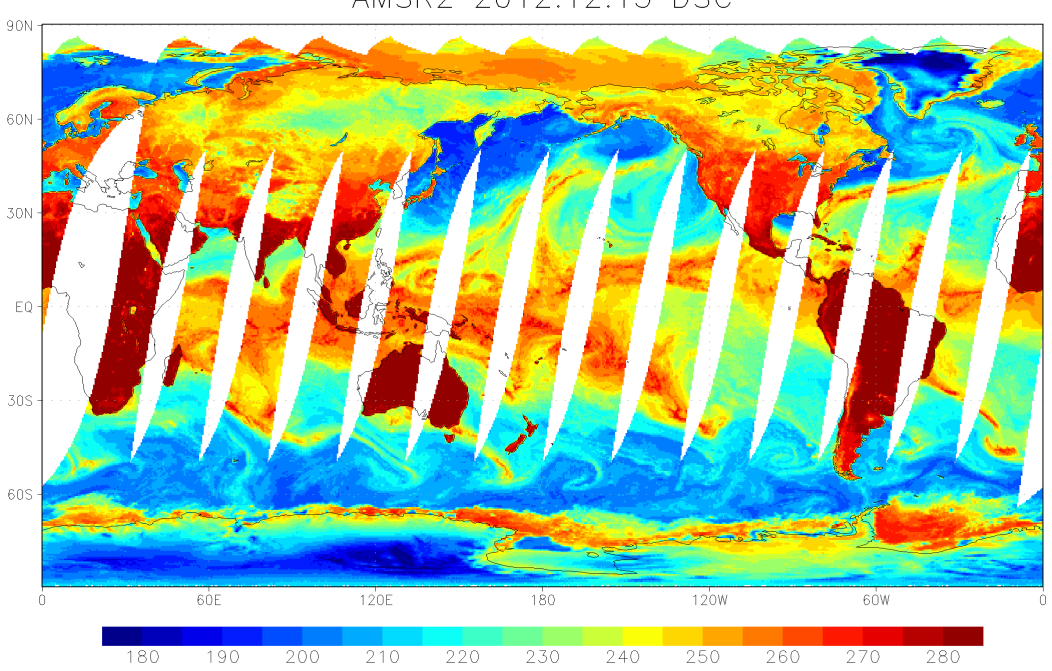
JAXA GHRSST Server (Japanese RDAC)

- JAXA SST datasets in GHRSST format (GDS2.0, NetCDF)
  - http://suzaku.eorc.jaxa.jp/GHRSST/
  - AMSR2 SST (GCOM-W1): L2P/L3C
    - From Jul. 2012 to present
    - Near-real-time (3-4 hours after observation)
    - Standard (1-day after observation)
  - Windsat (Coriolis): L2P/L3C
    - From Apr. 2009 to present
  - AMSR-E (Aqua): L2P/L3C
    - From Jun. 2002 to Oct. 2011
  - VIRS (TRMM): L2P/L3C
    - From Dec. 1997 to Mar. 2014 (currently, VIRS is stayed off)

