

Effects of Resolution on Simulation of Boundary-layer Clouds

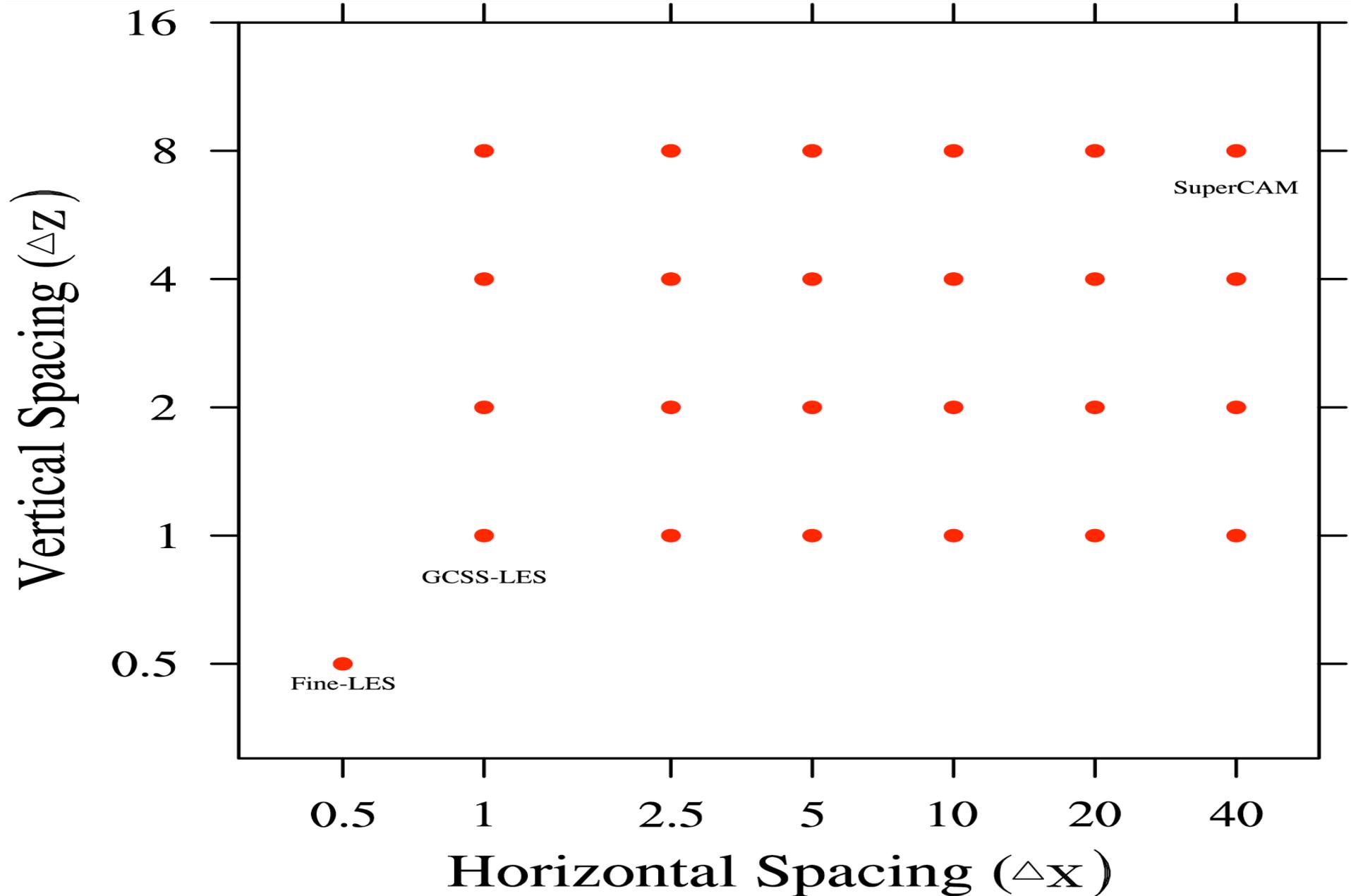
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