

1.028 Carbon Monoxide and Cities as Seen from the MOPITT Instrument.

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Abstract:

On 18th December 1999 the Terra platform was launched from the Vandenberg Air Force base carrying the Measurements Of Pollution In The Troposphere (MOPITT) instrument. Although manifested for a 5-year mission, the Terra satellite and MOPITT have now completed more than 18 years of operation.

The 18-year continuous data series that MOPITT has provided (so far) affords a great opportunity to look at longer-term changes over the planet if sufficient care is taken to eliminate instrumental effects. Fortunately, the instrument has been more stable than originally predicted and care has been taken throughout the mission to ensure that the data are properly validated. The result is a well-characterised time record that can now be “mined” for a variety of phenomena charting decadal changes (or stability) in carbon monoxide (CO) and looking at the frequency of events that often drive anomalies in the carbon monoxide distribution.

Recent interest in megacities and their atmospheric chemistry footprint both within their boundaries and in the broader region has prompted a study using the MOPITT dataset of the changes in CO around megacities. CO is neither confined locally, nor globally distributed so it offers an interesting “medium life” pollutant with influence over a considerable area. This talk will present some studies of CO around large cities and industrial zones with the objective of looking for long-term trends.

MOPITT was built in Canada by COMDEV of Cambridge, ON, data processing is performed at the National Center for Atmospheric Research in Boulder, CO, the Terra instrument is funded and operated by NASA and the MOPITT instrument and operations are funded by the Canadian Space Agency.