中国科学院烟台海岸带研究所
Yantai Institute of Coastal Zone Research,Chinese Academy of Sciences

PICES-2018 Annual Meeting

Impact of Water-Sediment Regulation Scheme on seasonal and spatial variations of biogeochemical factors in the Yellow River Estuary

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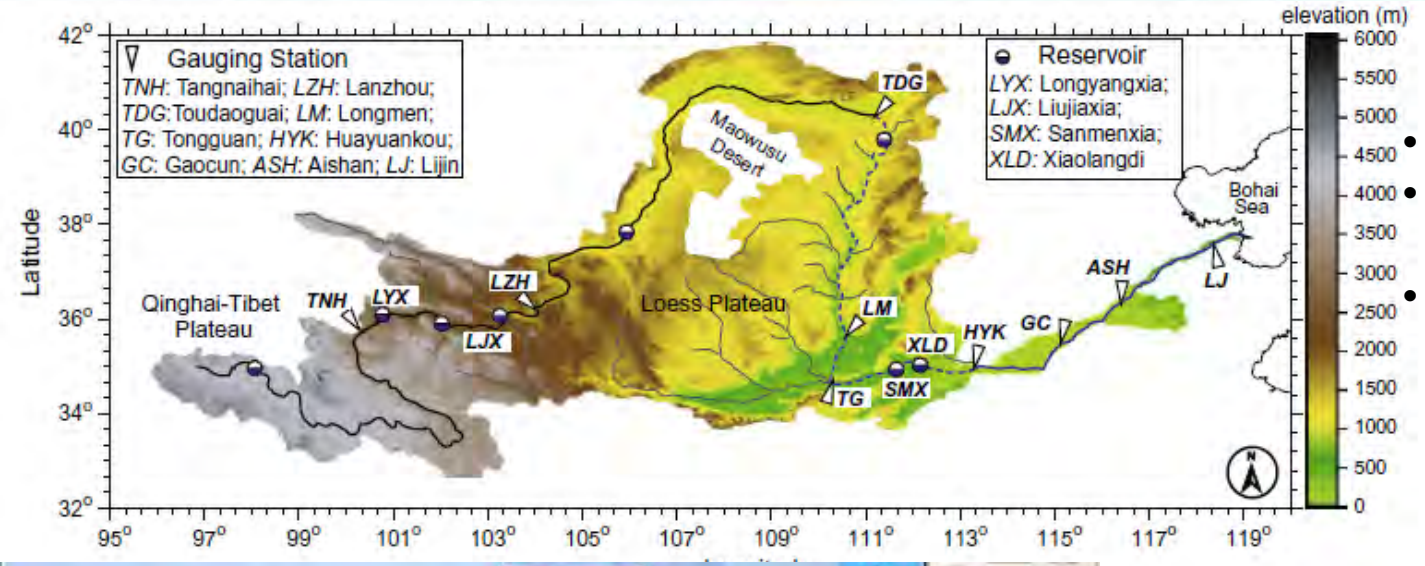
Background

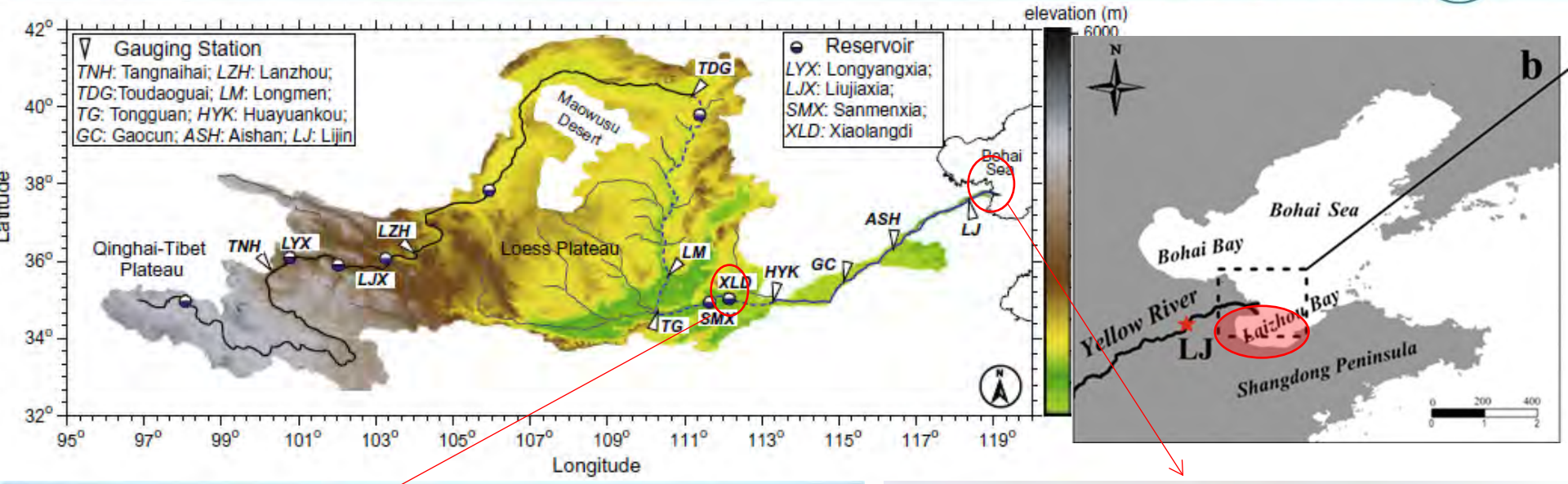


Yellow River

- Second longest in China
- Highest sediment content in the world
- More than 1000Mt/yr delivered to the sea and about 1/3 of them deposited in the lower Yellow River

