

## **HYDRODYNAMICALLY DOMINATED SEDIMENTARY PROCESSES IN THE BLACK SEA**

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The bottom sediments of the Black Sea constitute the permanent repository for material retained by the basin that is derived from the surrounding land mass via the atmosphere, rivers, groundwater discharge and coastal erosion. We report here investigations of the energy-and-mass exchange sedimentary processes that determine propagation of pollution in the bottom boundary layer of the Black Sea. Special emphasis has been put on possible propagation of Chernobyl radioactive substances via physical mechanisms such as the global circulation, near-bottom gravity and turbidity currents, internal waves, large-scale eddies and chemical processes in near-bottom layer. One of the key problems in this program has been the modeling of mechanisms of the backward transport of radionuclides during bottom storms from deep water regions toward the beaches and surf zone of the Black Sea. We have investigated the near-bottom density and turbidity current diagnostics and calculation methods for the forecast of these flows on radionuclide transport. Such currents may be catastrophically powerful and may contaminant surrounding waters over tens of meters above the bottom level. The elaboration of current structure diagnostic methods based on the results of spectra analysis of suspended particle size and of current parameter distributions measurements have been performed both in depth and in time. The experimental base allowed development of diagnostic methods and mathematical models which were combined into a general model of the Chernobyl radionuclide fate in the Black Sea sediments.