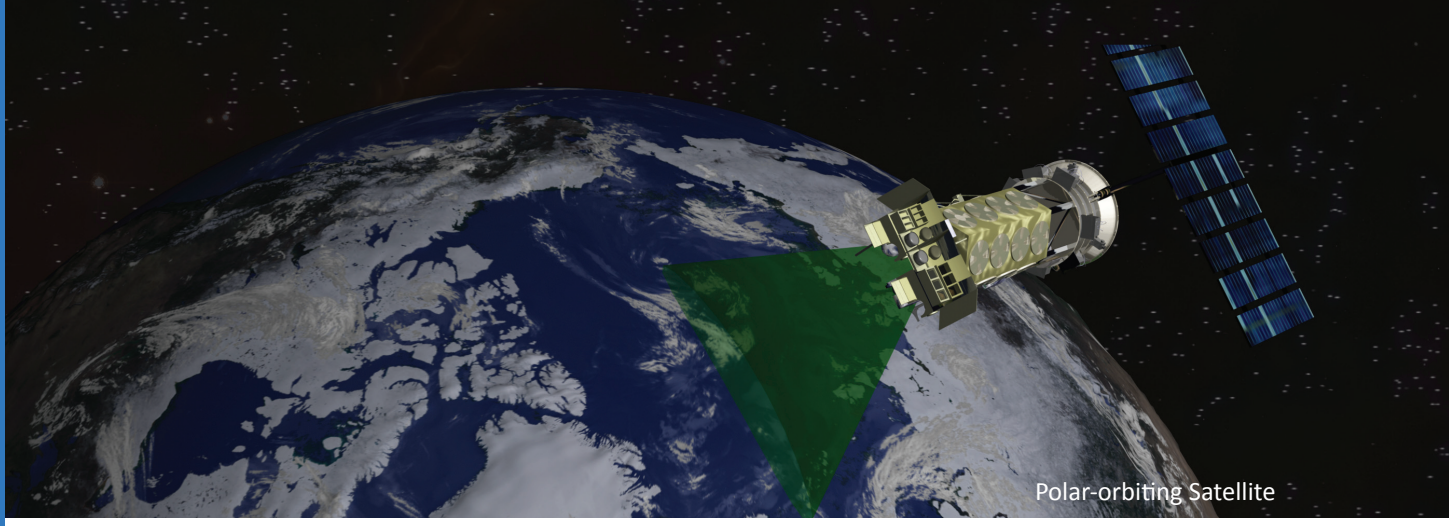
NOAA National Oceanic and Atmospheric Administration | NOAA Satellite and Information Service

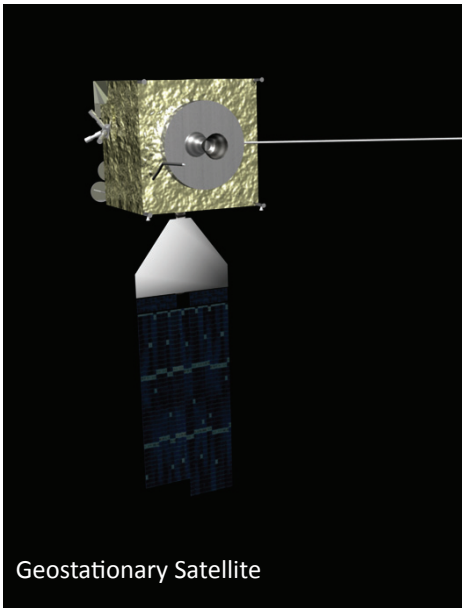

Polar-orbiting Satellite

Operational Environmental Satellites

Environmental satellites are key tools in forecasting weather, analyzing climate, and monitoring hazards worldwide. This 24-hour global coverage provides scientists and managers with a never-ending stream of information critical for decisions affecting our world, such as preparing for events that will impact our climate, weather and oceans. The National Oceanic and Atmospheric Administration (NOAA), along with the National Aeronautics and Space Administration (NASA) and the U.S. Air Force, manages and operates fleets of weather and environmental monitoring satellites. Within these fleets, NOAA manages two groups of environmental satellites.

Geostationary Operational Environmental Satellites

Geostationary Operational Environmental Satellites (GOES) are the Nation's weather sentinels. When you see a satellite image on a TV weather report or the news, you are looking at a GOES image from NOAA. If severe weather is coming your way, your local meteorologists are using NOAA satellites as one tool to track the storms. Geostationary satellites are located 22,300 miles (35,800 km) above the Earth's surface and orbit at the same speed as the Earth, which allows for constant monitoring of the same area of the planet. NOAA has two operational GOES that monitor the Western Hemisphere. On-board sensors monitor clouds and the oceans as well as the space weather environment. Because of their constant presence, GOES are also used to relay data from search and rescue beacons. The beacon data helps authorities identify the locations of distress signals in a matter of minutes, increasing the chances of survival and rescue.

