

TRANSPORT AND MIXING PROCESSES IN RAYLEIGH-BÉNARD CONVECTION AND IN ATMOSPHERIC BOUNDARY LAYERS

PROJECT LEADERS

HEA van den Akker

RESEARCH THEME

Complex dynamics of fluids

PARTICIPANTS

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COOPERATIONS

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FUNDED

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1st 100% 2nd - 3rd -

START OF THE PROJECT

ongoing project

INFORMATION

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PROJECT AIM

The general interest is in turbulent dispersion and thermal convection phenomena in wall-bounded inhomogeneous turbulent flows and associated heat transfer at high Reynolds and Rayleigh numbers. A correct simulation of the near-wall region is then of paramount importance to allow proper Large Eddy Simulations. The current interest is in atmospheric boundary layers and in the formation and life cycle of clouds.

PROGRESS

Some topics from the past have been rounded off. Dr. De Roode joined the department in March 2008. This has broadened and strengthened the atmospheric boundary layer theme. Cloud-topped boundary layers and deep convection are new topics of interest. In addition, we are interested in the exact role of clouds in climate models.

DISSERTATIONS

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SCIENTIFIC PUBLICATIONS

1. Verdoold, J., Van Reeuwijk, M., Tummers, M.J., Jonker H.J.J. and Hanjalic, K., Spectral analysis of boundary layers in Rayleigh-Bénard convection, *Phys. Rev. E* 77, Article Number: 016303 (2008).
2. Van Reeuwijk, M., Jonker, H.J.J. and Hanjalic, K., Wind and boundary layers in Rayleigh-Bénard convection. I. Analysis and modeling, *Phys. Rev. E* 77, Article Number: 036311 (2008).
3. Van Reeuwijk, M., Jonker, H.J.J. and Hanjalic, K., Wind and boundary layers in Rayleigh-Benard convection. II. Boundary layer character and scaling, *Phys. Rev. E* 77, Article Number: 036312 (2008).
4. De Wiel, B.J.H.V., Moene, A.F., De Ronde, W.H. and Jonker, H.J.J., Local similarity in the stable boundary layer and mixing-length approaches: Consistency of concepts, *Boundary-Layer Meteorology* 128 (1), pp. 103-116 (2008).