

# **MASTER OF SCIENCE IN PHYSICAL OCEANOGRAPHY**

---

## **A WIND-FORCED MODELING STUDY OF THE CANARY CURRENT SYSTEM FROM 300 N TO 42.50 N**

**Daniel W. Bryan-Lieutenant, United States Navy  
B.S., United States Naval Academy, 1990**

**Master of Science in Physical Oceanography-June 1998  
Advisor: Mary L. Batteen, Department of Oceanography**

A high-resolution, multi-level, primitive equation ocean model is used to investigate the roles of wind forcing and irregular coastline geometry in the generation of currents, eddies, jets and filaments in the Canary Current System (CCS) from 300 N to 42.50 N. To study the generation, evolution, and sustainment of the currents, eddies, jets and filaments in the CCS, the model is forced from rest using seasonal climatological winds and a realistic coastline. Results of the experiment show that wind forcing alone is capable of generating surface currents, undercurrents, meanders, eddies, and filaments. Preferred eddy generation locations, enhanced growth of meanders, eddies, and filaments are seen. The features produced by the model are consistent with available observations of the CCS.

**DoD KEY TECHNOLOGY AREAS:** Battlespace Environment, Environmental Quality, Modeling and Simulation

**KEYWORDS:** Primitive Equation Model, Canary Current System, Currents, Meanders, Eddies and Filaments