



## **Diurnal variation of carbon monoxide in the remote marine atmosphere**

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Atmospheric concentrations of carbon monoxide (CO) have been monitored continuously on a remote site of the Indian Ocean (Amsterdam island: 37°S, 77°E) from 1996 to 2000 and from 2004 to now on. The sampling station is equipped with a CO gas chromatograph Trace analytical RGA3 especially designed to perform accurate measurements at the 30 to 40 ppbv levels with a step time of 10 minutes.

The background concentration range from 35-40 ppbv during summer months to 60 ppbv during the period of August to September. During the summer period (i.e. from December to February) the variability of CO is characterized by a very systematic diurnal oscillation of 1 to 5 ppbv, with a maximum peaking in the afternoon. On the opposite no diurnal variability is observed during the rest of the year. On the basis of a careful examination of air masses origin and marine and continental tracers, this diurnal variation of few ppbv is attributed to a local contribution of the marine source. The strength of the estimated marine source needed to explain the amplitude of the diurnal variation would be significantly greater than previous estimates. This difference may be due to an underestimation of the emission by photodegradation of organic matter in the ocean surface and/or to other non-quantified processes. One possible contribution could be the emissions from the nannoplankton algae, which pneumatocysts have been shown to contain high CO concentrations. The representativity of these measurements is discussed by comparing with measurements performed over the Indian Ocean.