

JPSS

Joint Polar Satellite System



Data from JPSS are used by the National Weather Service to forecast weather 3 to 7 days in advance.

What is JPSS?

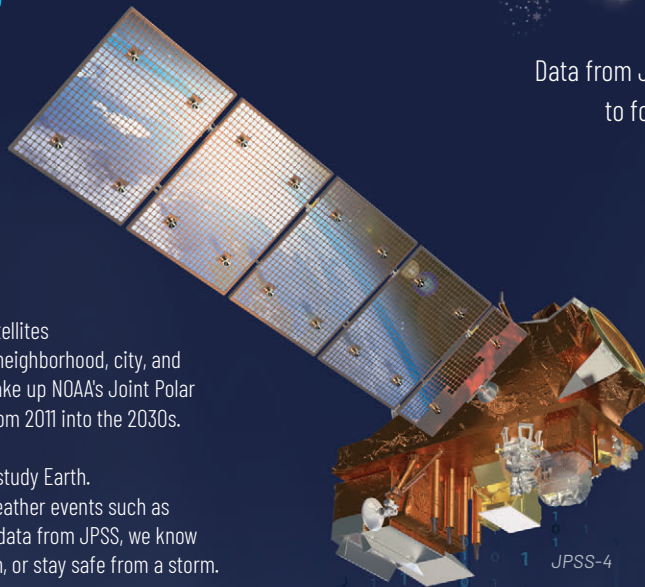
Every day and every night, polar-orbiting satellites collecting data pass over your house, town, neighborhood, city, and state. These advanced weather satellites make up NOAA's Joint Polar Satellite System, which will monitor Earth from 2011 into the 2030s.

JPSS also helps scientists across the world study Earth. The data helps scientists forecast severe weather events such as blizzards, hurricanes, and tornadoes. Using data from JPSS, we know when to bring an umbrella, put on sunscreen, or stay safe from a storm.






There are five JPSS satellites in the fleet, starting with the Suomi National Polar-orbiting Partnership (S-NPP) satellite. JPSS-1 and JPSS-2, renamed as NOAA-20 and NOAA-21 after launch, are currently operational with S-NPP. JPSS-4 will be the next satellite to launch in the series, followed by JPSS-3.

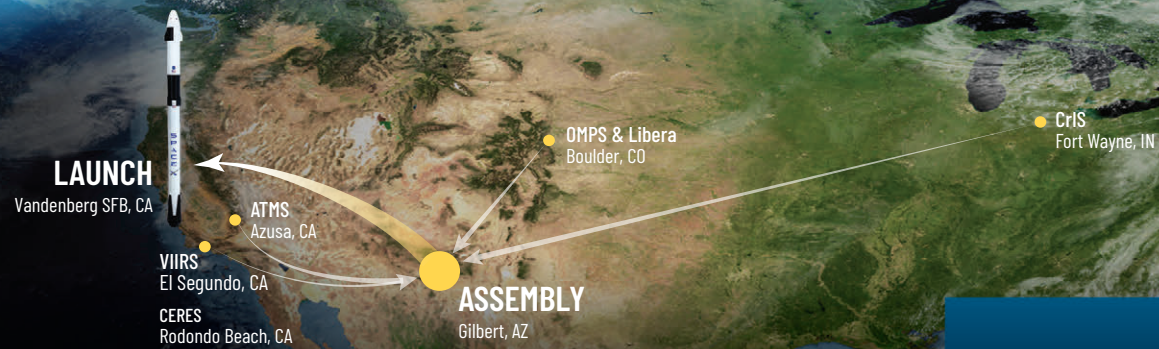
Did You Know?

NOAA renames JPSS satellites once they are in orbit. JPSS-4, the next to launch, will become NOAA-22. JPSS-3, the last in the series, will become NOAA-23.



Instrument Measures and detects...

