

Remote sensing synergies for dust model evaluation

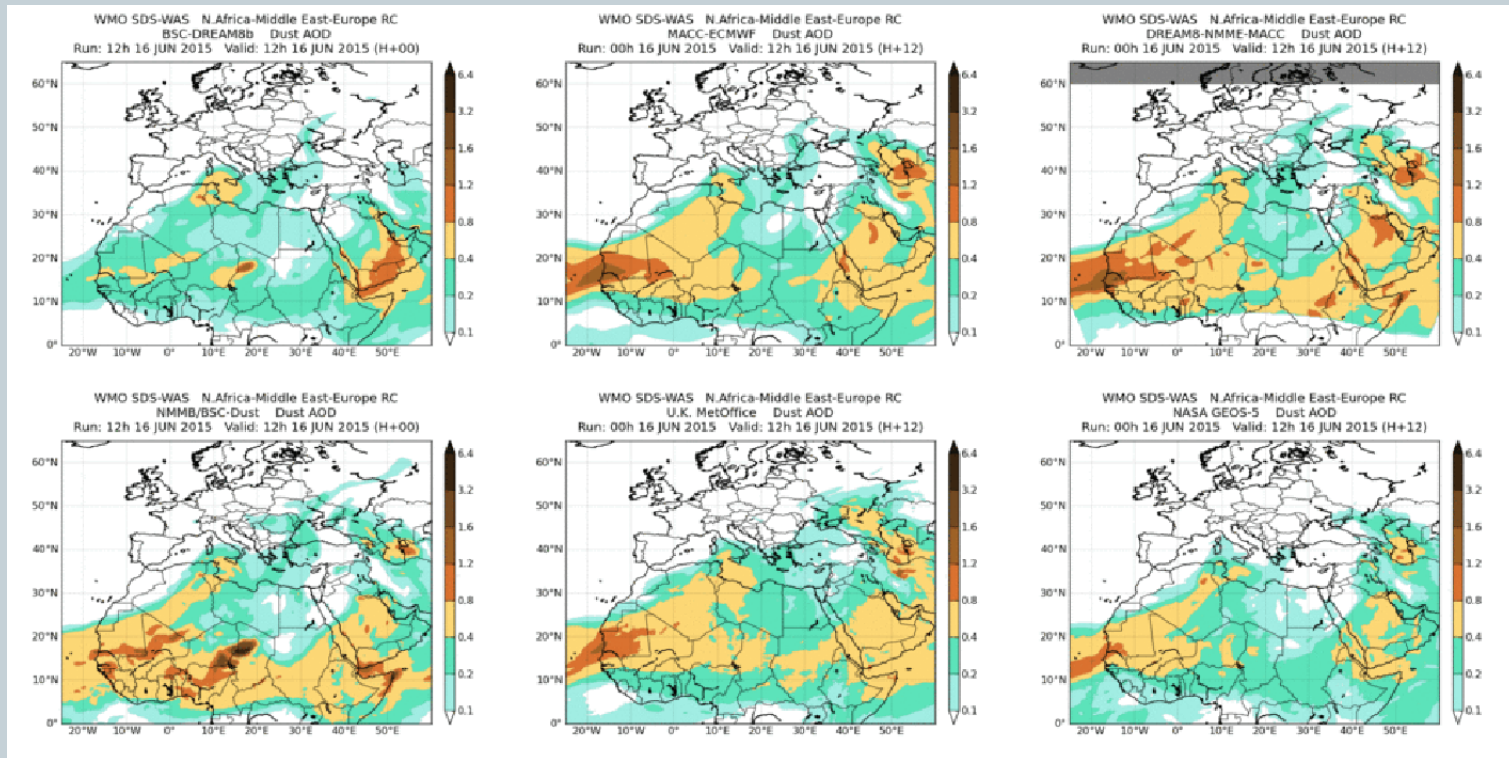


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Regional dust models



- Regional dust models provide forecasts for Europe, but how well do they work?



