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## Aerosol sources and their contribution to the chemical composition of aerosols in the Eastern Mediterranean Sea during summertime

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**Abstract.** A detailed study on the temporal variability of compounds important in controlling aerosol chemical composition was performed during a one-month experiment conducted during summer 2000 at a background site on Crete, in the Eastern Mediterranean Sea. Contribution of different aerosol sources in the Eastern Mediterranean Basin could be investigated at this location since the site is influenced by a wide range of air masses originating mainly in Europe and Africa. Chemical apportionment was performed for various air mass origins and showed a strong impact of anthropogenic emissions in the Turkey and Central Europe sectors, with black carbon (BC) and non-sea-salt sulfate (nss-SO<sub>4</sub>) concentrations higher than observed in the Eastern and Western Europe sectors. High levels of non-sea-salt calcium (nss-Ca) were associated with air masses from Africa but also from Central Turkey. Evidence was found that BC calculation based on light absorbance during dust events was biased.

This quality-controlled high temporal resolution dataset allowed to investigate in detail the source-receptor relationships responsible for the levels of BC, nss-SO<sub>4</sub> and sulfur dioxide (SO<sub>2</sub>), observed in Crete. Among the results obtained from this model, the major contribution of Turkey and Central Europe was confirmed in terms of anthropogenic emissions. Comparisons with remote optical properties obtained from Satellite observations (SEAWIFS) north of Crete indicates that our ground based aerosol characterization was suitable for describing aerosol properties in the atmospheric column for most of the time during the campaign.

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