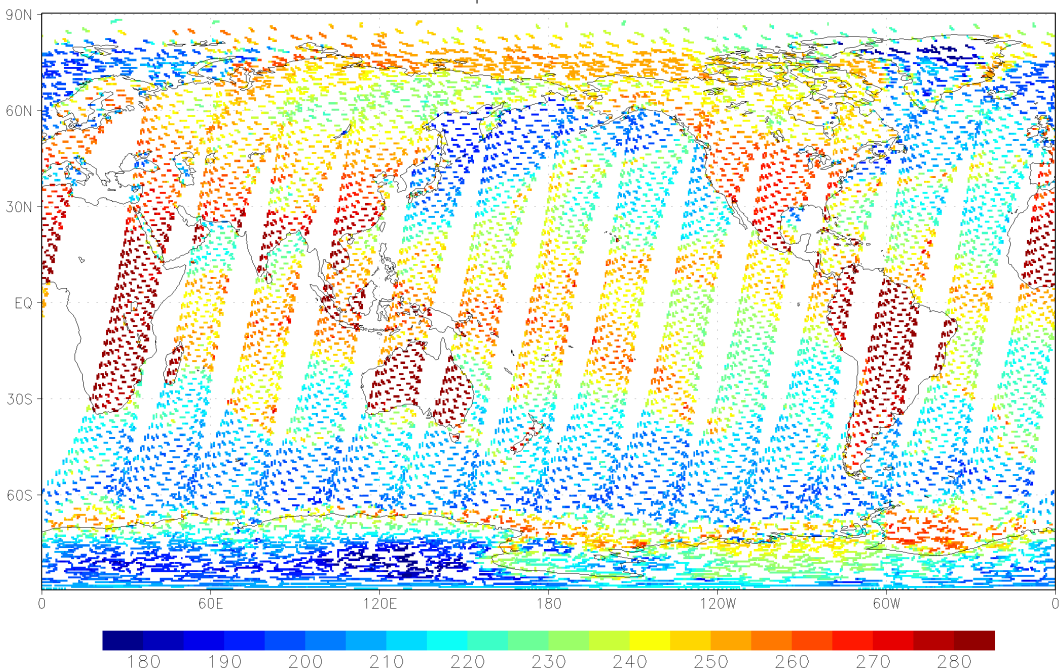
Status of Aqua/AMSR-E

- AMSR-E was halted its observation on Oct. 4, 2011. AMSR-E has restarted observation at 2-rpm since Dec. 4, 2012 to implement cross-calibration with AMSR2.
  - See more details http://sharaku.eorc.jaxa.jp/AMSR/products/amsre_slowdata.html
- AMSR-E L1B data in 2-rpm is distributed to public through GCOM-W Research Product
  - http://suzaku.eorc.jaxa.jp/GCOM_W/research/terms.html

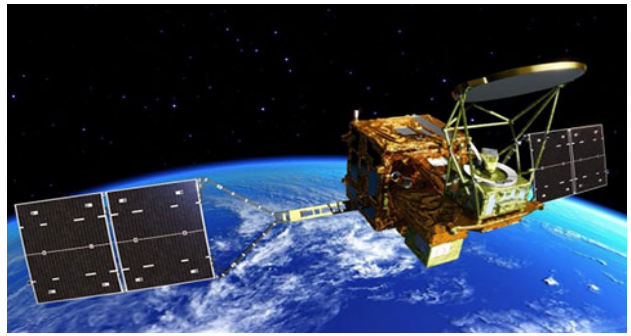
AMSR2 on 40-rpm



AMSR-E on 2-rpm



Status of GCOM-W/AMSR2



- May 17, 2012: Launch
- June 28, 2012: Injection into A-Train
- July 3, 2012: First images of AMSR2
- August 10, 2012: Completion of initial checkout
- January 25, 2013: AMSR2 Level 1 (Brightness temperature) products release to the public
- May 17, 2013: AMSR2 Level 2 (Geophysical) products release to the public (Successful completion of Initial Cal/Val period)
  - GCOM-W Data Providing Service System (https://gcom-w1.jaxa.jp)
- The GCOM-W satellite system and AMSR2 instrument are working well.
- Level 1, 2, and 3 products will be updated late this year.
- Research product candidates are nominated and will be evaluated this year.