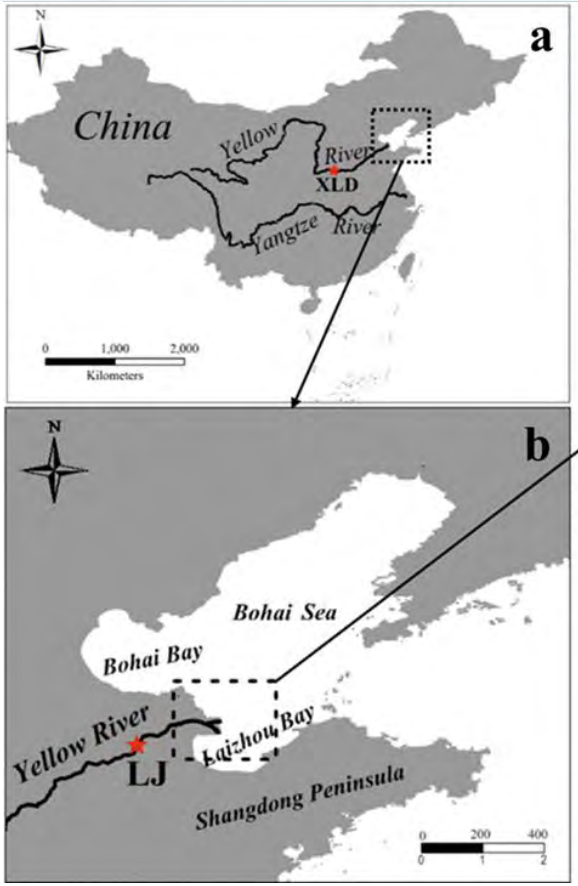
Suspended river

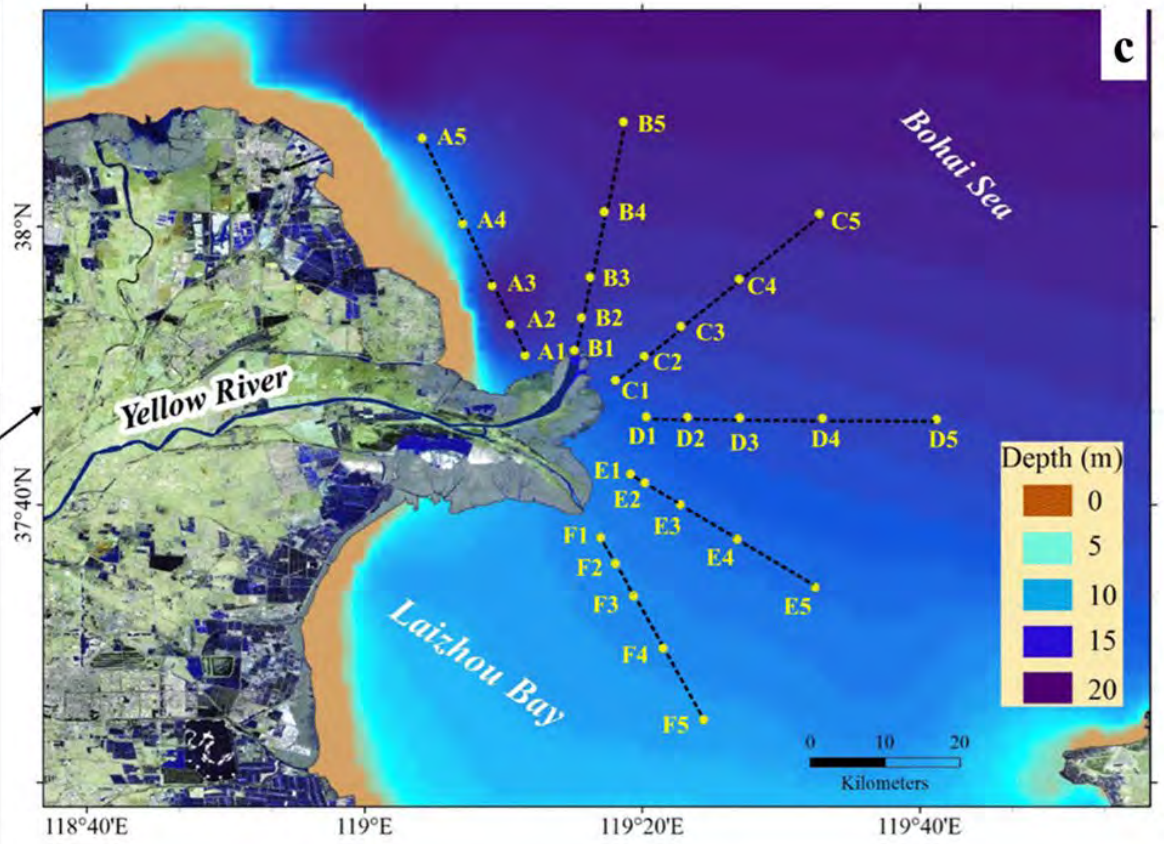
Background



Water-Sediment Regulation Scheme

Sampling and analysis



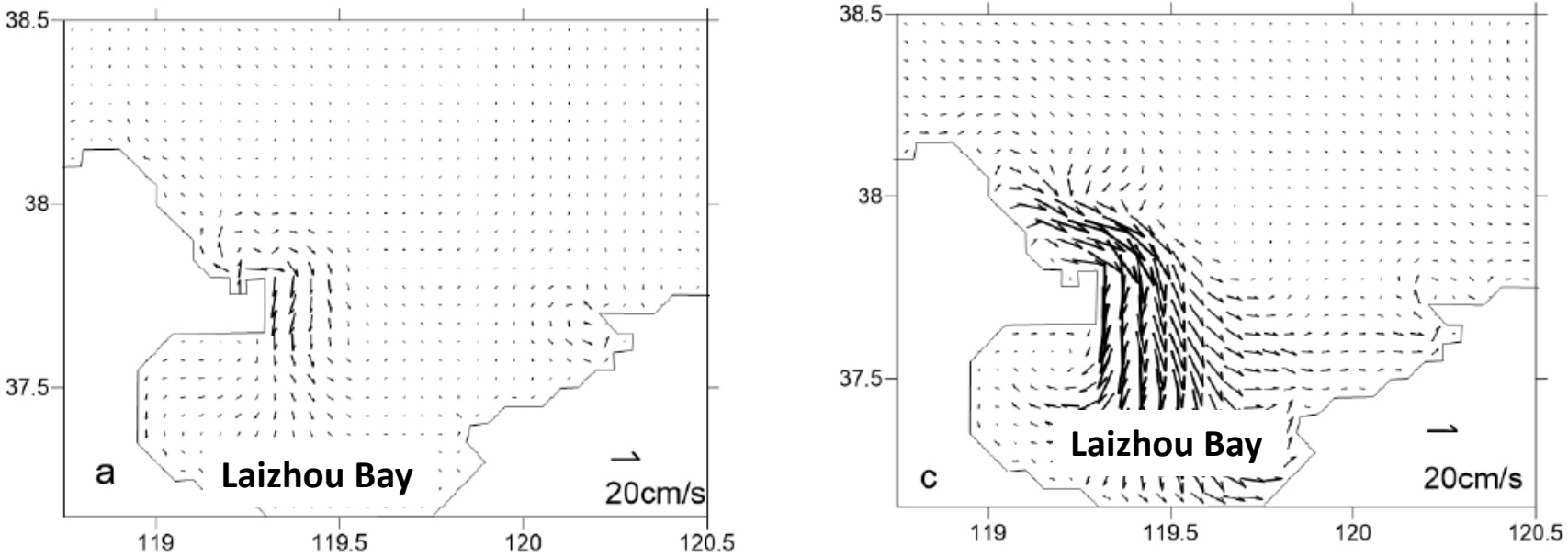


WSRS from 19th June to 12th July, 2013

10th - 14th April (spring), 22nd - 28th June (summer, early phase of WSRS), 25th -31st July (late phase of WSRS) and 26th-27th September (early autumn)

