

Supplement of Atmos. Meas. Tech., 11, 6525–6538, 2018  
<https://doi.org/10.5194/amt-11-6525-2018-supplement>  
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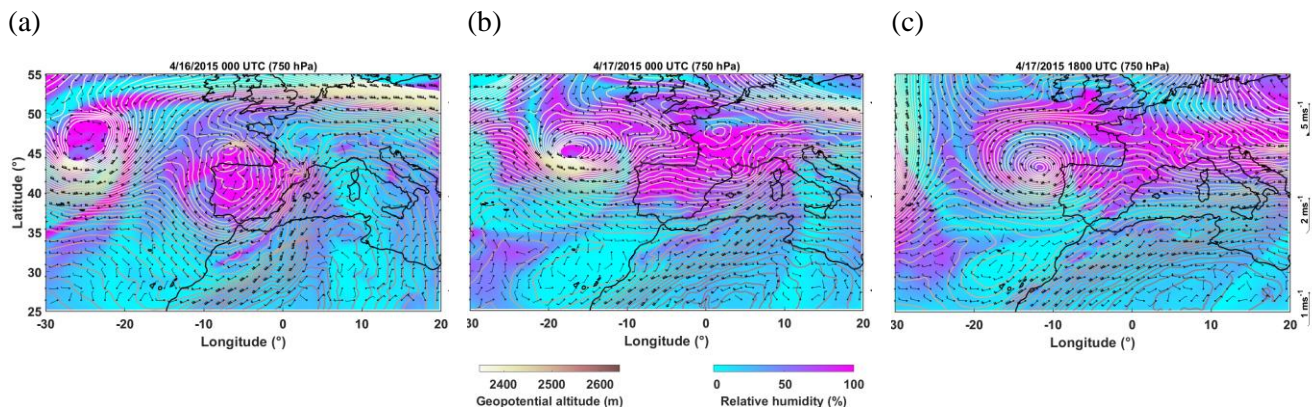
*Supplement of*

## **Analysis of a warehouse fire smoke plume over Paris with an N<sub>2</sub> Raman lidar and an optical thickness matching algorithm**

**Xiaoxia Shang et al.**

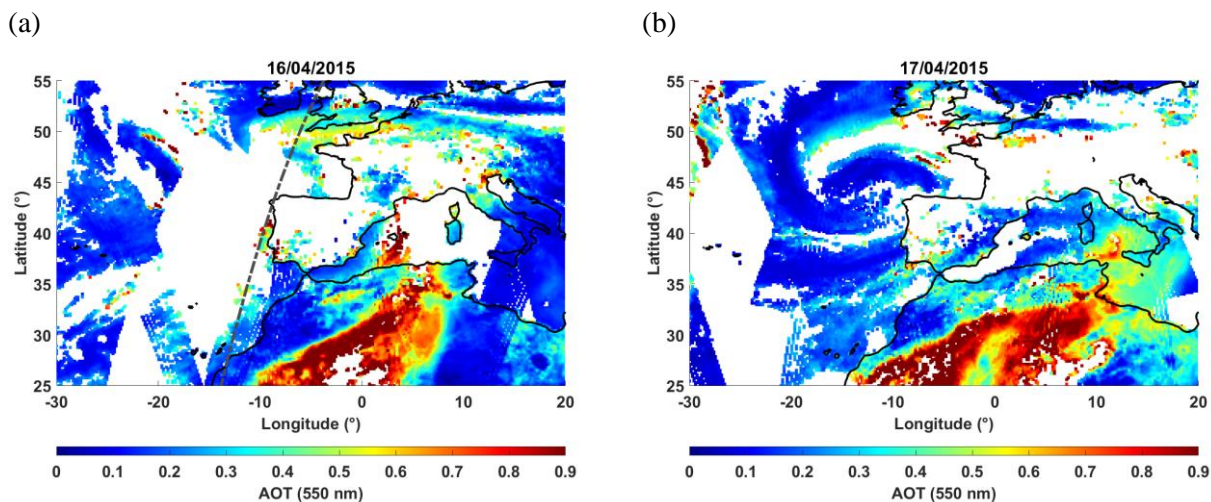
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**Figure S1.** Relative humidity (%) and Geopotential altitude (m) at 750 hPa on (a) 16 April 0000 UTC, (b) 17 April 0000 UTC, and (c) 17 April 1800 UTC, derived from reanalyses of numerical weather prediction model ECMWF/IFS with  $0.30^\circ$  horizontal resolution (ERA5, ECMWF Newsletter 147, page 7). The wind field is also shown on each figure.

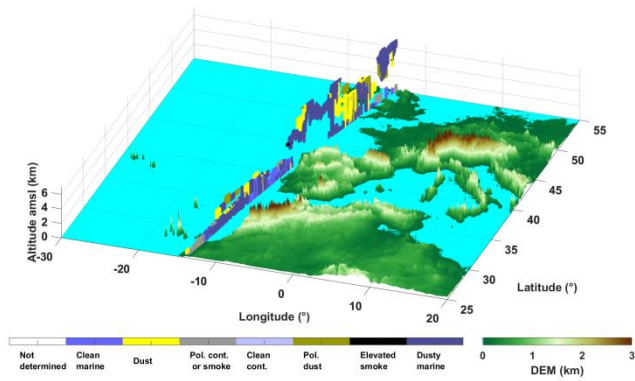
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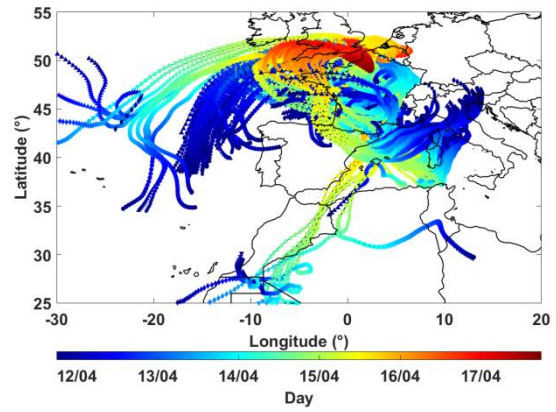
**Figure S2.** Aerosol optical thickness (AOT) at 550 nm on (a) 16 April and (b) 17 April 2015, derived from MODIS products over land and sea. The night time ( $\sim 0200$  UTC) ground tracks of CALIOP are given as a gray line in (a).

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(a)



(b)



**Figure S3.** (a) Aerosol types on 16 April deduced from CALIOP products are plotted as a function of altitude along the ground track of the satellite. (b) Back-trajectories over 6 days, calculated using the HYSPLIT model in ensemble mode (312 back trajectories), with the temporal colour scale at the bottom. The back trajectories endpoint is above Palaiseau, between 1.8 and 3 km amsl, following the lidar-derived vertical structure on 17 April 2015 1800 UTC.