

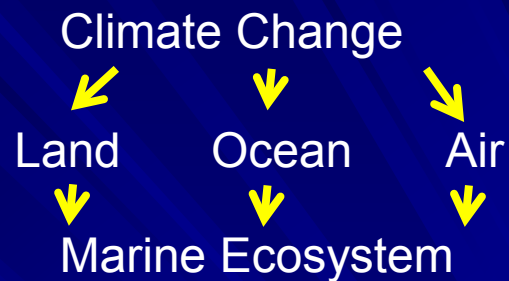
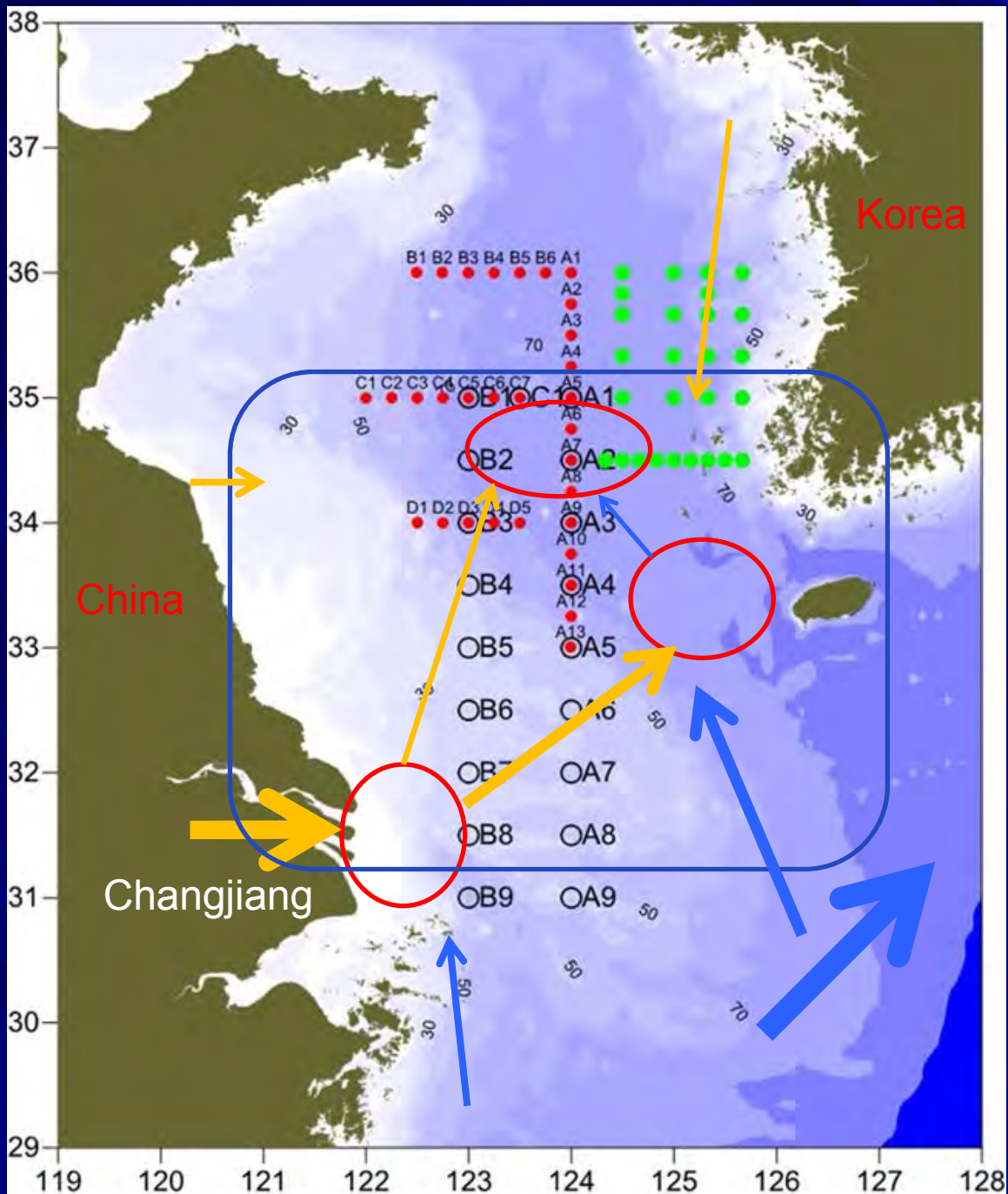
PICES 2015 annual meeting

Effects of **Changjiang Diluted Water** on the planktonic ecology of the **Yellow Sea Cold Water Mass**

PU Xinming, WANG Zongling

First Institute of Oceanography, State
Oceanic Administration
Oct 15, 2015, Qingdao





Eutrophication

Spring/Summer
phytoplankton bloom

Hypoxia

Primary production and
species succession

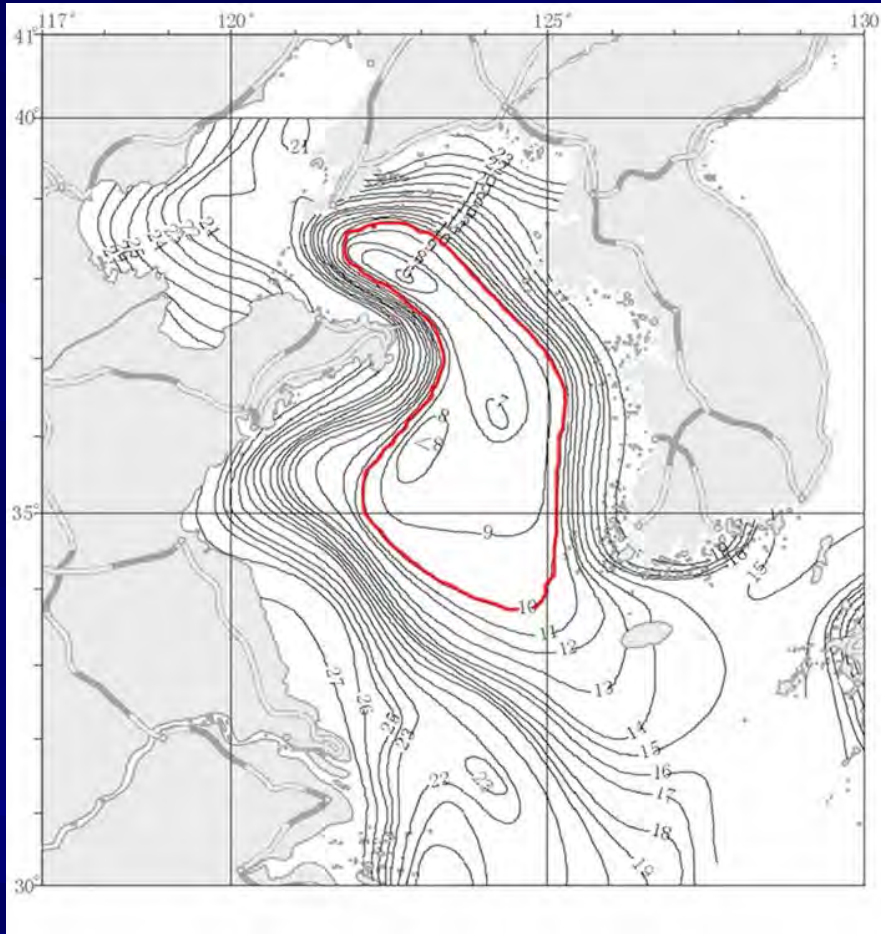
Zooplankton population
and community dynamics

