

Leicester scientist watch mother nature breathing in

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Earth Observation Scientists at the University of Leicester have been able to measure from space for the first time signals showing the amount of carbon dioxide taken up by plants, in a project hailed by the Natural Environment Research Council (NERC) as one of its top achievements of the year.

Using the Scanning Imaging Absorption Spectrometer for Atmospheric Chartography (SCIAMACHY) on Envisat, the largest Earth observation satellite ever built, they can measure atmospheric trace gases through the observation of reflected and scattered sunlight.

Using 20,000 individual measurements a month, researchers are monitoring carbon dioxide drawn down by plants over Siberia, North America and Northern Europe. Dr Paul Monks, of the University's Department of Chemistry, who is working on this with Ph.D. Student Michael Barkley (Department of Physics and Astronomy), said: "Usually researchers put up a tower and measure carbon dioxide concentrations in the surrounding kilometres, but we are taking high precision measurements on a continental scale. This is exciting as it allows us to see nature in action from space and begin to understand the role the natural system has in controlling carbon dioxide".

"Analysing a year's measurements for each continent takes 12 weeks of computer time on 60 processors, and we can actually see streaks of low carbon dioxide where the vegetation is sucking it out of the atmosphere during the growing season."

The SCIAMACHY work on carbon dioxide at Leicester has been funded



by NERC's Centre for Observation of Air-Sea Interactions and Fluxes(CASIX) and will provide important information for policy makers and scientists alike.

Dr. Paul Monks, said: "With the rapid changes in the Earth's climate that are now taking place, the importance of this kind of research is vital to preserving the planet's health. We are delighted that NERC has acknowledged this and recognised it in their annual highlights.

The Leicester Earth Observation Science Group in the University's world-renowned Space Research Centre is involved in three of the ten instruments on board Envisat. SCIAMACHY, the Advanced Along Track Scanning Radiometer (AATSR) and the Michelson Interferometer for Passive Atmospheric Sounding (MIPAS).

Launched in 2002, the European Space Agency's Envisat (environmental satellite) circles the Earth 14 times a day at a speed of seven kilometres per second. About 250 gigabytes of data products are generated every day, providing both information for immediate use and building up an archive for future generations of scientists to use.

Source: University of Leicester

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