

Seasonal Variation of Air Pollutants over the UAE

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The first ever campaign of observing air pollutants over the UAE began in 2006 with a couple of balloon flights carrying ECC ozonesondes to measure the vertical profiles of ozone. The chromatography of the collected air samples to measure concentrations of the Volatile Oxygenated Compounds (VOCs) began a year later. The purpose of this campaign was to study characteristics of the chemical and dynamical structures at this unique subtropical location (latitude 24.45N; longitude 54.22E). Ozone sounding has been continued regularly since 2006 while VOCs have been measured sporadically over the period of three years. In this paper, we present ozone profiles throughout the troposphere and the stratosphere characterizing the wet (January - April) and dry (May - August) seasons over the UAE. Preliminary results of wet season profiles indicate that the stratospheric ozone is quite stable while thick polluted layers confined to the lower tropospheric heights showing enhancements in ozone contents. Excessive values of ozone concentration in the range 50 - 55 ppb at the ground levels are observed. These values are 20 to 30% larger than those observed at nearby sounding stations like New Delhi (India) and Esfahan (Iran) using the same technique. The difference in values probably reflects the elevated levels of pollution due to petrochemicals and automobile emissions in the UAE. This can be confirmed from the VOCs measurements. About 120 VOCs have been observed most notably ethane, propane, butane, ethane, acetylene, benzene, and toluene. The concentrations of these compounds are found to be in the range 10 – 100 ppb in comparison with nearby city of Karachi. We intend to present all the ECC sounding data and VOCs data including a discussion on the high levels of surface ozone responsible for contaminating the air quality in the UAE.