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Turbulent parameterization influence on high resolution numerical modelling of deep moist convective processes

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Nowadays computer power has grown to the point that very-fine-mesh mesoscale modelling is approaching a new issue: the suitability of subgrid-scale turbulence parameterization used in mesoscale models for operation in this scale range (O(1 km) or less). In this work, deep moist convective processes in simplified atmospheric scenarios (e.g. supercell, radiative convective equilibrium) are studied by means of high resolution numerical simulations with Cosmo Model. Particular attention will be paid to determine at which grid-spacing the convection-resolving solutions statistically converge from a turbulence perspective with respect to flow field structure, transport properties and precipitation forecast. Different mesoscale turbulent closures will be used and their impact on the spatial-temporal structure of convective fields in simplified atmospheric scenarios will be discussed