



## **Saharan Dust Export towards the Caribbean: Dust Sources and Atmospheric Circulation over North Africa**

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Studies analysing satellite observations illustrate the spatial and temporal distribution of emitting dust sources. Results show that high surface wind speeds related to the break-down of the nocturnal low-level jet (LLJ) occurring during the morning hours are frequent driving mechanism for dust uplift in the Sahara desert.

Here, we present a study investigating atmospheric circulation pattern over North Africa favouring (a) dust entrainment into the boundary layer and (b) dust export towards the Caribbean Sea. Satellite-based information on the spatio-temporal distribution of dust source activation (DSA) events inferred from 15-minute Meteosat Second Generation (MSG) Spinning Enhanced Visible and InfraRed Imager (SEVIRI) dust observations are linked to atmospheric circulation regimes over North Africa.

By means of air-mass trajectories, which map the dust export from North Africa toward the SALTRACE ground observation site at Barbados, cases are selected which link DSA regions with dust events observed at Barbados. These cases are then examined with regard to the atmospheric conditions during dust emission and geomorphologic dust source characteristic. Dust properties inferred from LIDAR observation using the POLIS system and measurements taken during Falcon research flights are compared to the different dust source locations and atmospheric conditions during dust emission.

Altogether, the results from this study aim at illustrating the relevance of knowing the dust source locations in concert with the atmospheric circulation. Ultimately, this study addresses the question of what is finally transported across the Atlantic towards the Caribbean from which dust source region.