

S4.7a Atmospheric Chemistry and Processes

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40 years of atmospheric composition observations and research at Cape Grim, Tasmania — an overview

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In 2016, the Cape Grim station located at the north-west tip of Tasmania, will celebrate 40 years of continuous operation. Commencing operations in 1976, and in its current facilities since 1981, the Baseline Air Pollution Station at Cape Grim is Australia's contribution to international efforts for monitoring the global background atmosphere for trends due to human activities and natural variability. It is one of the three premier stations in the Global Atmosphere Watch (GAW) network of the World Meteorological Organization (WMO). Cape Grim observations thereby contribute very significantly to the GAW programme, and research outputs are published in peer-reviewed international journals of the highest quality, are very frequently cited, and feed into the international/global assessments, for example the IPCC.

Cape Grim's essential purpose has not changed since the program's inception in 1976. National and global concern that human activity is having an impact on the composition of the global (and regional) atmosphere requires that the changes be observed and understood. Initially, this was the main focus, whereas now the data are also used for prediction, to guide development of remedial policies, and to verify the effectiveness of global mitigation actions. The critical, but too often unrecognised role of precise in-situ atmospheric observation programs underpinning our current understanding of atmospheric processes and ability to model future climate, is well summarised in a commentary in *Nature*, titled "Cinderella science" (*Nature* 450, p789, 2007).

The Cape Grim station is operated and funded by the Aust. Bureau of Meteorology, with the Cape Grim Science Program jointly supervised by CSIRO, the Bureau of Met., Univ. of Wollongong and ANSTO. This presentation will give an overview of the past and present measurement programs at the station, show some of the iconic long-term datasets, and summarise some of the science highlights and impacts from the past 40 years.