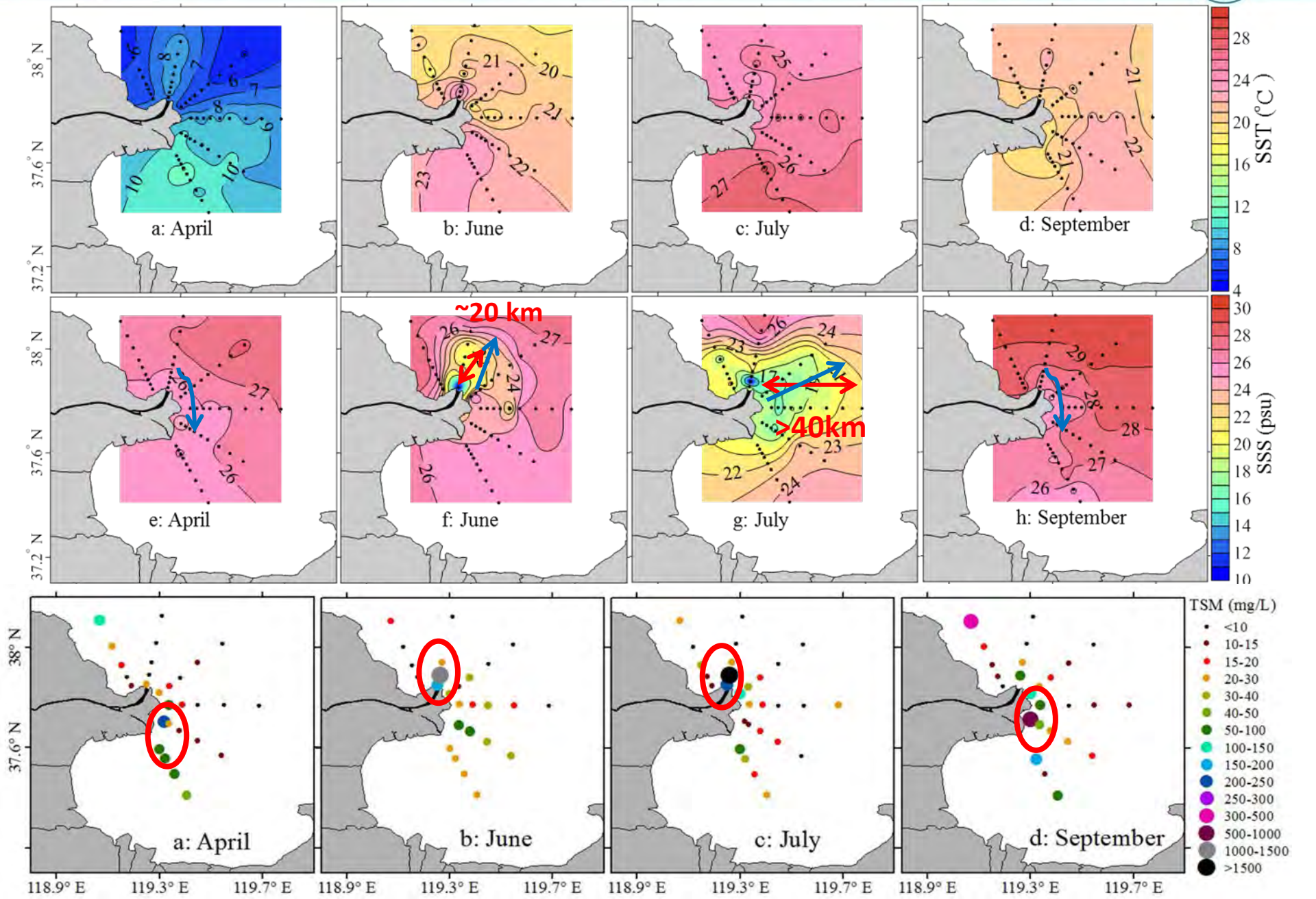
Nutrients, Chl-a, TSM, temperature, Salinity