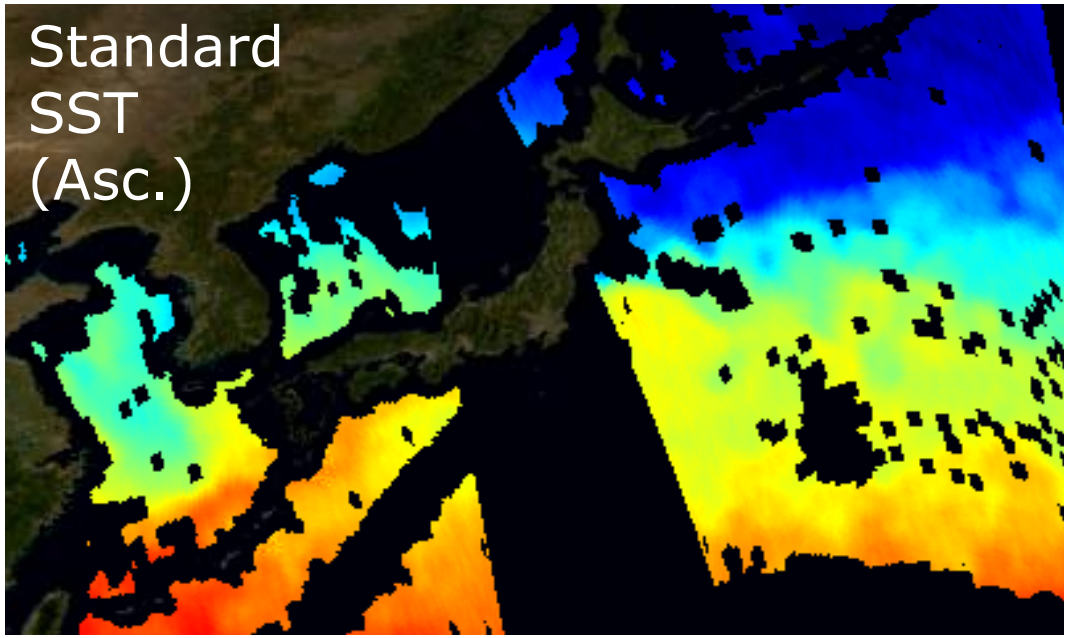
Comparison of AMSR2 SST with buoys

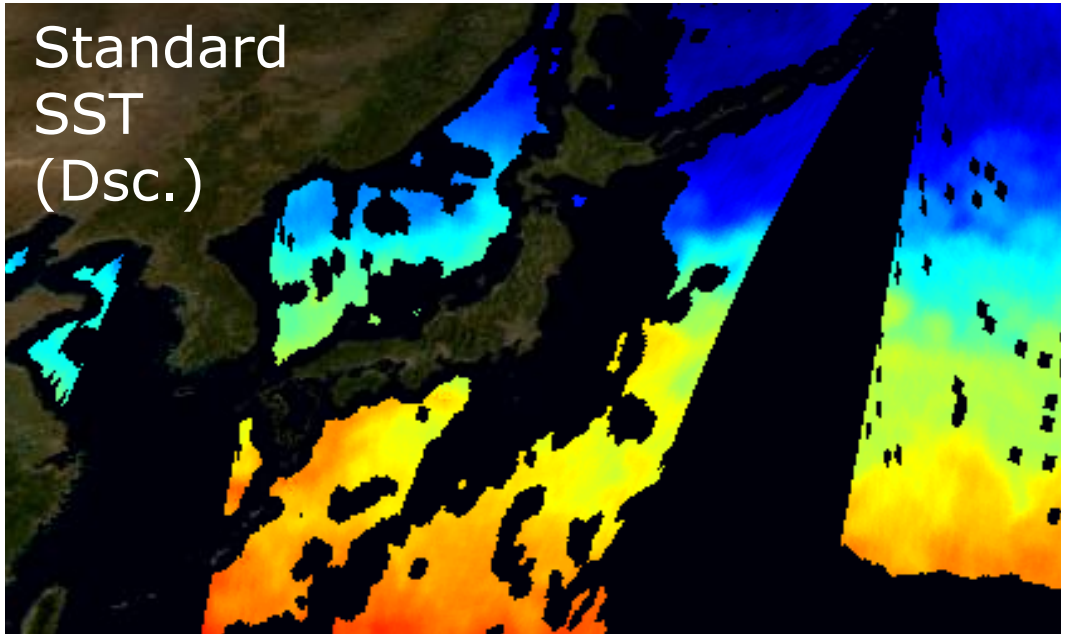
Compare with buoy SST derived from GTS within 2-hr in time and 30km in distance, 10-points average of AMSR2 SST.
(Period: May 14, 2013 – Dec. 18, 2013)

