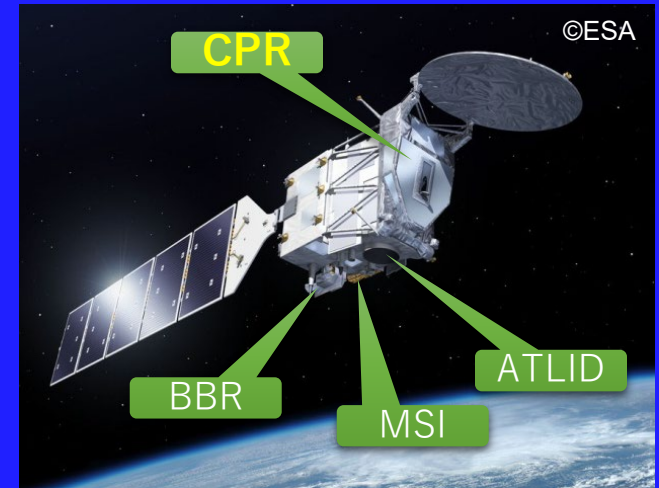


EarthCARE/CPR Update

EarthCARE/CPR Project Team
Space Technology Directorate I
Japan Aerospace Exploration Agency (JAXA)

1. EarthCARE/CPR Overview

- ❑ Earth, Clouds, Aerosols, and Radiation Explorer (EarthCARE) is an international joint mission by JAXA and ESA.
- ❑ Synergy observation by four instruments;
 - ✓ **CPR** : **C**loud **P**rofil**ing** **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.



1. EarthCARE/CPR Overview (cont'd)

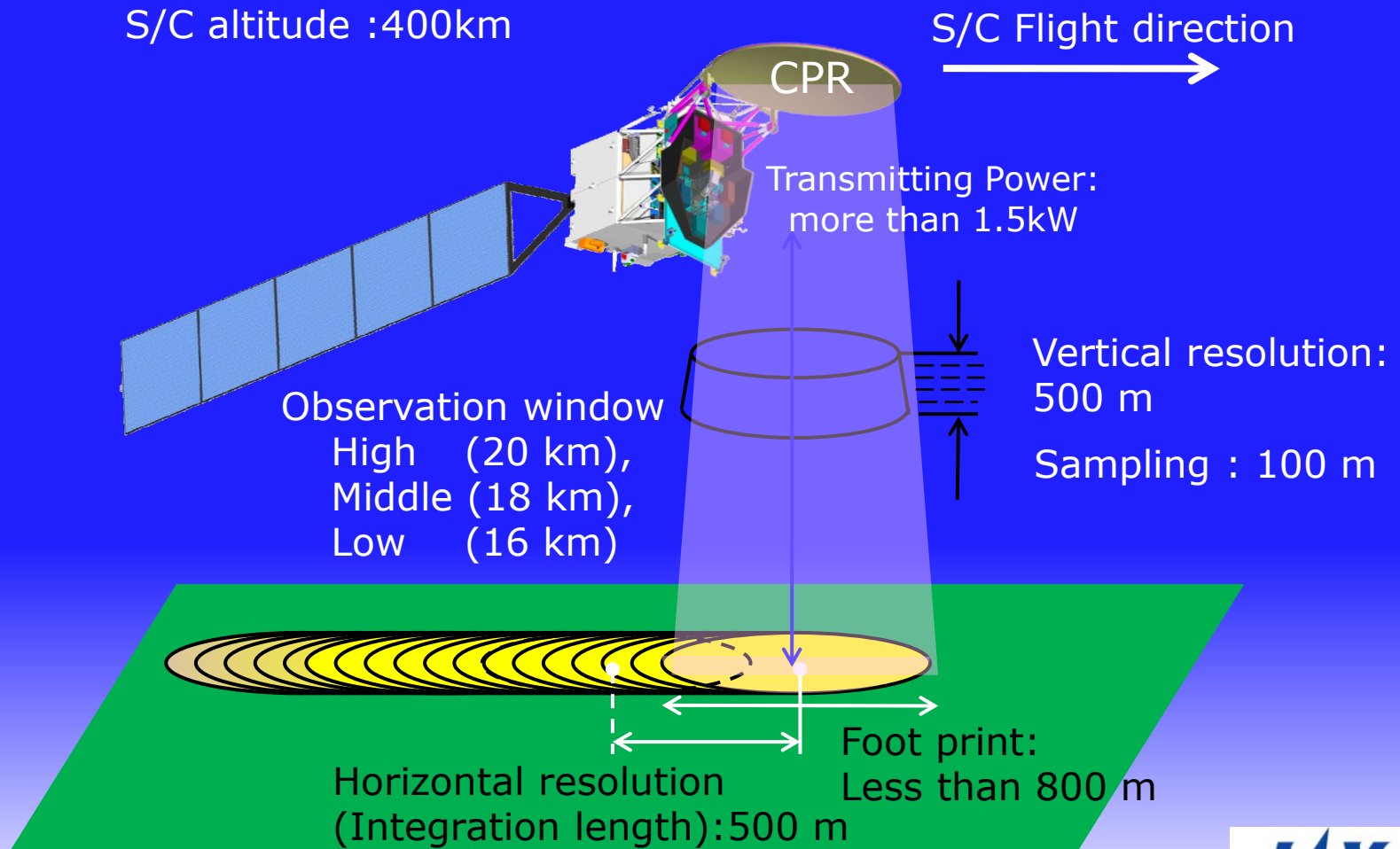
□ Major specifications:

