



## **Vertical tropospheric ozone measurements over the Eastern Mediterranean and comparison with Central Europe**

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Vertical tropospheric ozone profiles measured in the period 1996-2002 in the framework of the MOZAIC project (Measurement of Ozone and Water Vapor by Airbus in Service Aircraft) for flights connecting Central Europe to the northern part of the Eastern Mediterranean basin (Heraklion and Rhodes in Greece; Antalya in Turkey) were analysed in order to evaluate the high rural ozone levels recorded in the Mediterranean area during summertime.

In total, ozone profiles from 77 flights during summer (JJAS) were averaged to represent the ozone values at standard pressure levels of 1000, 900, 800, 700, 600, 500 and 400 hPa. The results showed significantly (10-12 ppb, 20-40%) enhanced ozone levels over the Eastern Mediterranean for the 1000 hPa to 900 hPa levels, whereas ozone between 700 hPa and 400 hPa was only slightly (3-5 ppb, 5-10%) higher than over central Europe.

If the above set of summer profiles is classified into groups of the 25% highest and the 25% lowest ozone levels in the Eastern Mediterranean boundary layer and the corresponding daily composite weather maps for each group are plotted, it comes out that a main factor leading to high tropospheric ozone values in the area is anticyclonic influence, whereas the lowest ozone levels are associated with an extension to the west of the Middle-East low and weak pressure gradients over the Eastern Mediterranean. Summer midlatitude anticyclones influence ozone in two ways: (i) downward transport from the upper troposphere and (ii) by creating stable conditions close to the

surface, thereby hindering vertical dispersion of ozone precursors and enabling them to travel over long distances horizontally thus leading to regional photochemical activity in the boundary layer. Especially in the Aegean area, northern airflow due to the combined influence of the Central Mediterranean and the Balkans anticyclones with the Middle East low predominates in the boundary layer, thus leading to southward transport of polluted air from the Balkans and Eastern Europe.