Transport and transformation of nitrate in the Changjiang Estuary

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OUTLINE

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Introduction

1 Changjiang

Changjiang is the longest river in China, delivering more than 9.24×10^{11} m^3 yr^{-1} fresh river water to East China Sea .

2 Human activities

There are substantial human activities in Changjiang watershed, deeply influencing nitrate concentration in river water.

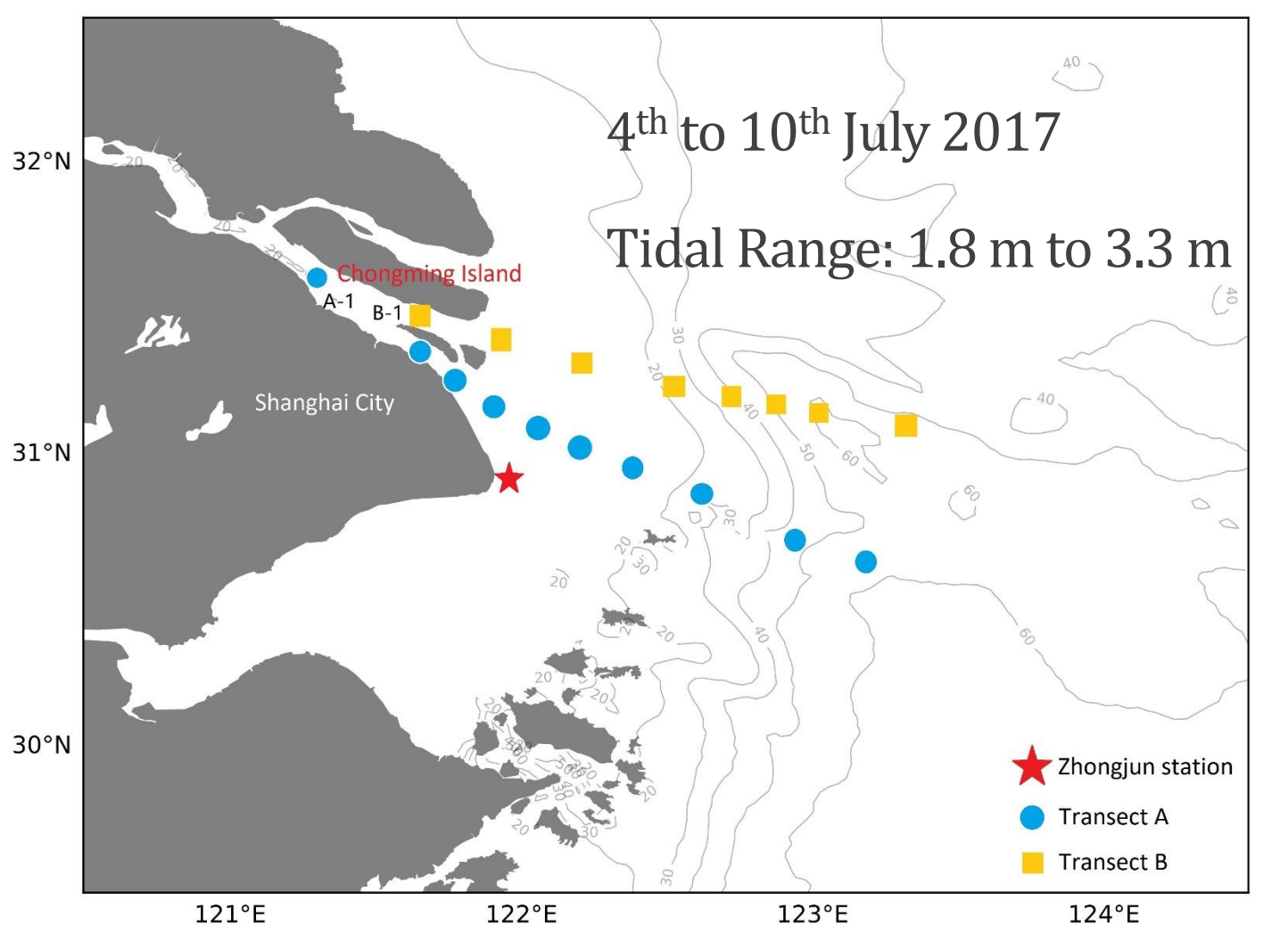
3 Importance

The intrusion of allochthonous nitrate from Changjiang water to coastal zone has led to a series of environmental and ecological problems, such as hypoxia and harmful algae blooms.

