



Summertime tropospheric ozone variability over the Mediterranean basin observed with IASI

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The Mediterranean basin is one of the most sensitive regions of the world to climate change and air quality issues. The particular dynamical situation of the Mediterranean basin leads to ozone amounts in the lower troposphere of the largest ones in the Northern Hemisphere. Six years of summertime tropospheric ozone observed from IASI from 2007 to 2012 have been analyzed to document the variability of ozone over this region. In the lower troposphere a large West-East gradient is observed with an enhancement of ozone in the Eastern part of the basin. This gradient is explained by (i) the diabatic convection over the Persian Gulf during the Indian Monsoon, which induces an important subsidence of ozone rich air masses from the upper to the lower troposphere over the central Mediterranean basin; (ii) the Etesian winds which set up during summer between the Azores anticyclone to the West and the thalweg of Indian Monsoon to the East, leading to a horizontal advection of potentially ozone rich air masses from the European industrial areas. Concerning the temporal variability of ozone over the basin, the IASI observation analysis shows a summertime maximum in July in the lower troposphere. The high correlation with the 300 hPa potential vorticity indicates that the temporal variability of lower tropospheric ozone is mainly driven by vertical exchanges between the upper and the lower troposphere. Two case studies (June 2008 and June 2009) showing ozone anomalies (positive and negative) will also be presented and related to two particular meteorological situations.