

## **Aerosol and Regional climate in the Mediterranean: A Model Intercomparison Exercise in the Context of Med\_Cordex and CharMEx**

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Mediterranean basin is located at the crossroads of air masses carrying gas phase species such as ozone and precursors, as well as natural and anthropogenic aerosol particles. These species contributes to regional pollution and can have strong effects on the regional radiative budget with ensuing impact on regional climate fluctuations from daily to multidecadal time scales, as well as on ecosystems and air quality over the Mediterranean basin. Aerosol linked processes still represent one of the main sources of uncertainty in past climate change attribution and future climate change projections notably due to high spatial and temporal variability. The use of high-resolution RCMs therefore offers an interesting potential for a better characterization of aerosol-radiations and climate interactions in the complex Mediterranean region. In the context of Med-CORDEX and MISTRALS-ChArMEx programs, a FPS (Flag Pilot Study) has been proposed with the aim of answering important scientific questions such as:

- Can we fully characterize the Mediterranean aerosol past variability and future evolution at climate scales ? in particular using RCMs.
- Can we understand the role of the Mediterranean aerosols on the past regional climate variability ? including issues related to regional climate change attribution and aerosols representation in climate models (GCM, RCM).
- Can we determine the role of regionally-born aerosols in the Mediterranean future climate sensitivity ? in particular using RCMs as complementary approach to GCMs.
- What is the aerosol role in shaping the Mediterranean extreme events ? (e.g. heat waves, heavy precipitation events).

The presentation will focus on the development of simulation strategies involving several research groups, and will gives some preliminary results as well as relevant information to join the initiative.