Objective

Build a downscaling framework to produce high-resolution regional climate projections of ecosystem variables for the California Current System (CCS)

Time-Varying Delta Method

Control run (REGIONAL)
Regional Ocean Model System coupled with a biogeochemistry model (ROMS-NEMUCSC)
Atmospheric forcing: ERA5, CCMP
Open boundaries: SODA, WOA

Resolutions:
ESM Atmosphere ~ 200Km
ESM Ocean ~100Km
ROMS ~10Km

Anomalies relative to the historical climate

Sea Surface Temperature

Future Work & Take-Home Message

Mini-ensemble of CMIP6 models
Understand and quantify the variability of the physical mechanisms that drive changes in the biogeochemistry of the California Current Upwelling System in response to anthropogenic climate change

Until large ensembles of eddy-resolving global or regional models are computationally feasible, a fruitful approach is to combine coarser resolution large ensembles with dynamical downscaling of select runs informed by analyses similar to what we have performed here to assess how representative basin-scale changes are translated to shelf-scale responses.