Fish and Jellyfish

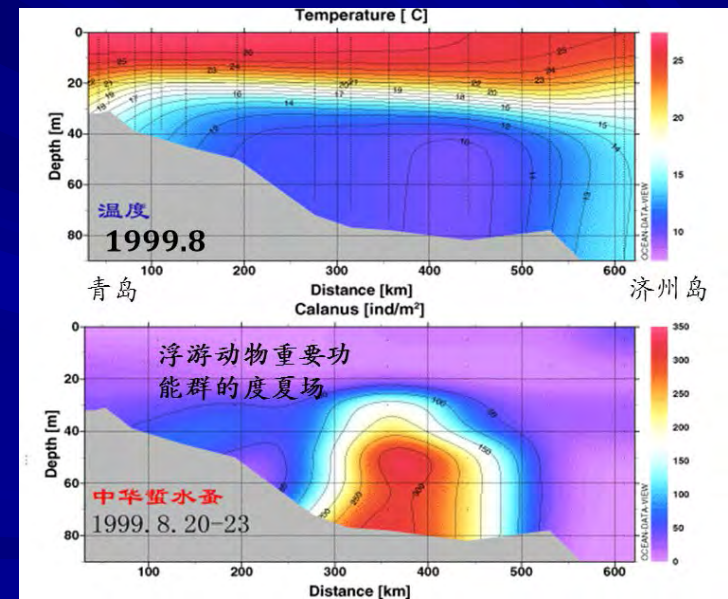


YSCWM

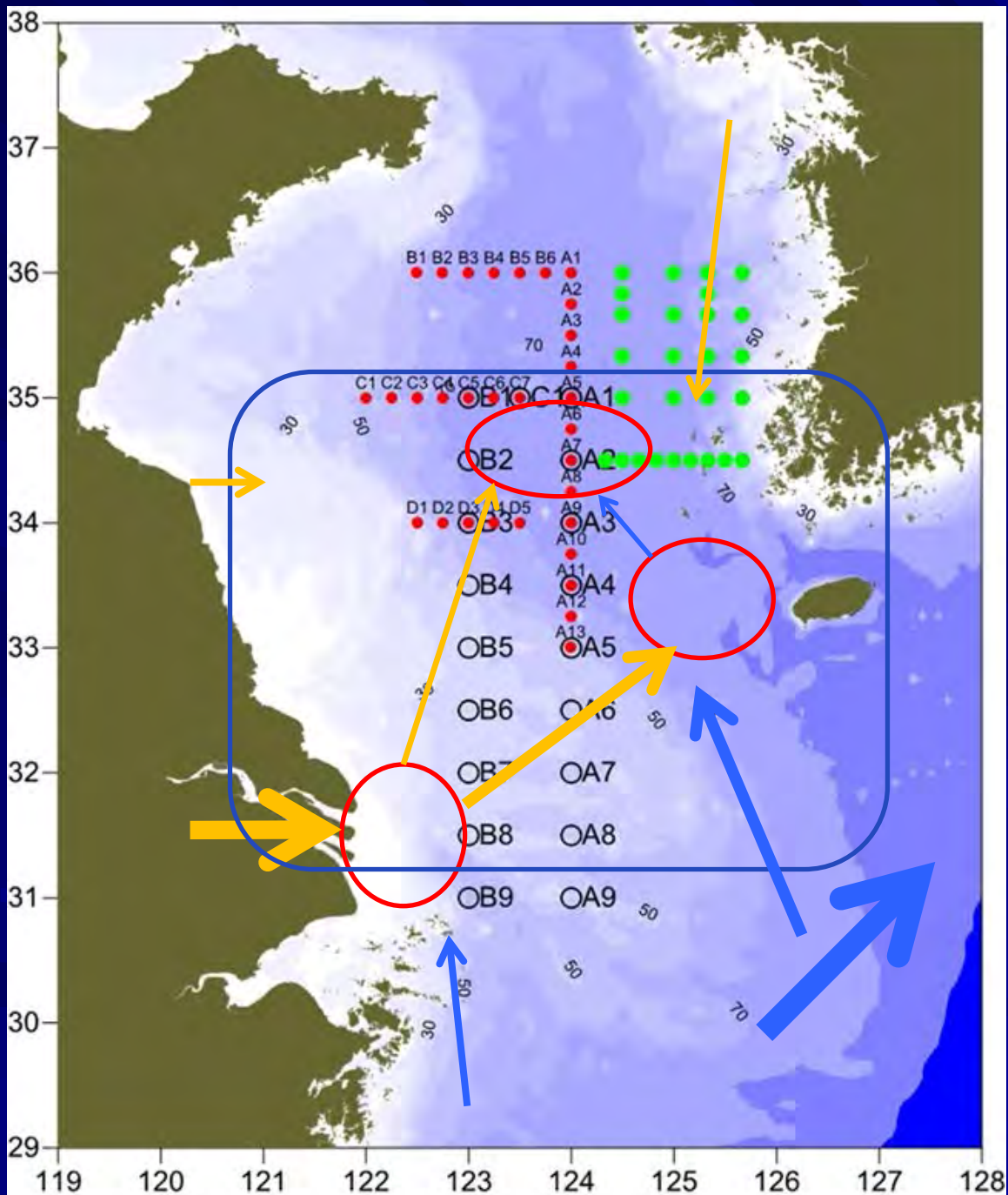
- strong thermocline
- Low nutrient and Chla at surface
- Pico- and nano- sized phytoplankton
- Bottom gathering of inactive zooplankton



Average bottom temperature in August (GUO, 2004)



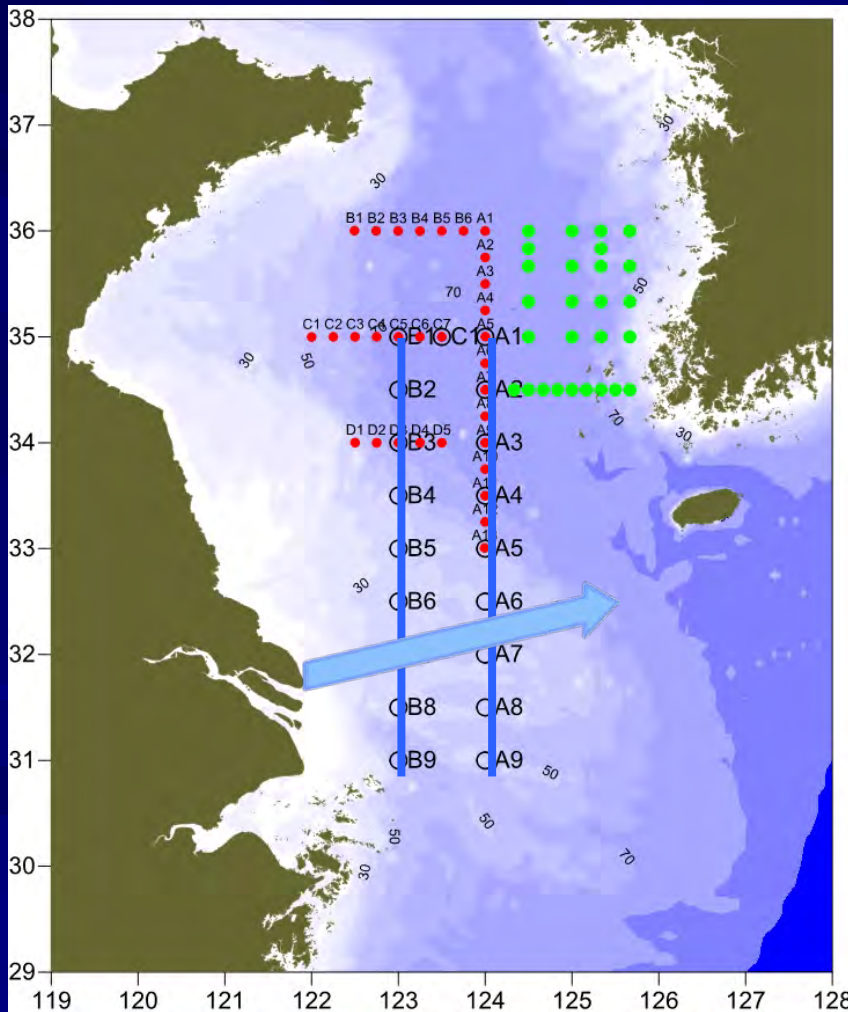
Sun et al, 2002



External forces of YSCWM

- Kuroshio / warm current
- Coastal currents
- Air
- **Changjiang Diluted Water**

