



Landsat 9

Why in News

Recently, NASA has launched **an earth monitoring satellite called Landsat 9** from Vandenberg Space Force Base in California. The satellite is **a joint mission of [NASA](#) and the US Geological Survey (USGS)**.

- This satellite is referred to as NASA's' **new eye in the sky'** that will help study climate change.

Key Points

▪ Background:

- Landsat-9 is the **continuation of a series of Earth-observing spacecraft stretching back almost 50 years.**
- The **first Landsat satellite was launched in 1972** and since then, Landsat satellites have collected images of earth and helped understand how land usage has changed over the decades.
- In **2008**, it was decided that **all Landsat images will be free and publicly available** and the policy has helped scores of researchers, farmers, policy analysts, glaciologists, and seismologists.
- Landsat images have been used to study the **health of forests, coral reefs, monitor water quality and melting glaciers.**

▪ About Landsat 9:

- The Landsat 9 **joins Landsat 8 that was launched in 2013** and the satellites together will collect images of Earth's surface.
 - It takes 8 days to capture the whole Earth.
- Landsat 9 carries instruments similar to the other Landsat satellites, but it is the **most technologically advanced satellite of its generation.**
- The instruments aboard Landsat 9 are the **Operational Land Imager 2 (OLI-2)** and the **Thermal Infrared Sensor 2 (TIRS-2).**
 - **OLI-2:** It captures sunlight reflected off Earth's surface and studies the visible, near-infrared, and short wave infrared portions of the spectrum.
 - **TIRS-2:** It has a four-element refractive telescope and photosensitive detectors that capture thermal radiation and help study the Earth's surface temperature.
- Along with the [European Union's Sentinel-2 satellites](#), the Landsat Satellite will provide better estimation of the extent of climate change.

Sentinel Satellites

- It is a family of satellites developed by the **European Space Agency (ESA)** under the **Copernicus Programme.**
- The Copernicus Programme is the **Earth Observation Programme** managed by the ESA, **launched in 1998.**

- It was named after the scientist and observer **Nicolaus Copernicus**. Copernicus' theory of the heliocentric (sun-centric) universe made a pioneering contribution to modern science.
- Sentinel satellites is **a group of six satellites** dedicated for different purposes.
 - **Sentinel 1:** It provides all-weather, day and night radar images.
 - **Sentinel 2:** It delivers high-resolution optical images for land services.
 - **Sentinel 3:** It delivers data on land and ocean.
 - **Sentinel 4 and 5:** Monitor atmosphere from geostationary and polar orbits.
 - **Sentinel 6:** Provides information on oceanography and climate studies.

Earth Observation Satellites of India

- Recently, India has launched **EOS-01 satellite**.
 - It is an earth observation satellite and is intended for applications in agriculture, forestry and disaster management support.
- Earth observation satellites are the satellites equipped with remote sensing technology. Earth observation is the gathering of information about Earth's physical, chemical and biological systems.
 - Many earth observation satellites have been employed on **sun-synchronous orbit**.
- Other earth observation satellites launched by ISRO include **RESOURCESAT- 2, 2A, CARTOSAT-1, 2, 2A, 2B, RISAT-1 and 2, OCEANSAT-2, Megha-Tropiques, SARAL and SCATSAT-1, INSAT-3DR, 3D, etc.**

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