
Primitive equations of the ocean under location uncertainty (LU)

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Résumé

In this talk, I will present the so-called primitive equations of the ocean, which are derived from the 3D Navier-Stokes equations by approximating the vertical momentum relation with the hydrostatic hypothesis. In this context, the location uncertainty formalism (LU) allows to infer a stochastic interpretation of the primitive equations. This is based on the conservation of physical quantities - namely mass, momentum and energy - and typically involve the so-called transport noises. I will expose some results on the existence and uniqueness of the solutions of such stochastic model, and connect them to those of the deterministic setting. I will also discuss how the hydrostatic hypothesis can be relaxed in the stochastic setting, to account for the transport of the vertical velocity by the noise.

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