Changjiang Diluted Water: one of the most important external forces

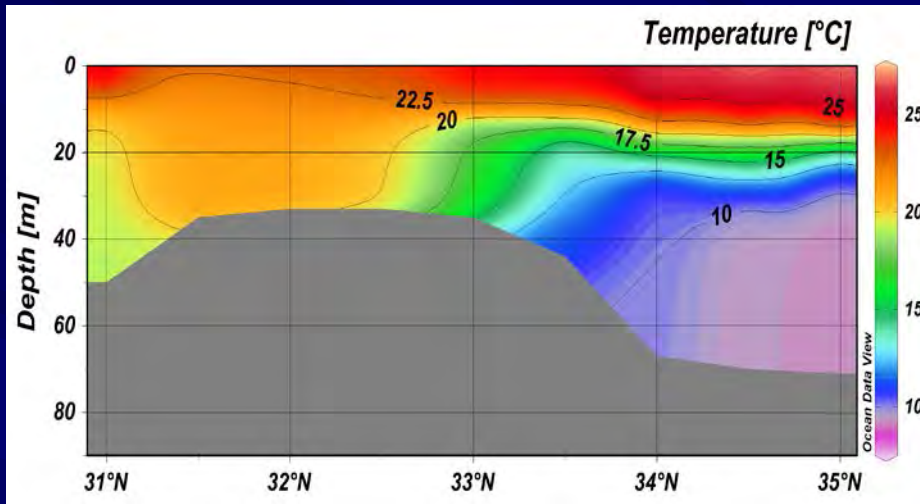


Parameters:

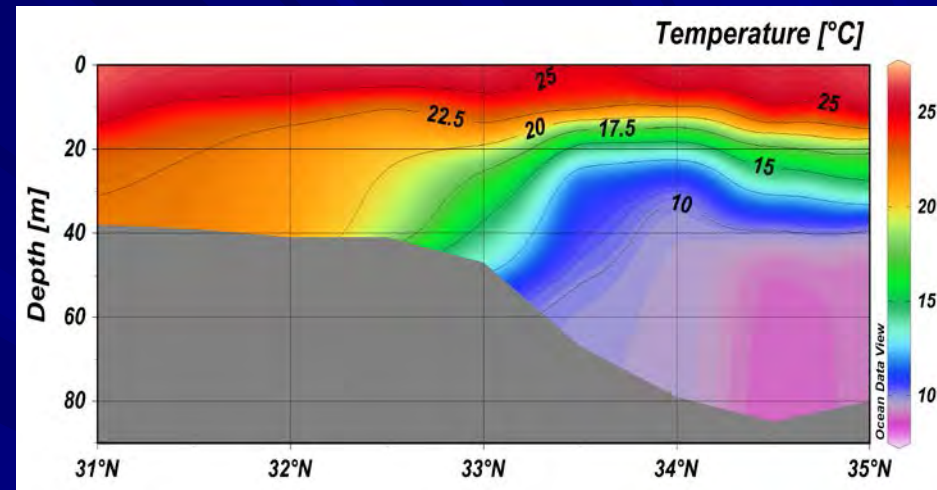
- ✓ T, S
- ✓ Nutrients, DO, pH
- ✓ Chla, phytoplankton, zooplankton
- ✓ C13, N15 of POC

