

Halley – A Recently Established Global Atmospheric Watch (GAW) Global Atmospheric Research Station in Antarctica - Preliminary Results from Greenhouse Gas Measurements

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Halley is an Antarctic coastal research station operated by the British Antarctic Survey. The Clean Air Sector Laboratory (CASlab) is situated about 1.2 km south of the main base and in a sector that is rarely affected by vehicles or base pollution. More details about the CASlab can be found at http://www.antarctica.ac.uk/bas_research/support/labs/caslab. The CASlab was opened in 2003, closed in early 2009 to facilitate the new build project (Halley VI), and re-commissioned in early 2011. It has almost continuous measurements of trace gas, O₃, CO, CPC, halogens and black carbon as well as filter sampling and snow sampling capabilities. NOAA flask sampling measurements have been continuously taken since 1982. Other instruments recently introduced include high temporal resolution CH₄ and CO₂ measurements (2013) and oxygen flask sampling (2014).

As well as continuous gas measurements the laboratory has hosted a number of field campaigns including collaborations involving many UK national and international universities, both to access the the chemical environment and to carry out process studies. Although the prevailing wind direction throughout the year is easterly, traversing hundreds of kilometers of undisturbed snow, strong directional changes to westerlies often occur, especially in the spring and summer months. Halley is therefore well placed to observe air masses with a variety of origins including the continental snowpack, the sea-ice zone and the southern ocean. In 2013 we incorporated a Picarro G2301 to provide high temporal resolution data of greenhouse gases CO₂, CH₄ and water vapour. Here we provide some measurement data and include an interesting synopsis of a local event that occurred. We also provide information on a network of continuous monitoring stations linking the northern and southern hemispheres ranging from Ny-Alesund, Svalbard in the north to Halley, Antarctica in the south and named Equianos (<http://equianos.com/news-feed/>). The Halley Research Station has recently achieved GAW global status by committing to long-term measurements of reactive trace gases (O₃, CO, NMVOC's, greenhouse gases and total column ozone) as well as providing other meteorological and atmospheric parameters.

Jones, A. E., et al.: Chemistry of the Antarctic Boundary Layer and the Interface with Snow: an overview of the CHABLIS campaign, *Atmos. Chem. Phys.*, 8, 3789–3803, doi:10.5194/acp-8-3789-2008, 2008.

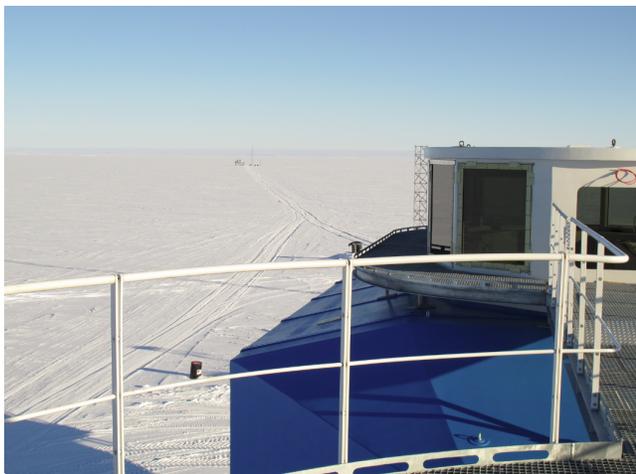


Figure 1. View of the CASlab from the Halley VI Station.



Figure 2. The CASlab above is situated 1.2 km south of the new Halley VI Station.