Variability in the Distribution of Ozone Over Land and Marine Regions in the Indian Region

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Measurements of surface ozone are being made at Ahmedabad (23.0°N, 72.5°E), an urban site, Mt. Abu (24.6°N, 72.7°E) and Nainital (29.4°N, 79.4°E). The latter two sites are high-altitude sites, the first one in Western India and the other in the Northern India. In addition to these surface level measurements, balloon borne measurements of ozone profiles up to an altitude of 32 km have been made using Electrochemical Concentration Cell sondes from Ahmedabad from 2003-2007 and over the Bay of Bengal (BoB) and the Arabian Sea (AS) during a cruise campaign in 2006. The surface-level measurements at all the three sites show strong seasonal variability with lowest levels during the summer monsoon period and higher levels during winter and spring seasons. Surface ozone levels at Nainital are highest (monthly average 60-70 ppbv) during April-May months (Fig.1) due to long-range transport and regional pollution. However, ozone at Mt. Abu is highest (~50 ppbv) in October-November months. Ozone profiles over Ahmedabad also show the increase due to regional pollution within the first 2 km while the effect of long-range transport is seen in the free troposphere above, an altitude of about 2 km.

Measurements of ozone profiles made over the BoB and the AS show the effects of transport from the Indo-Gangetic plain over the northern BoB in the 1-3 km height region. However, such an effect is not observed over the AS.

Further details of these results will be presented during the meeting.

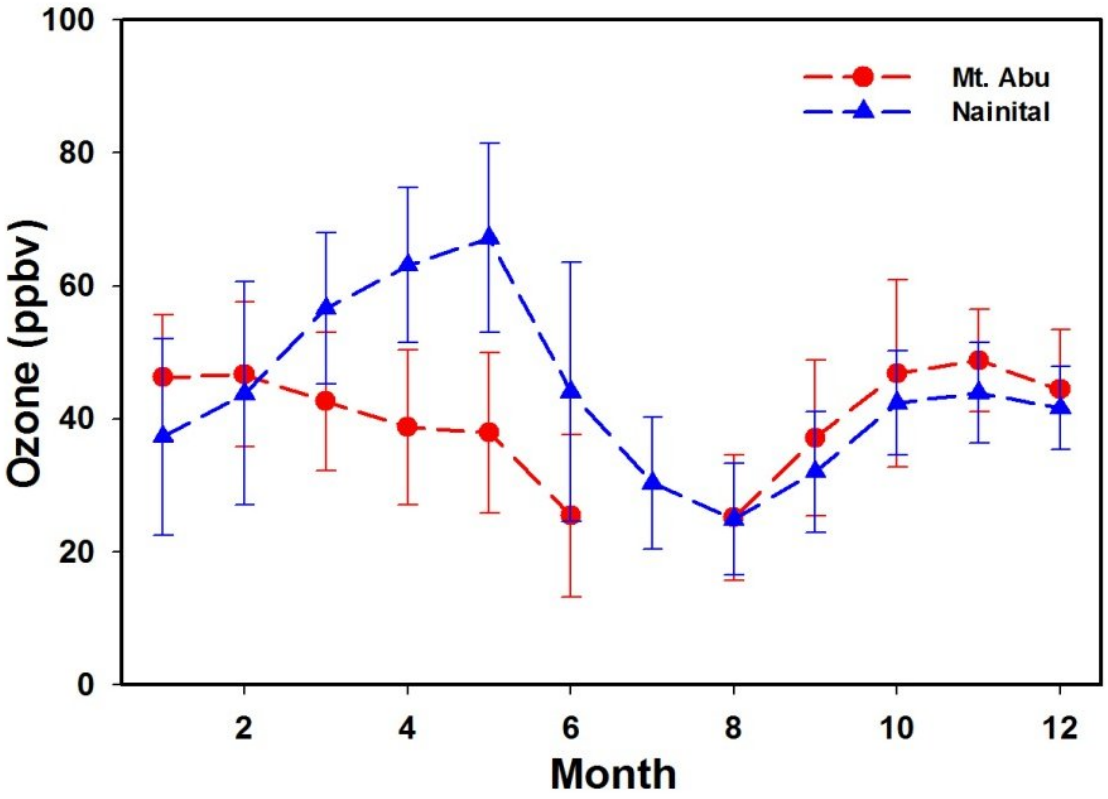

Figure 1. Monthly average surface ozone levels with 1 sigma variability at Mt. Abu and Nainital in India.