Temperature

123E

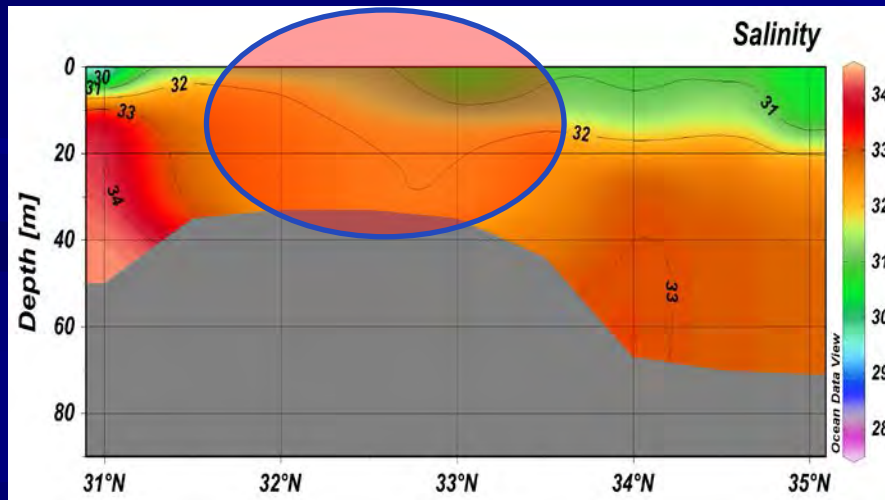


124E

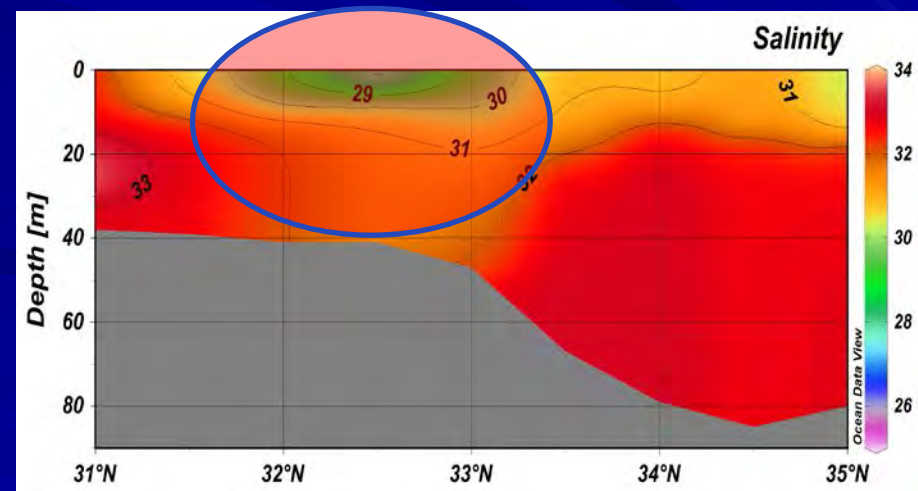


Salinity

123E

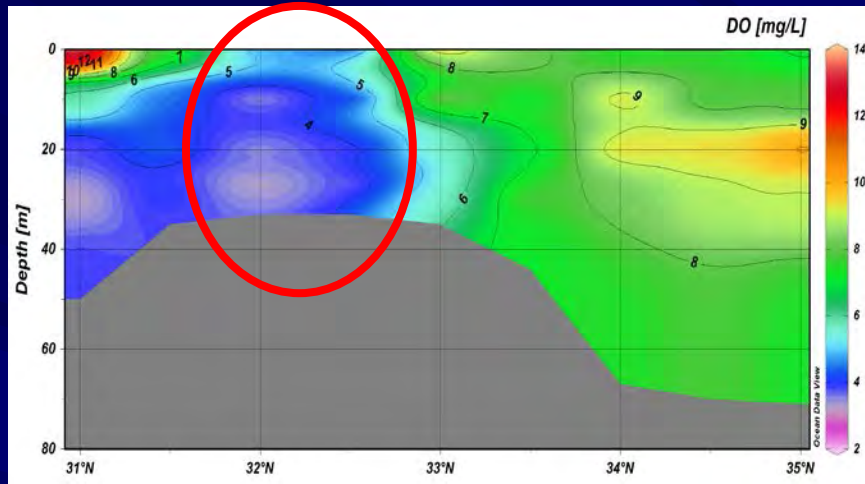


124E



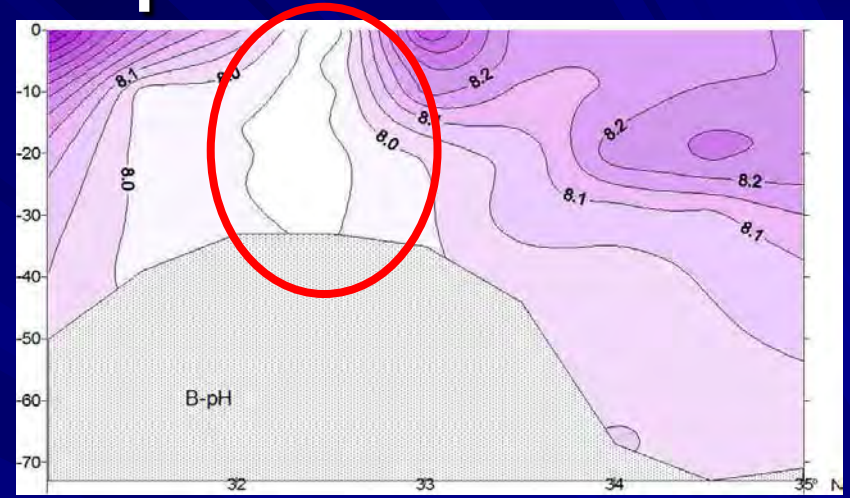
DO

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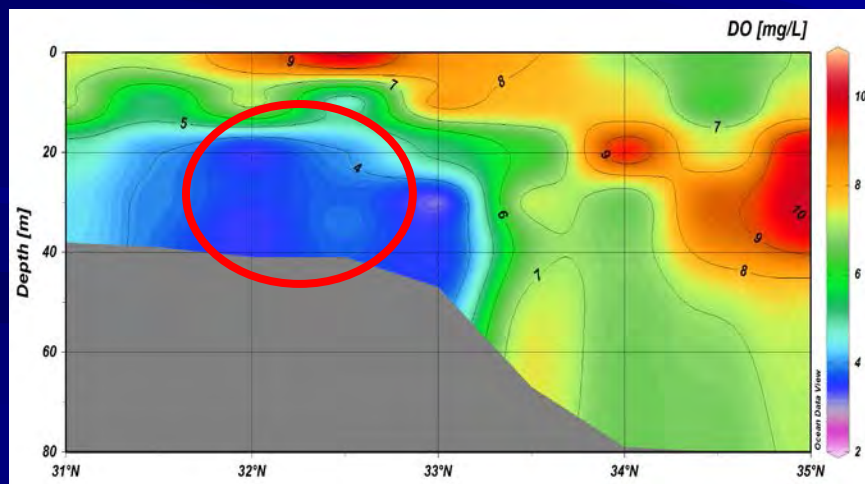


pH

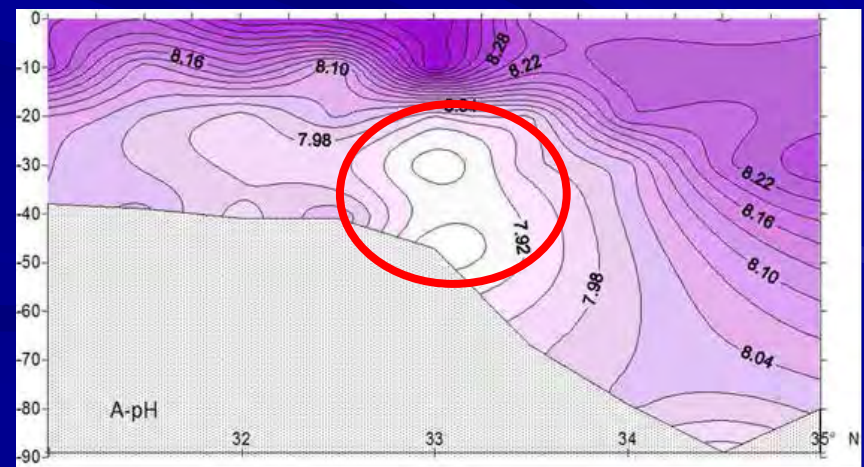
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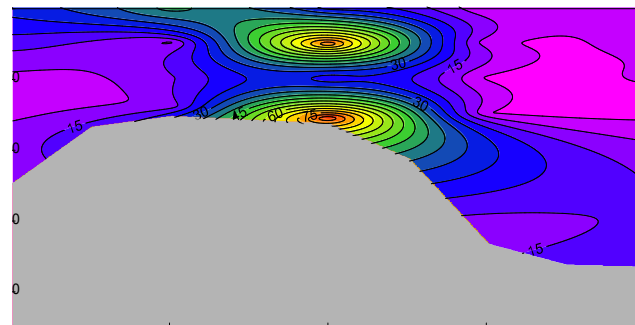
124E



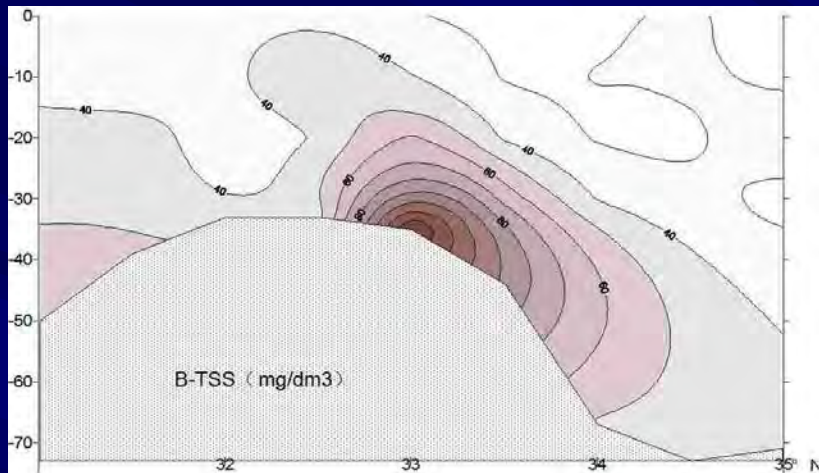
124E



POC 123E



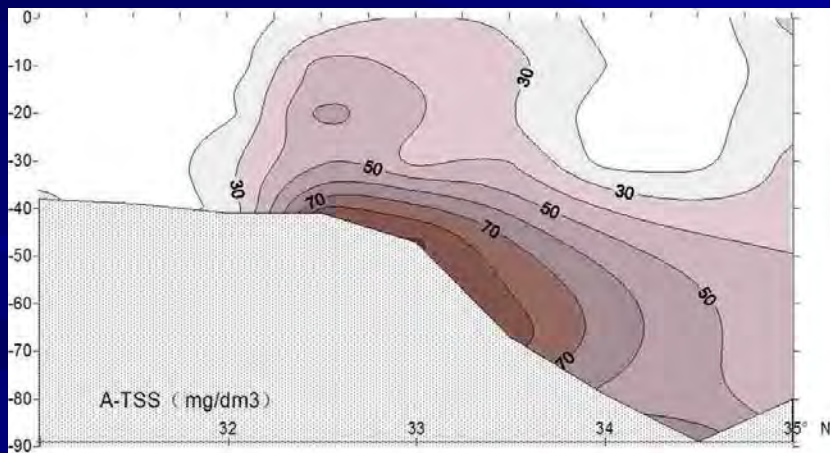
TSS 123E



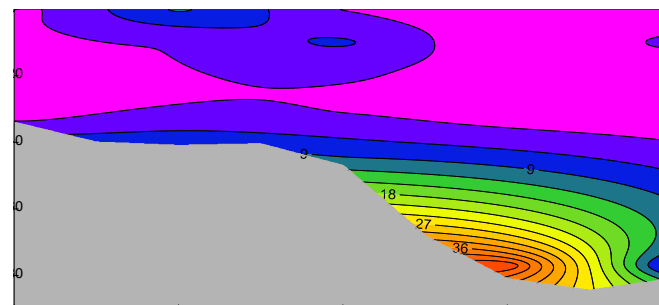
POC 124E

124E

PN 123E



PN 124E

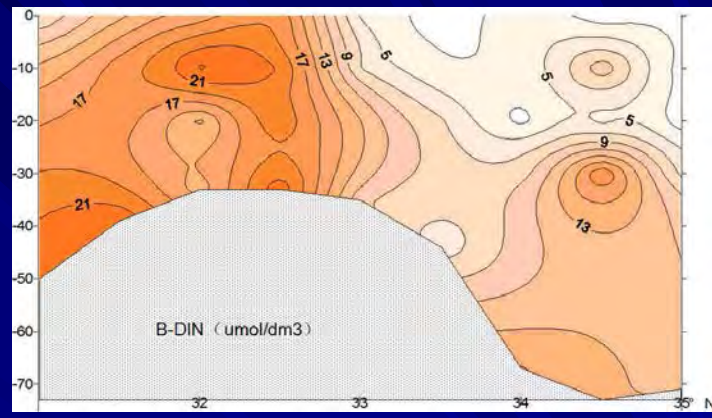
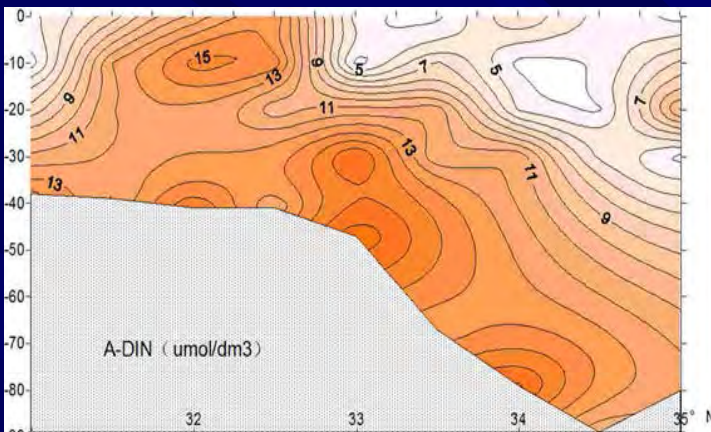