	Standard AMSR2 SST (degC)		
	Asc. + Dsc.	Asc. (day)	Dsc. (night)
Bias	0.071	0.093	0.051
RMSE	0.57	0.58	0.56
Correlation	0.998	0.998	0.998

	Near-Real-Time AMSR2 SST (degC)		
	Asc. + Dsc.	Asc. (day)	Dsc. (night)
Bias	0.065	0.080	0.051
RMSE	0.57	0.59	0.56
Correlation	0.998	0.998	0.998

Research Product Candidate: AMSR2 10-GHz SST

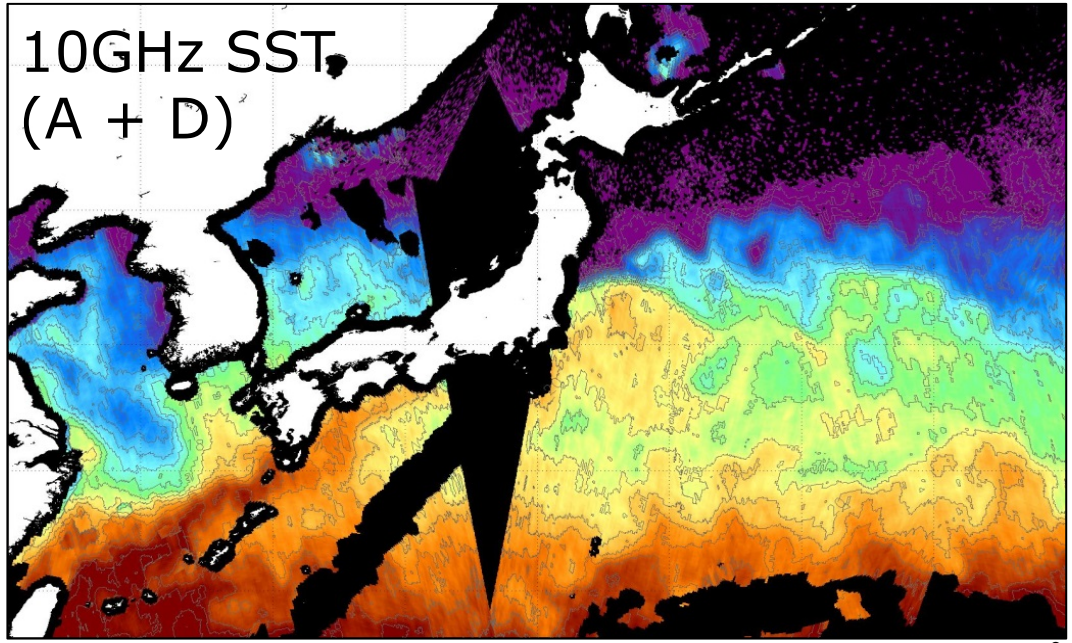




Finer resolution & less missing area along coast line.

