GEOTRACES Activities in China 2012-2013

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By China-GEOTRACES Working Group

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- **Capacity building**
- **GEOTRACES-relevant research in China**

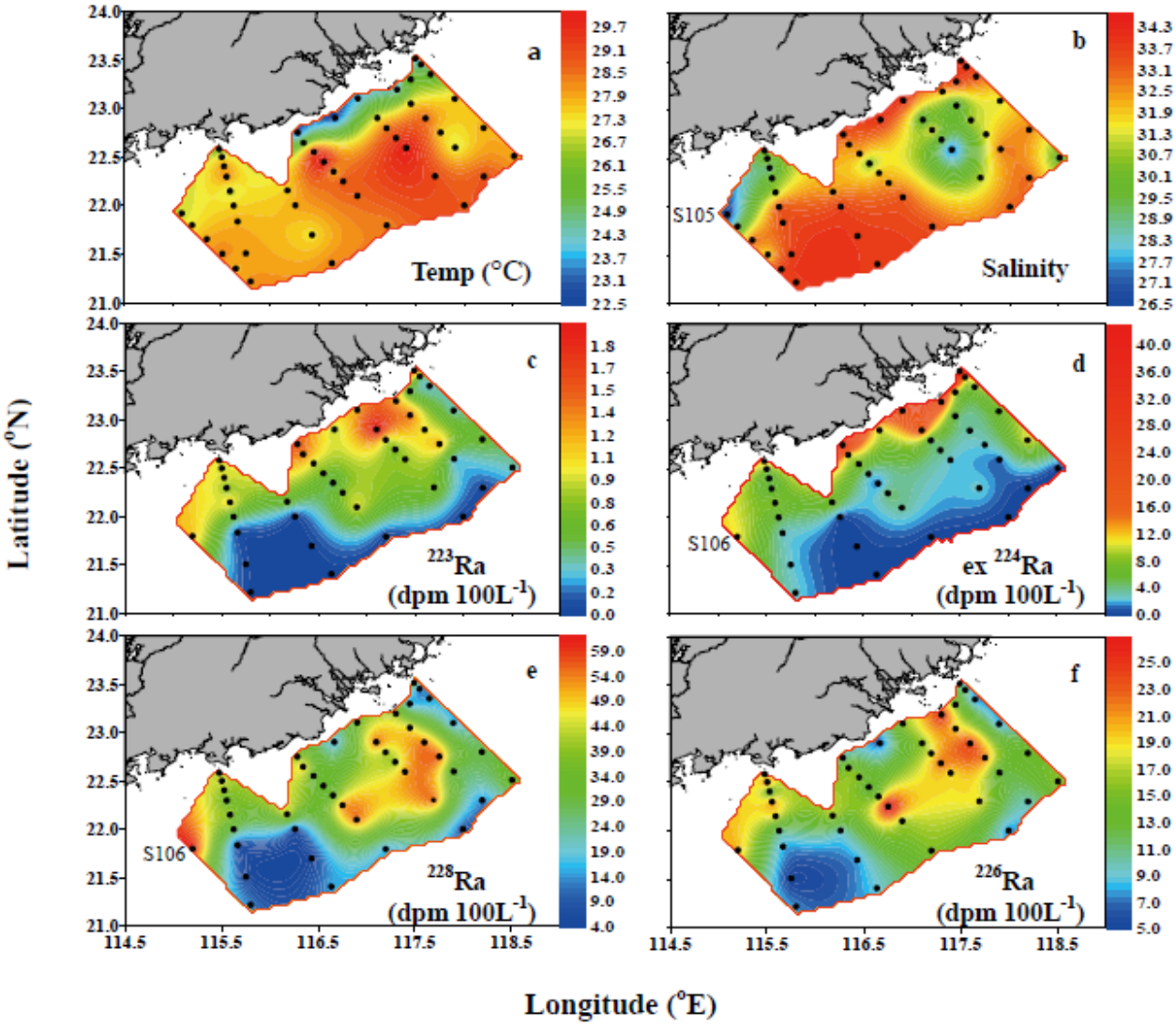
