The MUSC Single Column Model

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MUSC, Modèle Unifié Simple Colonne, is a single column version of the HARMONIE-AROME Numerical Weather Prediction model (Bengtsson et al., 2017), which is a configuration of the shared ALADIN-HIRLAM system. MUSC is based on the work of Malardel et al., 2006 and is now embedded in the 3D HARMONIE-AROME code and as such automatically benefits from all the evolutions of the code.

MUSC allows all physics processes to be run in a vertical column; these processes are driven by large scale forcings provided by the 3D HARMONIE-AROME model. MUSC is quick to compile and run and is useful for evaluating model developments and testing changes to physical processes. It also has the advantage that any parameter can be written to the output files which greatly aids analysis.

In this presentation we will give an overview of MUSC and its components and illustrate some examples using idealised test cases including GABLS3 (GEWEX Atmospheric Boundary-Layer Study) and ARMCu (involving diurnal cycle of shallow cumulus over land).

References:

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