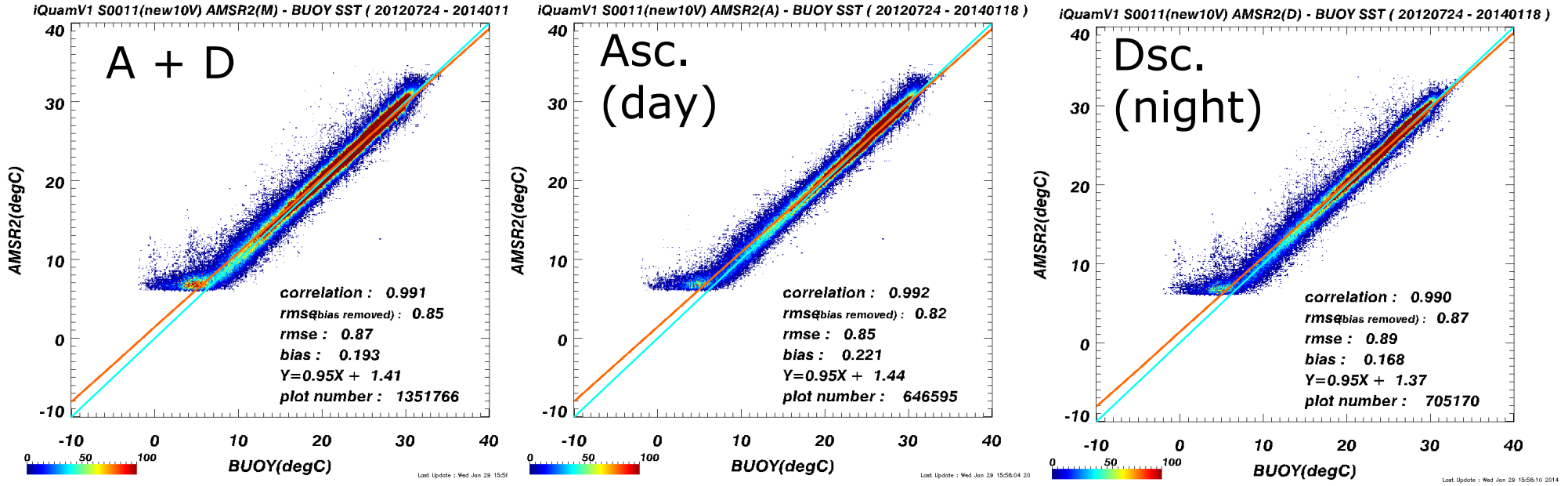
Cannot measure lower SST than 10-12 degC.

Apr. 30, 2014



AMSR2 10-GHz SST: Comparison with buoys

Period: Jul. 24, 2012 – Jan. 18, 2014)

