


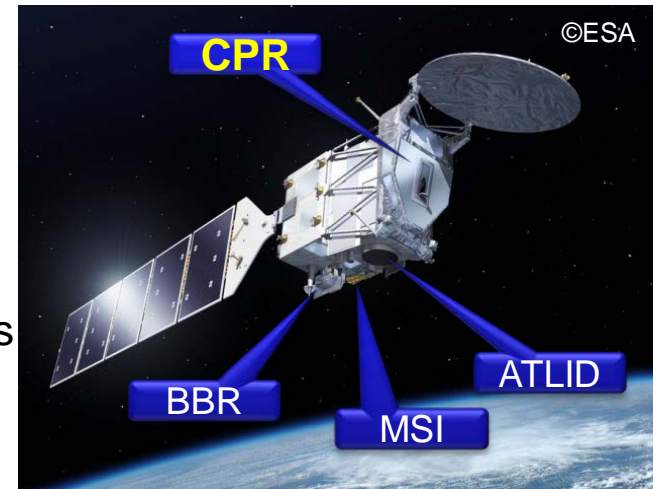
EarthCARE/CPR Update



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1. EarthCARE/CPR Overview

- ❑ Earth, Clouds, Aerosols, and Radiation Explorer (EarthCARE) is an international collaborative mission led by JAXA and ESA.
- ❑ Synergy observation by four instruments;
 - ✓ **CPR** : **C**loud **P**rofilin**G** **R**adar 
 - ✓ ATLID: **A**tmospheric **L**idar
 - ✓ MSI : **M**ulti-**S**pectral **I**mager
 - ✓ BBR : **B**road-**B**and **R**adiometer
- ❑ The CPR is the world's first cloud radar that measures vertical profiles of the cloud and its vertical motion.
- ❑ Major specifications:

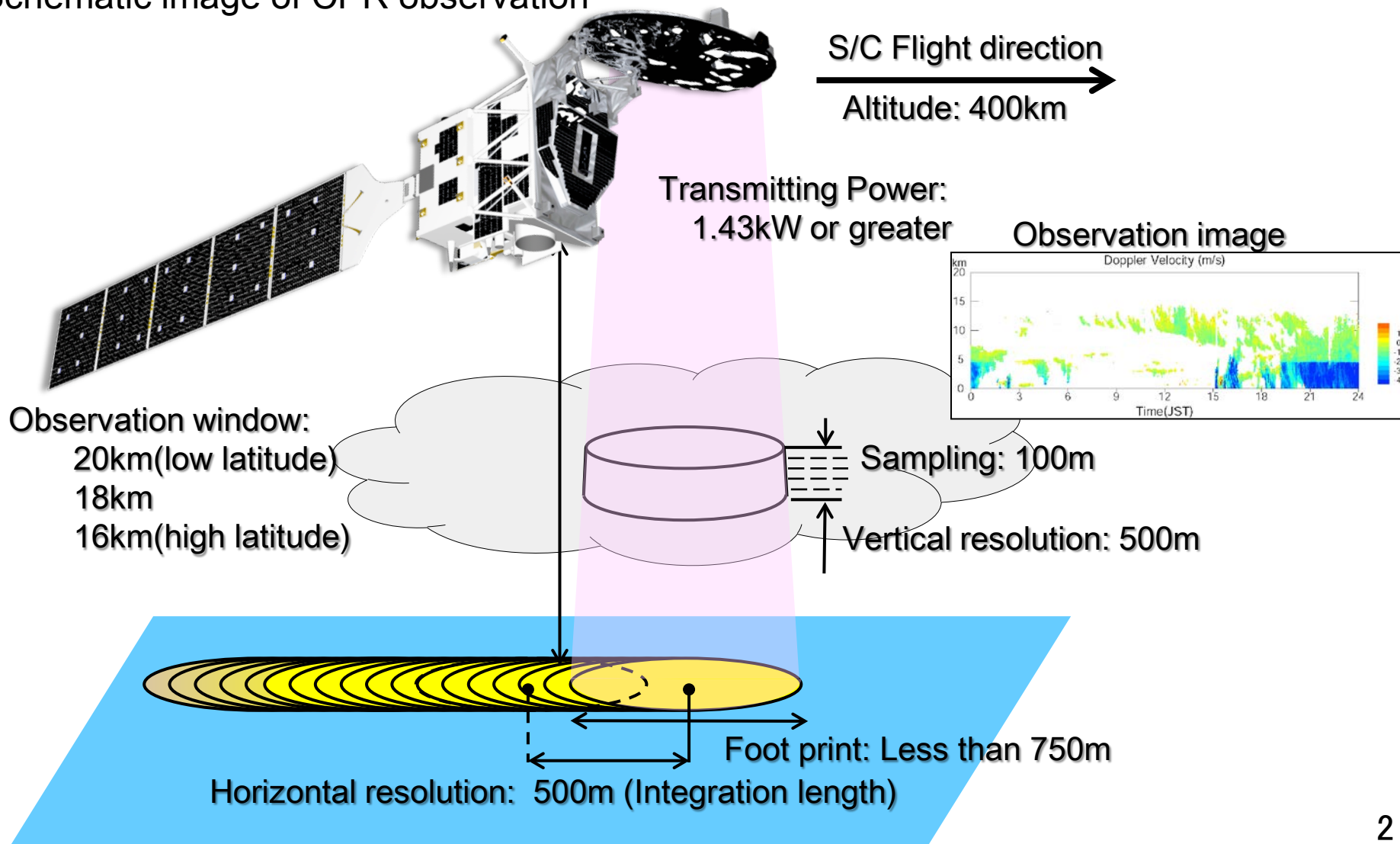


Center Frequency	94.050 GHz
Antenna Aperture	2.5 m Φ
Beam Width	0.095 degrees
Transmit Power	1.43 kW or greater
PRF	Variable, 6,100 Hz to 7,500 Hz
Pulse Width	3.3 μ s
Minimum Sensitivity	less than -35 dBZ (at 10km integration)
Doppler Range	\pm 10 m/s
Doppler Accuracy	1.3 m/s (for -19 dBz clouds / at 10km integration)
Vertical Resolution	500 m
Mass / Power	approx. 270 kg / 316 W



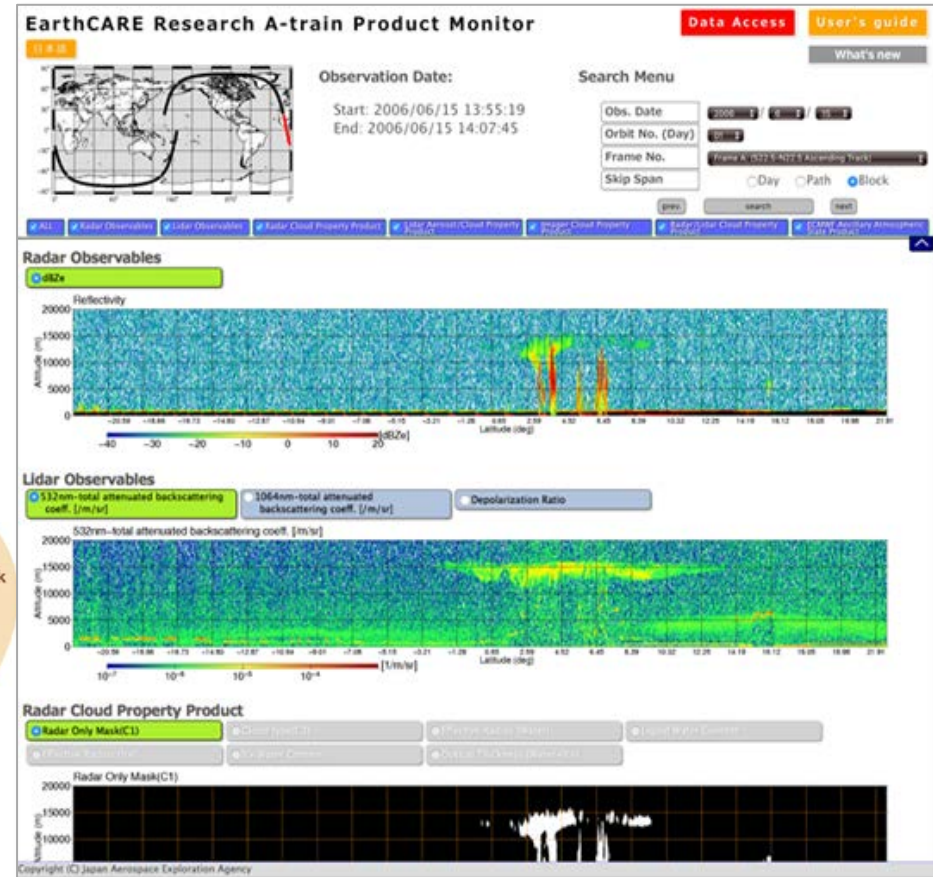
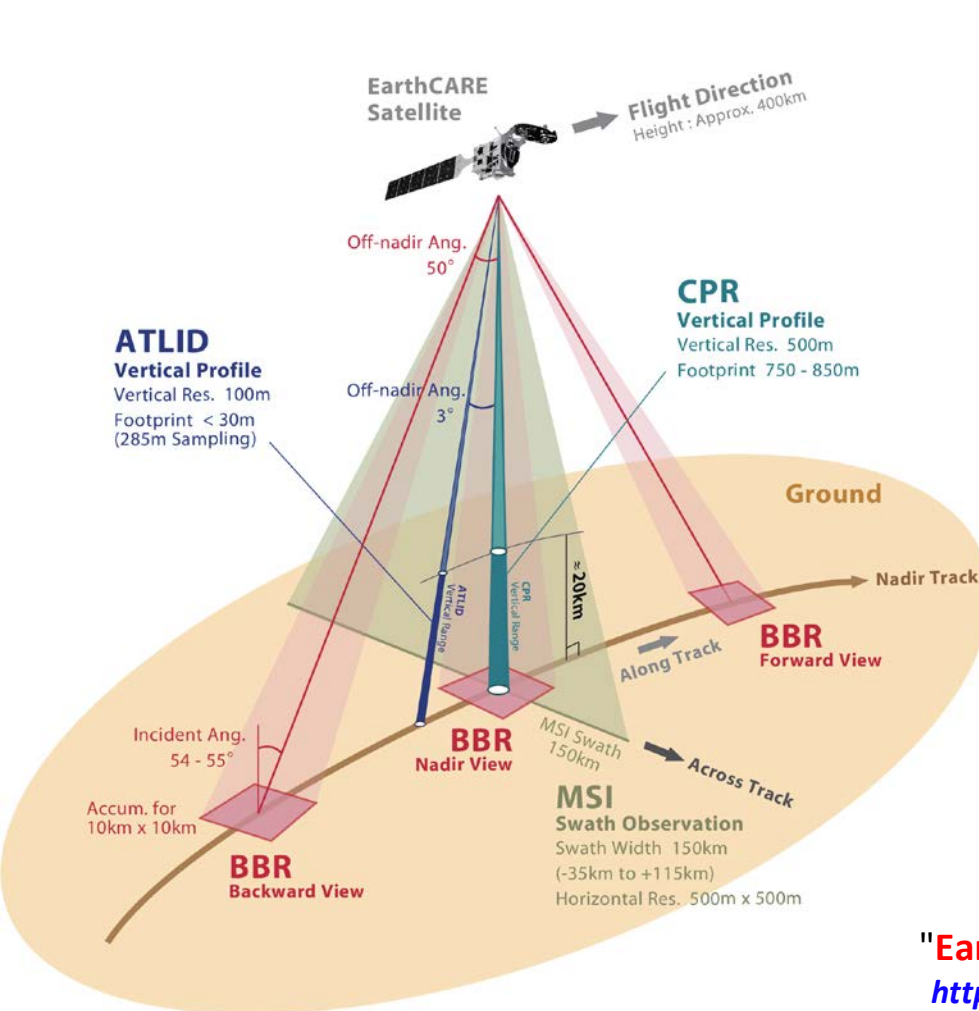
1. EarthCARE/CPR Overview(cont.)