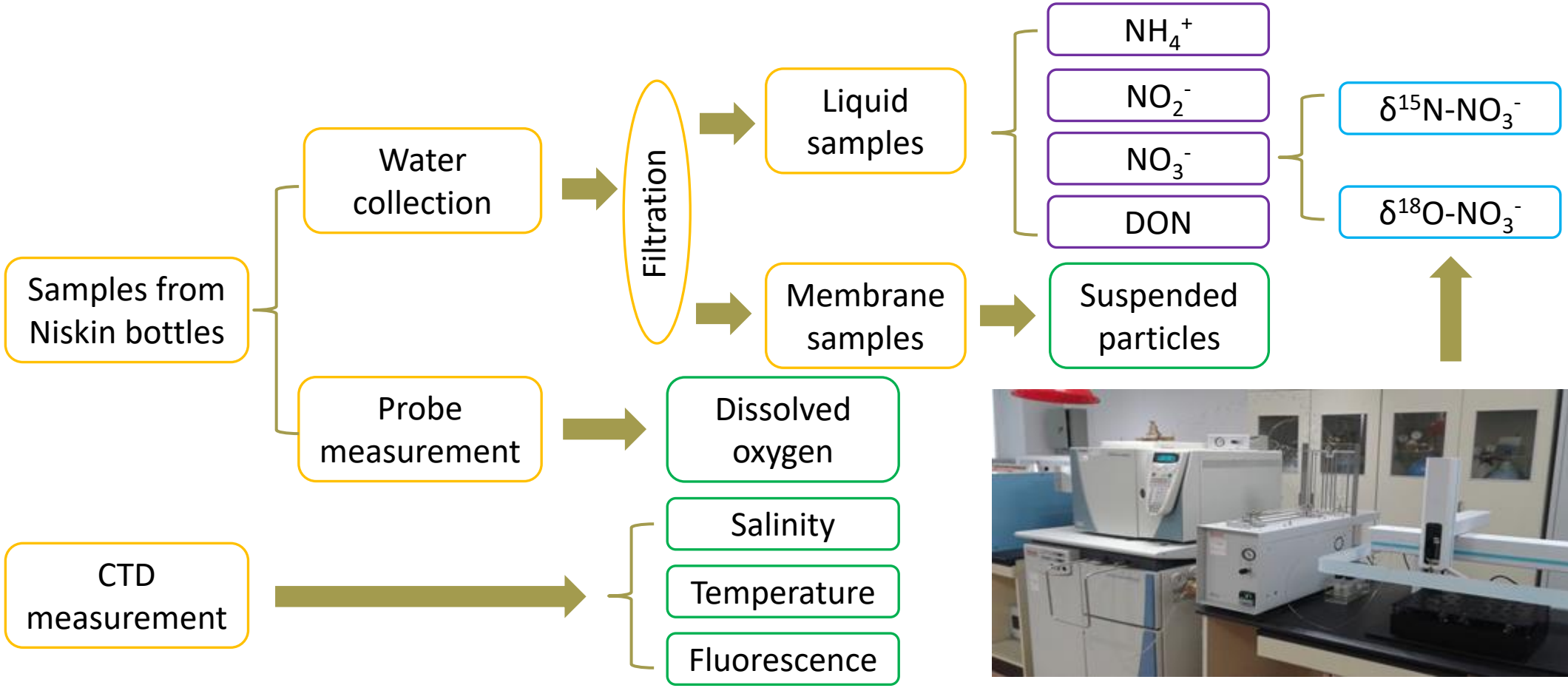
4 Objectives

Understanding the nitrate sources in Changjiang water and exploring the biogeochemical reactions in the estuary water .

Study Site


4th to 10th July 2017
Tidal Range: 1.8 m to 3.3 m
Chongming Island
A-1
B-1
Shanghai City
32°N
31°N
30°N
121°E
122°E
123°E
124°E
Zhongjun station
Transect A
Transect B