Impacts on spatial variations

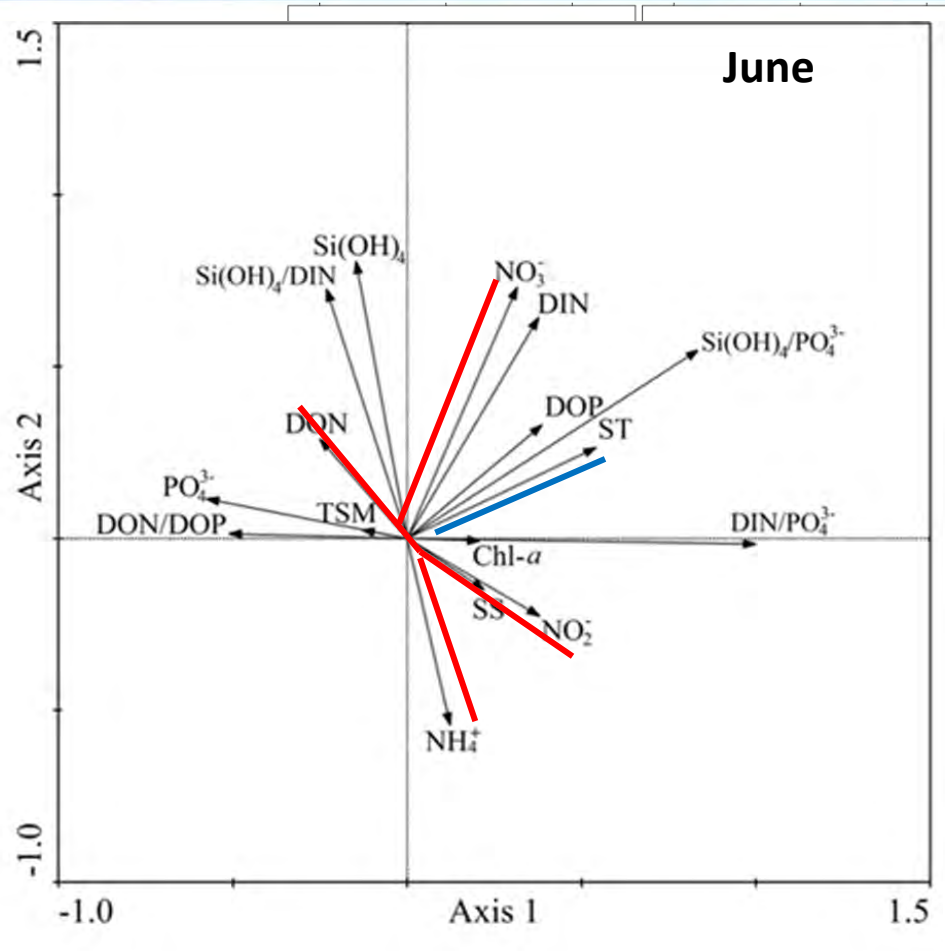


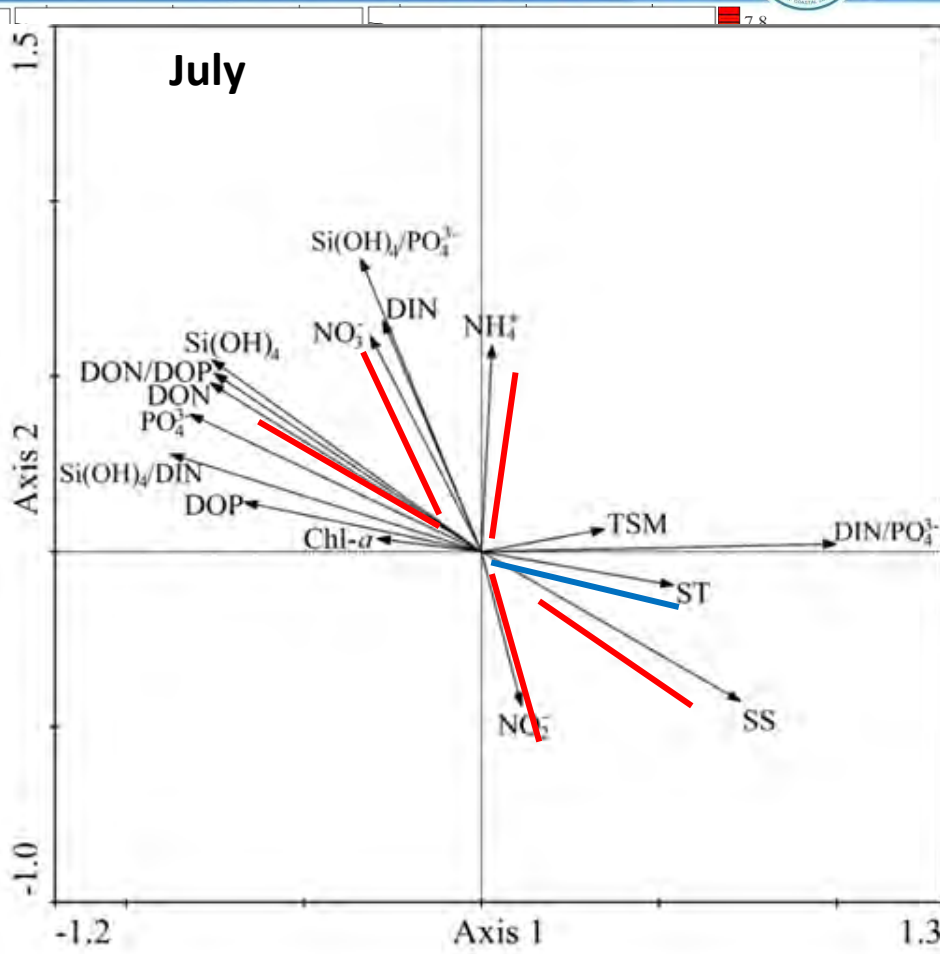
The residual current variations before and after the WSRS (Song et al., 2018)

