Research Plan for the Kuroshio Extension at the Korea Institute of Ocean Science & Technology (KIOST)

Young-Gyu Park, Hanna Na, Dong Han Choi, Sang Hoon Lee, Kiseong Hyeong, Ki Young Choi
Korea Institute of Ocean Science & Technology, Ansan, Korea

Overview

understanding environmental variability in the Kuroshio Extension region

physical variability
- months to decades
- glacial to interglacial
- mooring
- altimeter
- numerical model

material cycle
- biogeochemical cycle
- ecosystem structure
- sediment trap
- C & N cycle, productivity
- food web
- biodiversity

water mass structure & mixing
- seismic oceanography
- microstructure
- high resolution turbulence model

2017 cruise

Oct. 16 (Busan, Korea) – Nov. 12 (Guam, USA)

- 1 tall mooring, 2 CPIES, CTD (with extensive water sampling), sediment core, seismic oceanography, etc.
- 2018 and 2019 cruises also planned

Circulation, Biogeochemistry, Ecosystem

- 2-year mooring & satellite data & reanalysis products
- flow variability of the downstream Kuroshio Extension
- current-eddy-topography interaction

Current Pressure recording Inverted Echo Sounder (CPIES)

- 75 kHz ADCP (upward looking)

Seismic oceanography

- temperature, salinity, and seismic velocity along the observation line near the Shatsky Rise from numerical model
- Past variability of Kuroshio Extension and associated frontal systems from sedimentary records
- Changes of westerly jet path over glacial-interglacial cycles

Paleoclimate

- sediment core over the Shatsky Rise
- what we already have
- what we plan to have

- Past variability of Kuroshio Extension and associated frontal systems from sedimentary records
- Changes of westerly jet path over glacial-interglacial cycles

Schematic from http://www.po.gso.uri.edu/dynamics/IES/index.html

Seismic survey

- seismic-derived water mass structure
- seismic velocity based on the model results