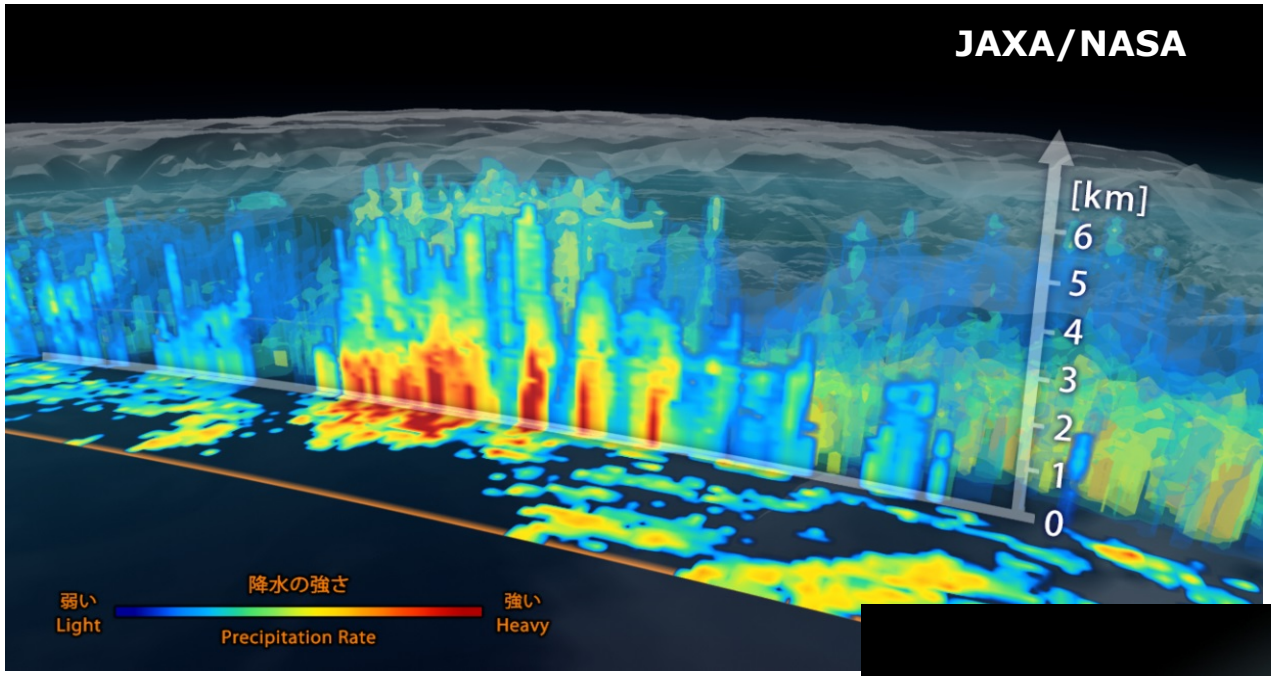


	AMSR2 10-GHzSST(degC)		
	Asc. + Dsc.	Asc. (day)	Dsc. (night)
Bias	0.193	0.221	0.168
RMSE	0.87	0.85	0.89
Correlation	0.991	0.992	0.990

(NOTE) SST under 10 degC is not excluded in comparison with buoys.
We may put missing values to the pixels lower than 10 degC.

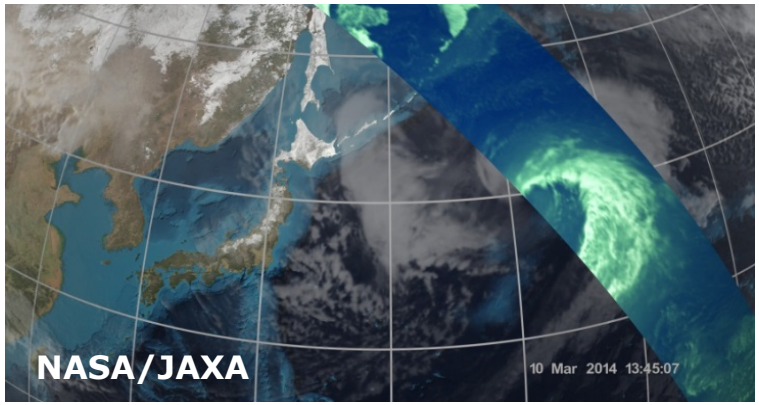
GPM Core Observatory Launch: 3:37 am on 28 Feb. 2014 (JST)

US-Japan joint first images from the GPM Core (March 25)

