



## **A review of the Mediterranean tropospheric aerosol and ozone chemistry and the project ChArMEx (Chemistry-Aerosol Mediterranean Experiment)**

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The Mediterranean is a large enclosed sea of  $\sim 2.5 \cdot 10^6$  km<sup>2</sup> bordered by very diverse regions of Europe, Africa and the Middle East and. All year round anthropogenic and natural emissions and the local environmental and climate conditions contribute to make of the Mediterranean troposphere the most aerosol-rich and photochemically active region of Europe. Whereas a number of large scale aerosol-chemistry-climate programmes have been performed at various places in the world, the Mediterranean region still misses such an integrated regional study. It has nevertheless been the subject of many studies at more limited scales. In this work we trace back and summarize more than 25 years of studies on tropospheric aerosols in the Mediterranean region. Tendency and distribution of gaseous species such as carbon monoxide and ozone is also studied in particular through satellite data assimilated in a chemistry-transport model. We conclude that there are important gaps remaining in the assessment of

the regional tropospheric chemistry and aerosols and of their impacts on the radiative budget, hydrological cycle, air quality, and marine biogeochemistry. To address such questions, we present the French initiative ChArMEx for a Chemistry-Aerosol Mediterranean Experiment, and call for international collaboration. A related action on fire emissions (FireMeX) is presented in session AS2.01. ChArMEx is part of a cluster of multidisciplinary regional projects including MerMex on marine biogeochemistry presented in session OS9 and HyMeX on the hydrological cycle.