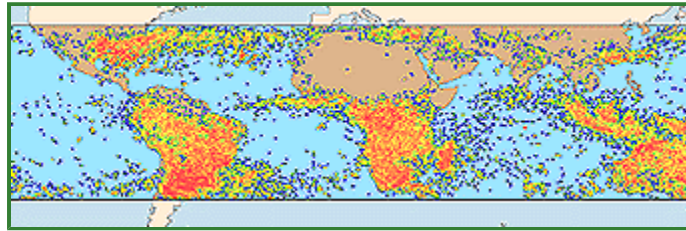




Lightning likes land

First three months of data show surprising pattern

May 19, 1998: Lightning likes land more than water, according to the first three months' of images of data from NASA's Lightning Imaging Sensor (LIS). It's not just that most lightning occurs over land. From December 1997 through January 1998, LIS saw that 90 percent of lightning was over land, a significant finding.



This composite from three months of Lightning Imaging Sensor data dramatically shows that most lightning occurs over land. Areas over sea match major circulation patterns that carry storms over water. The image links to a [1160x620-pixel, 110KB JPG](#) covering the entire globe. TRMM's orbit only covers the globe as far north and south as 35 deg. latitude. Credit: NASA/Marshall Space Flight Center.

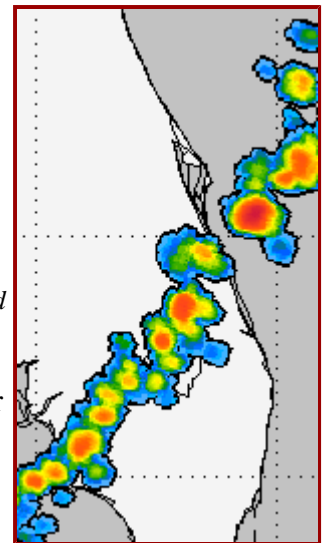
"We believe that the increased lightning activity over land is primarily due to enhanced convection - continual overturning of the atmosphere that occurs as water, evaporated from the Earth's surface, carries excess heat energy into the upper atmosphere," said Dr. Hugh Christian, the principal investigator for the Lightning Imaging Sensor at the Global Hydrology and Climate Center in Huntsville.

At right is a slice from a larger image ([848x892 pixels, 40KB GIF](#)) of Florida as LIS passed over on March 9, 1998, as a line of thunderstorms raked the state. This is typical of the detailed maps built from LIS data.

"Specifically, convection is just much stronger over land. This results in greater ice production and, consequently, more lightning."

Since its launch on Nov. 27 aboard the Tropical Rainfall Measuring Mission, a NASA-Japan project, LIS has worked beyond expectations. It has filters and a solid-state camera designed to see just the light from a lightning flash, day or night, and even from cloud-to-cloud. These images are combined with images from three other TRMM instruments, including radar, to determine the relationship of lightning and storm structures and activities.

"The beauty of this mission is that the unique array of instruments aboard the spacecraft allows us to test this hypothesis time and again," Christian said of the find. "This mission will enable us to gain fundamental insights into the properties of these convective storms and thus better estimate the effects on global weather patterns."



related links

- [Global Hydrology and Climate Center](#)
- [Lightning and atmospheric electricity research](#)
- [LIS science mission](#)
- [Lightning detectors watch storms that spawned tornadoes \(April 2, 1998\)](#)

Ultimately, Christian and other LIS team members envision placing an advanced Lightning Mapping Sensor aboard a geostationary weather satellite to provide rapid, precise warnings of intense thunderstorms that usually precede tornadoes.



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