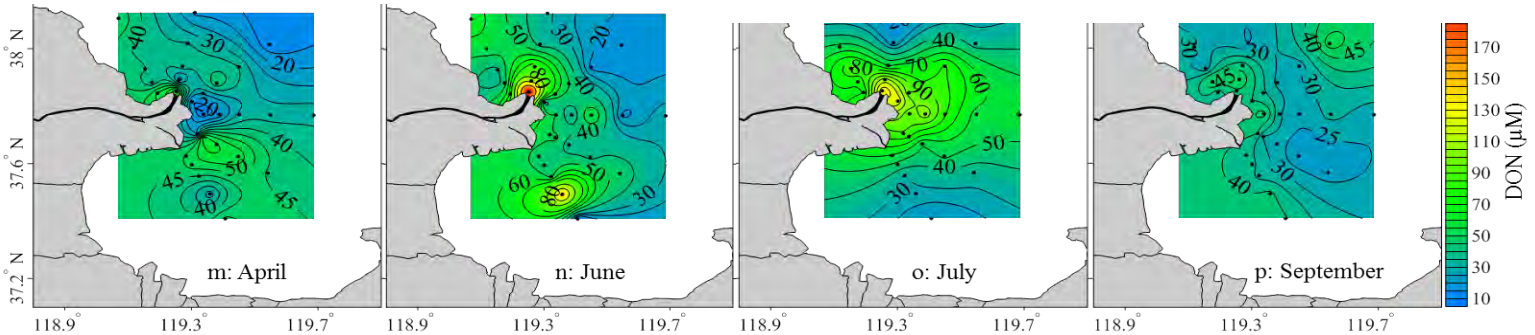
Impacts on spatial variations



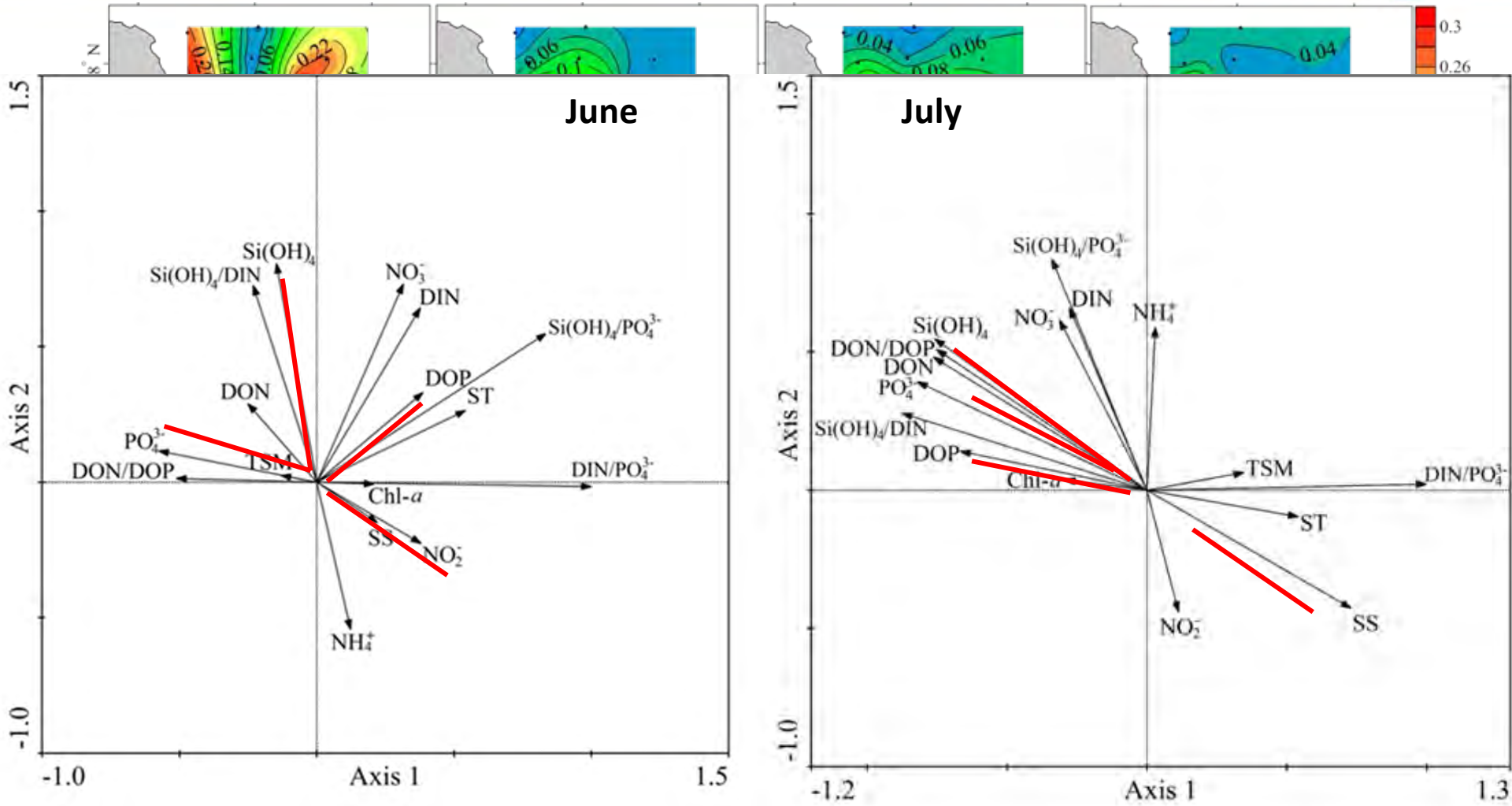
Impacts on spatial variations

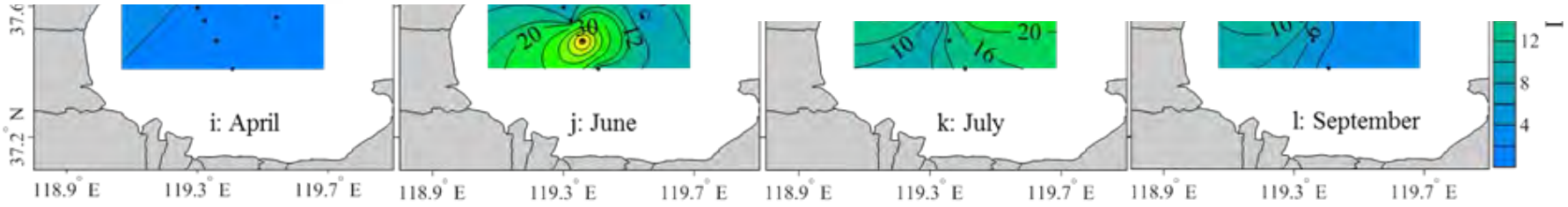




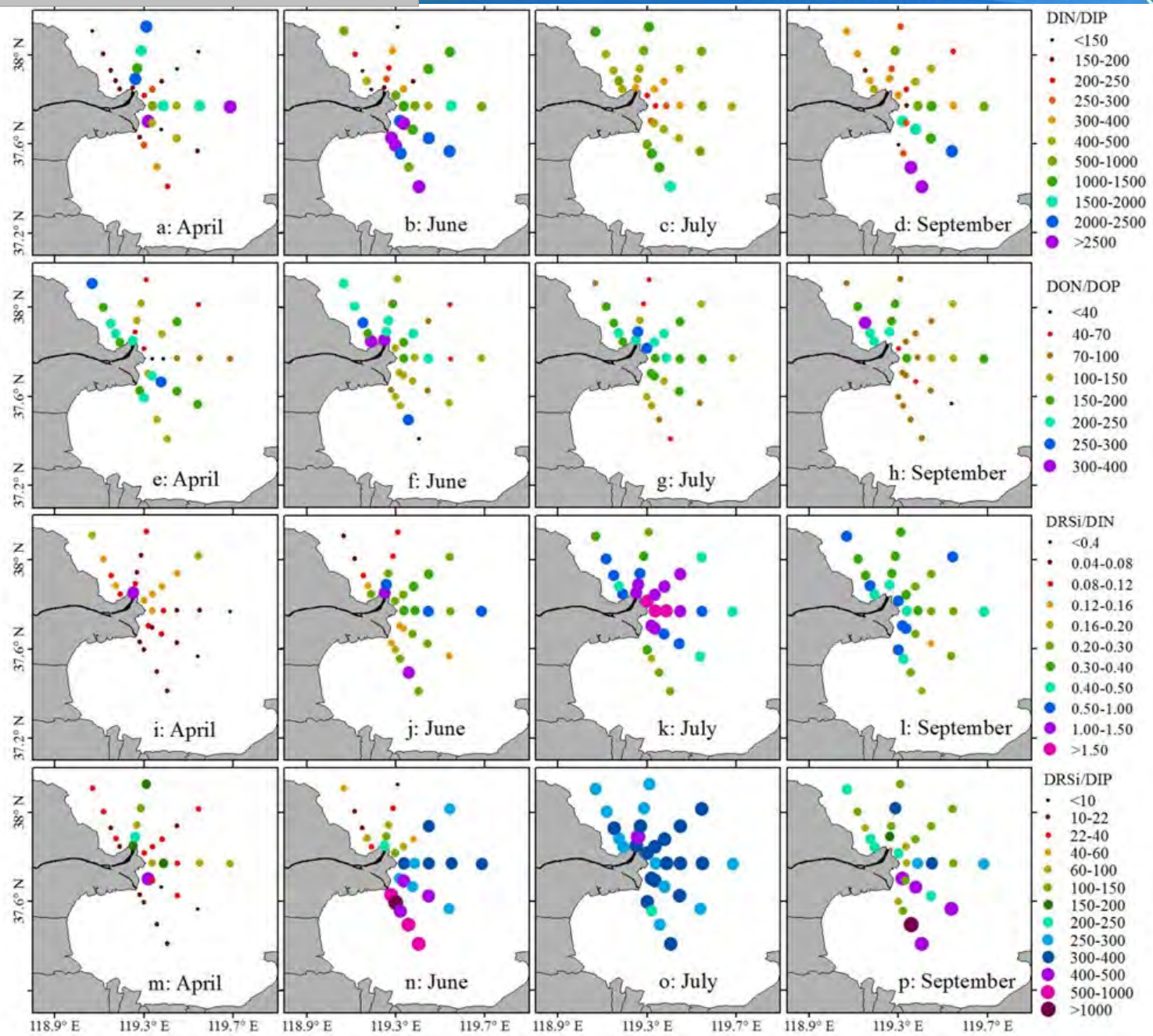


Impacts on spatial variations