Sample collection and analyses



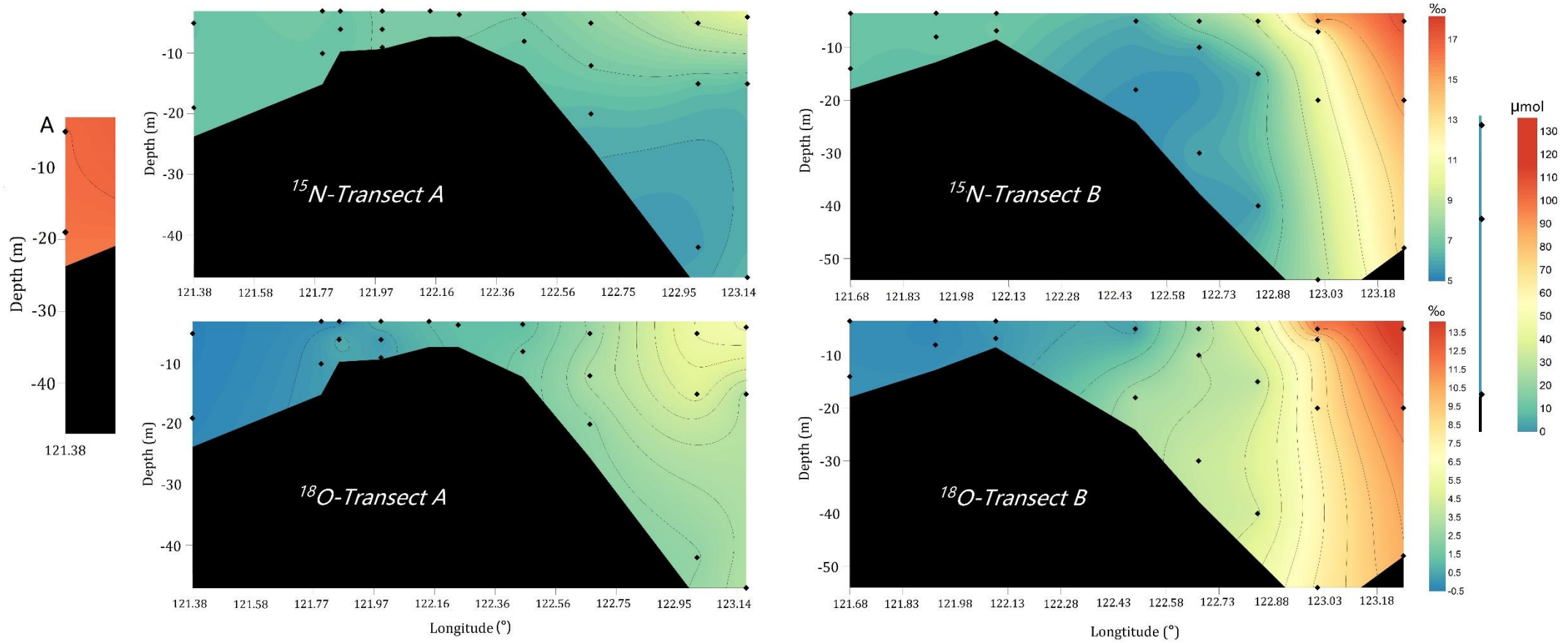
Results

Water chemistry

Parameters	Transect A	Transect B
Salinity	0 to 34.5 ‰	0 to 34.4 ‰
Temperature	18.9 to 26.5 ℃	19.8 to 26.7 ℃
DO	4.1 to 7.8 mg L^{-1}	3.7 to 8.9 mg L^{-1}
SPM	9.8 to 75.6 mg L^{-1}	9.0 to 79.6 mg L^{-1}
Fluorescence	0 to 12.8	0 to 10.6

