
**NRL STENNIS' FIELD AND MODELING EFFORTS IN THE TURKISH STRAITS SYSTEM, THE BLACK SEA
AND THE AEGEAN SEA**

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Abstract

Large bodies of water are often interconnected through narrow channels or sea straits. The exchanges of water, heat, salinity, and regional biochemical properties through these straits influence the larger regional scale oceanography and are governed by complex physical processes. Thus, two new Naval Research Laboratory (NRL) programs focus on strait dynamics and their impact on the dynamics of adjacent seas. The area of interest for these two programs is comprised of the Turkish Straits System (TSS) and adjacent seas (Black and Aegean Seas). The observational program is primarily focused on the Bosphorus and Dardanelles Straits. During the one-year field work, current, salinity, temperature, and microstructure measurements will be carried out within and near these two straits. The modeling effort will encompass the TSS, Black, and Aegean Seas by combining a structured grid, high-resolution regional hybrid coordinate ocean model with a baroclinic finite element-based model. The Black and Aegean Sea basins will adopt implementations of the structured grid, HYbrid Coordinate Ocean Model (HYCOM). In the TSS, the unstructured grid, finite element ocean model (DG-ADCIRC) will be applied. DG-ADCIRC is the newly developed, baroclinic ocean model based on an inherently conservative, discontinuous Galerkin, finite element methodology, and is well-suited to represent the complex dynamics of the narrow and shallow TSS.

Keywords : Black Sea, Aegean Sea, Models, Hydrology, Remote Sensing.