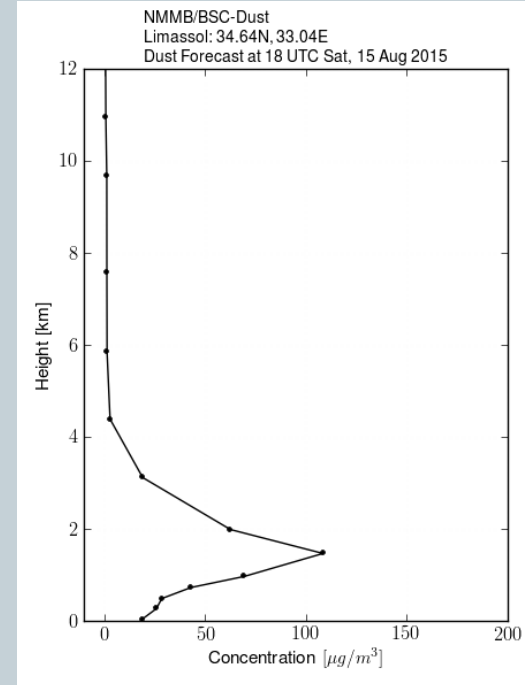
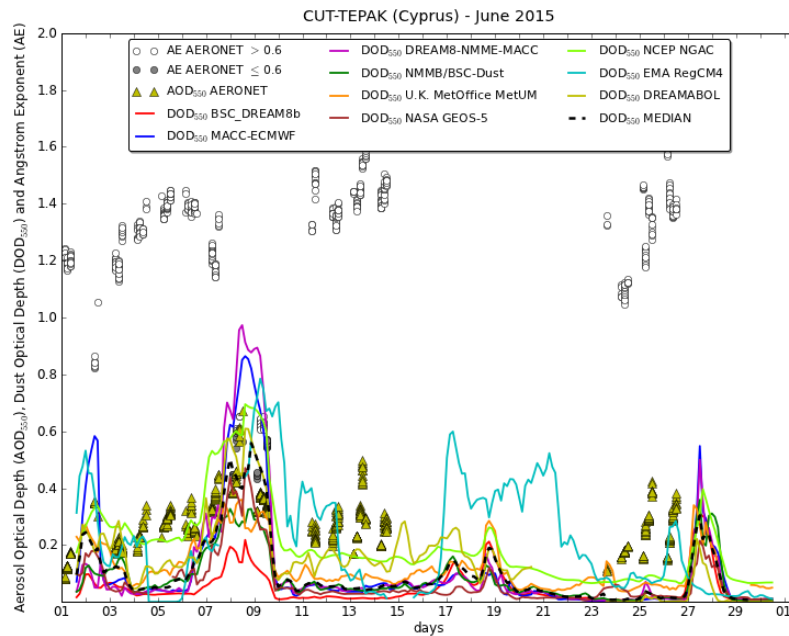
WMO's Sand and Dust storm Warning Advisory and Assessment System (SDS-WAS)

No evaluation of vertical dust distribution



- Dust columnar properties are tested in near-real time. Vertical distribution? Not at all.

