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Researchers recently found that NASA's PACE satellite can now detect nitrogen dioxide pollution at a fine enough scale to isolate emissions from individual factories and highway corridors.

PACE Satellite

The Plankton, Aerosol, Cloud, and ocean Ecosystem (PACE) is a NASA satellite mission that studies global ocean biology, aerosols, and clouds.

It was launched in February 2024 into a Sun-synchronous orbit.

It provides the world's first and only hyperspectral coverage of the globe every 1-2 days.

PACE's primary instrument is the Ocean Color Instrument (OCI), a highly advanced optical spectrometer to measure the ocean's colour across a spectrum from ultraviolet to shortwave infrared.

It enables continuous measurement of light at finer wavelength resolution than previous NASA satellite instruments, extending key system ocean color data records for climate studies.

It also features two polarimeters – the Spectro-polarimeter for Planetary Exploration (SPEXone) and the Hyper Angular Research Polarimeter (HARP2).

These are used to measure how the oscillation of sunlight within a geometric plane – known as its polarization – is changed by passing through clouds, aerosols, and the ocean.

The data from PACE allows researchers to study microscopic life in the ocean and particles in the air, advancing the understanding of issues including fisheries health, harmful algal blooms, air pollution, and wildfire smoke.

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With PACE, scientists also can investigate how the ocean and atmosphere interact with each other and are affected by a changing climate.

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