



## **Convective dust storms during Saharan dust outbreak on Northern Adriatic**

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Airborne mineral dust affects the climate by modifying radiation budget, formation of clouds and marine biogeochemical cycles. It's most abundant global source, Saharan desert, has strong influence on the Mediterranean countries. The increase of PM<sub>10</sub> hourly values due to Saharan dust outbreak was observed at several ground based air quality stations located on Italian and Croatian Adriatic coast in September 2015. According to previous studies, two major mechanisms contribute to dust emissions; the Nocturnal Low Level Jet (NLLJ) breakdown and convective dust storms, Haboobs. WRF-Chem model was applied to simulate the dust emission, transport and deposition, and two major sources of dust in Algeria and Tunisia were detected during the episode. The temporal evolution of spatially averaged dust emission at sources locations show strong morning peaks characteristic for NLLJ breakdowns. However, using North African Sandstorm Survey (NASCube) method, the Haboob development is observed and according to Aerosol Optical Depth (AOD) product possibly contributing to Algerian dust source emission. Although the model's coarse resolution does not allow the grid resolved simulation of convective processes, the model shows good agreement with AOD measured at 8 African and European AERONET stations and with PM<sub>10</sub> measured at 10 Italian and Croatian air quality stations.