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	± 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'd)

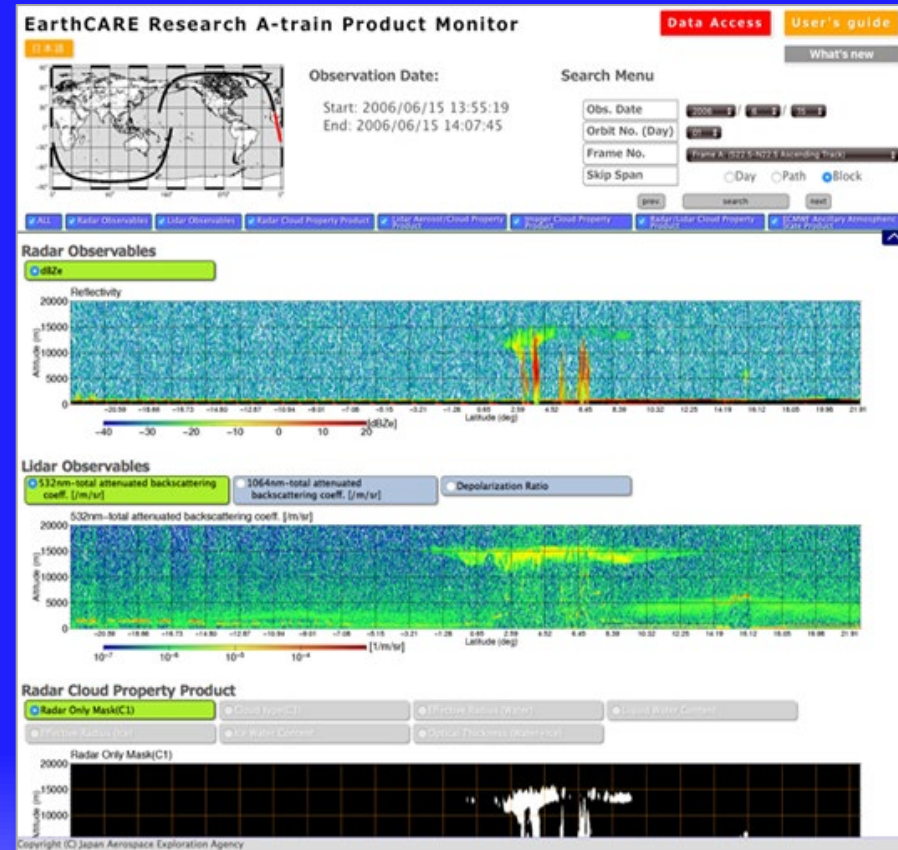
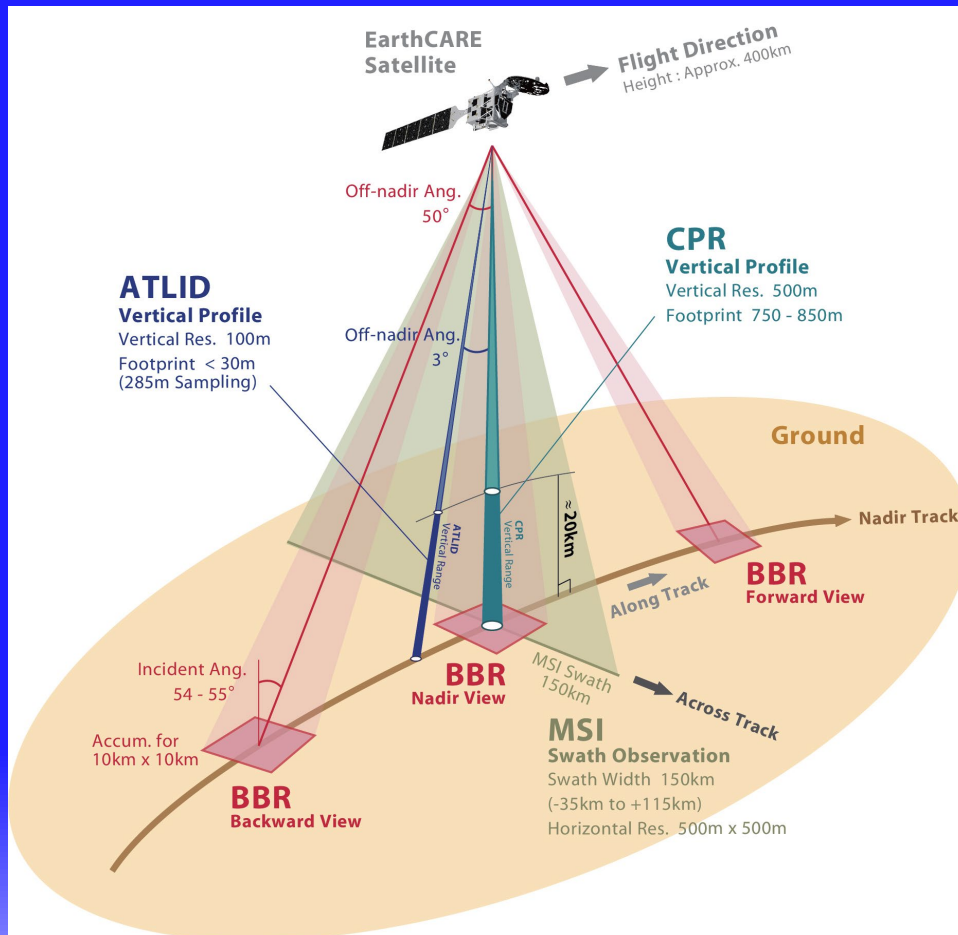
□ Schematic image of CPR observation

- CPR measures altitude and Doppler velocity from received echo.
- The observation altitude can be changed with Low (16 km), Middle (18 km), High (20 km).



1. EarthCARE/CPR Overview (cont'd)

❑ 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

- CPR was transported to Europe in March 2021 and was handed over to ESA/Airbus in April 2021.
- CPR integration to EarthCARE satellite and test was completed by ESA/Airbus in June 2021.
- ESA-Airbus continue to EarthCARE satellite level tests at Airbus and will start Satellite level environment test at ESTEC in 2022.
- EarthCARE will be launched in 2023 after completion of environment test at ESTEC.



EarthCARE@ Airbus (April. 2021)
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