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Clustering of floating particles in stratified turbulence GUIDO BOFFETTA, FILIPPO DE LILLO, University of Torino, STEFANO MUSACCHIO, University of Nice Sophia Antipolis, ALESSANDRO SOZZA, University of Torino
— We study the dynamics of small floating particles transported by stratified turbulence in presence of a mean linear density profile as a simple model for the confinement and the accumulation of plankton in the ocean. By means of extensive direct numerical simulations we investigate the statistical distribution of floaters as a function of the two dimensionless parameters of the problem. We find that vertical confinement of particles is mainly ruled by the degree of stratification, with a weak dependency on the particle properties. Conversely, small scale fractal clustering, typical of non-neutral particles in turbulence, depends on the particle relaxation time and is only weakly dependent on the flow stratification. The implications of our findings for the formation of thin phytoplankton layers are discussed.

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