

Abstract Submitted  
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**Convective turbulence in rotating and non-rotating flat Cartesian cells**<sup>1</sup> JOERG SCHUMACHER, Technische Universitaet Ilmenau — Frequently, the lateral extensions of a convection layer exceed the vertical one significantly, e.g., in atmospheric mesoscale systems. We study therefore turbulent Rayleigh-Bénard convection in a Cartesian slab with an aspect ratio of 8. The Rayleigh number is fixed to  $10^7$  and the Prandtl number is 0.7. Free-slip boundary conditions are applied in the vertical direction. Three cases are considered: non-rotating, weakly rotating (Rossby number larger unity), and strongly rotating (Rossby number smaller unity) convection. The variation of the turbulent heat transport and the formation of lateral large-scale temperature patterns are discussed. The large-scale pattern formation, which is observed for the non-rotating case only, is in line with detected clusters of thermal plumes. Extensions of this model to shallow moist convection are also discussed briefly.

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