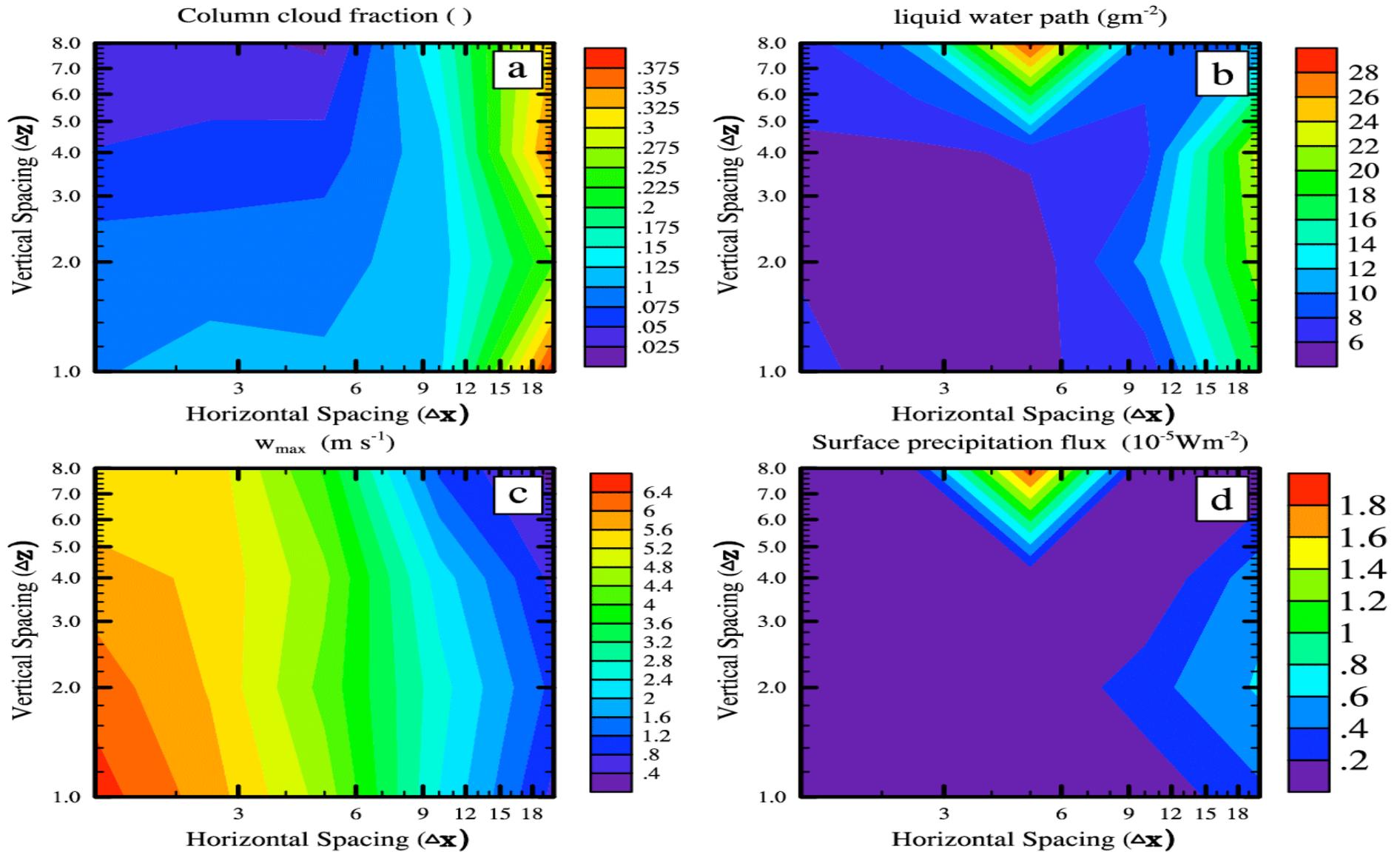
Goal

- Study the effects of horizontal and vertical resolution on the simulation of PBL processes
