

Airborne HSRL: High Spectral Resolution Lidar

Innovative Instrument

With 200 pulses of laser light each second, the NASA Langley High Spectral Resolution Lidar, or HSRL, “looks” through the atmosphere faster than the blink of an eye, literally. With its laser, the HSRL instrument sees small particles in the atmosphere called aerosols.

HSRL is an innovative technology that is similar to radar. But, instead of the radio waves that radar uses to determine and map locations, directions and speeds, lidar uses laser light. Lidar allows researchers to see the vertical distribution of aerosols within the atmosphere. The advanced HSRL makes measurements that can even distinguish among different aerosol types, such as urban pollution versus desert dust.

High Spectral Resolution Lidar can help

scientists not only better understand Earth’s changing climate, but also measure the quality of the air we breathe.

Integrated Aircraft Platform

HSRL is often flown on NASA’s Beechcraft King Air B200 aircraft. From the outside, the King Air looks like a small plane that can carry about a dozen passengers. But inside, NASA 529, which is based at NASA’s Langley Research Center in Hampton, Va., is a flying science platform that can study the Earth’s atmosphere.

The twin-turboprop engine plane was built in 1982, but came to NASA Langley from NASA’s Marshall Space Flight Center in January 1996. Previously, researchers used NASA 529 to develop technologies to make airplanes safer, to test a sensor that may improve measurements of the Earth’s surface and for program support.

Its payload capacity and flexibility make it an excellent instrument platform, so now the aircraft is equipped with a suite of state-of-the-art active and passive sensors, developed at Langley, to help scientists better understand our atmosphere and air quality.

Read More about HSRL and view data images:

<http://science.larc.nasa.gov/hsrl>

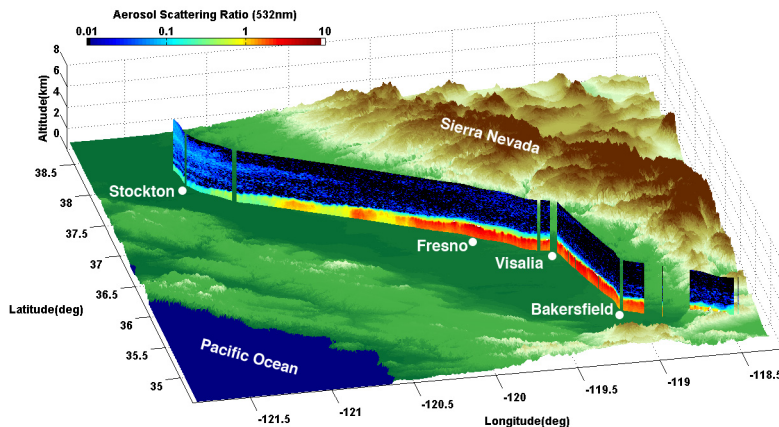


Image above: HSRL data from Feb. 15, 2007 with geographic reference points in central California noted. The HSRL gives the vertical perspective of the atmosphere, showing that the high aerosol concentrations (shown in red) are near the ground layer.

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