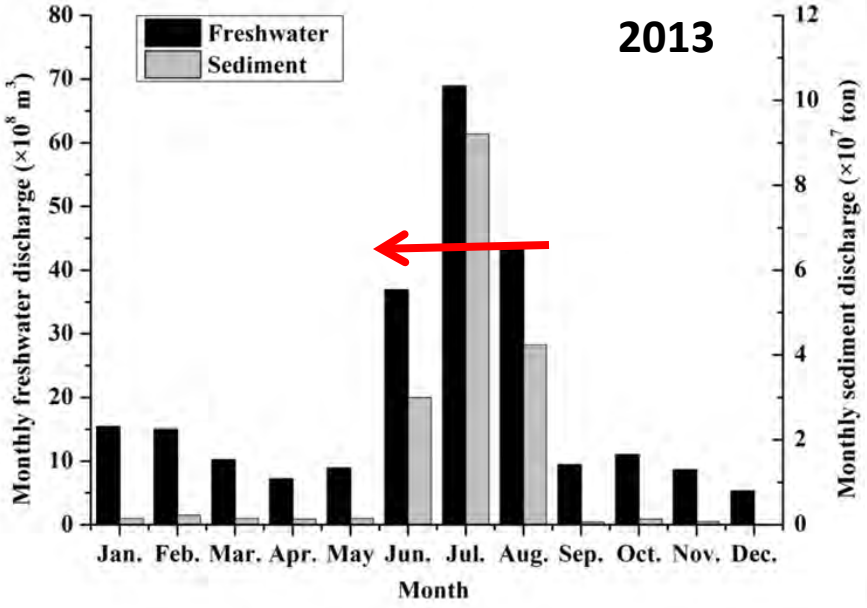




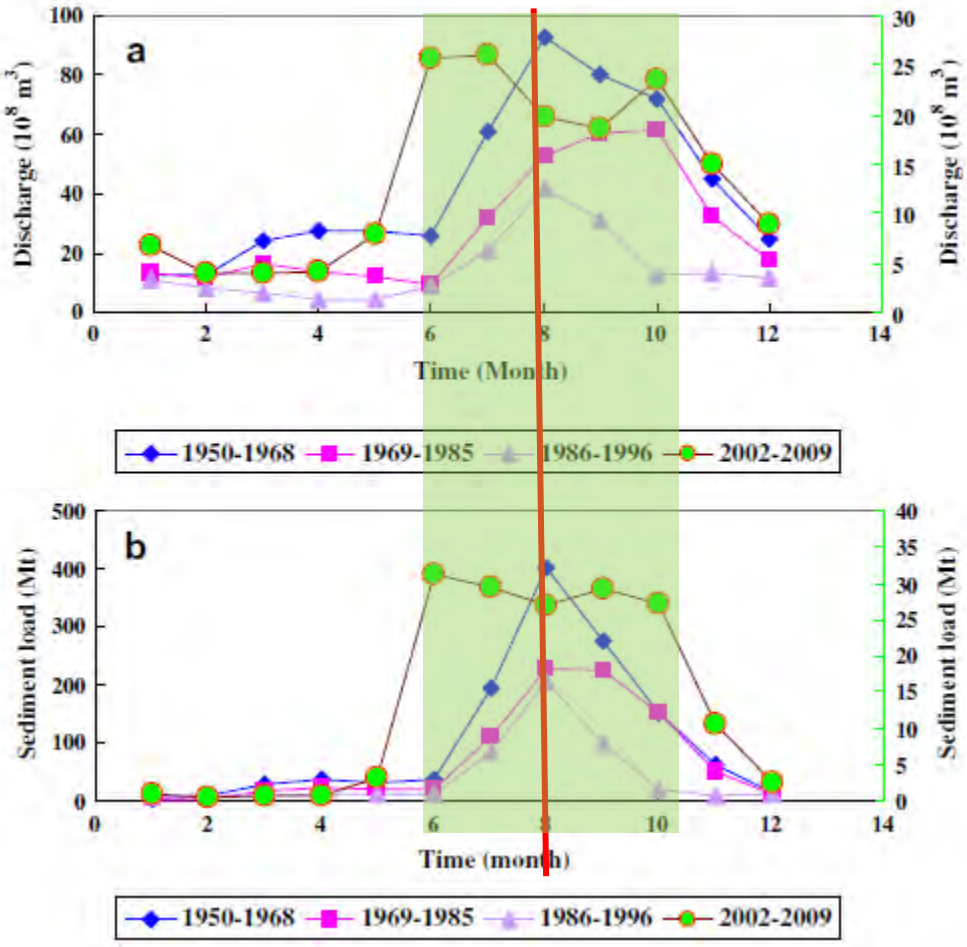
Impacts on spatial variations



Impacts on seasonal variations



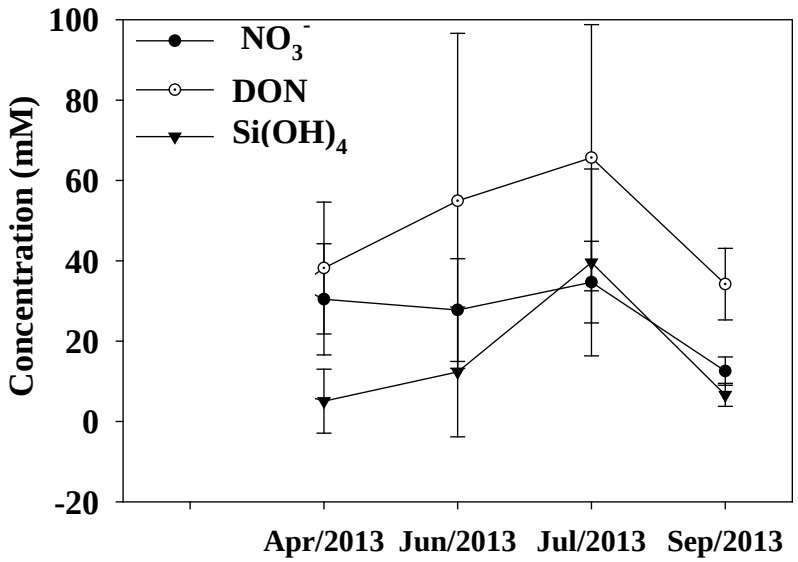
http://www.yellowriver.gov.cn/nishagonggao/2013

