EARTH EXPLORER MISSIONS



As we are challenged by cutting-edge scientific questions, ESA's Earth Explorer satellites pioneer new space technology and observe our planet to reveal crucial information about Earth's system.



Earth is a dynamic, interactive system that involves significant natural variability. Human activity is leaving its mark on these natural processes and changing the interactions in Earth's system. Understanding Earth's changing system is also essential as we tackle the scientific challenges of climate change.

The main purpose of **Earth Explorer missions is to advance Earth science by providing answers to key scientific questions**. This family of research missions provide essential information about Earth's interior, cryosphere, hydrosphere, atmosphere, ionosphere and land surface. Using innovative space technology, they support the quest to understand Earth as a system and the complex interactions within it.

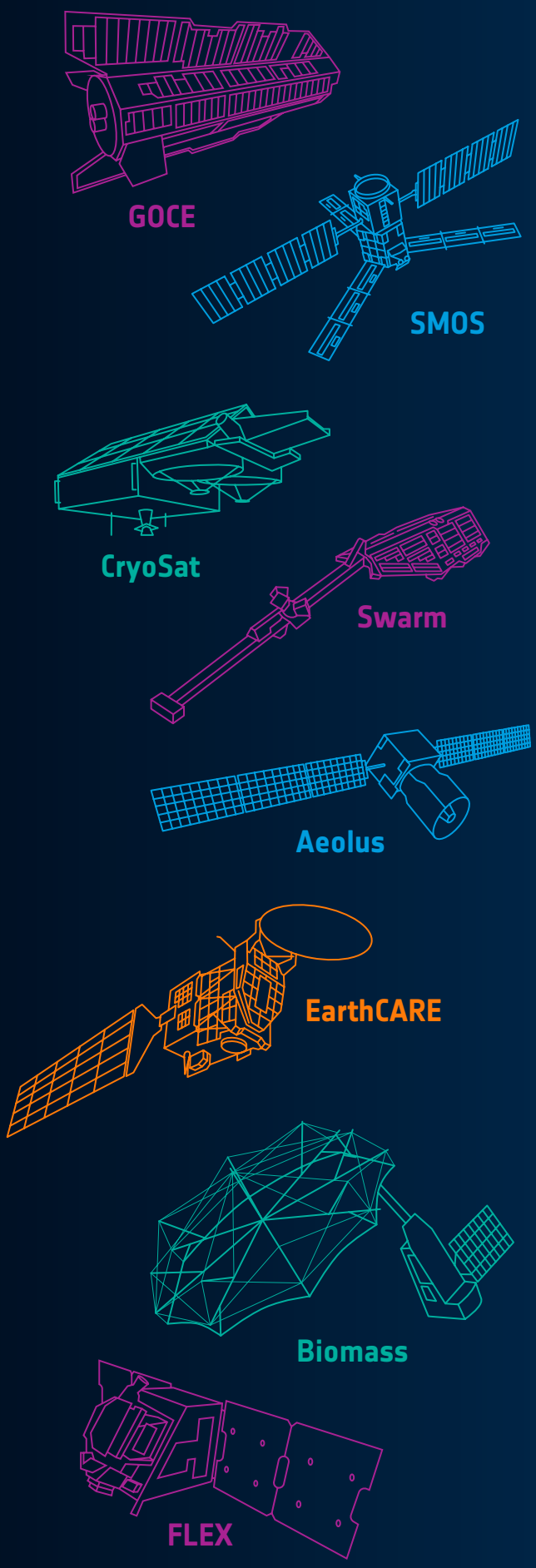
The first Earth Explorer to enter operation, **GOCE**, mapped variations in Earth's gravity in unprecedented detail. GOCE completed its mission in 2013.

The next four missions to launch were **SMOS, CryoSat, Swarm** and **Aeolus**, monitoring soil moisture, the cryosphere, the magnetic field, and Earth's winds, respectively. SMOS, CryoSat, and Swarm are currently operational, with Aeolus completing its mission in 2023. All four missions significantly exceeded their original design lifetimes.