A NEW R/V BEING Built

The design of the new vessel has been accomplished

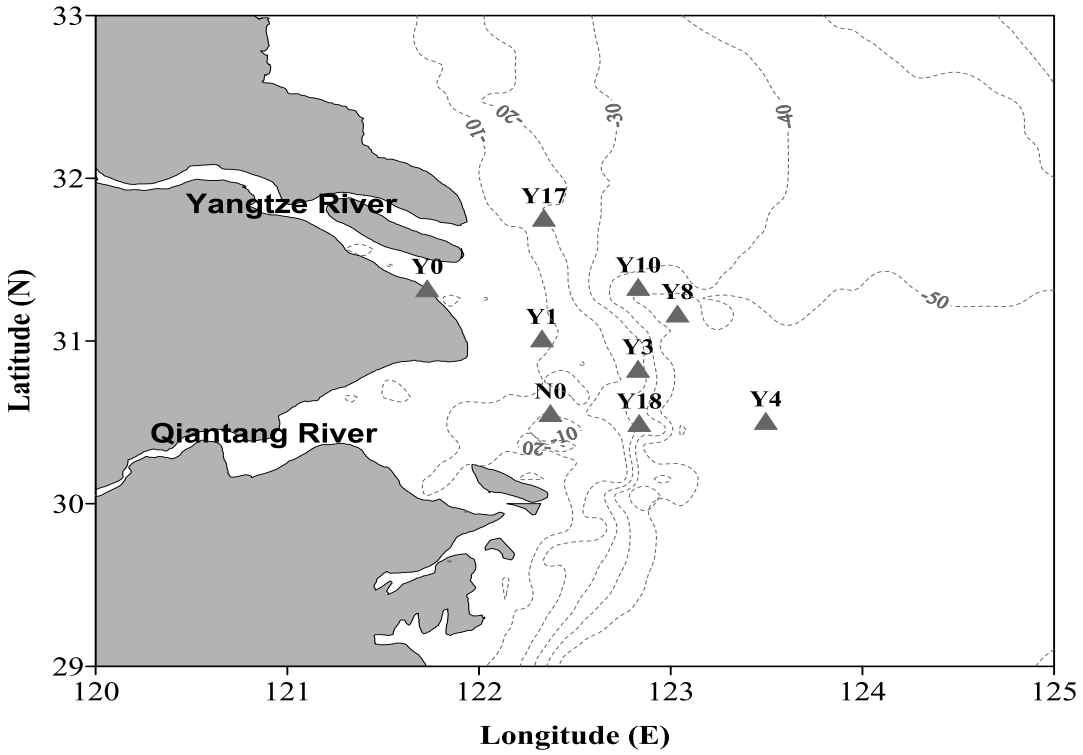
1. **The new vessel will be available in 2015.**
2. **Chris Measures and his colleagues are helping to set up the clean sampling system.**