Nutrients

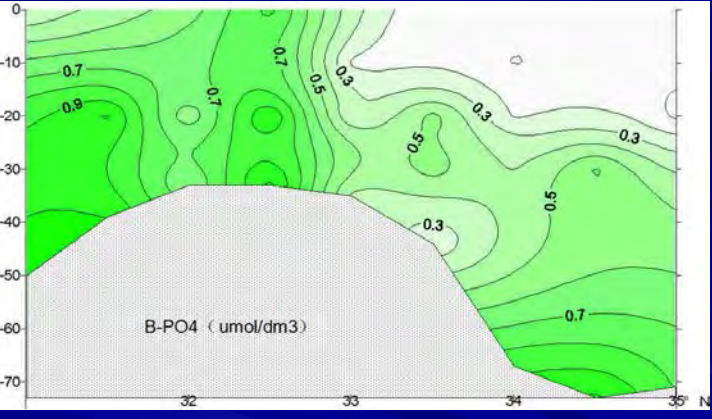
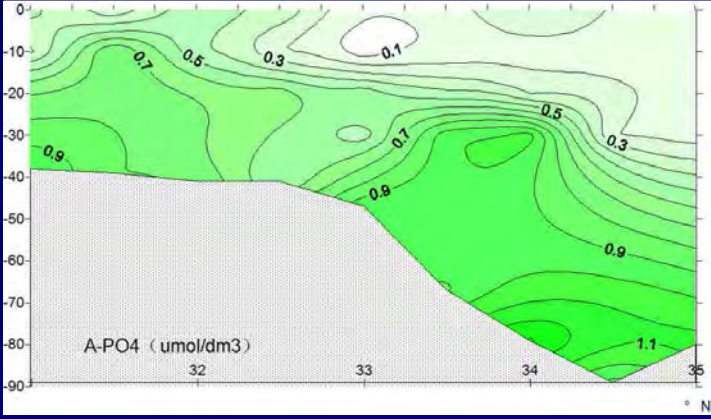
123E

124E

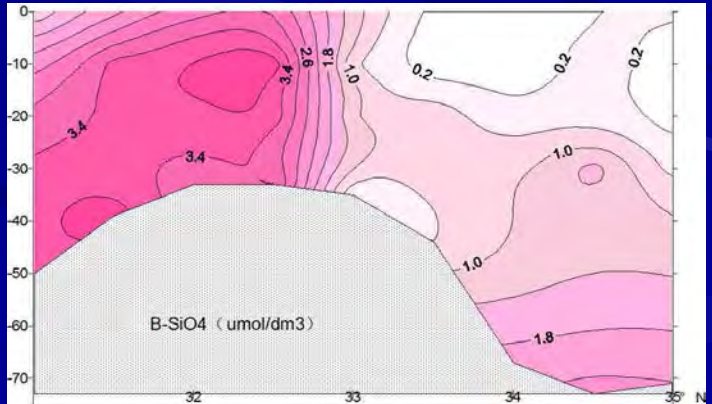
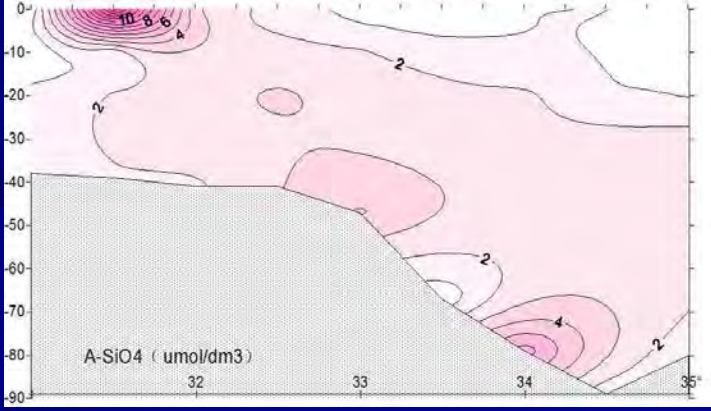
TIN