- ATMS** Advanced Technology Microwave Sounder 
- OMPS** Ozone Mapping and Profiler Suite 
- CrIS** Cross-track Infrared Sounder 
- VIIRS** Visible Infrared Imaging Radiometer 
- CERES** Clouds and the Earth's Radiant Energy System (CERES is on S-NPP, NOAA-20) 
- Libra** Follow-on mission to CERES (To fly on JPSS-4/NOAA-22)



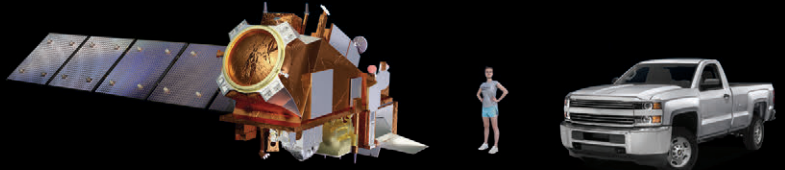
Where is JPSS Built and Launched?

JPSS satellites aren't built in just one place. The spacecraft bus (the satellite's main body) is built in Arizona and the instruments are built in Indiana, Colorado, and California. When all the pieces are built, they are put together and tested in Arizona. After the engineers test the satellite, to make sure all the parts work properly together, it is shipped to California for launch.

JPSS satellites launch from Vandenberg Space Force Base in California. The satellites need to launch from the West Coast in order to get into the right position for a polar orbit.

How Big is JPSS?

JPSS is about the size of a pickup truck. The satellite is powered by solar panels that harness the Sun's energy, and its length stretches to 35 feet when its solar array is deployed, about the height of a 3-story building. It weighs 5,750 pounds.



What is a Polar Orbit?

JPSS orbits Earth traveling over the North and South Poles 14 times a day. This is called a polar orbit. As JPSS passes over the poles, the Earth spins underneath, allowing JPSS to observe the entire Earth twice per day, once in sunlight and once in the dark.

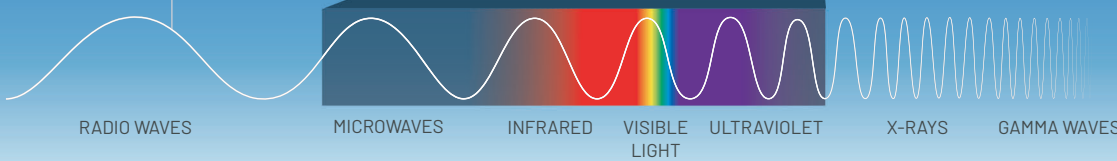
JPSS orbits 512 miles above the Earth, traveling at approximately 17,000 miles per hour. It takes JPSS approximately 7 minutes to travel from the southern tip of Florida to the northern tip of Maine, and about 101 minutes to travel all the way around the Earth.



How Does JPSS Look at the Earth?

JPSS collects data about the Earth by measuring microwave, infrared, visible, and ultraviolet light and uses radio waves to send weather data to ground stations near the North and South Poles.

The Electromagnetic Spectrum



What Does JPSS Do, and How Does that Help Us?

JPSS monitors the land, oceans and atmosphere 24 hours a day in order to collect important information about Earth and its weather, including:

| | | |
|--|---|--------------|
| | High-Earth Orbit Geostationary | 22,370 miles |
| | JPSS Low-Earth Orbit (LEO) Polar-orbiting | 512 miles |
| | International Space Station | 240 miles |
| | Aurora Borealis | 100 miles |
| | Weather balloon | 20 miles |
| | Commercial airplane | 7 miles |

Distances not to scale

How much water is in the atmosphere. Water vapor in the atmosphere can form clouds, rain, snow, thunderstorms, and even hurricanes.



Temperature across the Earth. This helps scientists monitor the movement of water, plant health, smoke, wildfires, and hurricanes.



The health of the Ozone Layer, the part of the atmosphere protecting Earth from the Sun's harmful ultraviolet light.



How much smoke, ash, dust, and other particles are in the atmosphere. This helps us understand when particles in the air might be dangerous to people and animals' health.



The greenness, moisture, and temperature of plants can reveal their health. Plant health information and daily forecasts help farmers grow more crops.



JPSS can even provide emergency responders with critical information after severe weather events such as flooding, power outages, and more.



Thanks, JPSS!

While these satellites are crucial to our ability to predict the weather, they also do so much more to help us in our everyday lives.

The Joint Polar Satellite System (JPSS) is a collaborative program between the National Oceanic and Atmospheric Administration (NOAA) and its acquisition agent, the National Aeronautics and Space Administration (NASA).



For more STEM activities, visit:
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