- Understand how the MMF to represent PBL processes
- Find a practical configuration for MMF

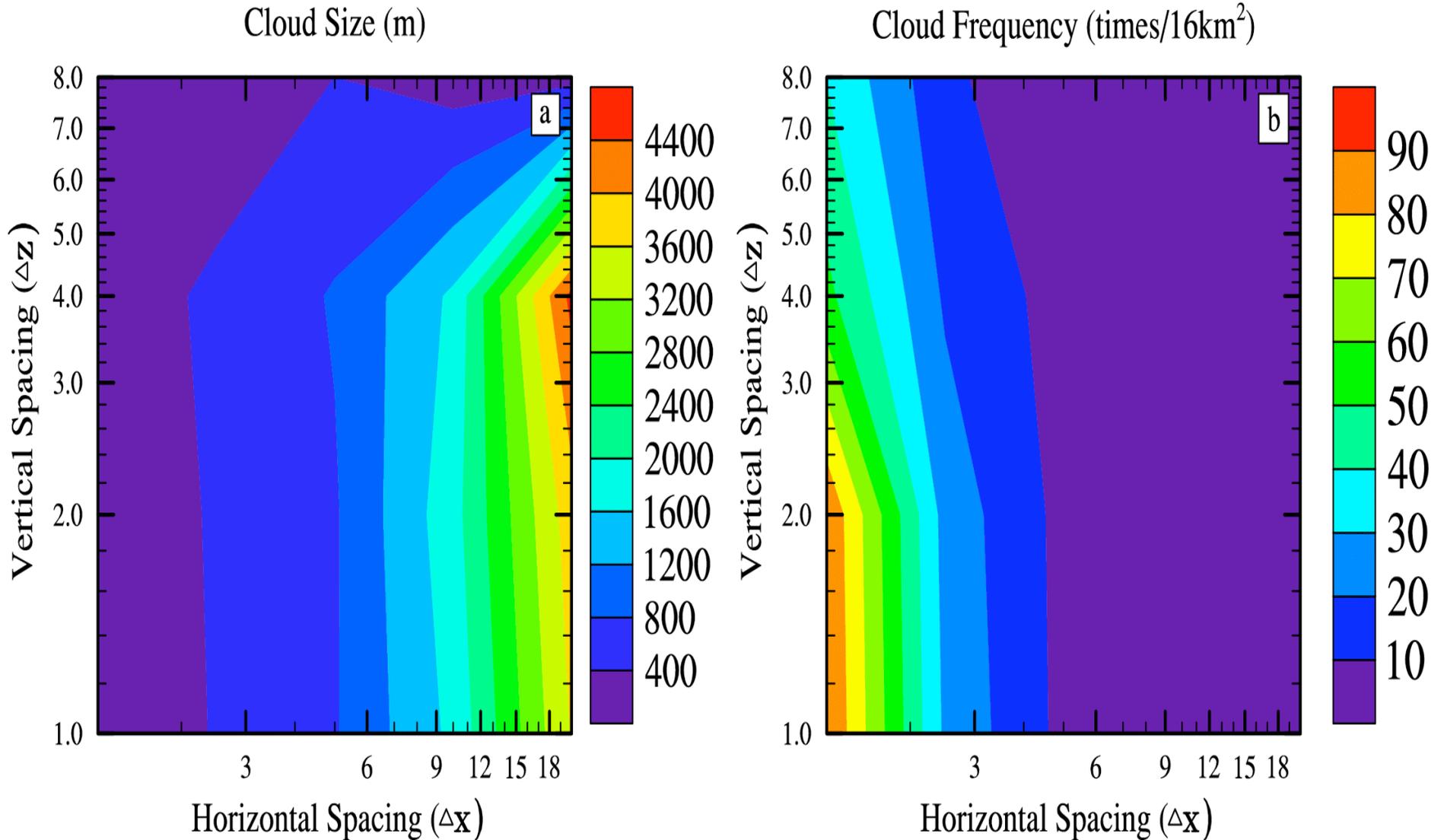