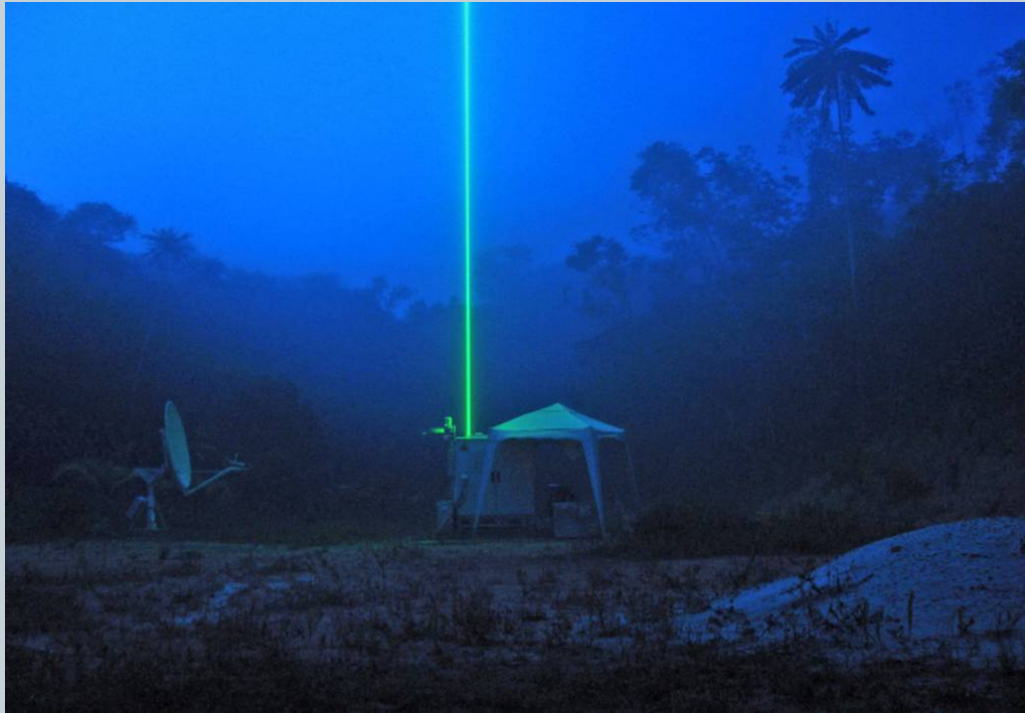
Evaluation with AERONET



Evaluation using lidar measurements



- Lidars measure vertical profiles of aerosols properties.
- A network of such instrument is spread across Europe.



Lidar in Amazonia (photo by Holger Baars)

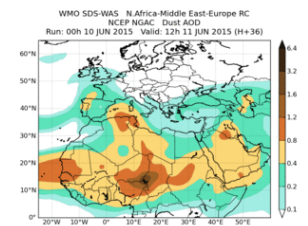
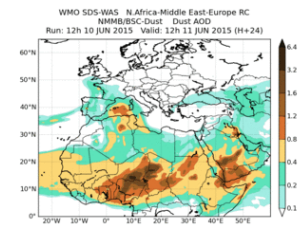
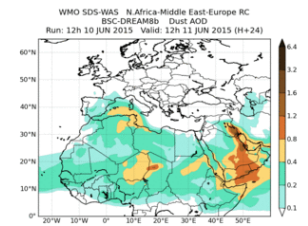
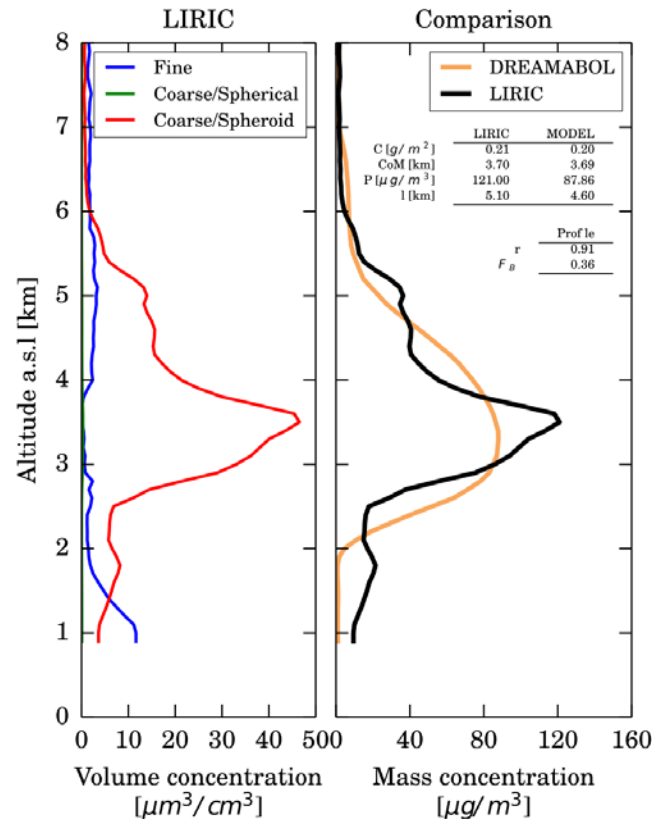
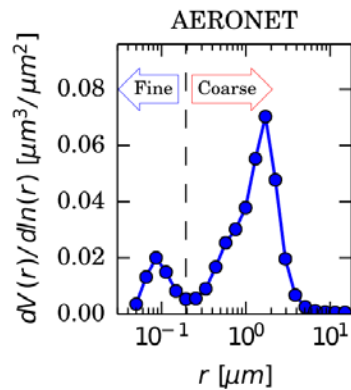
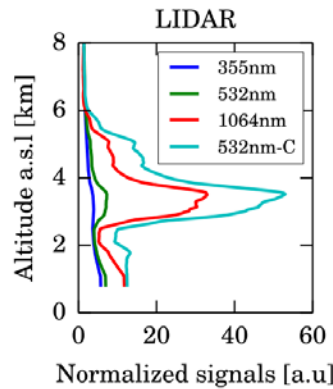


EARLINET network

Model evaluation using remote sensing



We evaluate 4 dust models using dust volume concentration profiles from 10 ACTRIS stations.

