

→ SATELLITE ORBITS

In Earth Observation, the satellites follow trajectories around the Earth called orbits.

The shape of these orbits depends on three principal factors. The first factor is the gravity of the Earth, the second factor is the velocity of the satellite and the third factor is the position of the satellite. The closer the satellite is to the Earth, the higher is its velocity.

Scientists select the orbits according to what the satellites need to observe.

In general, two types of orbits are used for Earth observation satellites:

Near Polar Sun-synchronous and Geostationary orbits.



Find out more at: www.esa.int/eduspace



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GEOSTATIONARY ORBITS "LOCKED WITH THE EARTH"

Geostationary orbits are described by a circular trajectory approximately 36,000 km above the Earth's equator. Satellites on these orbits travel around the Earth at the same angular velocity as the Earth. In this way, they appear constantly at the same position above the Earth's surface and can provide a continuous service. Most meteorological and telecommunication satellites are placed in geostationary orbits.

NEAR POLAR SUN-SYNCHRONOUS ORBITS "LOCKED WITH THE SUN"

Near polar Sun-synchronous orbits are described by a roughly circular trajectory approximately 800 km above the Earth's surface. Satellites on these orbits ascend or descend nearly crossing the poles as the Earth rotates, in such a way that they can observe every part of the Earth at the same local time and with the same sun illumination each day. Earth observation satellites needing to cover the planet globally are placed in these orbits.