



## ASCENSION ISLAND GOVERNMENT

### Successful trial tests of Ascension Island Global Atmosphere Watch Station

The United Kingdom is opening a new greenhouse gas measurement station just south of the equator in the Atlantic Ocean. The continuous high-precision measurements of atmospheric CO<sub>2</sub> and Methane will provide vital tropical data to contribute to the *Global Atmosphere Watch* of the United Nations' World Meteorological Organisation. Taken with the data from the famous Mauna Loa station in the Pacific and other similar stations from the South Pole to the high Arctic, the measurements from Ascension will help scientists measure, track, and understand the rise in CO<sub>2</sub> and methane around the planet.

The new Ascension station, housed within the Met Office on the island, is run by Royal Holloway, Univ. of London. The work is supported by the UK Natural Environment Research Council, the UK Met Office, the British Antarctic Survey, and by the European Union's GEOMon program, with the help of the Ascension Island Government and the Foreign and Commonwealth Office.

*Ascension Island: Britain's equatorial island, now a partner to Mauna Loa*





*Ascension Greenhouse Gas station at the Met Office, Ascension: Island Administrator Ross Denny (right) watches as Royal Holloway's Dr. Rebecca Fisher and Dr. David Lowry (Lab director) check the calibration gases.*

### ***The breathing Earth***

Fifty years ago, C. David Keeling began his measurements of atmospheric greenhouse gases, at the South Pole and Mauna Loa. Keeling discovered the Earth breathes, in and out. Plants take in carbon dioxide as leaves are put on in spring and summer, and then the process reverses as leaves fall and grasses burn in autumn and winter. The timing of the CO<sub>2</sub> rises and falls between Hawaii and the South Pole showed Keeling how the air mixes annually from pole to pole, with land plants dominating the cycle.

Not least, Keeling showed that each year there is more CO<sub>2</sub> in the air than the year before, and that our use of fossil fuels is the prime cause of this growth. Today we are all too well aware that the burden of greenhouse gases in the air is increasing year on year, and that this increase is changing our planet's climate.

### ***Observation of greenhouse gases***

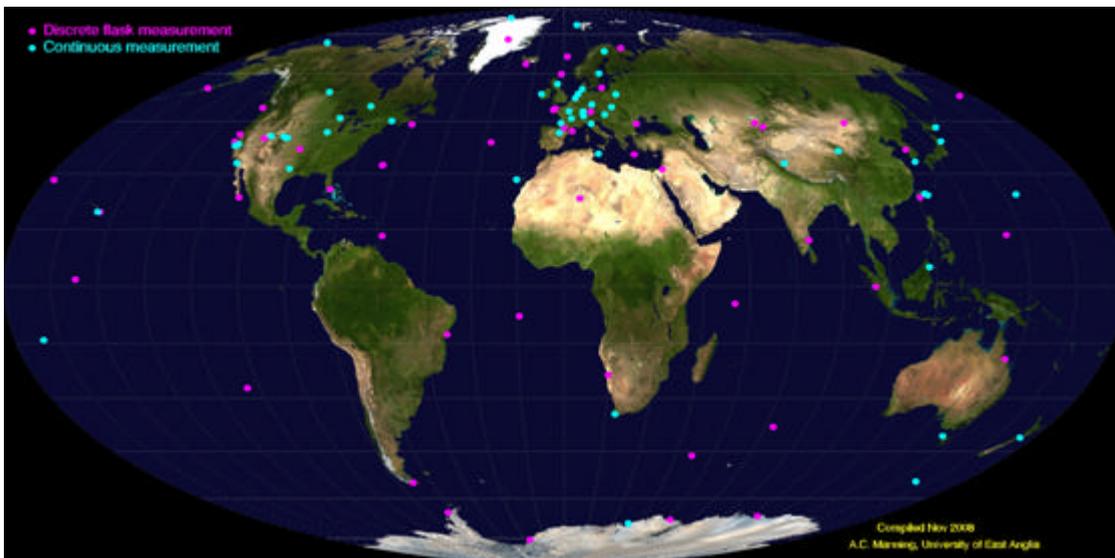
Today, a small number of high-precision *in situ* stations world-wide collect long-term records of atmospheric CO<sub>2</sub> and also other greenhouse gases such as methane (CH<sub>4</sub>). This

is not easy, especially in the Southern hemisphere where extremely high precision measurement is needed as seasonal variations are small. Computer models use the observational data to work out where the greenhouse gases are emitted and where they are taken up. At the moment, each country self-assesses its emissions under the UN Framework Convention on Climate Change and compliance with agreements like the Kyoto Treaty. Eventually, with enough high-quality monitoring stations, we should be able to sniff from a distance to assess how much each region is emitting. By tracking the gases as they move around the planet it should eventually be possible to verify national emissions declarations.

But there are hardly any measurement stations in the tropics. The heart of the biosphere is missed. Most of Africa and South America are unmeasured. The new data from Ascension will be vital in helping to assess Southern Hemisphere emissions and natural uptakes of CO<sub>2</sub>. Ascension is especially important because the South Atlantic and Southern Ocean are a huge natural sink of CO<sub>2</sub>, which is taken into the oceans. There are fears this sink is changing as the world climate warms, which will have major implications for the Kyoto/Copenhagen process. By measuring in Ascension we will be able to track this sink to see if it is indeed weakening

Ascension Island will become a vital part of the global network, a partner to American measurements on Mauna Loa. It will also help in 'ground-truthing' satellite observations as they fly over the equator. This is a major UK contribution to global understanding of the greenhouse gases.

*Greenhouse Gas monitoring stations. Key continuous stations are turquoise, other locations (many sending fortnightly air bottles to the US program) are purple. Ascension, which is just S of the equator in the Atlantic, now joins the turquoise spots.*



Administrator's Office  
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