

# JPSS

Joint Polar Satellite System



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

## What is JPSS?

Every day and every night, polar-orbiting satellites circle the Earth many times, collecting data that feed weather forecasts and help us understand extreme weather and climate change. These advanced weather satellites make up NOAA's Joint Polar Satellite System, which will monitor the Earth into the 2030s.

JPSS-2, launching in 2022, will be followed by JPSS-3 and JPSS-4.

JPSS satellites help scientists across the world study our planet. Their data help scientists forecast severe weather events such as blizzards, hurricanes, tornadoes and wildfires. These weather forecasts alert us when to bring an umbrella, apply sunscreen, or prepare for a storm.



### 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 Suite



**LAUNCH**  
Vandenberg SFB, CA

**VIIRS**  
El Segundo, CA

**ATMS**  
Azusa, CA

**ASSEMBLY**  
Gilbert, AZ

**OMPS**  
Boulder, CO

**CrIS**  
Fort Wayne, IN

## Where is JPSS Built and Launched?

JPSS satellites aren't built in just one place.

The spacecraft bus (the satellite's main body) and four 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-2 will launch from Vandenberg Space Force Base in California on an Atlas V rocket. The satellite needs to launch from the West Coast in order to get into the right position for a polar orbit.

## How Big is JPSS?

JPSS-2 is about the size of a sedan at 14 feet by 7 feet, and it weighs 5,750 pounds.

It is powered by solar panels that harness the Sun's energy. Its length stretches to 35 feet when its solar array is deployed.



## What is a Polar Orbit?

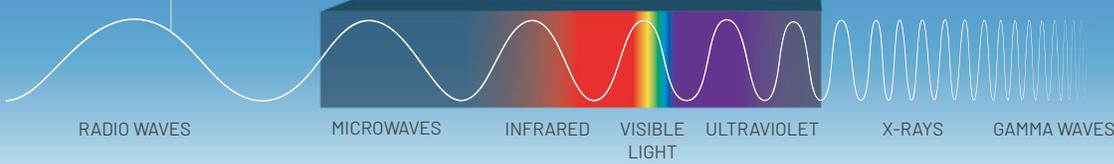
JPSS orbits the Earth, traveling from the North to the South Pole 14 times a day. This is called a polar orbit. As JPSS passes over the poles, the Earth spins underneath, allowing the satellite to observe the entire Earth twice per day, once in the daytime and once at night.

JPSS satellites fly at an altitude of 512 miles and travel at 17,000 miles per hour. It takes these satellites approximately 7 minutes to travel from the southern tip of Florida to the northern tip of Maine, and about 90 minutes to circle the planet one time.

## How Does JPSS Look at the Earth?

Instruments on the JPSS satellites see in the microwave, infrared, visible and ultraviolet part of the electromagnetic spectrum. They use radio waves to send weather data to ground stations around the globe, including at the North and South Poles.

The Electromagnetic Spectrum



GOES  
High-Earth Orbit  
Geostationary  
satellite 22,236 miles



JPSS  
Low-Earth Orbit  
Polar-orbiting  
satellite 512 miles



International  
Space Station 240 miles



Aurora Borealis 100 miles



Weather balloon 20 miles



Commercial airplane 7 miles

Distances not to scale

## How Does JPSS 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:

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, hurricanes and even city lights at night.



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's 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 JPSS STEM activities, visit:  
[www.nesdis.noaa.gov/jpss-education](http://www.nesdis.noaa.gov/jpss-education)



[www.nesdis.noaa.gov/jpss](http://www.nesdis.noaa.gov/jpss)



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