

THE CAPE POINT GLOBAL ATMOSPHERE WATCH STATION

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The Cape Point (CPT, 34 °S, 18 °E) Global Atmosphere Watch (GAW) is located near the Cape of Good Hope. It is under the influence of marine air for most of the time. The current measuring programme is explained and the scope of the observations outlined.

For the species CO₂, CH₄, CO and O₃ updated results for long-term trends and seasonal cycles under background conditions are presented, which are representative of southern hemispheric mid-latitudes. This is supplemented by selected results from case studies.

CO₂ levels have steadily increased from 355.6 ppm at the start of the measurements in 1993 to approximately 383 ppm in 2008. Draw-down events (DDEs) are also a feature of the CO₂ time series and are frequently reaching values of about 5 ppm below the background minimum. The DDEs are primarily a winter feature and are associated with regionally increased CO₂ sink strength.

In the case of CH₄, the high average growth rates during the 1980s decreased with marked fluctuation over the years. Methane levels stabilized from 2003 onwards, but an increase was observed again since October 2004.

Over most of its 30-year measuring period, the CO time series (longest in southern hemisphere) has not displayed any significant long-term trend, although some inter-annual variability is evident. Since 2003, however, an overall decline has been observed in the CO mole fractions. The causes are still under investigation and analytical artefacts – so far not identified - cannot be excluded.

A positive trend is indicated for O₃ between 1990 and 2002, accompanied by an increase in seasonal peak-to-peak amplitudes. Since 2003, the rise has leveled off again.

Total Gaseous Mercury (TGM) has been measured at Cape Point since 1995 as part of a co-operative programme (at present with GKSS). Recent high-resolution TGM data (since 2007) reveal both pollution (PE) as well as depletion events (DEs). The causes for these DEs - not previously observed at southern-hemispheric mid-latitudes - are discussed in relation to other atmospheric parameters, such as CO and O₃.