About
EarthCARE

Earth Explorers are **research missions designed to address key scientific challenges**, while demonstrating breakthrough technology in observing techniques. Every Earth Explorer mission provides an important contribution to further understanding of our planet

What

The largest and most complex Earth Explorer to date, it is ESA's cloud, aerosol and radiation explorer mission

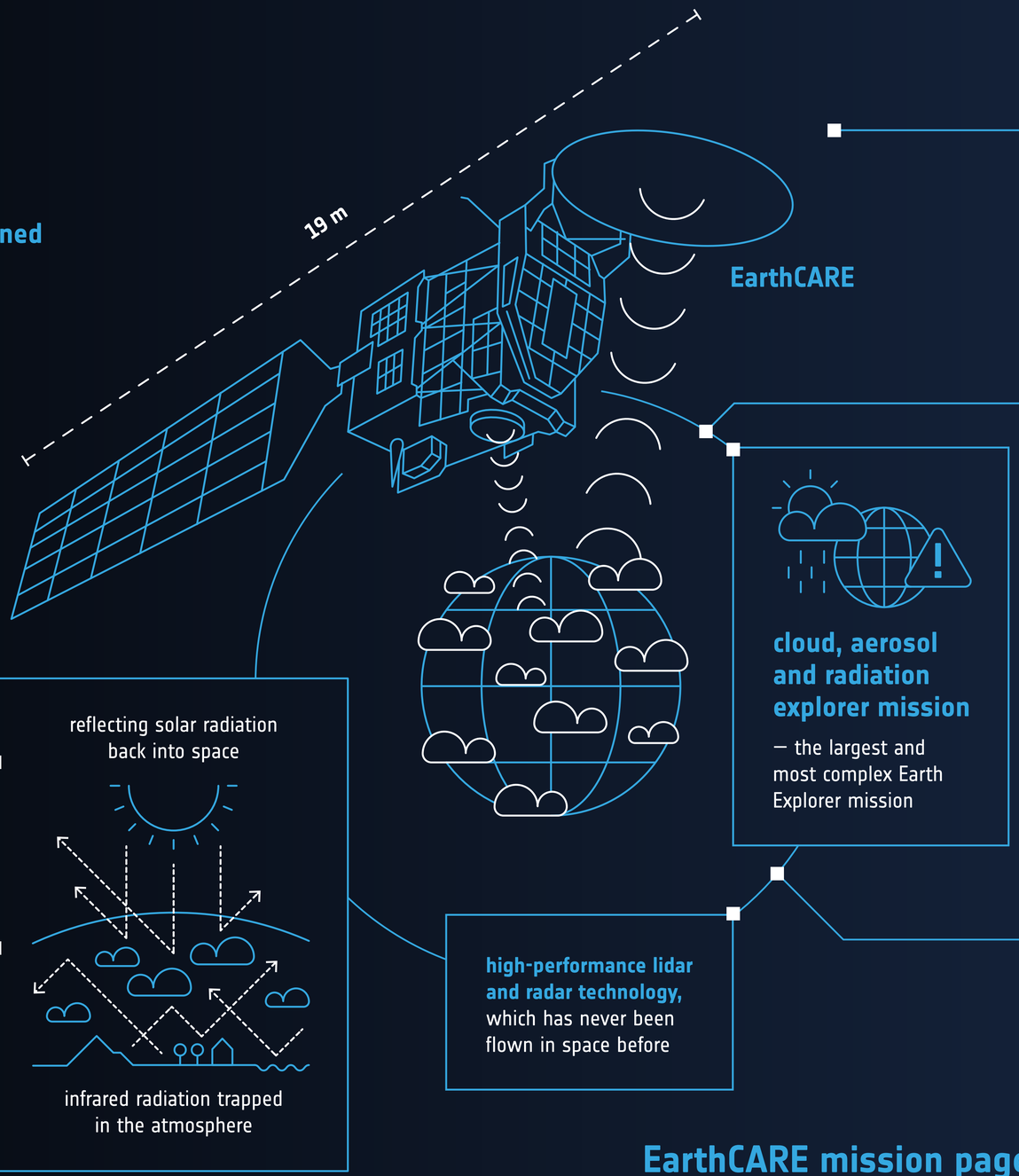
Where

EarthCARE is a joint venture between ESA and JAXA (Japan Aerospace Exploration Agency)

Aim

EarthCARE will improve current climate and numerical weather prediction models, advancing our knowledge of:

- **the role that clouds and aerosols play in reflecting incident solar radiation back into space**
- **how infrared radiation emitted from Earth's surface is trapped in the atmosphere**



high-performance lidar and radar technology, which has never been flown in space before

cloud, aerosol and radiation explorer mission

— the largest and most complex Earth Explorer mission

Innovation

EarthCARE will employ high-performance lidar and radar technology, which has never been flown in space before. The High Spectral Resolution Lidar operates in the UV and also filters co- and cross- polarised signals. The Cloud Profiling Radar offers Doppler capability

Instruments

EarthCARE carries a suite of instruments:
an atmospheric lidar (ATLID), a cloud profiling radar (CPR), a multispectral imager (MSI) and a broad-band radiometer (BBR)
The two active instruments, ATLID and CPR, probe the atmosphere to collect data at a microscopic level, observing clouds, aerosols and precipitation. The two passive instruments (MSI and BRR), provide complementary optical and radiation measurements, necessary for scientific products
The mission will help scientists to improve atmospheric models by 'closing the loop', providing an actual measurement of the radiation balance that will also be calculated by models fed with observation data collected by the active instruments

Curiosity

EarthCARE is 19 m long with the solar panel deployed. The solar wing is an essential part of the satellite, providing the energy for EarthCARE to do its job

EarthCARE mission page: earth.esa.int/eogateway/missions/earthcare