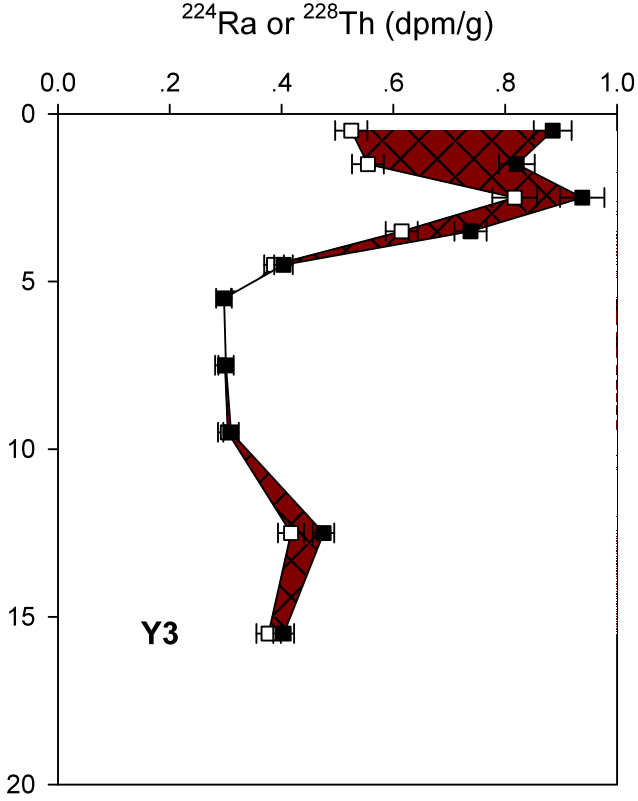
GEOTRACES-relevant research

1. Assessment of Submarine Water discharge in the northern South China Sea using radium isotopes (Liu et al., 2012, BG)

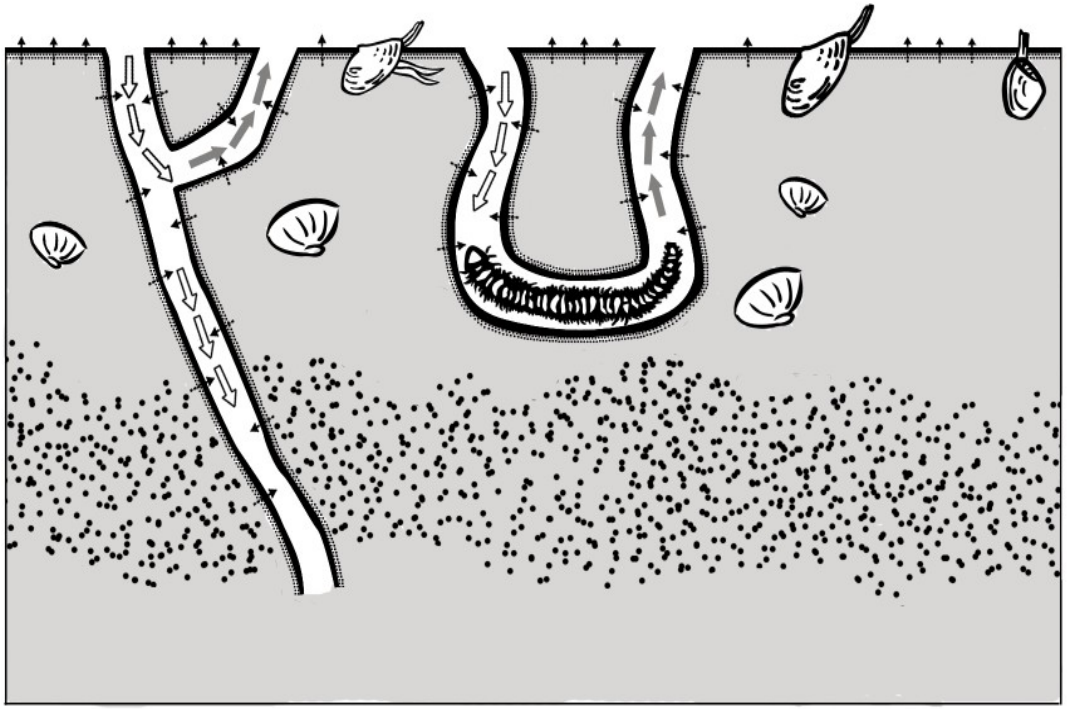


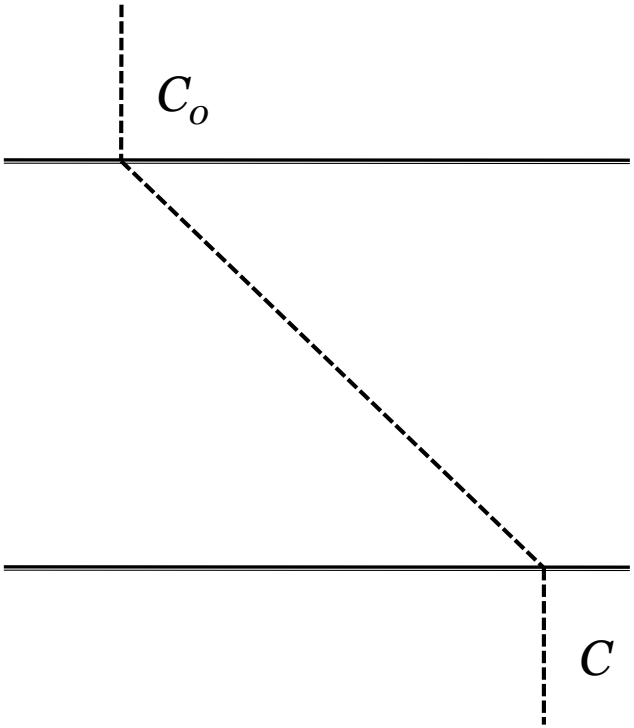