The most recent Earth Explorers continue to use pioneering space technology to study Earth's systems.

EarthCARE is delivering new insight into the role of clouds and aerosols in regulating Earth's climate, while **Biomass** measures global forest carbon to investigate the influence of forests on the carbon cycle. The latest Earth Explorer, **FLEX**, will provide information related to photosynthetic activity, shedding light on the functioning of vegetation.

The Earth Explorer family is continuing to grow as candidate mission concepts are selected for development. Future Earth Explorers include FORUM, Harmony and WIVERN, which will monitor thermal radiation, Earth's surface dynamics, and winds within clouds.



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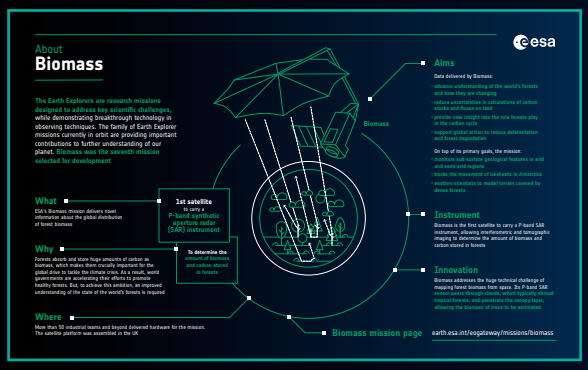
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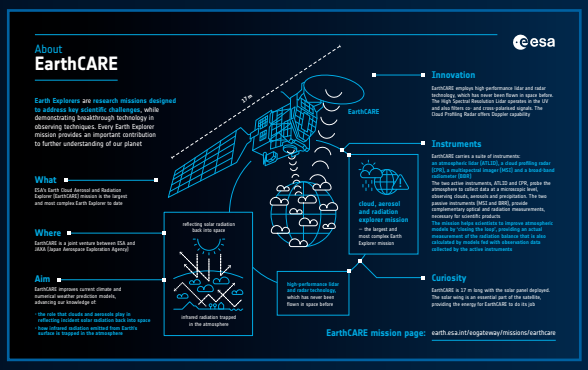
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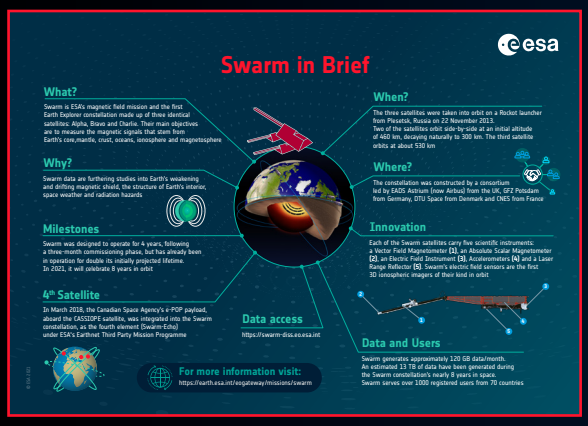


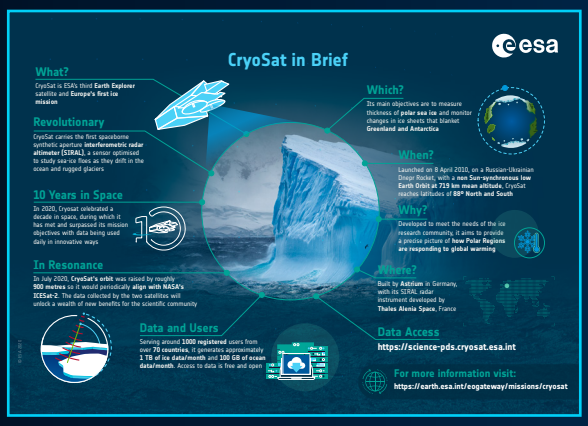
LEARN MORE ABOUT OUR MISSIONS

The infographics below introduce four selected Earth Explorers currently in operation:









LEARN MORE ABOUT **EARTH EXPLORERS**

earth.esa.int/eogateway/missions/earth-explorers

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