



## NASA Primes Five Satellites for Stormy Hunt

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NASA is readying five small satellites to launch spaceward next month on a mission to pinpoint the source of aurora-boosting storms from [Earth's](#) magnetic field.

The spacecraft quintet is part of NASA's THEMIS mission to find the trigger point of geomagnetic substorms, which begin somewhere in the Earth's magnetic field and, within minutes, swoop inside the [Moon's](#) orbit to the planet's upper atmosphere and brighten the aurora borealis – also known as the Northern Lights. The speed of the substorms makes tracking their starting point impossible with a single spacecraft, mission researchers said.

"Finding the elusive substorm point of origin is a question almost as old as space physics itself," THEMIS principal investigator Vassilis Angelopoulos, of the University of California at Berkeley, told reporters in a Wednesday teleconference. "[The mission] is a stepping stone towards understanding space weather phenomena that affect our lives."

A United Launch Alliance Delta 2 rocket is slated to loft the THEMIS mission, which is short for the lengthy moniker Time History of Events and Macroscale Interactions during Substorms, on Feb. 15 during a 19-minute window that opens at 6:07 p.m. EST (2307 GMT) [\[image\]](#). The \$200 million mission, the launch of which has been delayed since October due to booster issues, is named for the Greek goddess of justice, NASA officials said [\[image\]](#).

"We look forward to some terrific scientific discoveries," THEMIS project manager Peter Harvey, also of UC Berkeley, told reporters.

First identified in the 19<sup>th</sup> century, geomagnetic substorms are recurring phenomena spawned by a sudden release of charged particles – collected from the [Sun's](#) solar wind – in the Earth's magnetic field. The high-energy particles follow the Earth's magnetic field lines until they strike the upper atmosphere, giving a boost to the Northern Hemisphere's aurora borealis, researchers said.

While a substorm's aurora amplification seems like a limited visual effect, a series of such storms can occur during major space weather events that interfere with communications satellites or pose risks to astronauts in orbit, Angelopoulos said.

Only four THEMIS satellites are required to complete a primary two-year mission [\[image\]](#). After reaching orbit, two of the probes will be sent on a trajectory that carries them about one-sixth of the way to the [Moon](#) while two others take up stations about halfway to the Moon. The spacecraft will line up with one another and ground stations on Earth every four days during their respective orbits, researchers added [\[image\]](#).

The fifth THEMIS satellite is a spare in case one of its counterparts fails during the initial two-year mission.

"We're flying five to increase our reliability," Angelopoulos said.