

NASA's Firestation on way to the International Space Station

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An experiment to study the effects of lightning flashes on Earth's atmosphere hitched a ride to the International Space Station on Aug. 3, 2013. The Firestation experiment launched aboard a Japan Aerospace Exploration Agency's transfer vehicle called Kounotori-4. Firestation will be installed robotically to the outside of the space station, a process that will take about three weeks.

At the end of August, Firestation should be ready to begin observations, watching for lightning on Earth, which regularly appears some 50 times a second around the globe. Firestation will study the link between lightning and mysterious events known as terrestrial gamma ray flashes, or TGFs. TGFs are very brief but intense bursts of gamma rays produced in Earth's atmosphere by the powerful electrical charges over thunderstorms. Gamma radiation is typically produced only in extreme environments, like nuclear fusion inside the sun or from within distant [exploding stars](#), so this suggests the environment near a lightning flash is much more energetic and complex than previously thought. In addition to being a fascinating and unexpected aspect of our planet, TGFs also may shed light on the processes that trigger lightning in thunderstorms.

"We know that lightning might be intimately linked to these flashes of gamma rays, but we don't know the cause and effect mechanisms just yet," said Doug Rowland, principal investigator for Firestation at NASA's Goddard Space Flight Center in Greenbelt, Md. "So one of Firestation's goals is to study many TGF and lightning events to see what kinds of lightning produce [gamma rays](#) and what kinds do not."

Current estimates suggest there may be some 500 TGFs worldwide every day, and Firestation will spend a year observing them.

Provided by NASA's Goddard Space Flight Center

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