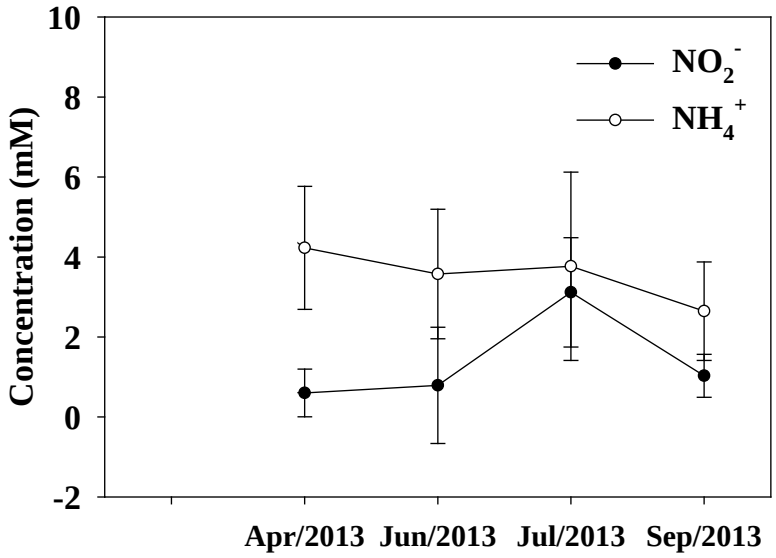


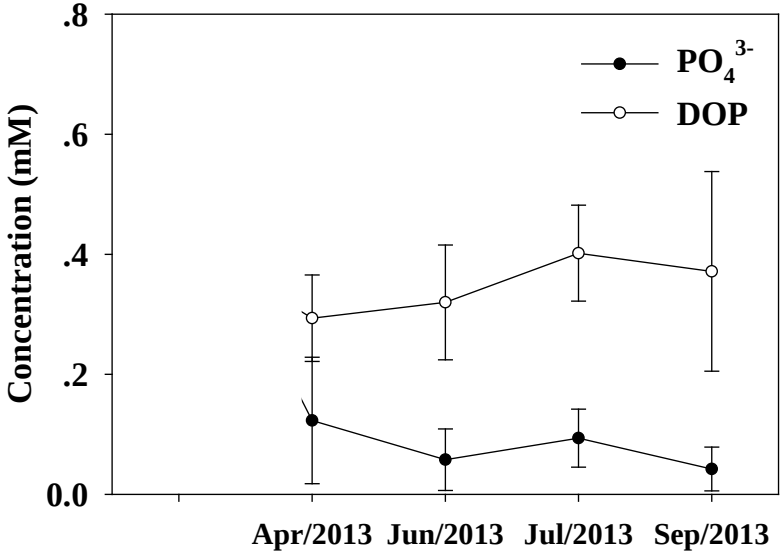
Liu et al., 2011

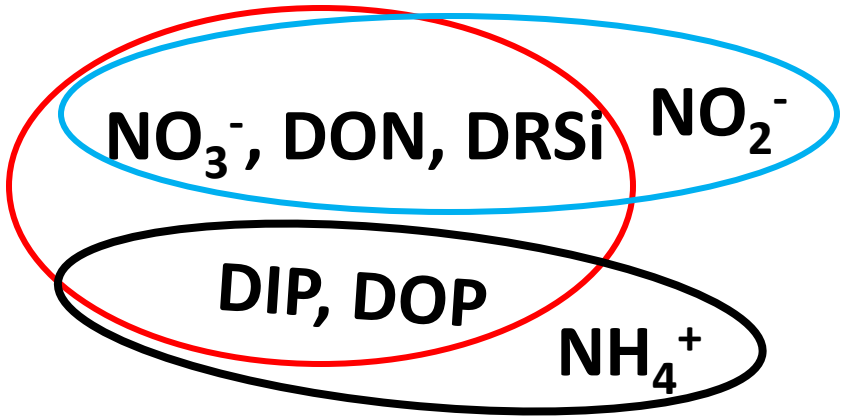
2 months prior to the normal high flow season

