

Abstract Submitted
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Magnetic Field Induced by a Submerged Inhomogenous Current

DANIEL SOBIEN¹, ERIC PATERSON², Virginia Tech, Aerospace and Ocean Engineering — A one-way coupled approach has been developed for studying the electromagnetic field induced by a submerged inhomogenous current. The method is based upon solving the Navier-Stokes equations, transport equations for salinity and temperature, the UNESCO equation of state for seawater density and conductivity, and a steady-state Poisson equation for the magnetic-field perturbation. The computational domain includes both the ocean and the atmosphere. Simulations are conducted for a net-zero-momentum wake in a linearly stratified ocean, and the influence of depth and Brunt-Väisälä frequency is studied. Simulation data will quantify the magnitude and distribution of magnetic-field perturbation.

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