PO4

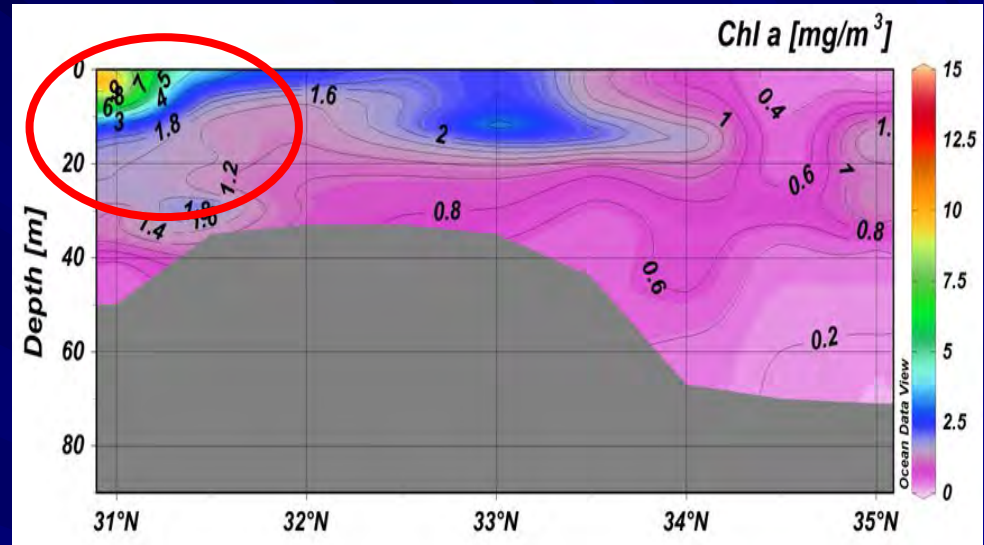


SiO3

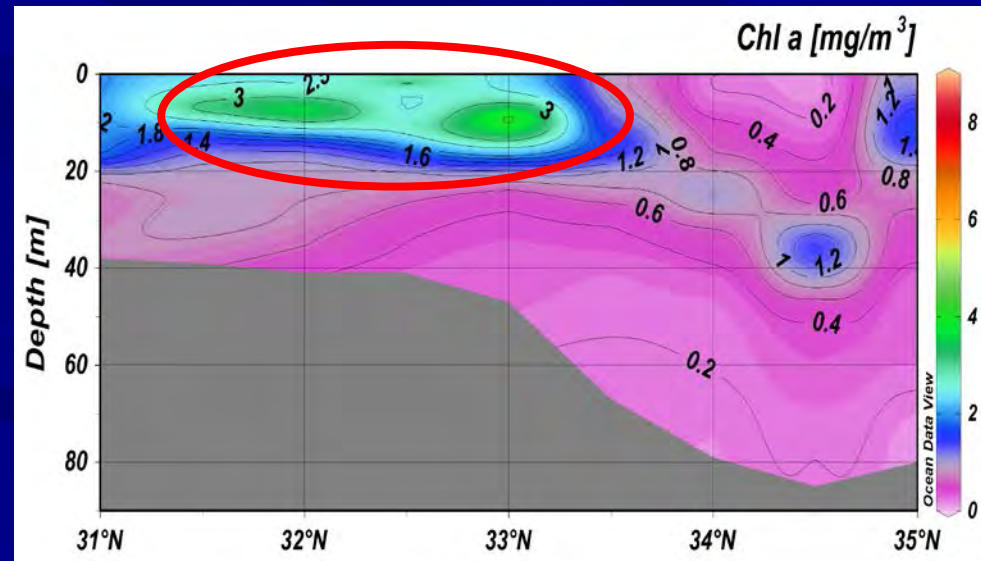


Chlorophyll a

123E

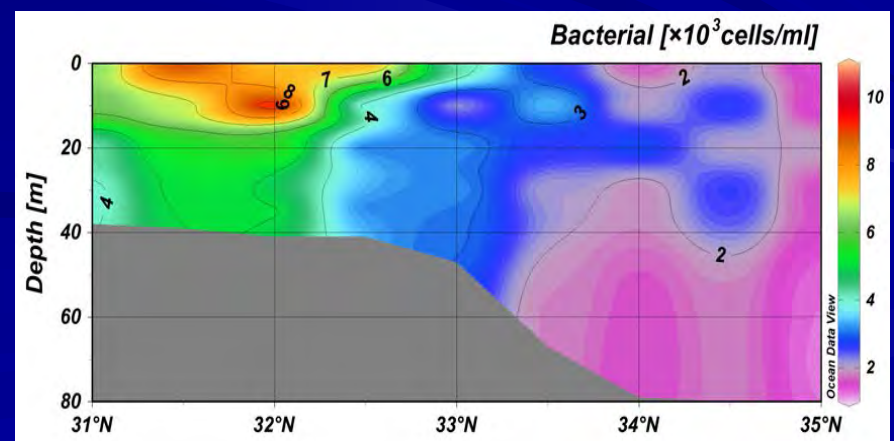
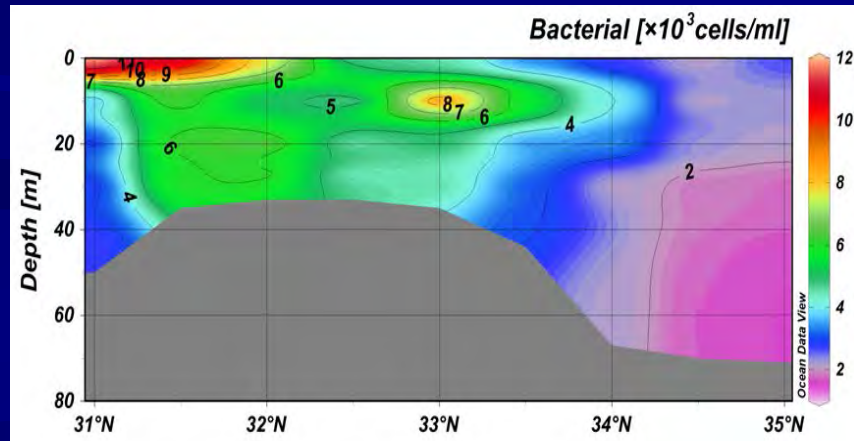
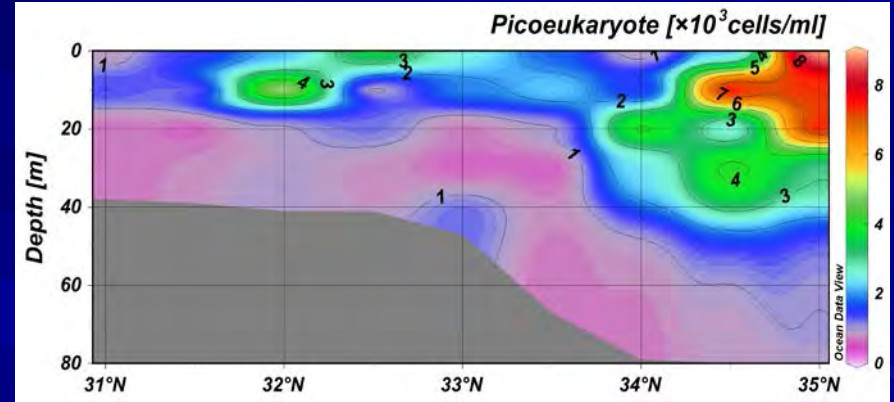
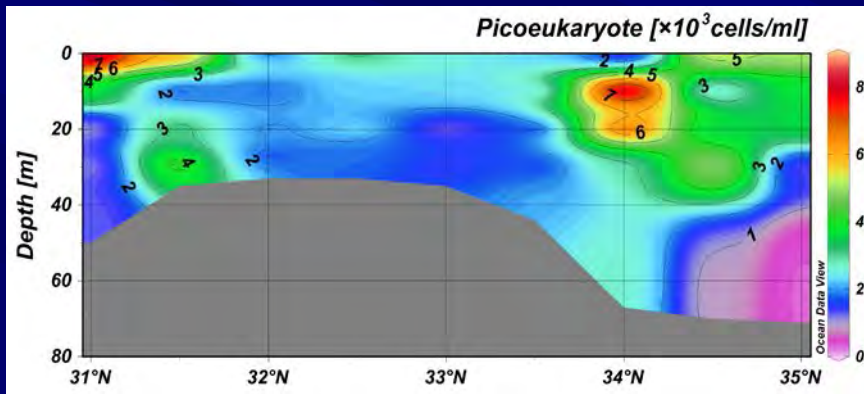
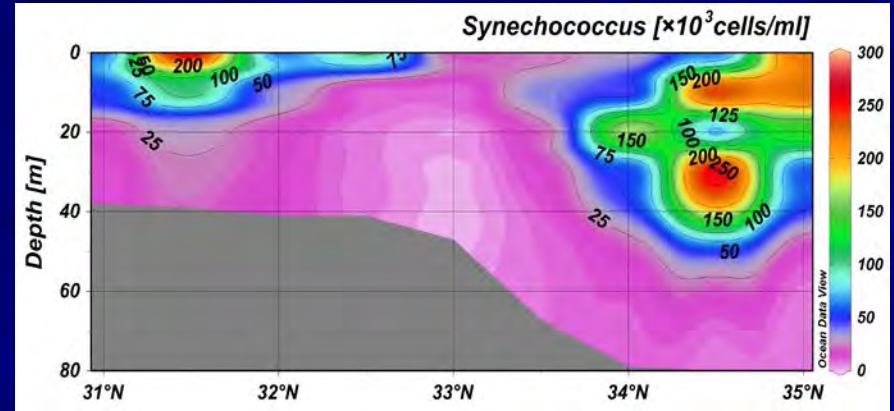
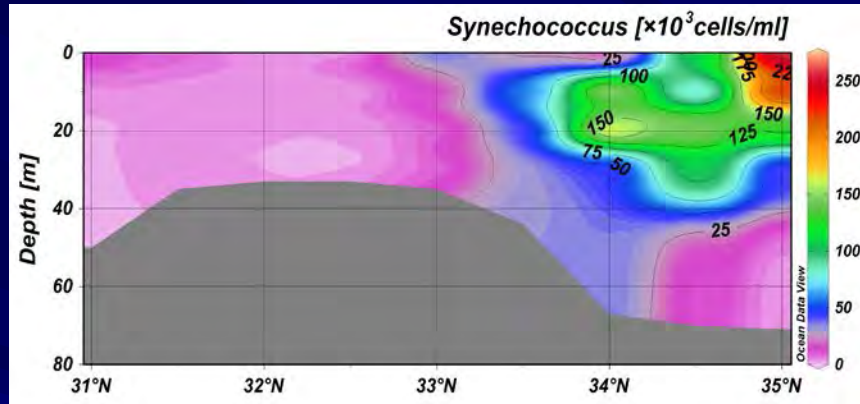


