

Postdoctoral Fellow – Forecasting the Gulf of Mexico Loop Current System

We seek a postdoc to work collaboratively with oceanographers at the University of Rhode Island (URI) and at the US Naval Research Laboratory- Stennis Spaceflight Center (NRL-SSC) to improve numerical forecasting of the Gulf of Mexico and its Loop Current System.

Opportunity / background. Processes in the Gulf of Mexico Loop Current and Loop Current Eddies, interacting with sea floor topography, drive essentially all strong subtidal current variability from sea surface to sea floor in the deep Gulf of Mexico. Close dynamical analogies exist to atmospheric jet stream meanders and storm systems, interacting with Earth's topography, and our forecasting developments build upon these similarities.

A key gap exists in forecasting of ocean currents and thermal structure: Almost all input data for model assimilation are from near-surface measurements. This arises because until recently in the ocean only surface data have been available in near real time. In contrast in the atmosphere, barometric pressure and observational profiles of temperature, density, and wind vectors are available through the full air column on a suitable grid of sites to forecast the weather.

Cost-effective ways now exist to report subsurface ocean observations in near real time, and the methods are particularly applicable in marginal seas such as the Gulf of Mexico. Subsurface ocean observations assimilated into predictive numerical models offer fundamental advancements in forecasting skill for ocean currents and thermal structure.

Objective: Develop methods to use deep current and bottom pressure observations to extend forecasts of the strongly varying deep current systems in the Gulf.

Science collaborators: Prof. Randolph Watts and Prof. Kathleen Donohue at URI; Dr. Clark Rowley and Dr. Prasad Thoppil at NRL-SSC.

Requirements and Preferences: Candidates should have a PhD, and a broad range of experience will be considered, such as physics, mathematics, engineering, meteorology, physical oceanography. Some preference will be given for a background in mesoscale/synoptic scale processes in the ocean/atmosphere, and for data assimilation in ocean/atmosphere modeling. There is a strong preference for candidates who are US citizens or permanent resident (green card), to have access to NRL computer systems.

Application Instructions: send to randywatts@uri.edu, using "Post Doc Position" as subject line:

- Cover Letter & Research Interests (2 pages max)
- CV
- Contact information for two professional references

Evaluation of applications will begin on **March 19th, 2024**. The position's anticipated start date is June 1, 2024, and will remain open until filled. The position is initially for a one-year appointment, and is renewable with 2 years funding in hand. Funded by the National Academy of Sciences, Engineering, and Medicine under the Understanding Gulf Ocean Systems program.