

**Danchin, Raphaël; Paicu, Marius**

**Global existence results for the anisotropic Boussinesq system in dimension two.** (English)

Zbl 1223.35249

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This paper is a step forward concerning the analysis of a Boussinesq system in 2D, when the diffusivity and viscosity are variable only in horizontal direction and act in only one equation. This model is related with geophysical flows. In contrast with previous papers in the field, the present results are concerning the use of a vertical buoyancy force. Global weak solutions are considered, and existence and uniqueness theorems are obtained, assuming initial velocity in  $H^1$  and initial temperature in  $L^2$ , by using the Friedrichs method. Some very interesting inequalities given in the appendix are used to get a priori estimates of the solution.

Reviewer: [Gelu Paşa \(Bucureşti\)](#)

**MSC:**

- 35Q30 Navier-Stokes equations
- 35B30 Dependence of solutions to PDEs on initial and/or boundary data and/or on parameters of PDEs
- 35D30 Weak solutions to PDEs
- 76D03 Existence, uniqueness, and regularity theory for incompressible viscous fluids
- 76U05 General theory of rotating fluids
- 86A04 General questions in geophysics

Cited in **1** Review  
Cited in **94** Documents

**Keywords:**

[Boussinesq system](#); [geophysical flows](#); [convection](#); [turbulent viscosity](#); [anisotropic](#)

**Full Text:** [DOI](#)

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