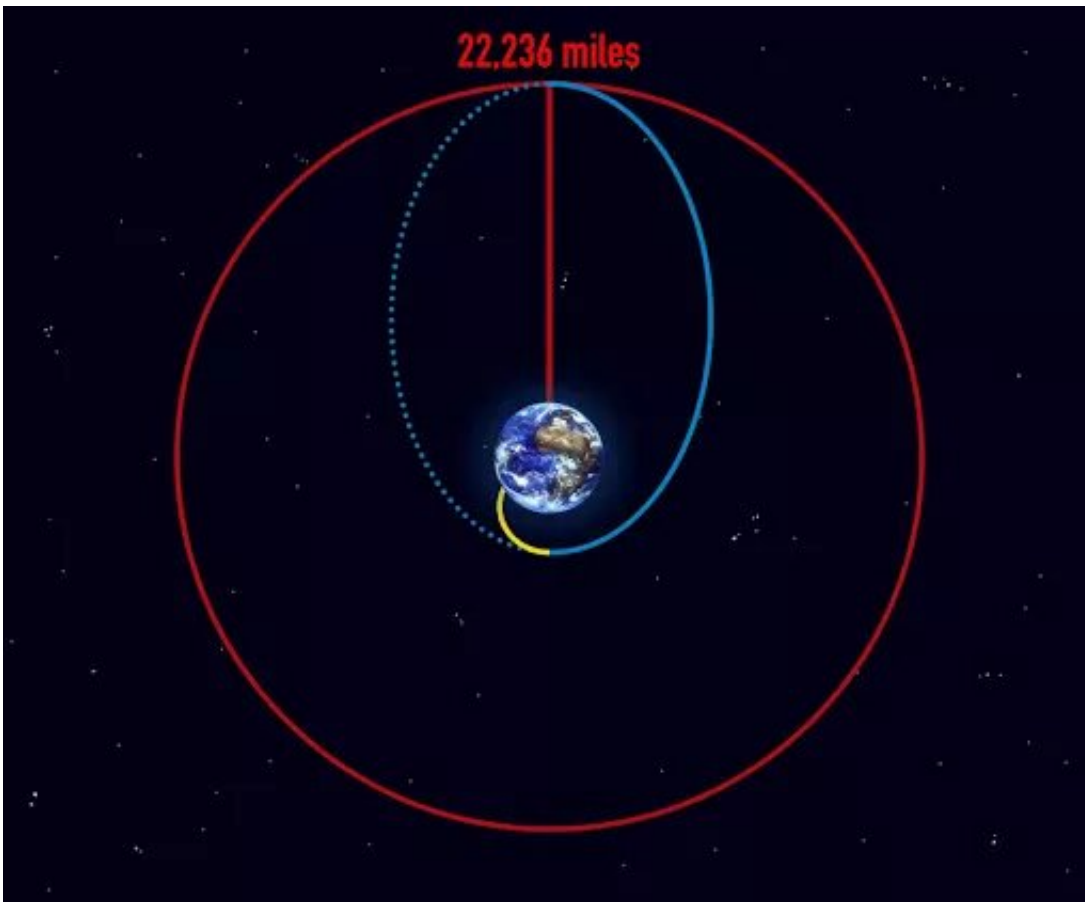


NOAA's GOES-T reaches geostationary orbit, now designated GOES-18

March 15 2022



Geostationary transfer orbit: After liftoff, the launch vehicle makes its way to space following a path shown by the yellow line. At the target destination, the rocket releases the payload which sets it off on an elliptical orbit, following the blue line which sends the payload farther away from Earth. The point farthest away from the Earth on the blue elliptical orbit is called the apogee and the point closest is called the perigee. When the payload reaches the apogee at the geostationary altitude of 22,236 miles, it fires its engines in such a way that it

enters onto the circular geostationary orbit and stays there, shown by the red line in the diagram. The geostationary transfer orbit is the blue path from the yellow orbit to the red orbit. Credit: The European Space Agency

On March 14, 2022, GOES-T executed its final engine burn, placing the satellite in geostationary orbit 22,236 miles above Earth. Upon reaching this milestone, GOES-T was renamed GOES-18. GOES satellites are designated with a letter prior to launch and a number once they achieve geostationary orbit.

NOAA's GOES-T [satellite](#) launched on March 1, 2022, at 4:38 p.m. EST, lifting off from Cape Canaveral Space Force Station in Florida. The satellite launched aboard a United Launch Alliance Atlas V rocket from Space Launch Complex 41. The launch was managed by NASA's Launch Services Program, based at Kennedy Space Center.

GOES-T separated from the Atlas V Centaur [upper stage](#) at 8:11 p.m. EST on March 1. GOES-T mission managers confirmed that its [solar arrays](#) successfully deployed at 8:28 p.m. EST and the satellite was operating on its own power.

The [launch vehicle](#) delivered GOES-T to a geostationary transfer orbit, a highly [elliptical orbit](#) where the satellite is close to the Earth during one part of its orbit and far from the Earth on the opposite side. Placing GOES-T in a geostationary transfer orbit provides the satellite a path to reach its final [geostationary orbit](#) over the equator (see diagram below). After a series of orbit-raising maneuvers and engine burns, on March 14, GOES-T was delivered into a circular geostationary orbit. The satellite is now in position to orbit at the same rate Earth rotates, so it can keep constant watch over the same region.

Next, GOES-18 will perform its second stage [solar array](#) deployment, releasing the solar array. The deployed [solar panels](#) will form a single solar array wing that will rotate once per day to continuously point its photovoltaic (solar) cells toward the sun. The photovoltaic cells will convert energy from the sun into electricity to power the entire satellite, including the instruments, computers, data processors, sensors, and telecommunications equipment.

In the days that follow, several maneuvers will be conducted to put GOES-T in its 89.5 degrees west longitude initial checkout position, between the operational GOES-East and GOES-West satellites. Then, the magnetometer boom will be deployed. The satellite will then begin on-orbit checkout and validation of its instruments and systems.



GOES-18 view of the Western Hemisphere at its initial checkout location and post-drift checkout location. Credit: NOAA Headquarters

NOAA expects to see the first images from GOES-18 in May. Then GOES-18 will drift west to 136.8 degrees west longitude and finish post-

launch testing. NOAA plans for GOES-18 to take over as the operational GOES-West satellite in early 2023, replacing GOES-17. GOES-17 will become the on-orbit backup.

GOES-18 will track destructive wildfires, lightning, Pacific Ocean-based storms, dense fog, and other hazards that threaten the U.S. West Coast, Hawaii and Alaska. It will also monitor solar activity and space weather to provide early warnings of disruptions to power grids, communications, and navigation systems.

Provided by NOAA Headquarters

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