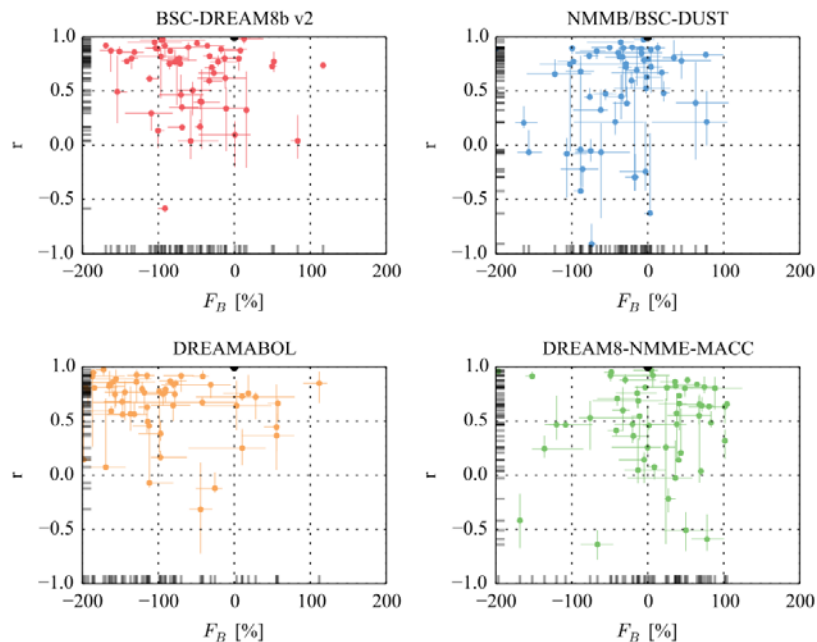


A good first comparison

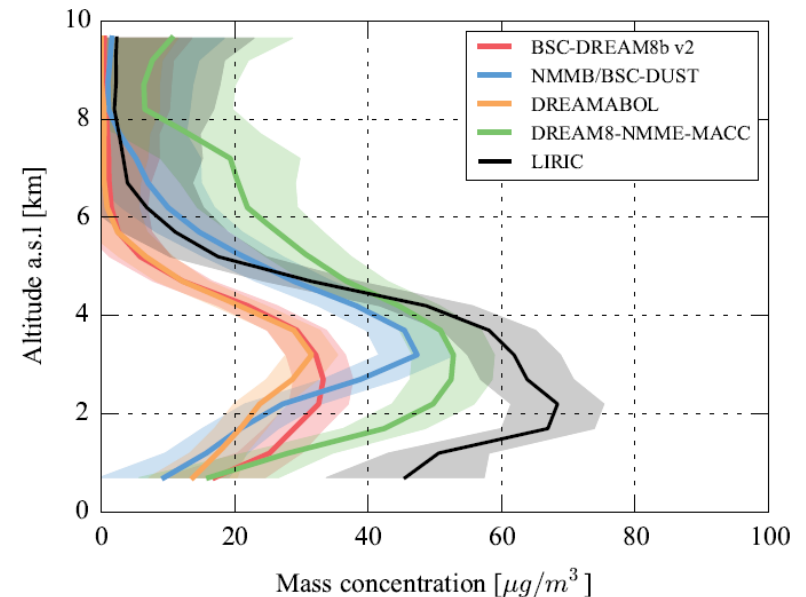


Models successfully predict the vertical structure of dust layers. The exact magnitude needs further investigation.

Correlation/Bias for 4 models



Average concentration profiles



Conclusions



- Remote sensing measurements are a powerful tool for continuous observation of the atmosphere
- Lidars, in particular, can give a unique view of the atmospheric vertical structure.
- Remote sensing synergies can create novel products and support new lines of research.

Thank you for your attention.



- Any questions?

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