Resolution sensitivity Strategy



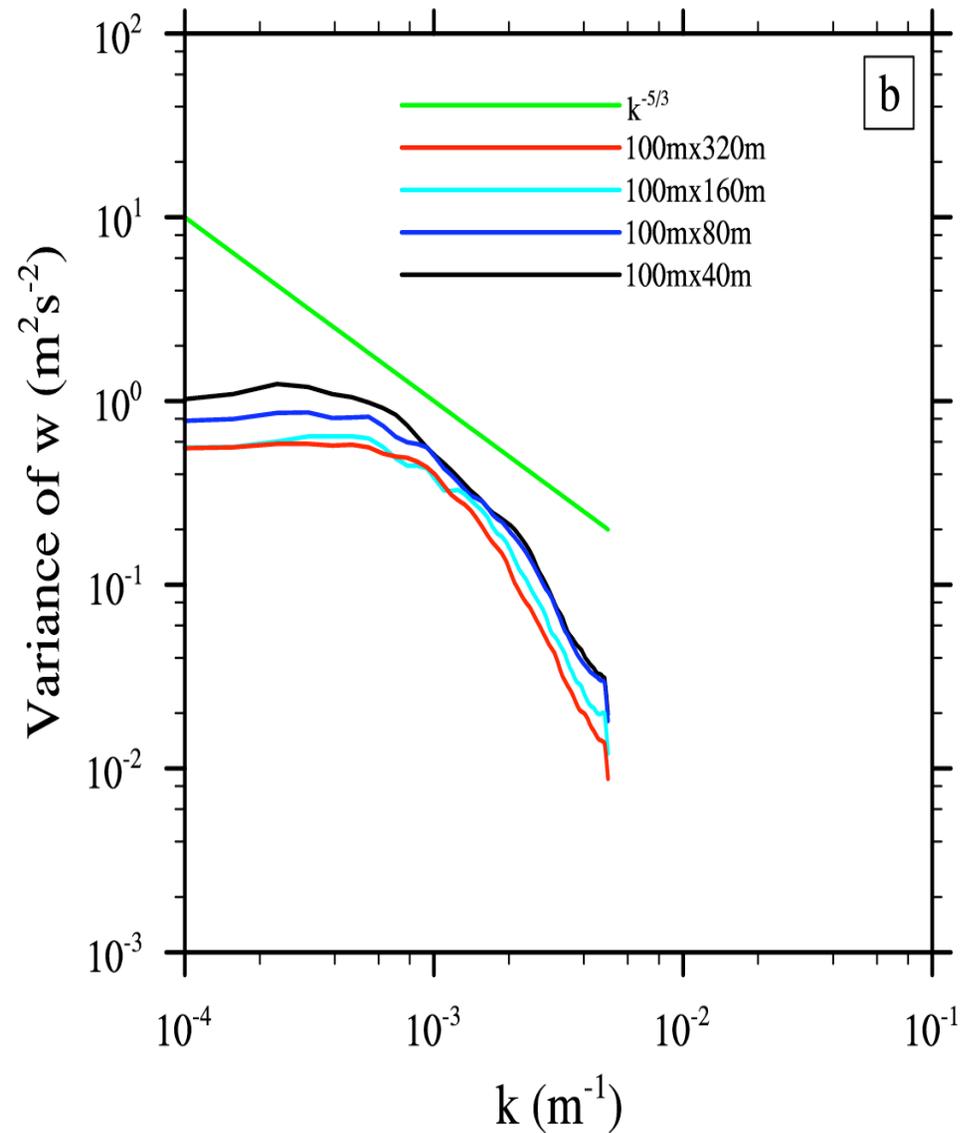
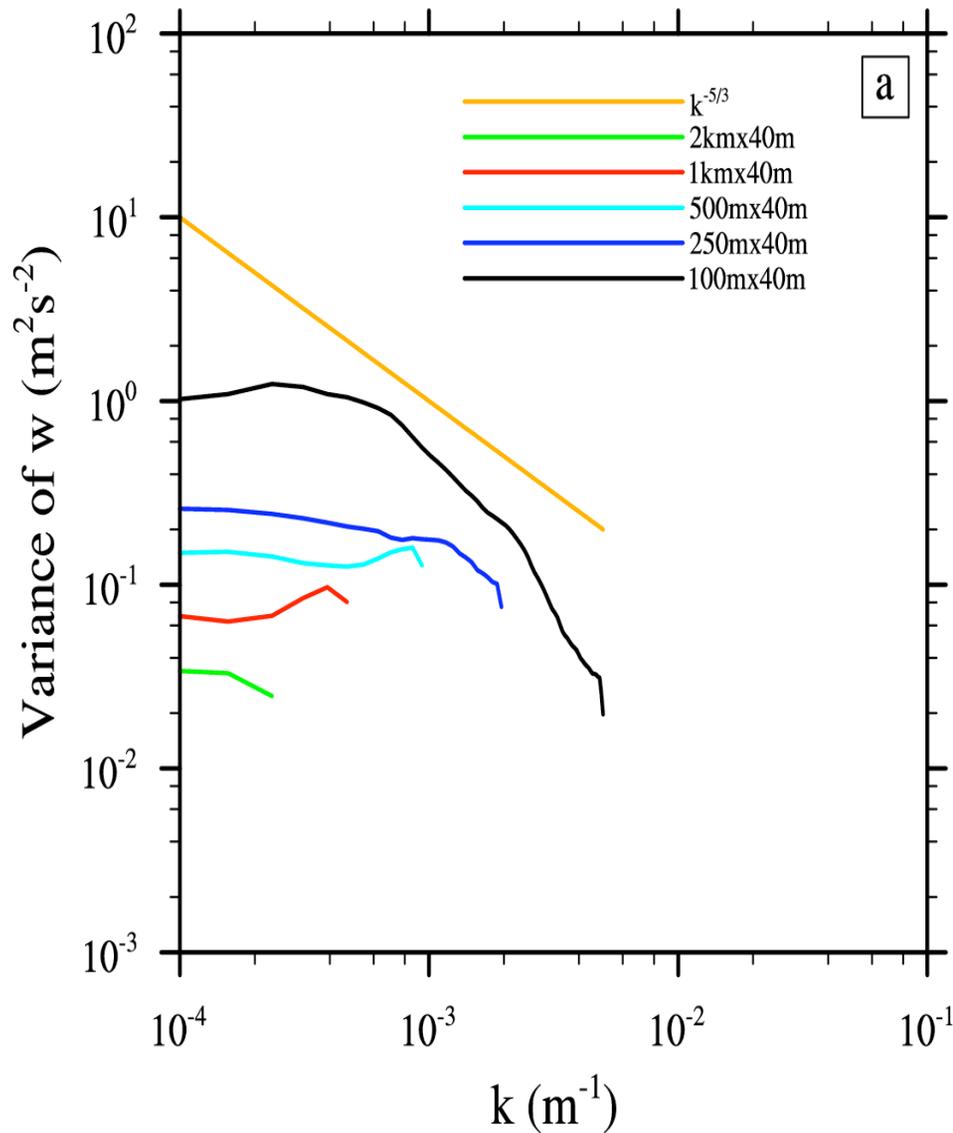
Results for BOMEX