Schematic image of CPR observation



1. EarthCARE/CPR Overview(cont.)

Schematic image of synergy observation

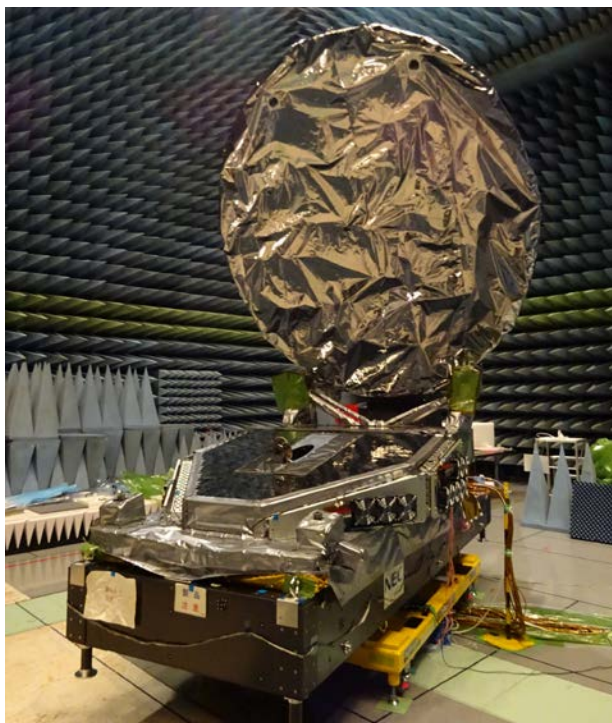


"EarthCARE Research A-Train Product" since Oct. 2017.
http://www.eorc.jaxa.jp/EARTHCARE/research_product/ecare_monitor_e.html

2. CPR Development Status

1st Proto-flight test campaign

- The CPR instrument proto-flight test (PFT) campaign and pre-integration with the spacecraft were completed in 2017.
- However, the high power transmitter (HPT) for the redundant chain had problem by internal electric discharge and repair become needed.



June 2016 @ Tsukuba Space center



CPR pre-integration and test June. 2017, @ Airbus

2. CPR Development Status(cont.)

2nd Proto-flight test campaign

- While HPT repair, the CPR instrument design was also modified to guarantee better thermal condition to de-risk the HPT internal discharge.
- After the modification, the CPR post-refurbishment test campaign started and it is about to finish.

Schedule for the launch and mission operation

- The CPR handover is scheduled in April and Spacecraft system level activity with all four instruments will start toward EarthCARE launch in JFY2022.
- The HPT repair is on-going with improvements on manufacturing process and to be installed during the system level activity.



Test configuration for the TV test @JAXA (Oct. 2020)

	2019	2020	2021	2022	2023	2024	2025	2026
Orbit			Today		CalVal	Mission operation		Ex
Spacecraft			Integration & Testing		Launch Site			
CPR	Refurbishment & Testing							
HPT (Redundant)	Repair			storage				