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Comparing UCLALES-SALSA and WRF-Chem LES

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The new UCLALES-SALSA model, which uses a sectional representation of aerosols and cloud droplets, is compared against the LES configuration of the established WRF-Chem model. Two configurations of WRF-Chem are compared: the first using the sectional MOSAIC aerosol representation, and the second using the modal MADE/SORGAM representation. Both sets of WRF-Chem simulations use the two-moment Morrisson bulk cloud scheme. Wherever possible, the three sets of simulations have identical processes and initial conditions.

By comparing UCLALES-SALSA against an established model in an ideal scenario, we demonstrate that the new model provides a realistic representation of warm cloud processes. The two configurations of WRF-Chem make it possible (to an extent) to isolate whether differences in model outputs are due to meteorological or microphysical effects.