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Variational Assimilation of Lagrangian Data in Oceanography

M. Nodet (1)

(1) University of Grenoble (maelle.nodet@imag.fr)

Within the framework of Global Ocean Data Assimilation Experiment (GODAE), an increasing amount of data are available. A crucial issue for oceanographers is to exploit at best these observations, in order to improve models, climatology, forecasts, etc. Thanks to the international program Argo and to more localized experiments (such as SAMBA, ARCANE-Eurofloat, ACCE), a new type of data is now available: positions of floats drifting at depth in the ocean. Unlike other data, mainly Eulerian, these ones are Lagrangian: the measuring instruments move in the flow. I will present methods and results about 4D-Var assimilation of Lagrangian data in the OPAVAR ocean model: implementation, sensitivity studies, assimilation of noisy observations, comparison with a classical method, complementarity with temperature data.