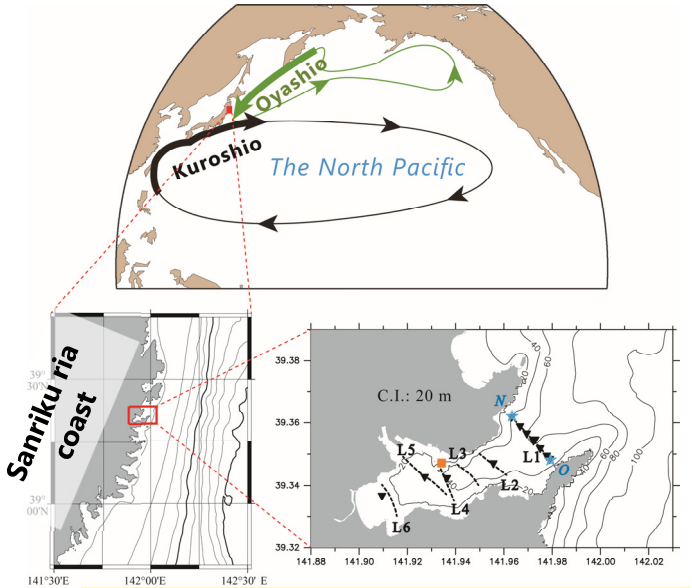
Toward High-Resolution Physical Oceanographic Observation Using Fishing Boats in Many Coastal Seas Around Japan

Kiyoshi Tanaka, Yutaka Michida, Daigo Yanagimoto (Atmosphere and Ocean Research Institute, University of Tokyo)

【1. Background】

- Major western boundary currents (Kuroshio & Oyashio) flow along the coast of Japan.
- There are active exchanges of water, momentum, and vorticity between the coastal seas and the western boundary currents through meso- & submeso-scale dynamics, often with baroclinicity.



An example of observation sites (the Sanriku ria coast area).

【2. Aims】

- We are aiming to develop skills of high-resolution physical oceanographic observation in many coastal seas around Japan, especially in the areas where high-resolution surveys using CTD and ADCP have not been conducted.

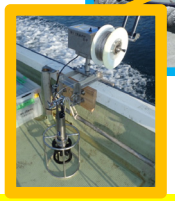
【3. Shipboard Observation 】

- A great deal of importance should be attached to synergistic cooperation with local fishermen, because the in situ observation over the coastal seas in Japan, where many fishing implements are placed, cannot be made without support from fishermen.

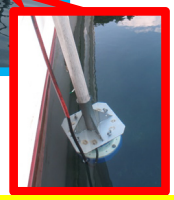
Farming of oyster in Hirota Bay.

- The other point worth noting is that an observing system is required to be easy to carry and assemble, because there are usually no research vessels or boats equipped with CTD and ADCP in most of the coastal seas.

An ordinary fishing boat.



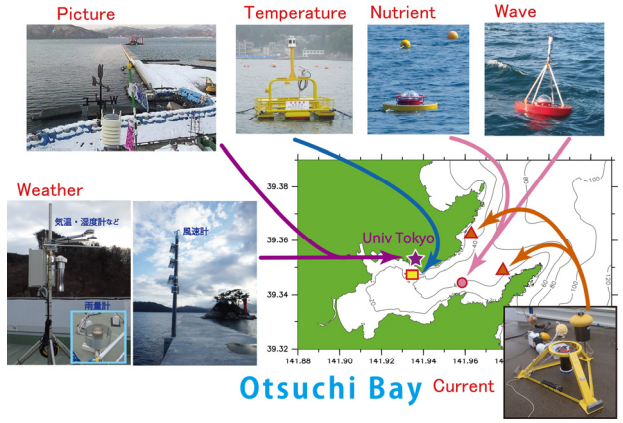
CTD (JFE Advantech) & Winch.



ADCP (TRDI Workhorse).

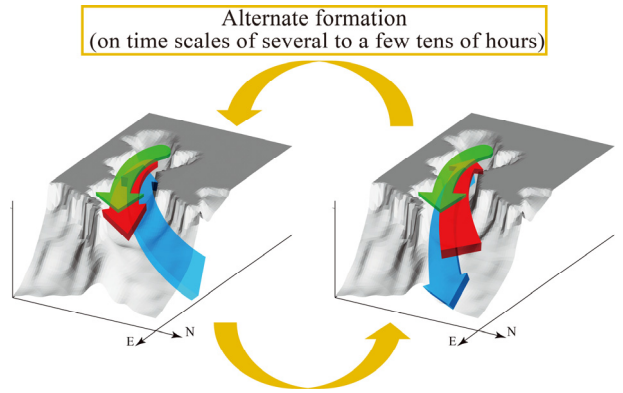
【4. Mooring Observation 】

- In order to complement the instantaneous shipboard observation, mooring instruments (current profilers, thermometers, wave sensor, weather station, and so on) have also been deployed in the bay.



Hydrographic monitoring system in Otsuchi Bay.

【5. An example of the obtained results 】



A schematic view of the summer stratified currents in Otsuchi Bay.