124E



Pico-phytoplankton

123E

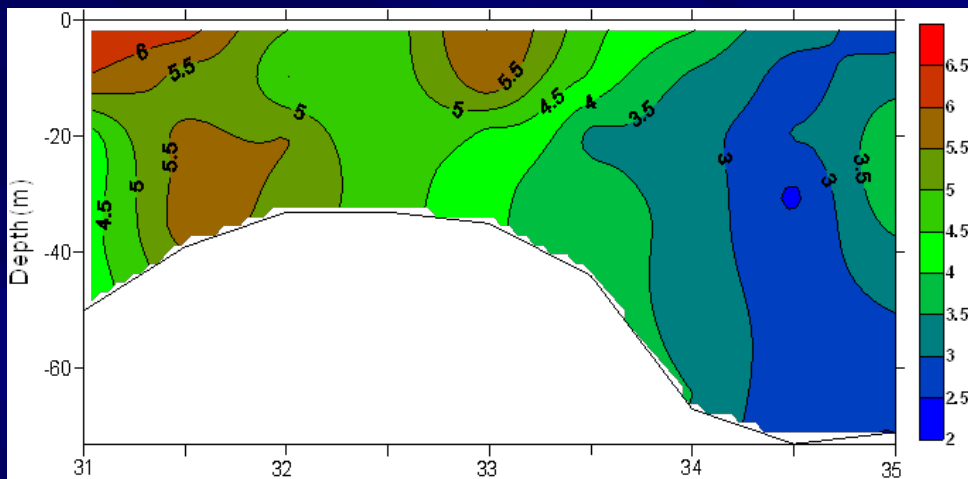


124E

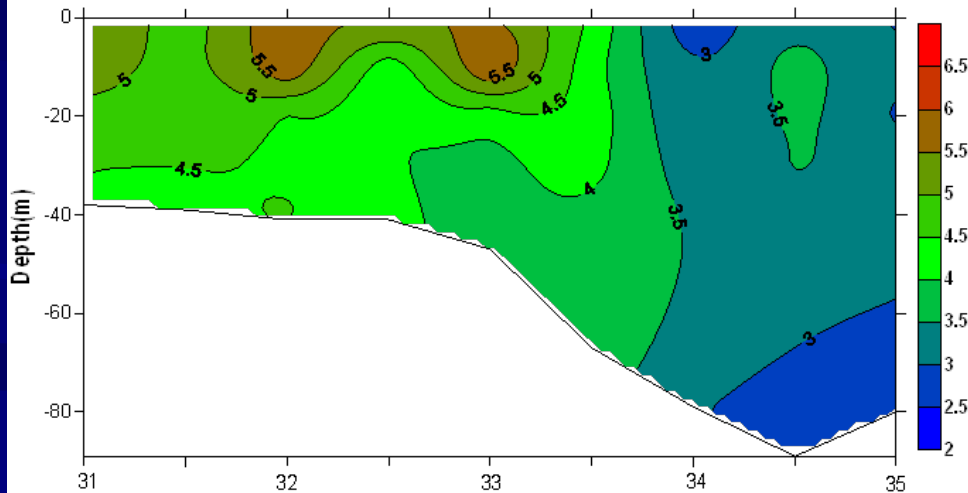
Phytoplankton (nano- and micro-)

Cell abundance (10^x cells/L)

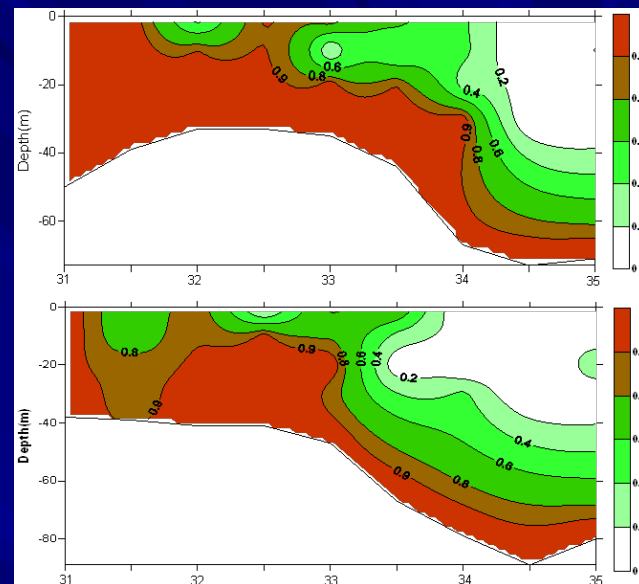
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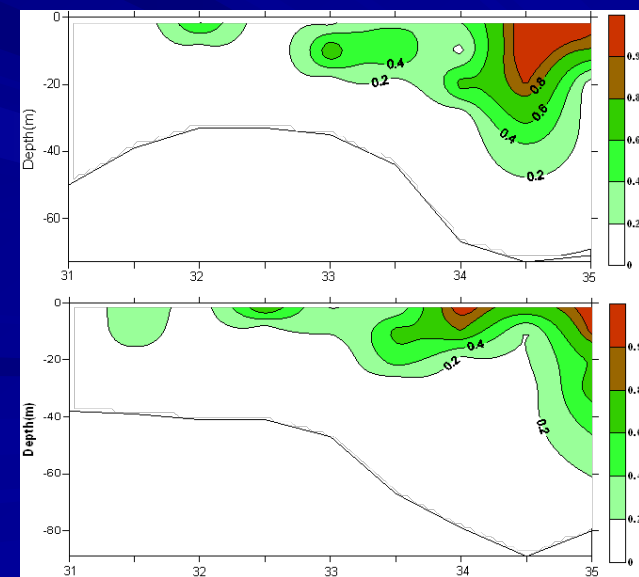
124E



