

Friday lift-off for aurora probe

A US space agency (Nasa) mission to study auroras - the Northern Lights - is set to launch on Friday.

The Themis mission, comprising five identical probes, will try to gain new insight into these colourful displays in high-latitude skies.

In particular, scientists want to understand what triggers a sudden brightening in the lights.

Themis will lift off atop a Delta II rocket, from Florida's Cape Canaveral Air Force Station.

The launch is timed to take place between 1805 and 1823 EST (2305 to 2323 GMT).

Stormy space weather

Auroras are caused when charged particles in the Earth's magnetic field accelerate into the upper atmosphere and collide with gas atoms, releasing energy as light.

From time to time, the green band of light will brighten, then break into many bands of light that dance rapidly and turn red, purple and white.

These events are called auroral substorms. One of the principal aims of the Themis (Time History of Events and Macroscale Interactions During Substorms) mission is to determine how these are initiated.

"A substorm starts from a single point in space and progresses past the Moon's orbit within minutes, so a single satellite cannot identify the substorm origin," said Vassilis Angelopoulos, Themis principal investigator at the University of California, Berkeley.

Three events in the tail of the Earth's magnetic field are associated with the onset of substorms: current disruption, auroral eruption and magnetic reconnection.

But scientists are divided about the order in which these occur and exactly how the substorm starts.

To find the answer, the five Themis probes will magnetically map the North American continent every four days for approximately 15 hours each time.

Simultaneously, 20 ground stations in Alaska and Canada with automated, all-sky cameras and magnetometers will document the auroras and space currents from Earth.

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