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Supplement of

Re-evaluating the Frankfurt isothermal static diffusion chamber for ice nucleation

J. Schrod et al.

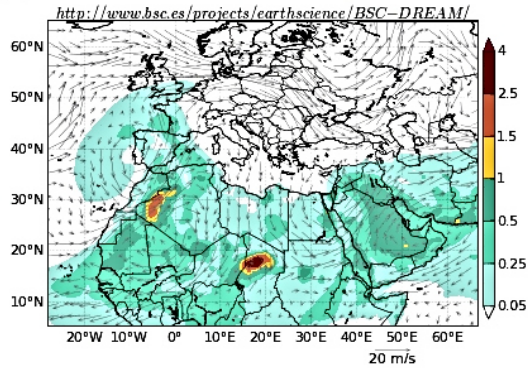
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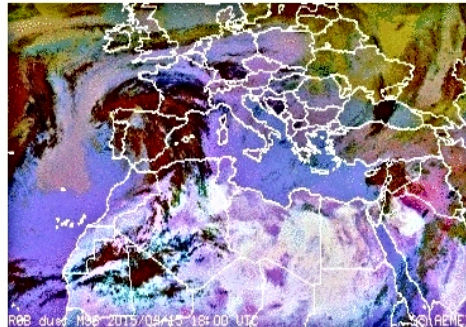
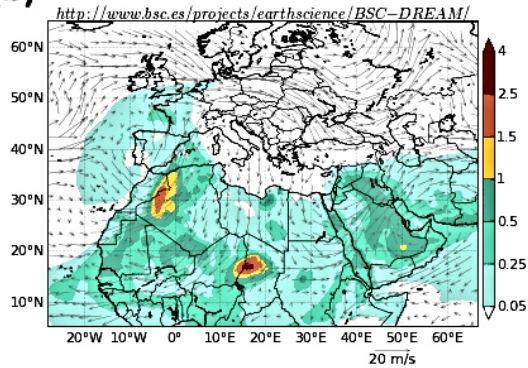
On April 16, 2015 a Saharan dust event was observed at the Taunus Observatory, Mt. Kleiner Feldberg (826 m msl, 50.221879° N, 8.446297° E). Figures 1 and 2 show the temporal evolution of the dust transport event in six hour increments. In Fig. 1 (a) and (b) the dust layer is primarily west of the Spanish and French coast and by 00 UTC on April 16 (Fig. 1 (c)) dust begins to pervade wide areas of central Europe. Figures 2 (d), (e) and (f) confirm that dust is present throughout the entire day, albeit within the RGB product the dust layer is superimposed with cold thick high-level clouds (red) and low-level clouds (yellow) and thus is not always clearly visible.

Figure 3 is the BSC-DREAM8b (vid BSC-DREAM8b ref., and Basart et al., 2012) modeled vertical profile of dust on April 16, 2015 above Taunus Observatory. It highlights that dust was present throughout the day, even in the lowest kilometer of the atmosphere. Thus it is reasonable to conclude that atmospheric samples taken at Taunus Observatory on April 16, 2015 included Saharan dust. Back trajectories from 12 UTC April 16, 2015 computed using HYSPLIT (Draxler and Rolph, 2015; Rolph, 2015) and originating from the Taunus Observatory, confirm the observation that the local air mass advanced from the Saharan region (Fig. 4).

(a) BSC-DREAM8b v2.0 Dust Load (g/m^2) and 3000m Wind
00h forecast for 12UTC 15 Apr 2015



(b) BSC-DREAM8b v2.0 Dust Load (g/m^2) and 3000m Wind
06h forecast for 18UTC 15 Apr 2015



(c) BSC-DREAM8b v2.0 Dust Load (g/m^2) and 3000m Wind
12h forecast for 00UTC 16 Apr 2015

