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The vertical extension of EMAC to the MLT region.

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We report the first results of an vertically extended version of the EMAC model. The aim of this work is to realistically simulate Mesosphere-Lower Thermosphere (MLT) coupling processes, which have been shown to be important in the context of the energetic particle precipitation and following NO_x intrusions. Such intrusions could impact the ozone budget in the stratosphere and more generally be important for a more realistic representaton the resulting upper branch of the Brewer-Dobson circulation.
Within the EMAC (ECHAM-MESSy) concept the extension is possible once the relevant physical processes and the proper boundary conditions are provided. Following the approach of the HAMMONIA model, the parametrizations for molecular diffusion module, long-wave and non-local thermodynamic equilibrium radiation schemes have been implemented in EMAC, together with the required modifications of the standard parametrizations (e.g. gravity wave and radiation modules). First results of the extended version up to approximately 125km showing the climatology of temperatures and winds are presented.