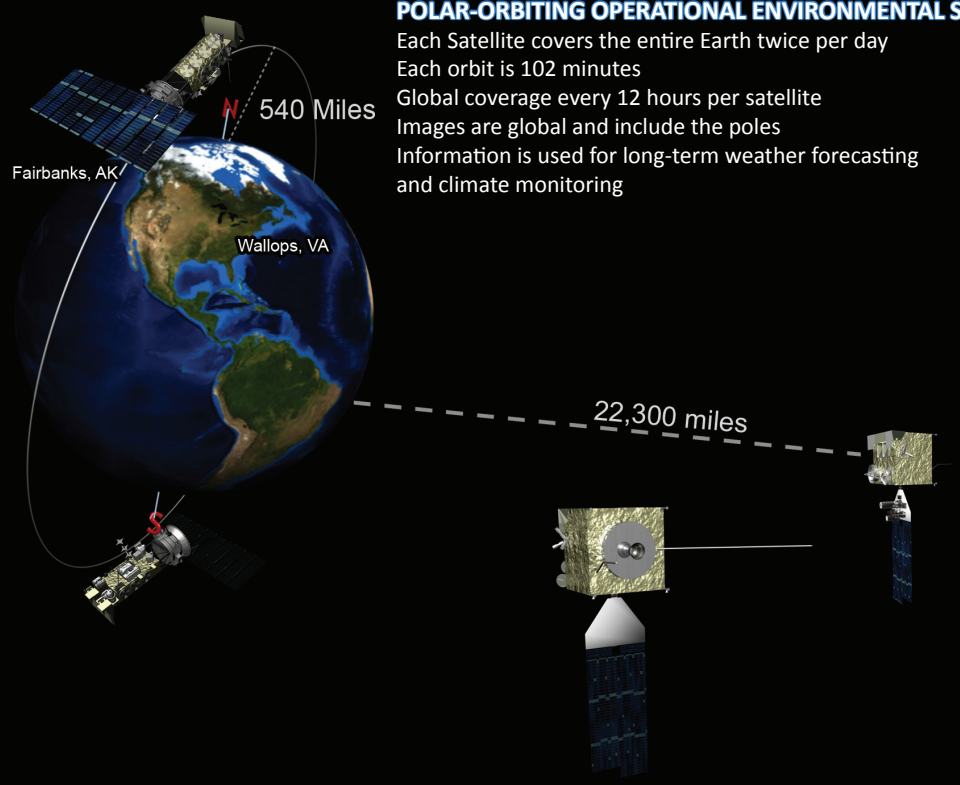

Geostationary Satellite

NOAA's next generation geostationary satellite system, called GOES-R, is scheduled for launch in 2015. This series of satellites will improve the resolution and timeliness of imagery and enhance forecasters' ability to monitor severe weather.

Polar-orbiting Operational Environmental Satellites

When scientists and meteorologists research long-term climate change or long-term weather forecasting, they need global data. NOAA's Polar-orbiting Operational Environmental Satellites (POES) are critical spacecraft, which provide such information on temperature, atmospheric conditions, wind speed, cloud formation, and drought conditions over the entire Earth. POES circle the Earth in an almost north-south orbit, passing close to both poles. The Earth constantly rotates counterclockwise underneath the path of the satellite, allowing a different view with each orbit. In a 24-hour period, the 14 orbits of each polar satellite provide two complete global views. Polar satellites also assist in search and rescue.

Satellites in Orbit

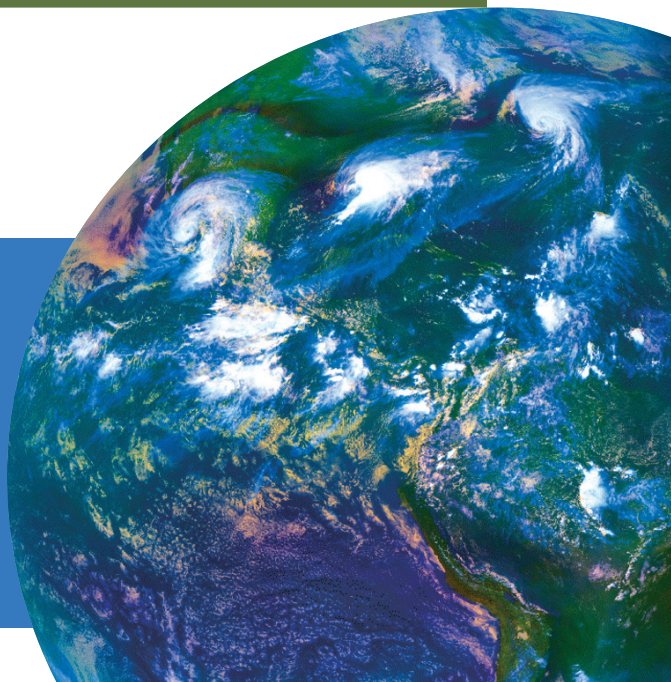


POLAR-ORBITING OPERATIONAL ENVIRONMENTAL SATELLITES

Each Satellite covers the entire Earth twice per day
Each orbit is 102 minutes
Global coverage every 12 hours per satellite
Images are global and include the poles
Information is used for long-term weather forecasting and climate monitoring

GEOSTATIONARY OPERATIONAL ENVIRONMENTAL SATELLITES

Continuously monitors the Western Hemisphere
Same geographic image over time
Full image every 30 minutes today (5 minutes in the future)
15 minute coverage of the U.S.
Information is used for short-term weather forecasting and severe storm warning/tracking



For more information:
www.nesdis.noaa.gov