On a stochastic approach of convective motions in the sea driven by random buoyancy inputs on a homogeneous and non homogeneous viscous sea.

V.Bouché[1]

A statistical model for the dynamics of dense water plumes in a sea initially at rest, suddenly perturbed on the air-sea surface by a series of random buoyancy inputs localized on small space and time scales,is presented here. A Lagrangian

representation allows the time evolution for a single mixing plume, able to carry down dense water mass to be discussed. Scale relations are also found out, depending on the surface air-sea interaction statistics involved, in a homogeneous sea. The dissipative mixing effect of the viscosity and the separate slowing down effect of the

stratification on the stochastic behaviour of the single plumes are also discussed. These are shown to be a result of surface heterogeneous buoyancy forcing inputs, so that the necessity of knowing the real air-sea interaction statistics is discussed.

[1]Physics Department-"La Sapienza" University - Rome-Italy
email:vanda.bouche@roma1.infn.it