2. Study on the exchange of sediment-water interface using $^{224}Ra/^{228}Th$ disequilibrium (Cai et al., 2013, GCA)





A conceptual diagram of the $^{224}Ra/^{228}Th$ approach to determination of the transfer rate of dissolved species:





The steady-state flux of a species:

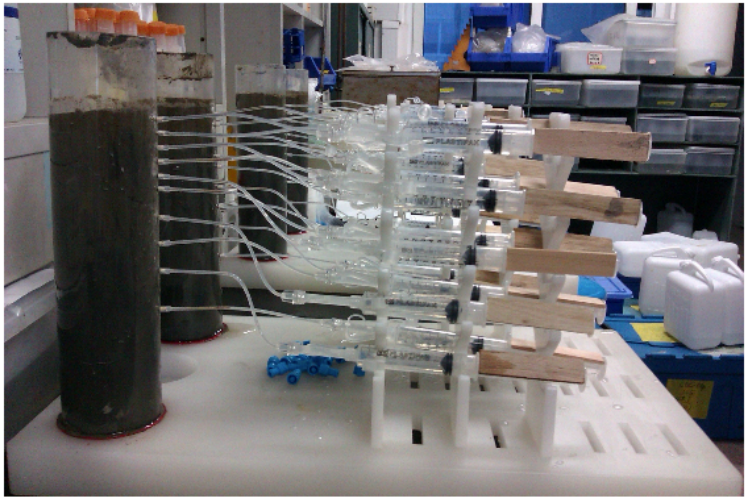
$$F = -\xi\phi D_s \frac{\partial c}{\partial z}$$

where ξ is an area factor

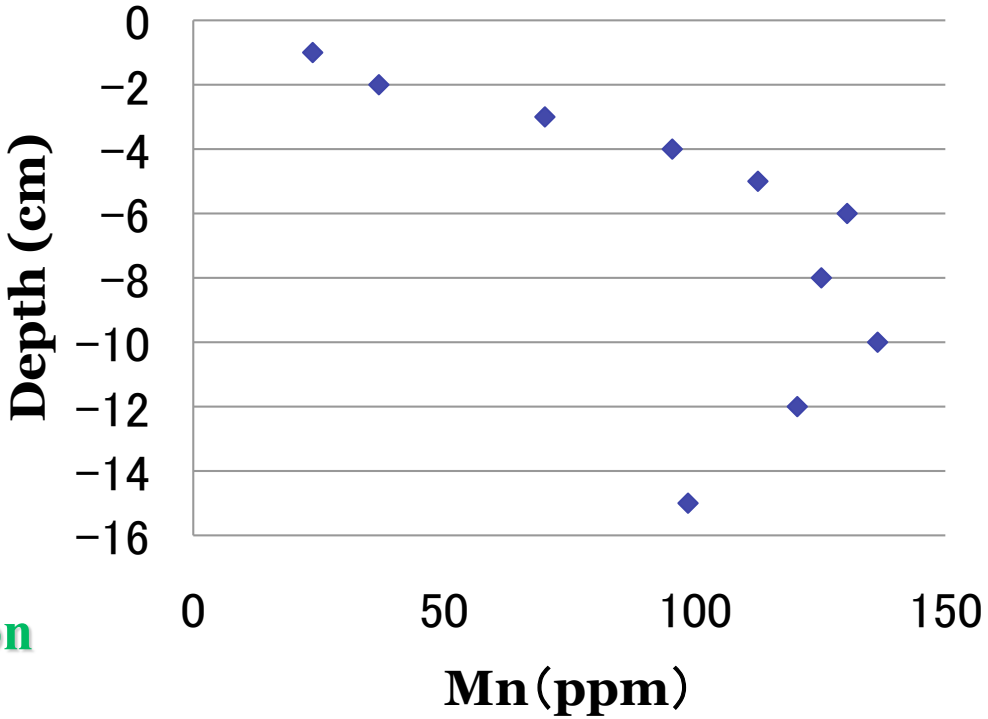
Based on the measured flux of ^{224}Ra, we have:

$$F_i = F_{Ra}\left(\frac{D_s^i}{D_s^{Ra}}\right)\left(\frac{\frac{\partial c^i}{\partial z}}{\frac{\partial c^{Ra}}{\partial z}}\right)$$

In principle, the $^{224}Ra/^{228}Th$ approach can be used to determine the benthic flux of trace metals (like Fe, Mn…) from coastal sediment.

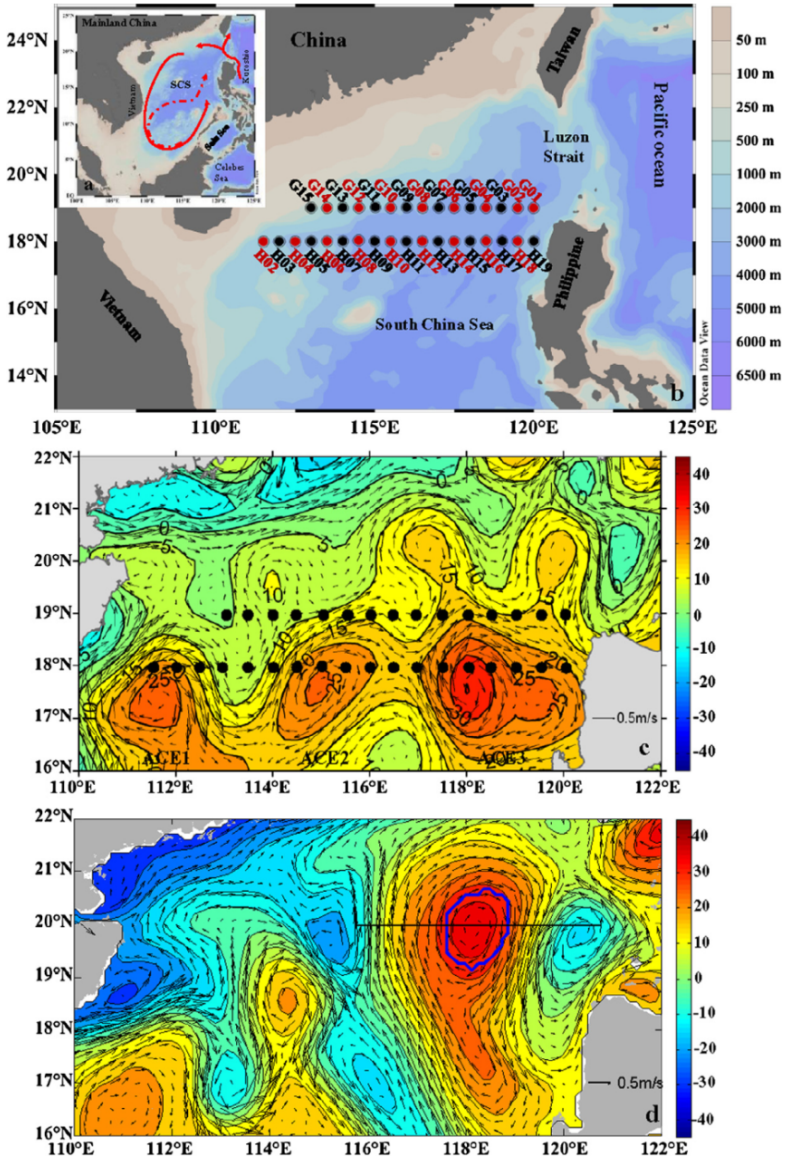


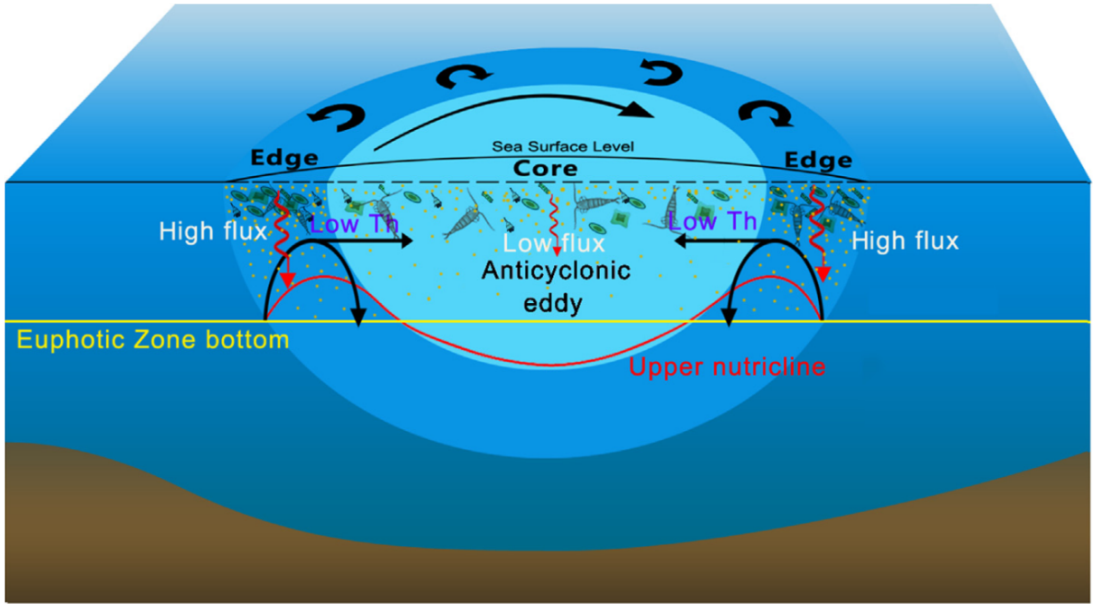
Pore water extraction using a Rhizon sampling system



