



Aerosol Optical Depth at Cape Grim 1986 - 2014: What does it tell us?

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The Cape Grim Baseline Air Pollution Station is located near the northwest tip of Tasmania (Australia), a site chosen to permit measurement of the atmospheric environment over the southern oceans. Atmospheric measurements began in the late 1970s, and observations of Aerosol Optical Depth (AOD) using automated sunphotometers began in 1986. Since then, measurements have continued with a range of different instruments operating at a varying number of wavelengths. The site is challenging for these measurements as it is exposed to a sea-salt laden atmosphere, which presents both instrumental issues (corrosion) and measurement complications (salt fouling of the windows) in addition to the high frequency of cloud.

The dataset has been processed to produce a record of half-hourly AOD for the period 1986 – 2014 and investigated for internal consistency. In general the AOD is small (around 0.05 at 500nm). The impact of the Mount Pinatubo eruption in 1991 can be clearly observed, along with a persistent annual cycle. This has been further analyzed fitting to all wavelengths measured to derive an averaged optical depth (at 500 nm) and some preliminary aerosol size distribution information.