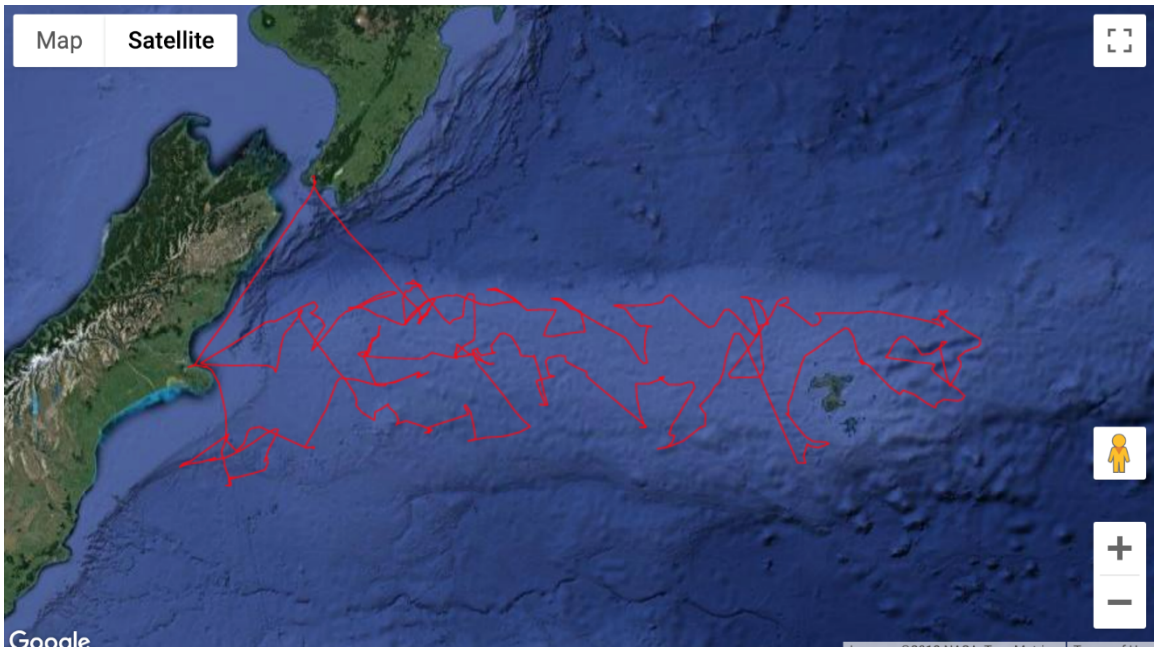
Project outline

Supervisors: Gustav Delius (York), Samik Datta (NIWA, New Zealand)

This project focuses on multi-species marine ecosystem modelling in New Zealand. Chatham Rise is a highly productive area off the east coast of the South Island of NZ, with high biodiversity, resulting to several high-profile fisheries and regular research surveys carried out by NIWA over the last three decades. There are three ecosystem models constructed to represent the wide range of interacting species in the region, including Atlantis (a high-resolution 3D, spatially-explicit, trophodynamic ecosystem model), a mass-balance food web model, and a size-structured model built using the R package *mizer*. The last of these will be the focus of this project.

The purpose of the project is to investigate aspects of the 30-species *mizer* model and compare model dynamics with empirical data from the research surveys carried out in the region. This will involve studying the system at steady state (i.e. when all species are at equilibrium) and under historical fishing pressure. Using appropriate data, we are particularly interested in if the diet composition of species and fishing yields line up with known data sources. Other questions may arise upon investigation of the model dynamics, and we are open to discussing specific topics the student is interested in.

The project will involve coding in R, and previous experience in this programming language would be advantageous.



The course taken by the RV Tangaroa to the Chatham Rise, off the east coast of New Zealand, for the hoki survey carried out in Jan – Feb 2018.

Credit for image: NIWA.