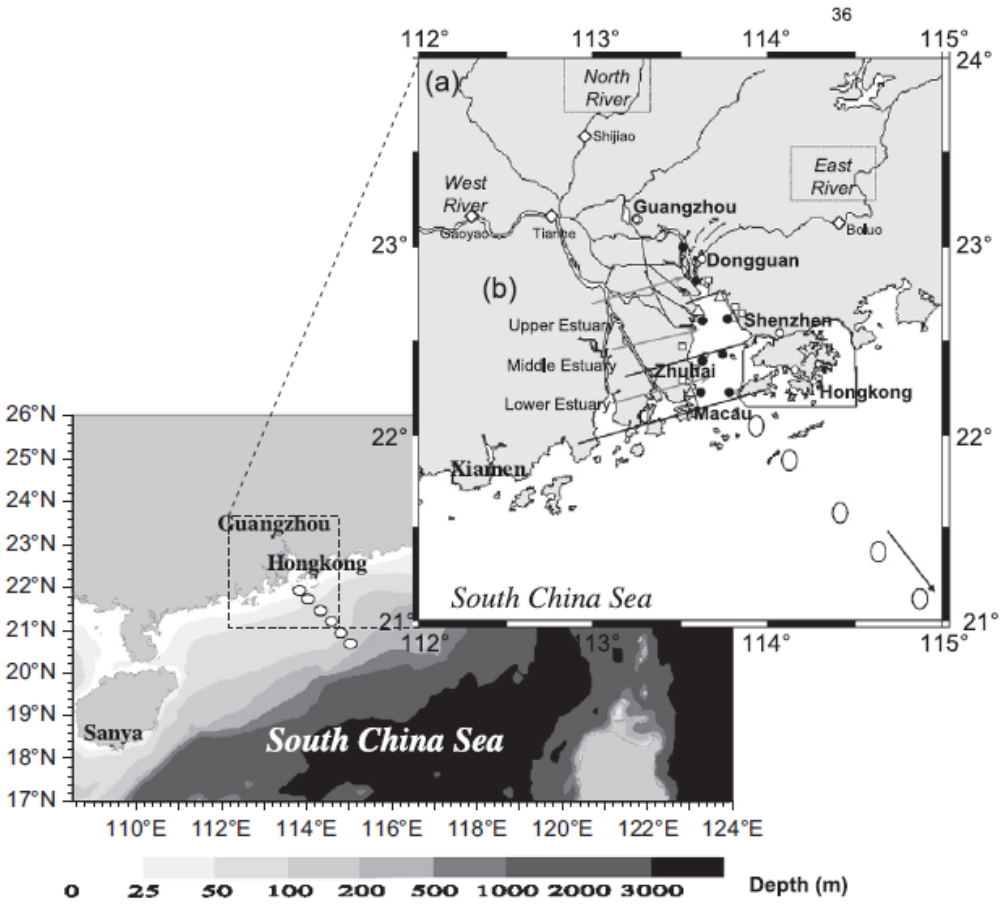
A depth profile of pore water Mn in the Pearl River estuary

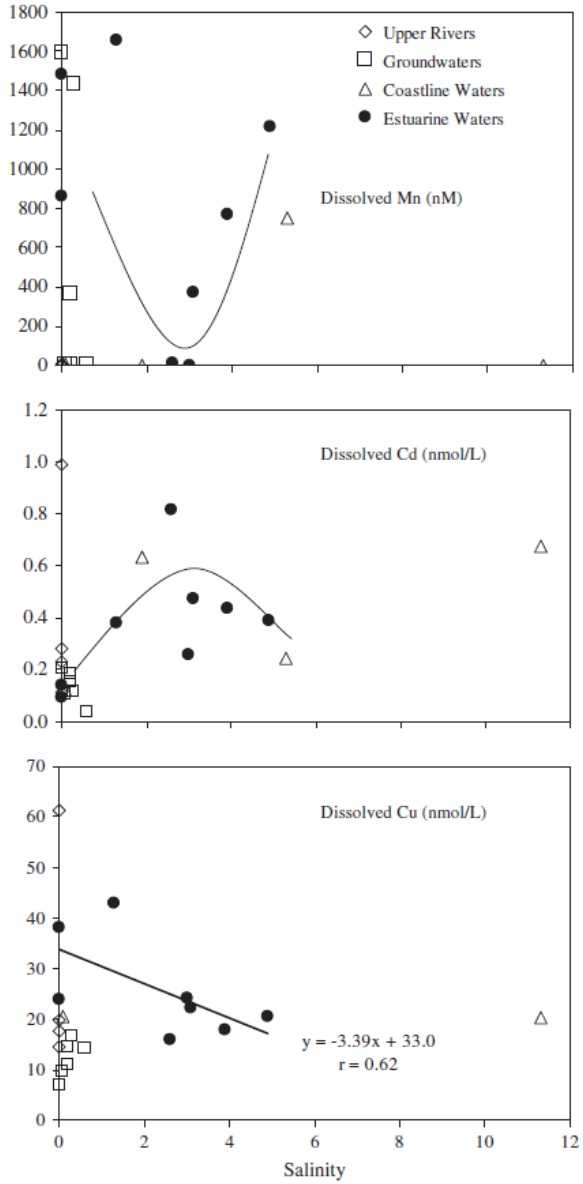
3. Investigations on POC export in warm eddies using $^{234}Th/^{238}U$ disequilibrium the Pearl River estuary (Zhou et al., 2013, EPSL)





