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# Comparison of single-column vertical mixing schemes designed for the convective boundary layer

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The design of single-column vertical mixing schemes is very important for environmental modelling. They have to be sophisticated enough to comprise atmospheric boundary layer characteristics and to illustrate the basic concepts on boundary layer processes. In the convective boundary layer the mixing is caused dominantly by buoyant plumes originating in the surface layer, rising up to the top of the boundary layer and penetrating into the capping inversion. These mixing processes can be described by the nonlocal approach. Employing nonlocal concept turbulent fluxes are computed as functions of large-scale gradients rather than local gradients, comprising turbulent mixing and transport by eddies of different sizes simultaneously. Therefore, in these schemes mixing occurs not only between adjacent model layers but also between layers at longer distances. In the last two decades it has been shown an evident advantage of nonlocal schemes comparing to local mixing schemes based on analogy with molecular diffusion, for their use in environmental models. The aim of our study is to test and compare: (i) single-column nonlocal and combined local and nonlocal mixing schemes as well as (ii) schemes with constant and varying upward mixing rates, using different types of parameterization for estimation of upward mixing rates.