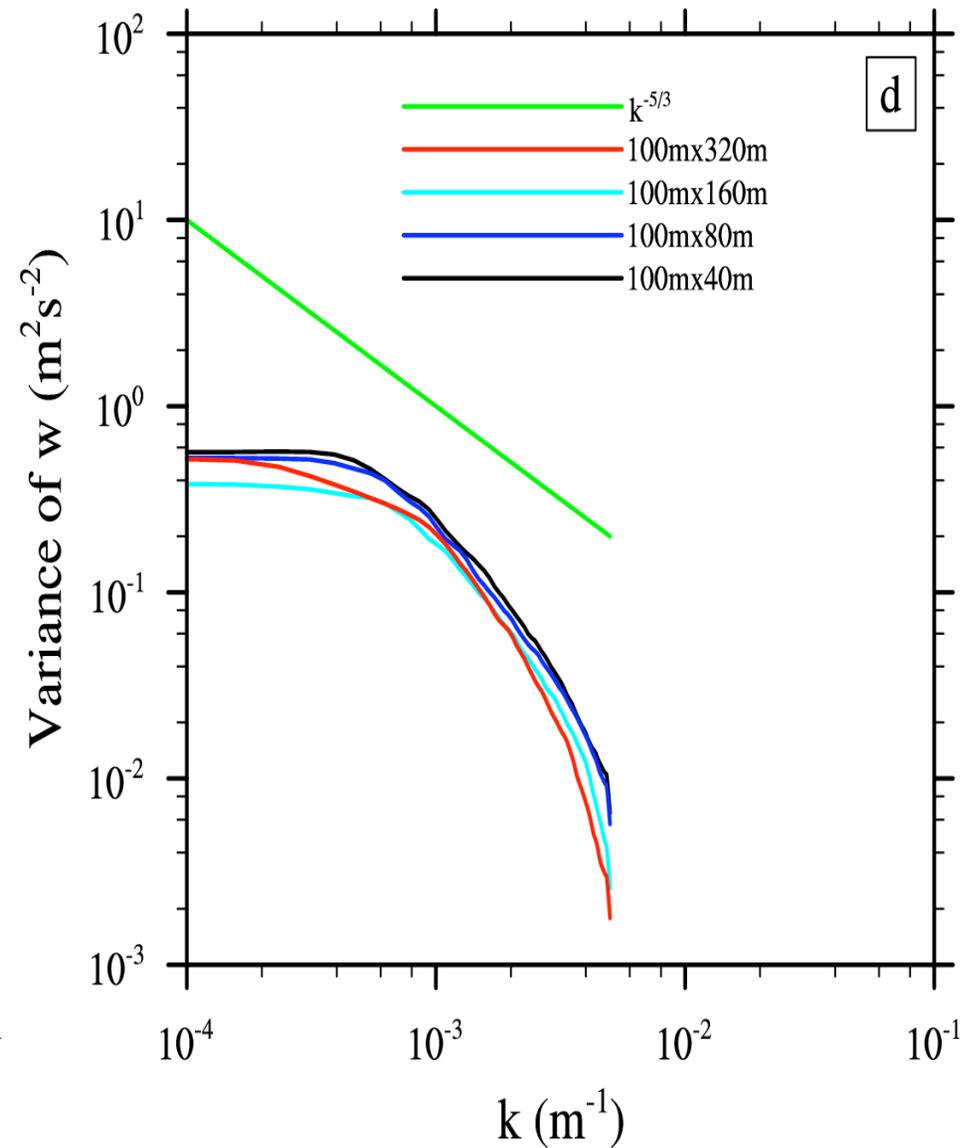
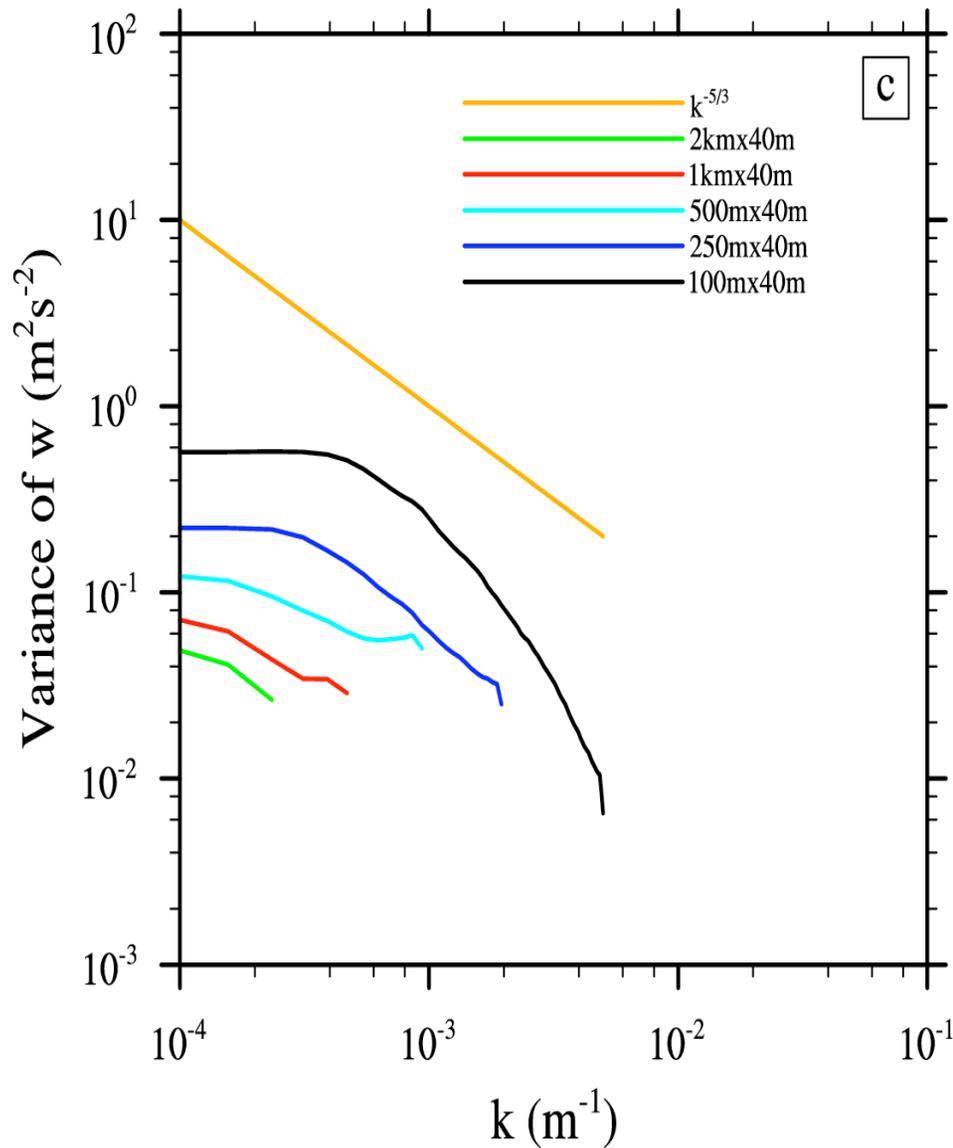
Cloud Diameter and Frequency



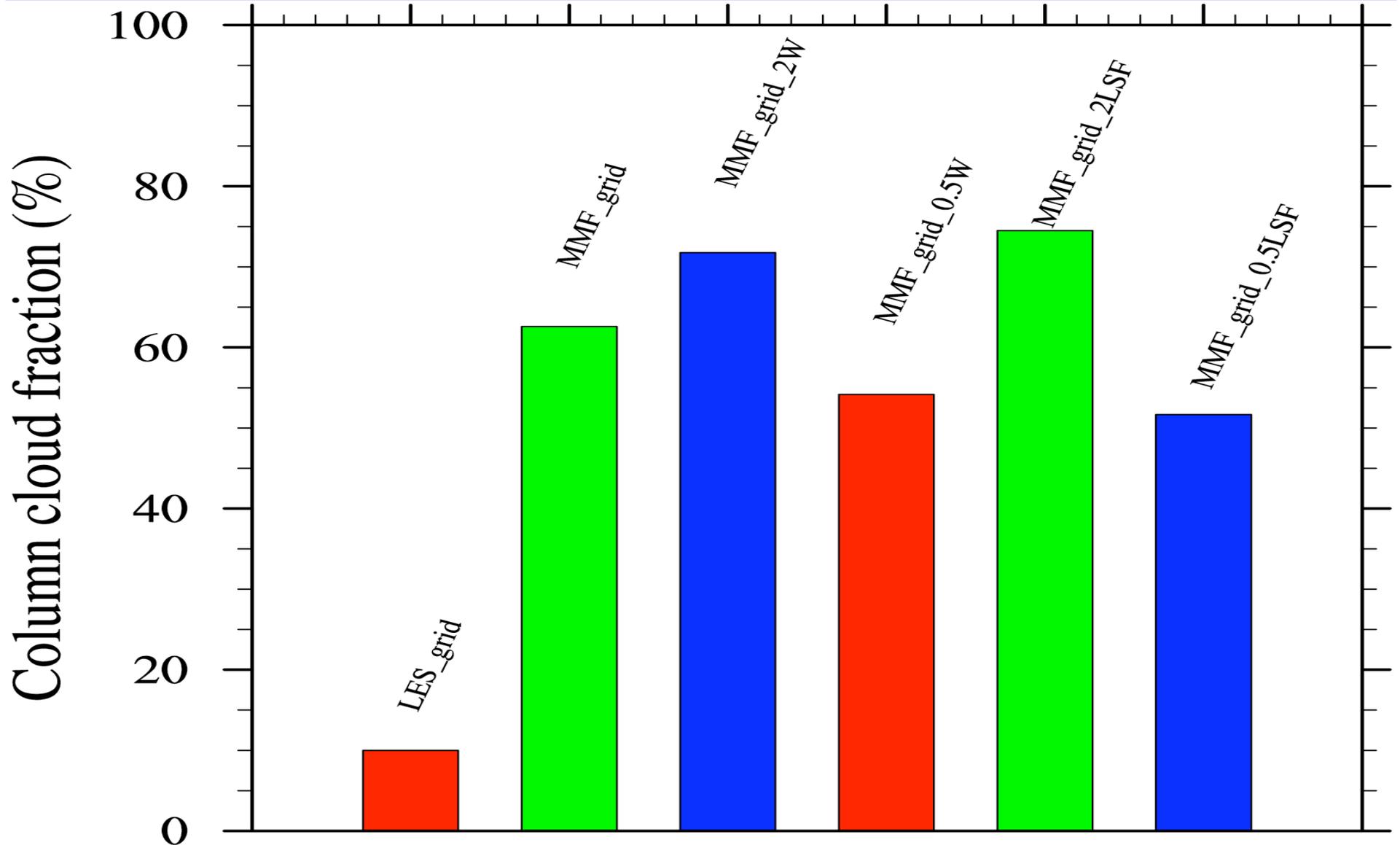
Power Spectra of w at Cloud Top



Power Spectra of w at Cloud base



Sensitivity Experiments on Large-scale Forcing



Discussions

- Increased Cloud amount, liquid-water path and precipitation fluxes with the decrease of resolutions
- Effects of resolving shallow cumulus as stratocumulus clouds with MMF resolution
- Effects of partially resolved scale and subgrid-scale dissipation on power spectra of vertical velocity
- Future work

Thank You!