# One of NASA's most widely used sensor networks resides on firm ground

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NASA's known best for sending humans to the Moon and rovers to Mars, but one of the agency's most widely used sensor networks resides right here on terra firma. Called the Aerosol Robotic Network (AERONET), it's one of the first places that scientists turn when volcanoes, wildfires, pollution plumes, dust storms and many other phenomena—both natural and manmade—make an appearance.

The network of ground-based instruments, called sun photometers and described in the video above, measures the many tiny particles blowing about in the atmosphere called aerosols. The particles are often impossible to see with human eyes, but AERONET's sensors can detect their presence by measuring subtle fluctuations in sunlight as the particles reflect and scatter the sun's rays.

A team of scientists at NASA's Goddard Space Flight Center in Greenbelt, Md., along with numerous institutions around the world, started setting up the network of portable, rugged instruments decades ago to validate and calibrate satellite measurements. That remains the network's core function, but thousands of scientists have found ways to use AERONET data to gain insight in a wide variety of research areas ranging from air quality, to cloud microphysics, to precipitation dynamics.

The network started with just a handful of stations, but teams of scientists have now deployed the sensors at an array of locations around the globe. You can find them in places ranging from the ice sheets in

Antarctica, to the peaks of the Himalayan Mountains, to the dunes of the Saharan Desert. Already, there are more than four hundred sites around the world, and AERONET manager Brent Holben thinks the number could grow to the thousands eventually.

It's no wonder why. Scientists consider AERONET sensors to be the gold-standard when it comes to measuring aerosol optical depth (AOD), a measure of the amount of incoming light aerosols prevent from reaching the surface. This, and a number of other measurements the sensors make, is quite often the critical data that scientists use to sort out what particles are in our air, where they came from, and what they means for earth's climate, as well as human health.

And one of the best things about the network, Holben reminds, is that the data are free for all to use.

Provided by NASA's Goddard Space Flight Center

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