Effect of aerosol sub-grid variability on AOD

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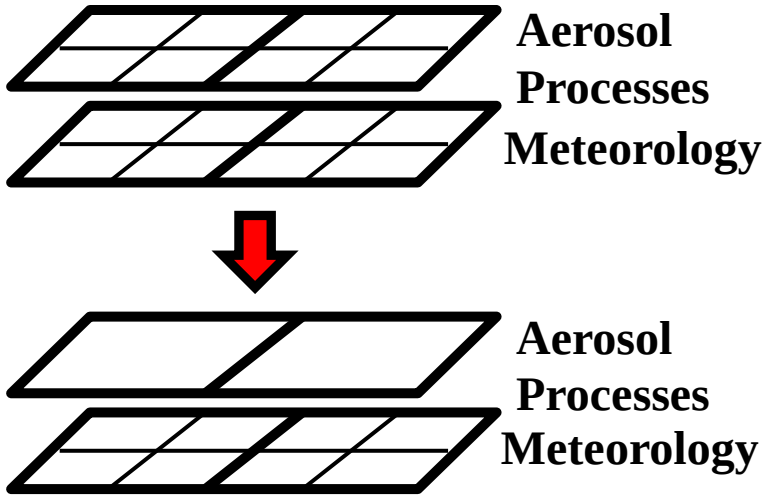
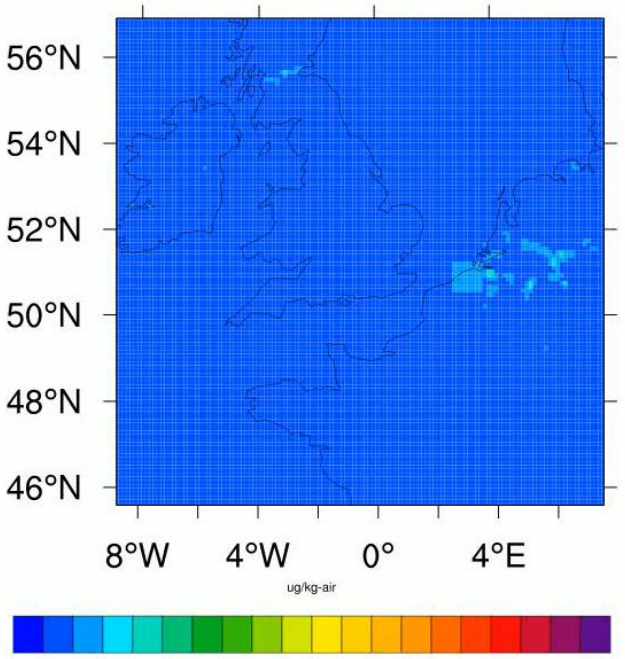
- Spatial scales of aerosol processes span orders of magnitude - largely unresolvable on horizontal scales of GCMs.

- Many previous studies explore effect of sub-grid variability by varying model resolution (e.g. Gustafson et al., 2010, Wainwright et al., 2012).

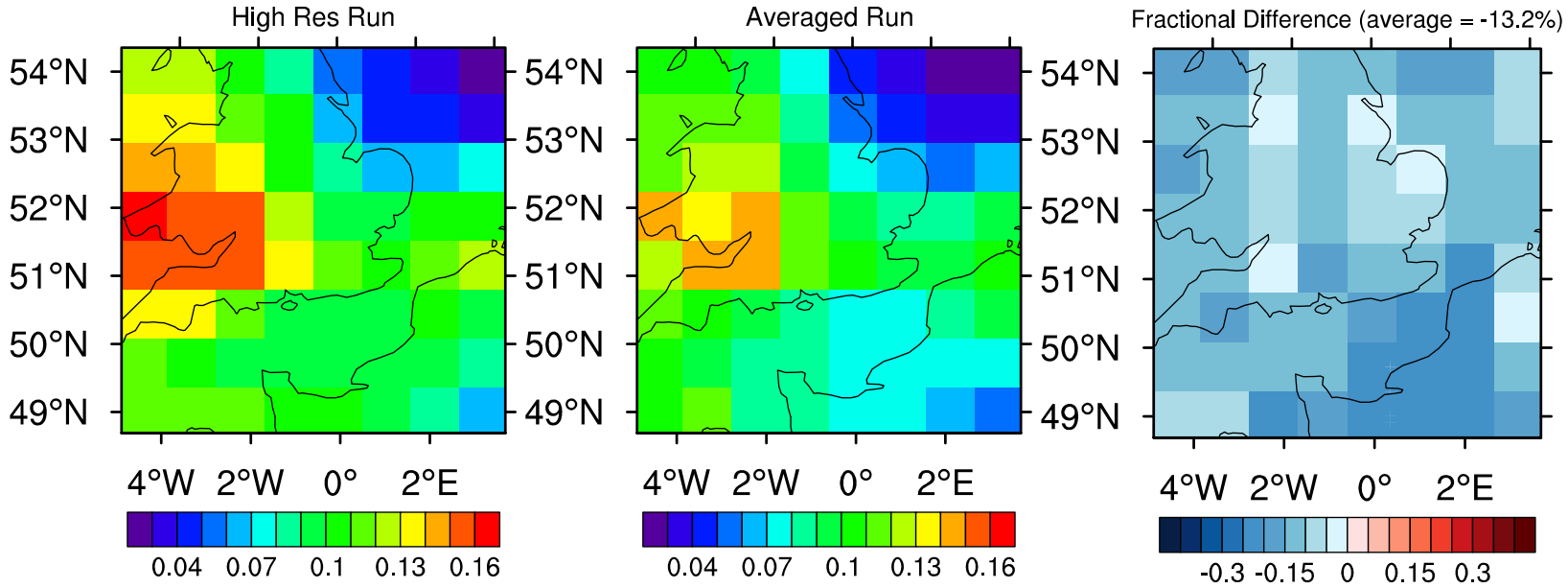


- In these studies, aerosol fields are affected by changes in resolution of meteorology, terrain, aerosol microphysics and emissions - difficult to quantify effect of aerosol variability on AOD.

- We develop a novel technique that allows us to separate meteorological and aerosol microphysical effects by varying the resolution of aerosol processes while maintaining constant resolution in all other model fields



AOD



Accumulation mode aerosol water