Imperial College London

Natural Environment Research Council

2023_03_Planetary helical motion in the ocean

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Department: Physics

(a) Motivation for the project

I have developed an algorithm computing "neutral trajectories" in the ocean but it needs to be improved in terms of numerical accuracy and efficiency --hence this project. Neutral trajectories are important to compute because they correspond to the pathways for the extra heat and carbon that the ocean is storing as a result of anthropogenic forcing.

(b) Context and background

NERC identified modelling, data management and numeracy as the first, third and fourth skills critically needed, respectively, for environmental sciences. This project will train extensively the undergraduate student in these three areas. It will also address NERC societal challenge of managing environmental change by bringing insight into mechanisms of heat and carbon uptake by the global ocean.

(c) Objectives and methodology

This project will be in collaboration with colleagues at the National Oceanographic Centre in Southampton and at least one visit to the centre is expected. This networking and interactive aspect of the project will give the student a broader experience of research than "simply computing". The timetable for the project is realistic, given that a code has already been written in Python and that a previous project has highlighted the specific areas to improve.

Project length: 6 weeks