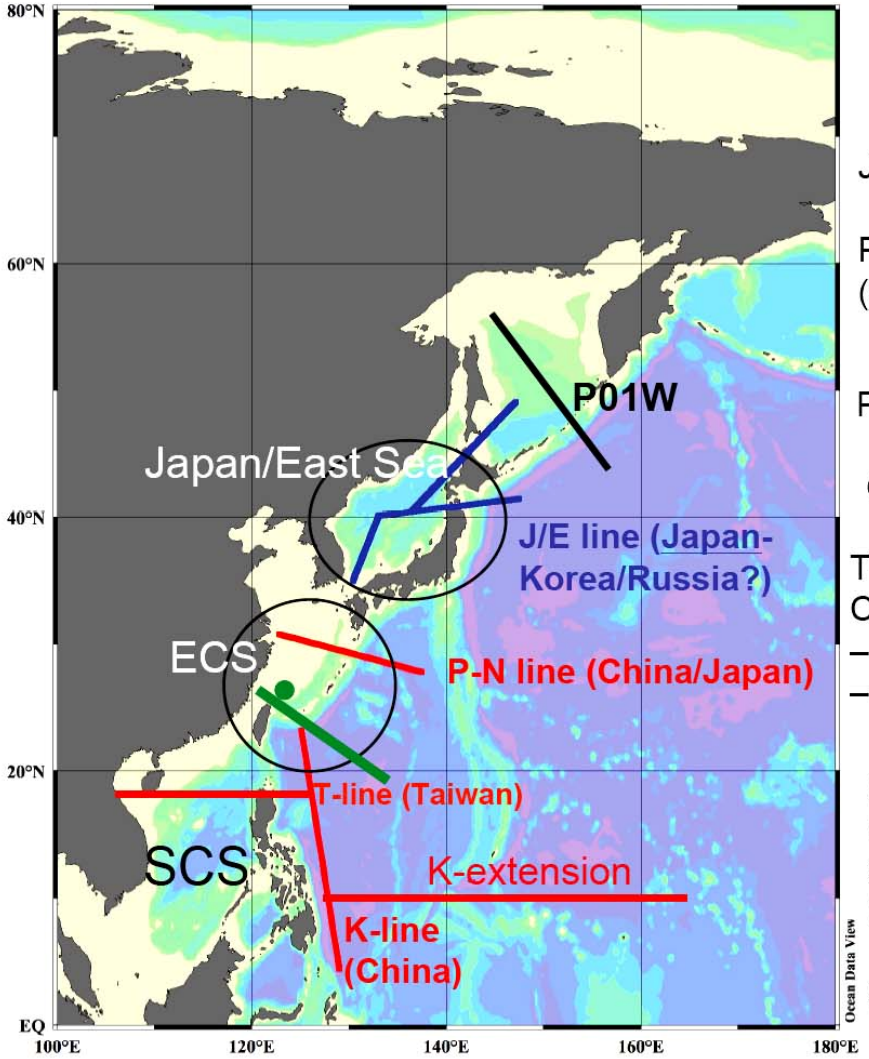
4. Study on Cu, Cd, and Mn in the Pearl River estuary (Wang et al., 2012, CSR)





Outlook

Study area and proposed cruise lines



Lines for the marginal seas in the Northwest Pacific:

P01W line

J/E line :
ECS (the Korea/Tsushima strait) - NW Pacific(Tsugaru strait)/Okhotsk Sea (Soya Strait)

P-N line :
Yangtze estuary – ECS shelf
Okinawa Trough – the NW Pacific

T- line :
Coast of China – north coast of Taiwan – Okinawa Trough (hydrothermal vent) – the NW Pacific

K- line :
East coast of the Philippine –
Southern part of Okinawa Trough
K-extension: along 18oN to 165oE

SCS-line

GEOTRACES process study cruise in NW Pacific

- When the new vessel is available, we should organize a GEOTRACS cruise in 2016.