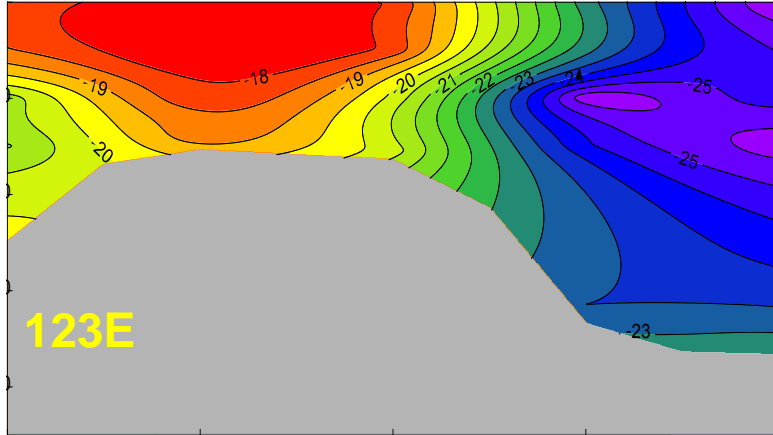
Diatom%



Dino-%

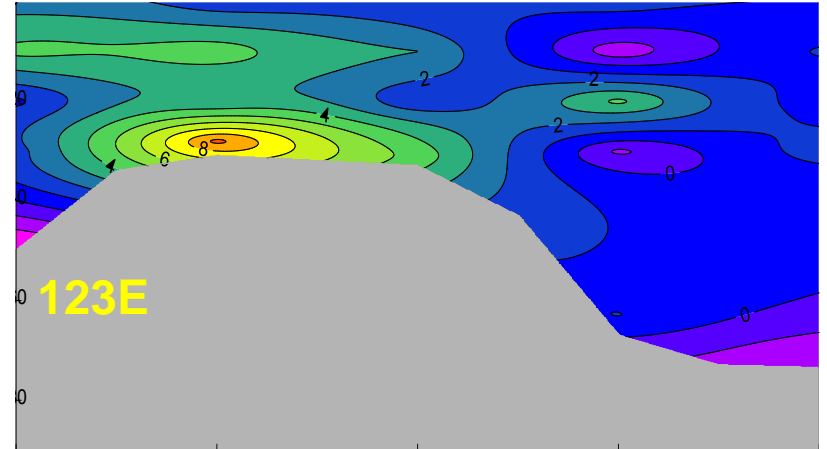


$\delta^{13}\text{C}$ POC

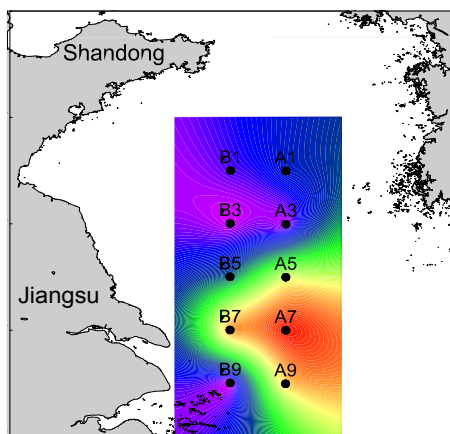
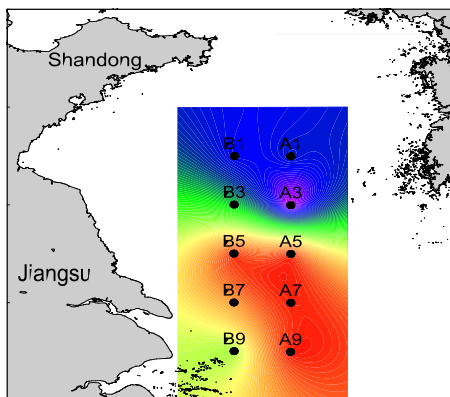
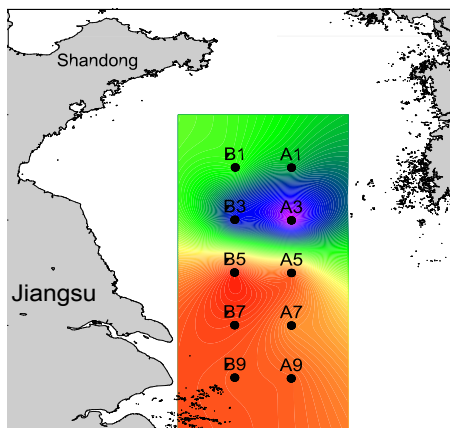
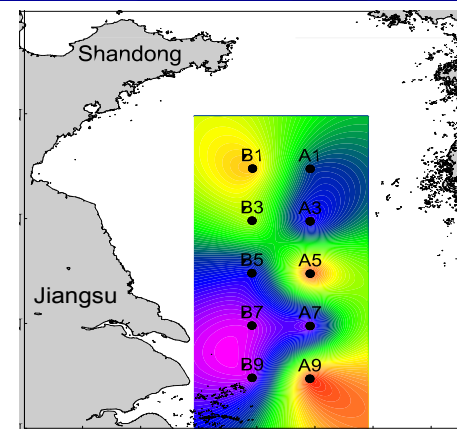
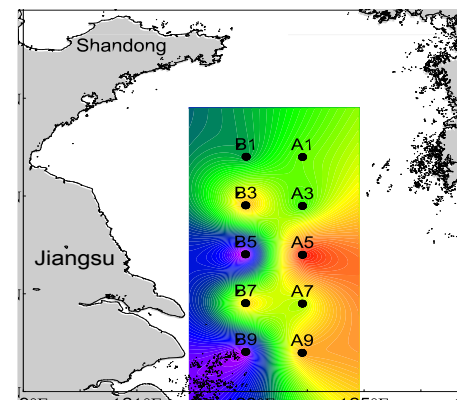
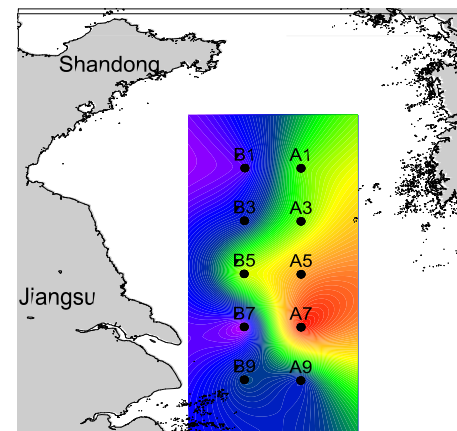


124E

$\delta^{15}\text{N}$ PN

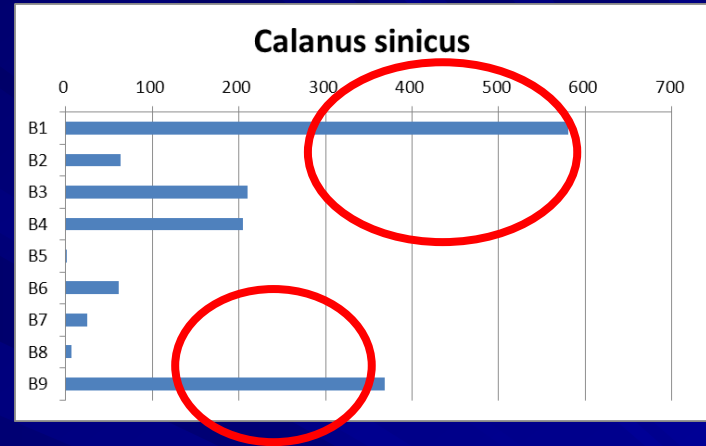
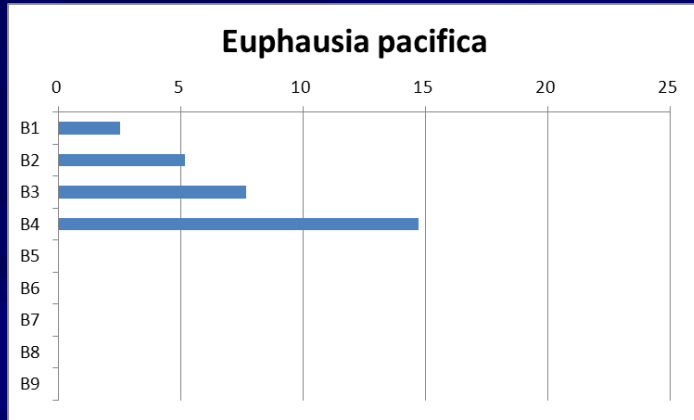


124E

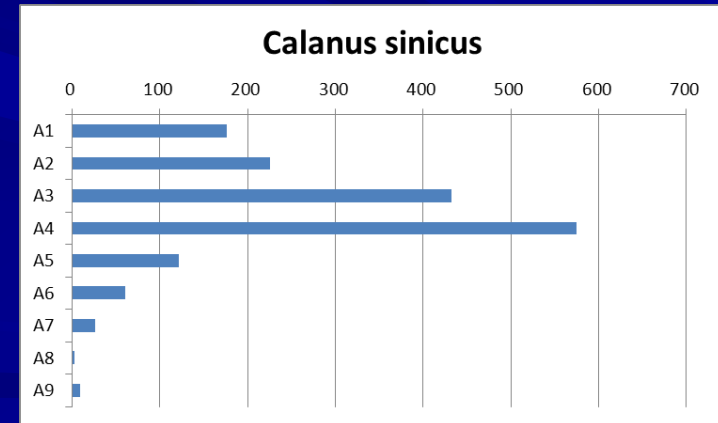
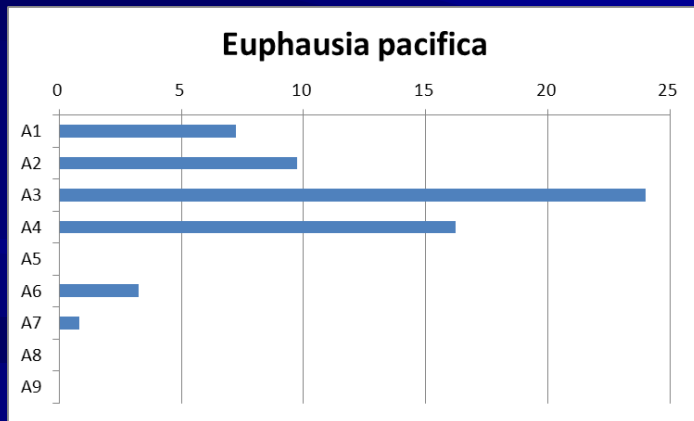
$\delta^{13}\text{C}$ Plankton
>75 μm Plankton
>150 μm Plankton
>500 μm  $\delta^{15}\text{N}$ 

zooplankton

123E



124E



Longer body length vs shorter
C4 and C4 dominated vs. C6 female
Deep layer vs surface layer

Conclusion

- The physical, chemical and biological patterns of YSCWM in summer are greatly modified by Changjiang Diluted Water(CDW).
- CDW induced phytoplankton summer blooms in the southern Yellow Sea. The sunk POC caused hypoxia, and maybe a food source for cold-dwelling *Calanus sinicus*.



Thank You

Three gorges of Changjiang River