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Convective mixing of trace compounds: a multi-year model analysis

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Atmospheric convection is one of the major tropospheric overturning mechanisms, but also substantially influencing the tropospheric energy budget as well as the hydrological cycle. Even though there are regions on the globe regularly affected by convection as the inter-tropical convergence zone or the mid-latitude storm tracks, convective overturning is difficult to characterise, since it is usually not measured, but analysed from model calculations. Furthermore, mostly the focus is on the energy and hydrological cycle.
This work analyses the occurrence and intensity of atmospheric convection on the basis of a 40 year chemistry - climate model simulation covering the second half of the twentieth century with transient boundary conditions. The extended time period of the simulation contains information whether the convective activity shows a trend or only inter-annual to decadal variability. Both the dynamic and hydrological aspects will be presented, but also the resulting impact on constituents being strongly affected by convective vertical transport and associated removal by precipitation.