



Artist's rendering of NASA's NPP.

NPP: Improving U.S. weather forecast accuracy from space

The launch of a new polar-orbiting environmental satellite enables NOAA to continue issuing accurate forecasts and provide advance warning for severe weather, such as deadly tornado outbreaks, blistering heat waves, floods, snowfall and wildfires.

The satellite, NASA's NPOESS Preparatory Project (NPP), orbits Earth every 102 minutes, flying 512 miles above the surface, and capturing data from the Earth's land, oceans, and atmosphere. The data is used by NOAA forecasters to detect the potential for dangerous weather conditions days – even several weeks – in advance. For example, data from polar-orbiting satellites helped NOAA meteorologists predict, 5 days in advance, the major snowstorms that struck the Atlantic Coast in February 2010 (“Snowmageddon”) and paralyzed New York City in December 2010.

“Along with the skill of our meteorologists, polar-orbiting satellites, like NPP, are critical to the success of our forecasts three days and beyond,” said Jack Hayes, assistant administrator of NOAA's National Weather Service. “They are the backbone of the global earth observing system and global weather prediction capability.”

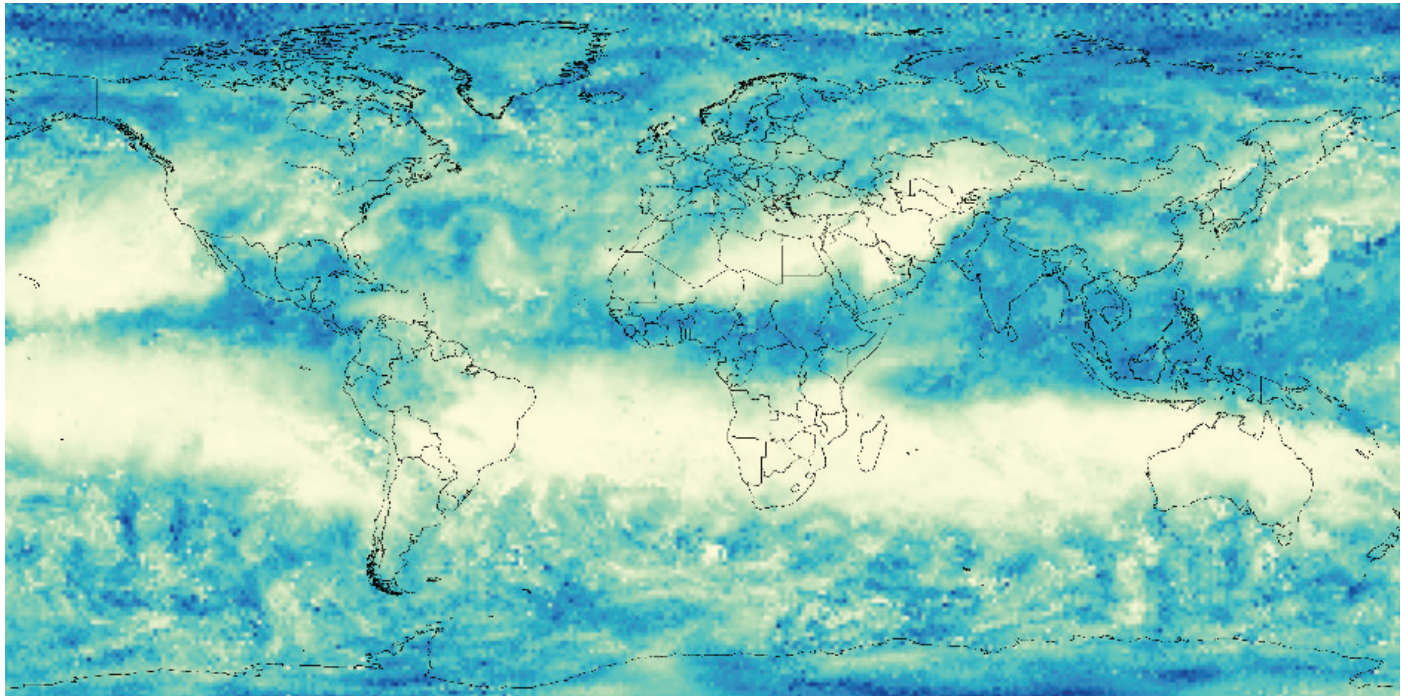
While NPP is a NASA mission, NOAA feeds the data collected from the satellite's new, sophisticated instruments into the forecast models. The satellite data is used to generate dozens of products, including measurements of cloud and vegetation cover, ocean color, and sea and land surface temperatures. NOAA meteorologists use these products, especially measurements of the distribution of moisture and heat in the atmosphere, to improve forecasts.

NPP as the Bridge

NPP data replaces data from the NOAA-19 satellite in the ‘afternoon orbit,’ meaning that the satellite passes over the U.S. during full daylight hours. The afternoon orbit is especially important since some of the spacecraft's sensors work best in full daylight. NPP is also the bridge that links NOAA's current polar-orbiting satellites to the next generation of advanced spacecraft called the Joint Polar Satellite System (JPSS).

“The bottom line is NPP is a big deal for America,” said Mary Kicza, assistant administrator for NOAA's Satellite and Information Service. “We need the data from NPP to inform the public about what's coming down the pike and how to plan for it appropriately.” Kicza added that the success of NPP is a credit to the long, successful partnership between NOAA and NASA.

“Both of our agencies have worked for many decades to provide the Nation with the best in satellite weather and climate monitoring, and NPP is no different,” she said. “NASA developed the NPP mission and NOAA provided the key instruments to populate the spacecraft.” Kicza added that NPP will test how



CrIS and ATMS will improve in the ability to detect subtle differences in atmospheric humidity at multiple layers in the atmosphere, a key component of accurate weather predictions. Global patterns of atmospheric humidity are shown here in this data from NASA's AIRS instrument, the predecessor to CrIS.

these instruments perform before they are formally added to the JPSS satellites. Data from NPP, like all other U.S. weather satellite data, is processed and distributed from NOAA's Satellite Operations Facility in Suitland, Md. to key users including NOAA's National Weather Service and others around the world.

In addition to providing data for accurate weather forecasting, NPP tracks ash plumes from volcanic eruptions, helps emergency responders fight wildfires, helps advance climate science, accurately measures the amount of Arctic sea ice and changes in the ozone hole, and monitors phytoplankton and other organisms in the ocean.

NASA's Goddard Space Flight Center manages the NPP mission on behalf of the Earth Science Division of the Science Mission Directorate. NOAA, with support from the Department of Defense, funded the instruments on NPP, and will provide operational support for the mission.



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