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## Gaseous elemental mercury depletion events observed at Cape Point during 2007–2008

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**Abstract.** Gaseous mercury in the marine boundary layer has been measured with a 15 min temporal resolution at the Global Atmosphere Watch station Cape Point since March 2007. The most prominent features of the data until July 2008 are the frequent occurrences of pollution (PEs) and depletion events (DEs). Both types of events originate mostly within a short transport distance (up to about 100 km), which are embedded in air masses ranging from marine background to continental. The Hg/CO emission ratios observed during the PEs are within the range reported for biomass burning and industrial/urban emissions. The depletion of gaseous mercury during the DEs is in many cases almost complete and suggests an atmospheric residence time of elemental mercury as short as a few dozens of hours, which is in contrast to the commonly used estimate of approximately 1 year. The DEs observed at Cape Point are not accompanied by simultaneous depletion of ozone which distinguishes them from the halogen driven atmospheric mercury depletion events (AMDEs) observed in Polar Regions. Nonetheless, DEs similar to those observed at Cape Point have also been observed at other places in the marine boundary layer. Additional measurements of mercury speciation and of possible mercury oxidants are hence called for to reveal the chemical mechanism of the newly observed DEs and to assess its importance on larger scales.

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