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Erratum

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ANALYSIS OF THE HYDROSTATIC APPROXIMATION IN OCEANOGRAPHY WITH COMPRESSION TERM *

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Abstract. The hydrostatic approximation of the incompressible 3D stationary Navier-Stokes equations is widely used in oceanography and other applied sciences. It appears through a limit process due to the anisotropy of the domain in use, an ocean, and it is usually studied as such. We consider in this paper an equivalent formulation to this hydrostatic approximation that includes Coriolis force and an additional pressure term that comes from taking into account the pressure in the state equation for the density. It therefore models a slight dependence of the density upon compression terms. We study this model as an independent mathematical object and prove an existence theorem by means of a mixed variational formulation. The proof uses a family of finite element spaces to discretize the problem coupled with a limit process that yields the solution. We finish this paper with an existence and uniqueness result for the evolutionary linear problem associated to this model. This problem includes the same additional pressure term and Coriolis force.

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