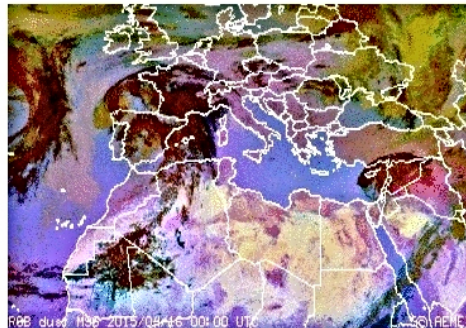
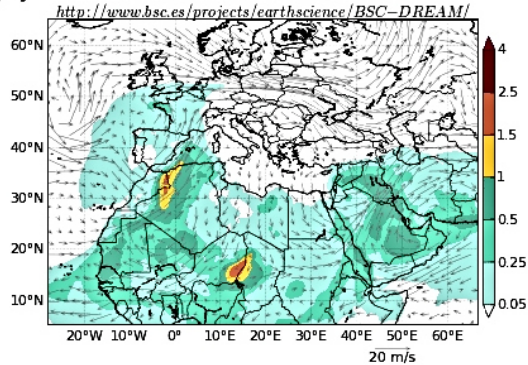


Figure 1. Temporal evolution of the Saharan dust event from (a) 12 UTC April 15, 2015 to (c) 00 UTC April 16, 2015. The lefthand panels show the dust load (g/m^2 , calculated using BSC-DREAM8b), while the right-hand panels show the EUMETSAT RGB dust product, with the intensity of the magenta corresponding to dust intensity.

