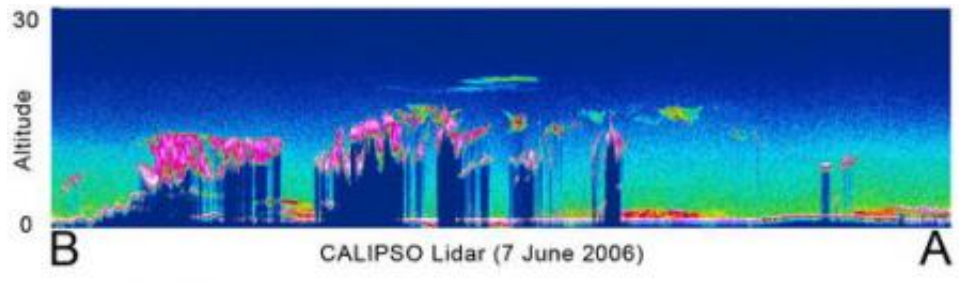
NASA Releases Initial Images From CALIPSO

July 25 2006



A lidar profile from the CALIPSO spacecraft, specifically the 523 nanometer Total Attenuated Backscatter. To view a higher resolution version with altitude information and latitude and longitude of the gathered data, click on the image. Credit: NASA Langley Research Center.

The Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observation spacecraft known as CALIPSO is returning never-before-seen images of clouds and aerosols, tiny particles suspended in the air.

These new images are revealing the secrets of how clouds and aerosols form, evolve and interact with the atmosphere. CALIPSO's first images were taken in early June. They highlight the results of a major lava dome collapse at the Soufriere Hills Volcano on the island of Montserrat in the Caribbean. The dome collapse on May 20 involved an explosion that sent ash clouds 55,000 feet into the sky.

To see the satellite's initial images, visit: www.nasa.gov/calipso

"The ability to observe and track a volcanic plume high in the atmosphere from the eruption of Soufriere Hills illustrates the high sensitivity of the satellite's instruments and the promise of discoveries to come," said David Winker, CALIPSO principal investigator at NASA's Langley Research Center, Hampton, Va. "These are exciting views of aerosols and clouds from around the globe."

On June 7 CALIPSO's lidar, a device similar to radar that emits pulsed laser light instead of microwaves, obtained a vertical profile of the aerosol remnants of the Montserrat volcanic activity over Indonesia. Upper air movement carried a sulfur dioxide plume from the Caribbean island more than 11,000 miles to Southeast Asia.

By globally observing aerosols' movement and altitude, CALIPSO improves our ability to assess and forecast their impact around the Earth. For example, volcanic plumes have an impact on air traffic safety, since the plumes are hazardous to commercial aircraft when they cross flight lanes. Aerosol activity at lower altitudes affects air quality.

The three instruments aboard CALIPSO are aligned to view the same area and work together to provide improved information on the size of ice crystals and other properties of thin clouds. The primary instrument is a polarization lidar that provides unique, high-resolution vertical profiles of aerosols and clouds using laser pulses. It can detect natural and human-produced aerosols and thin clouds that are invisible to radar, and sometimes even to the human eye.

The spacecraft's wide-field camera is used to determine cloud uniformity and provide a broader view of the location viewed by the lidar. The imaging infrared radiometer operates continuously, providing information on cirrus cloud particle size and infrared emissions activity. It looks at the top surface of a broad sweep of cloud area.

CALIPSO was launched April 28 from Vandenberg Air Force Base, Calif., with NASA's CloudSat satellite. Both satellites orbit 438 miles above Earth as members of NASA's A-Train constellation of five Earth observing system satellites. A-Train stands for "afternoon," because the constellation crosses the equator every day starting at 1:30 p.m. eastern time. The constellation provides new insights into the global distribution and evolution of clouds, helping to improve weather forecasting and climate prediction.

CALIPSO was developed cooperatively by NASA and France's Centre National d'Etudes Spatiales. Langley is leading the CALIPSO mission and providing overall project management, systems engineering, and payload mission operations. NASA's Goddard Space Flight Center, Greenbelt, Md., provides support for system engineering, project and program management.

CNES provides a PROTEUS spacecraft developed by Alcatel Alenia Space, the radiometer instrument, and spacecraft mission operations. Hampton University, Hampton, Va., is providing scientific contributions and managing the outreach program. Ball Aerospace, Boulder, Colo., developed the lidar and on-board visible camera.

Source: NASA