

SURFO 2023

Matt Wei, Associate Professor

Title: Using ocean circulation models to constrain the correlation distance of ocean currents along major subduction zones

Short description: This project is motivated by interdisciplinary research between geophysics and physical oceanography. Several recent large earthquakes in subduction zones show that seafloor started to deform slowly shortly before these earthquakes, suggesting that seafloor deformation could be used to predict large earthquakes. However, measure this deformation in the ocean is challenging. Mostly, ocean currents add noise to the seafloor pressure data, which is the most common way to measure seafloor deformation. In this project, you will download output of seafloor pressure from several global-scale ocean circulation models to analyze how ocean currents along subduction zones affect seafloor pressure. You will calculate the correlation of seafloor pressure between two locations along or cross the slope. The results will help guide future field projects to measure seafloor deformation.

Location: The project could be done either in-residence or online.

Student preparation: Coding experience with python or Matlab is required. Experience with data processing and analysis is preferred.

Mentor: Lingchao He (graduate student)

The student may contact me if interested: matt-wei@uri.edu