Impacts on seasonal variations

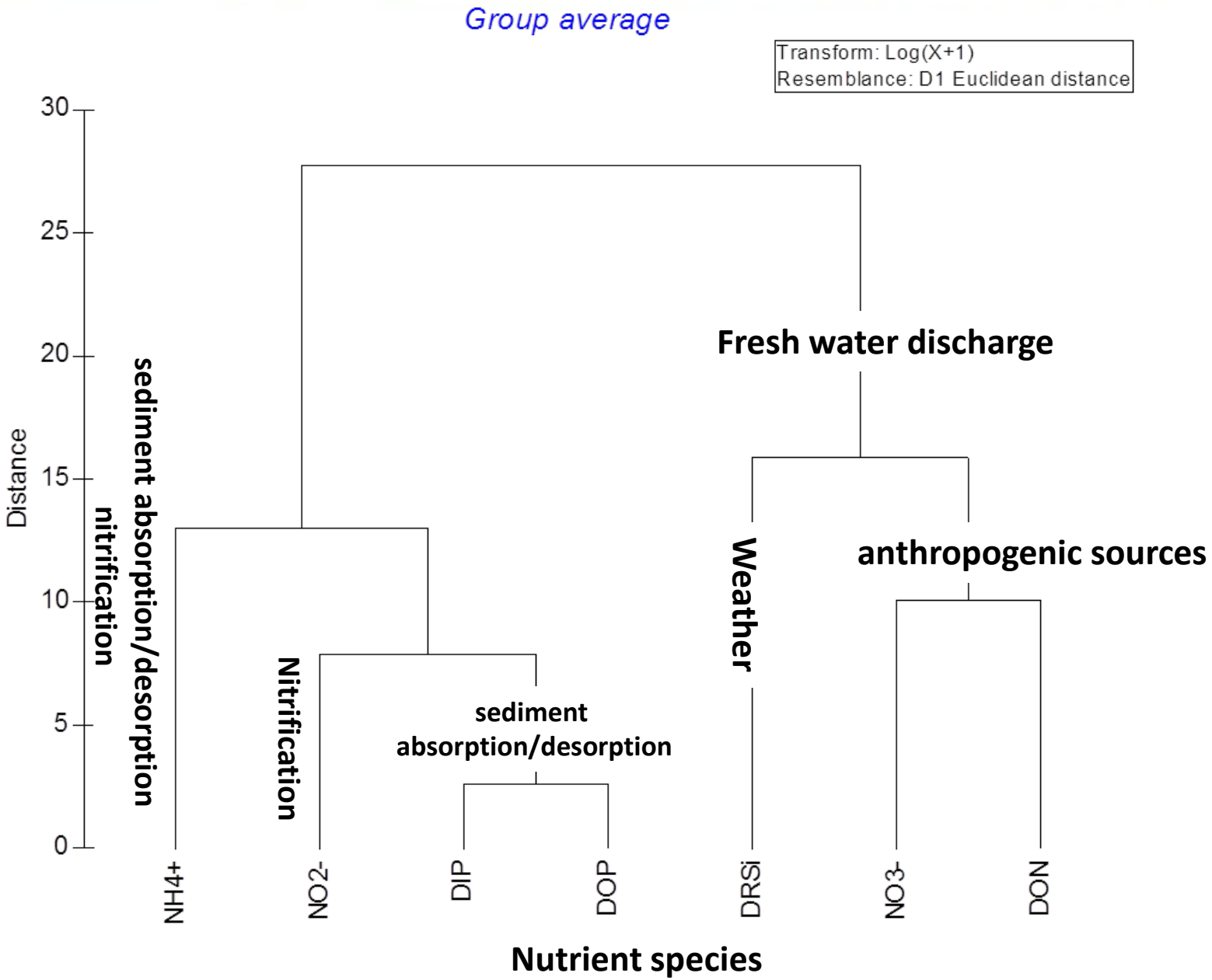




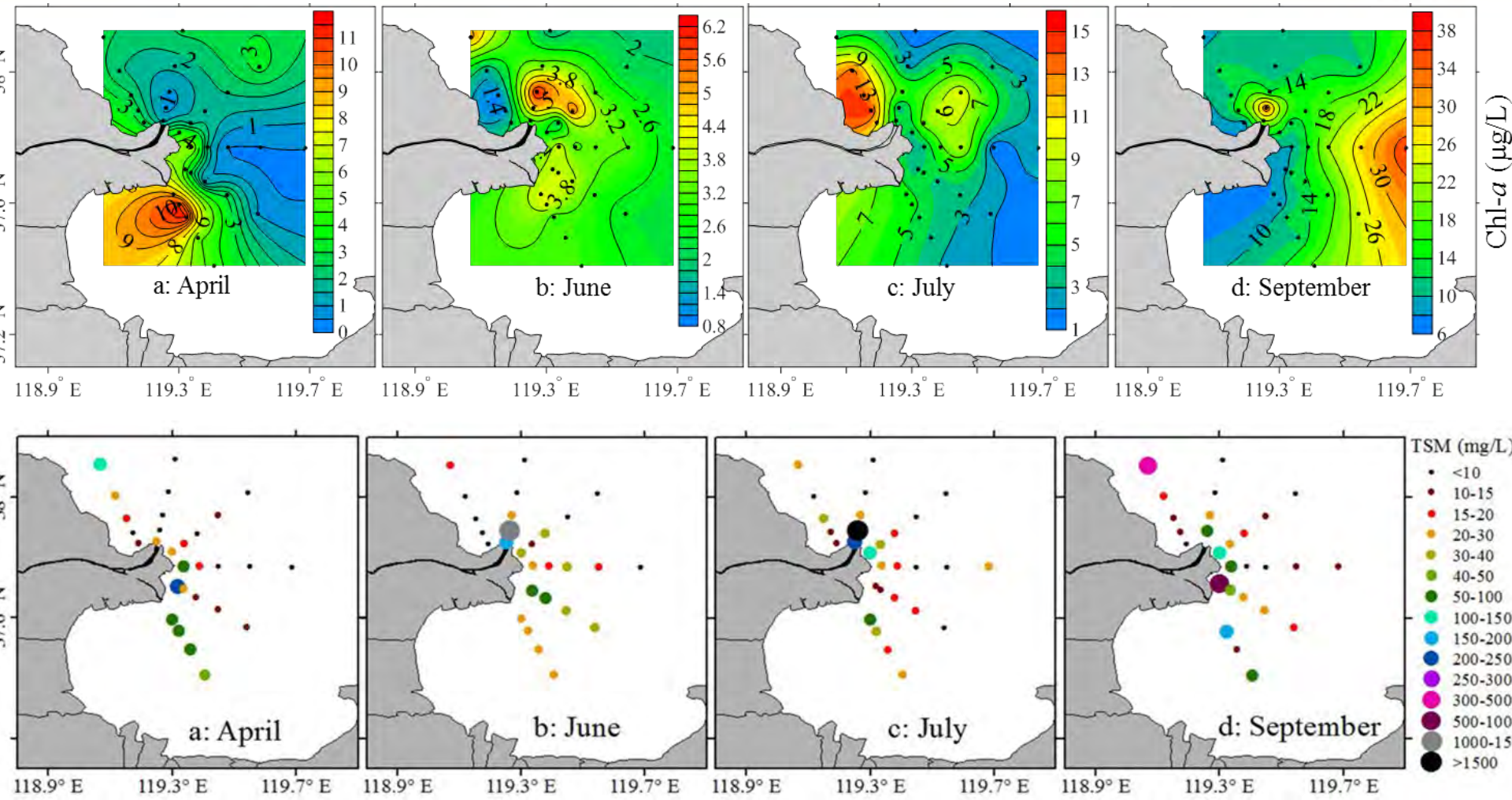




Nutrients source and impact factors



Impacts on Chla



Summary

◆The WSRS of the Yellow River in 2013 shifted the seasonal patterns of nutrients in the estuary, and promoted the spread of nutrients to the east of Bohai Sea, relieve the P and Si limitation of the Bohai Sea.

◆Nutrient species in the Yellow River estuary could be divided into two major groups depending on their differences in seasonal and spatial distributions related to different sources and impact factors.

◆The seasonal patterns of Chl-a remained almost unchanged. Turbidity and freshwater flushing instead of nutrients depressed the growth of phytoplankton.


THANKS