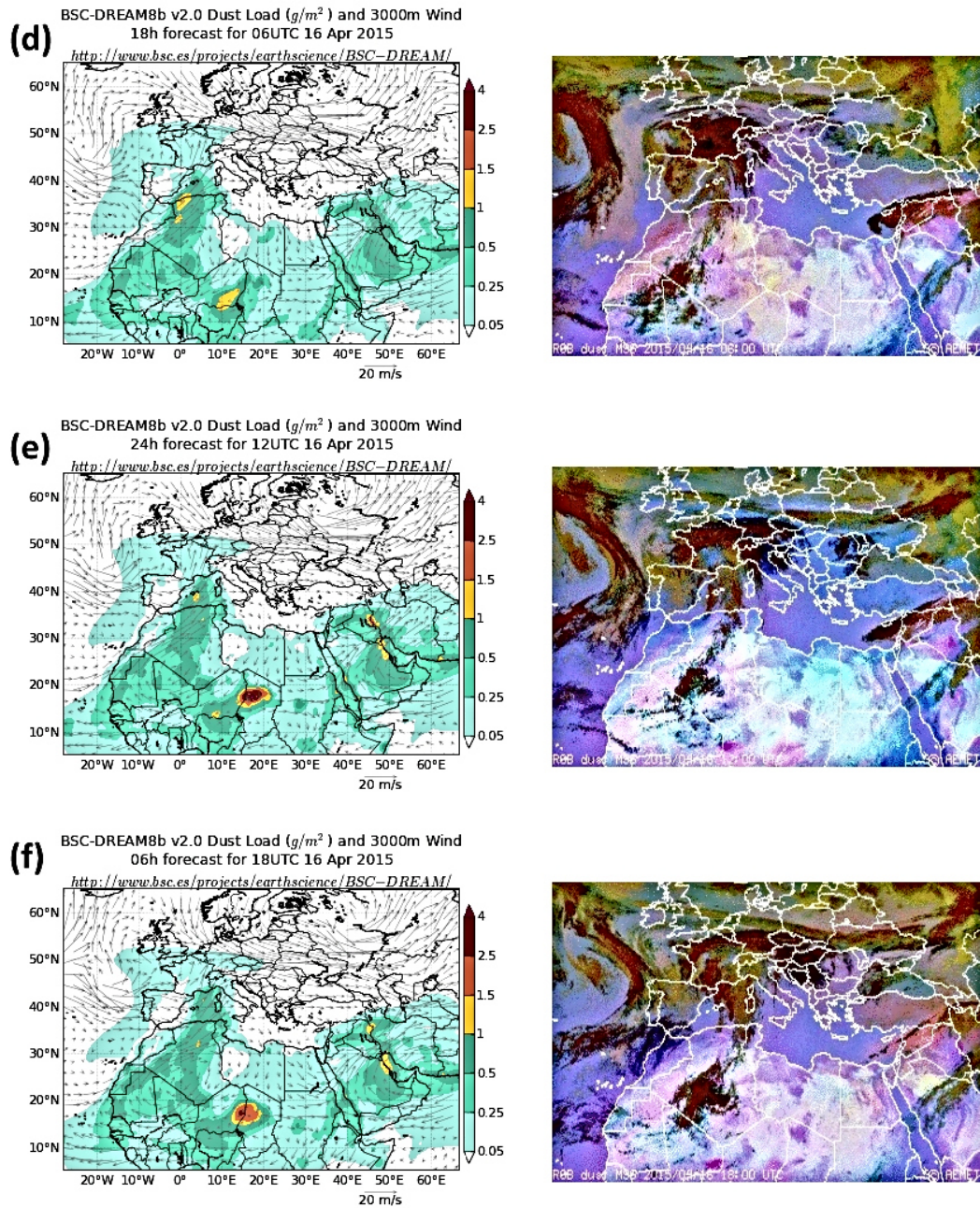


Figure 2. Continuation of Fig. 1's temporal evolution of the Saharan dust event from (d) 06 UTC April 1, 2015 to (f) 18 UTC April 16, 2015. Again the lefthand panels show the dust load (g/m^2 , calculated using BSC-DREAM8b), while the righthand panels show the EUMETSAT RGB dust product, with the intensity of the magenta corresponding to dust intensity.

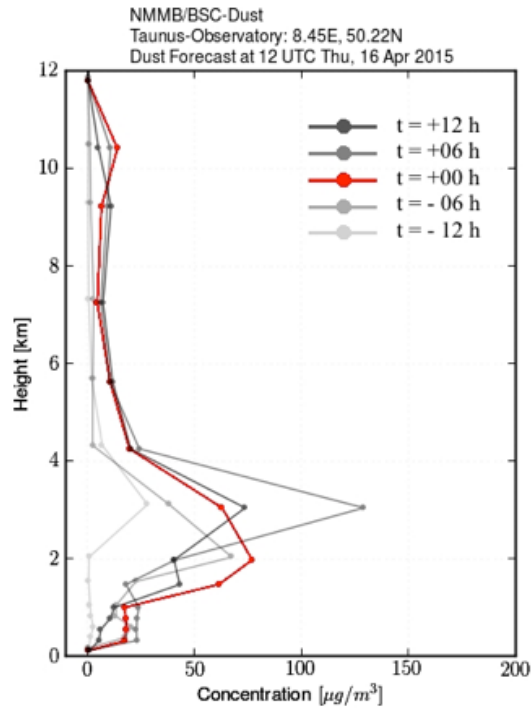


Figure 3. Vertical profile of dust concentration above Taunus Observatory on April 16, 2015 calculated using BSC-DREAM8b.

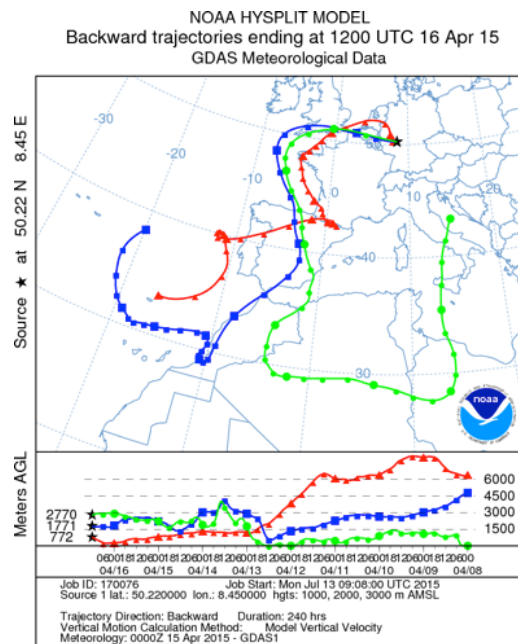


Figure 4. Back trajectories originating from Taunus Observatory at 1000 m (red), 2000 m (blue) and 3000 m (green) amsl. Trajectories were initiated at 12 UTC April 16 2015 and run for 240 hours.

References

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