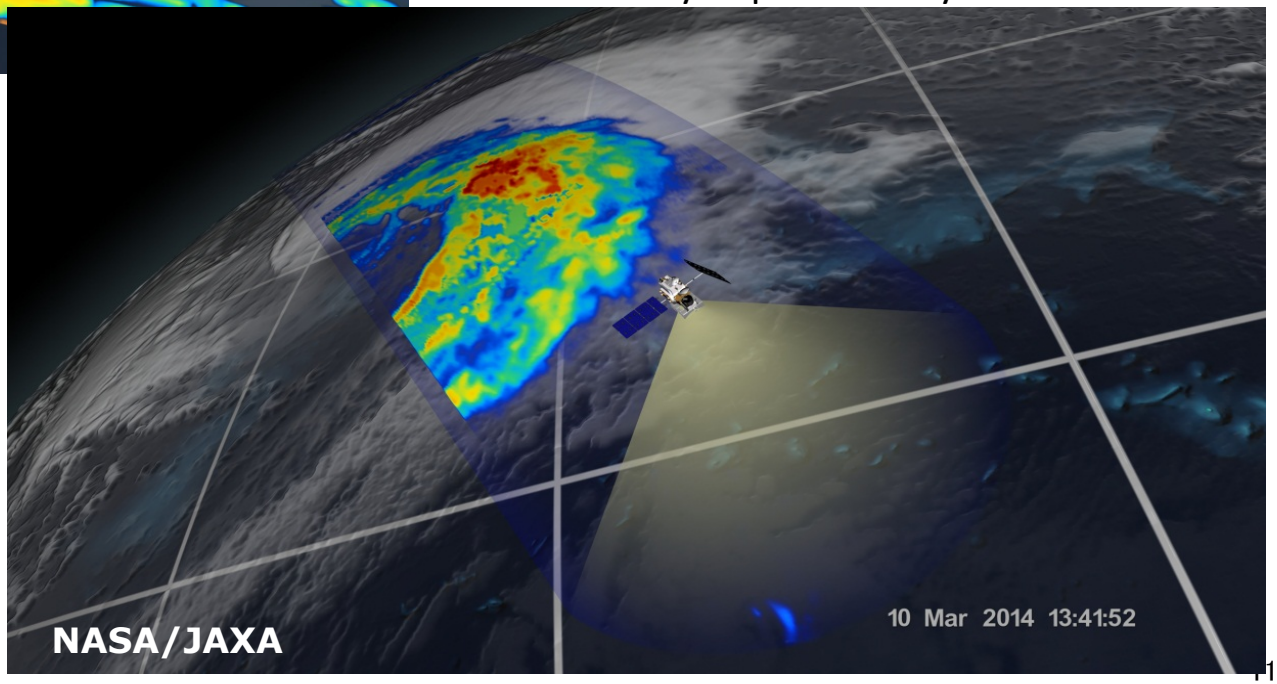


↑ Three dimensional structure of precipitation captured by DPR.

→Surface precipitation captured by GMI.



Extratropical Cyclone over the northwest Pacific Ocean (around 40N, 167E) around 1330Z on 10 Mar. 2014. GMI 36-GHz H TB is overlaying to the Geostationary IR provided by JMA and NOAA.



GPM Core Observatory Status

- Feb. 28, 2014 (JST): Launch
- Mar. 5, 2014: GMI initial checkout was started
- Mar. 9, 2014: DPR initial checkout was started
- Mar. 25, 2014: DPR and GMI first images
- May 12, 2014: JAXA Initial Check Out Phase Completion Review
- May 15, 2014: NASA Post Launch Assessment Review & Operation Transition Review
- May 29, 2014: NASA Operation Handover from GPM Project to Earth Science Mission Operation
- Mid Jun., 2014: GMI L1 release to public (2-month prior to original schedule)
- Mid Jul., 2014: GMI L1/L2 release to public (1-month prior to original schedule)
- Early Sep., 2014: DPR, DPR/GMI combined, Global Rainfall Map by Japan (original schedule)
- Nov., 2014: Global Rainfall Map by US

GPM data will be released from both JAXA and NASA
JAXA: G-Portal (https://www.gportal.jaxa.jp)

Related URLs

- JAXA GHRSST server
  - http://suzaku.eorc.jaxa.jp/GHRSST/
- GCOM-W Data Providing Service System
  - https://gcom-w1.jaxa.jp
- JAXA G-Portal (distribution of TRMM, GPM, AMSR-E standard products)
  - https://www.gportal.jaxa.jp
- AMSR-E slow rotation mode / data distribution
  - http://sharaku.eorc.jaxa.jp/AMSR/products/amsre_slowdata.html
- GCOM-W Web Site
  - http://suzaku.eorc.jaxa.jp/GCOM_W/
- AMSR/AMSR-E Web Site
  - http://sharaku.eorc.jaxa.jp/AMSR/
- JAXA GPM Web Site
  - http://www.eorc.jaxa.jp/GPM/