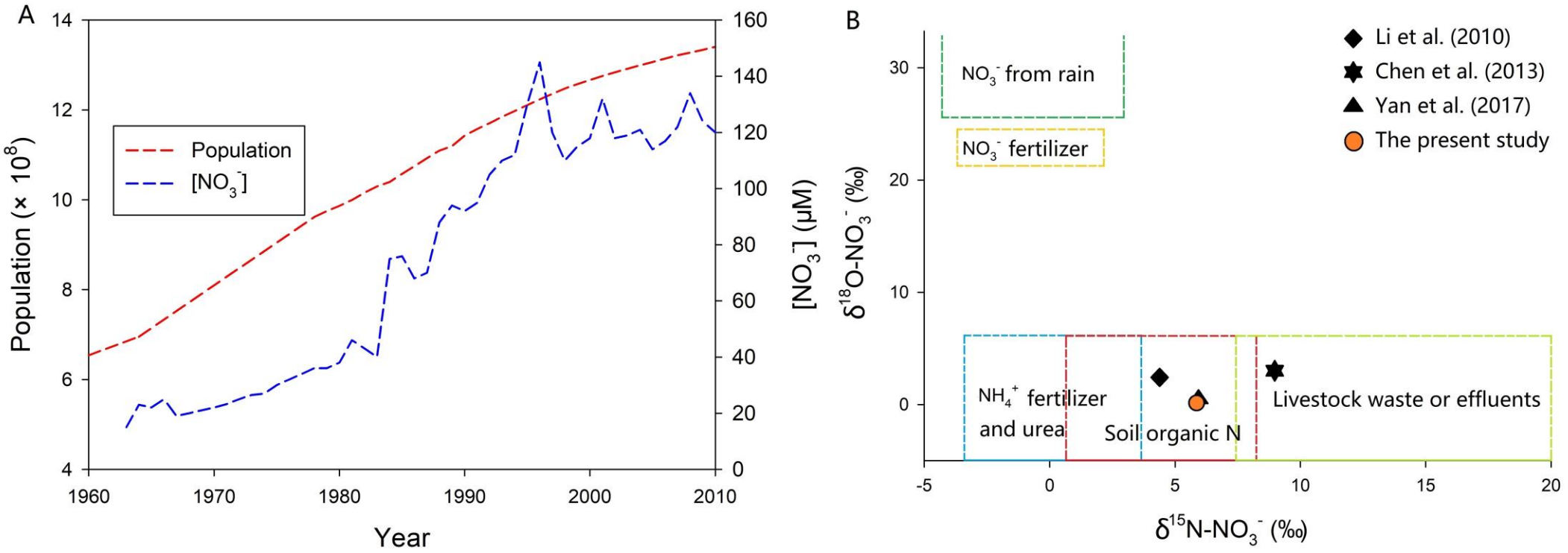
Results

NO_3^- concentration and isotope fractions



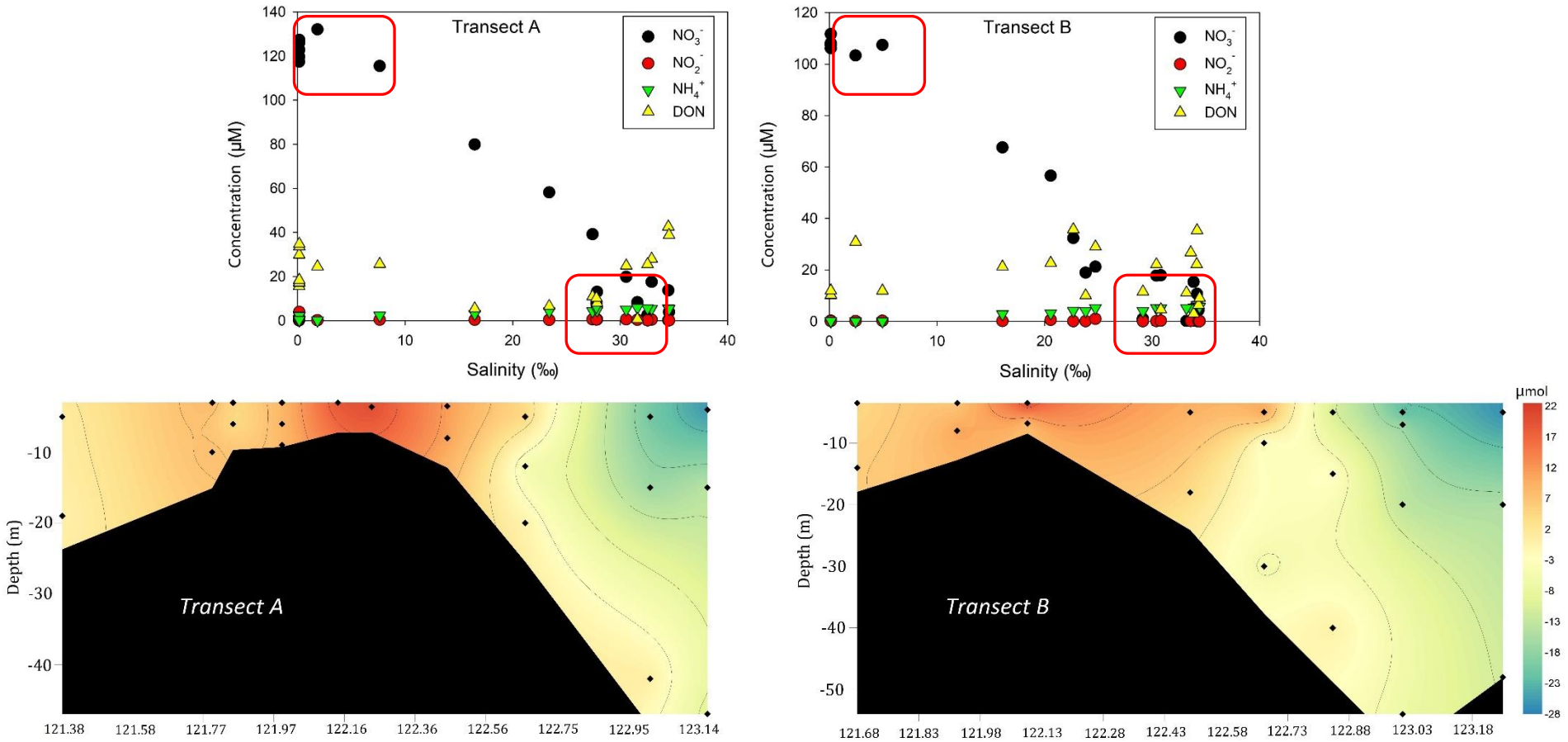
Results

NO_3^- sources in Changjiang



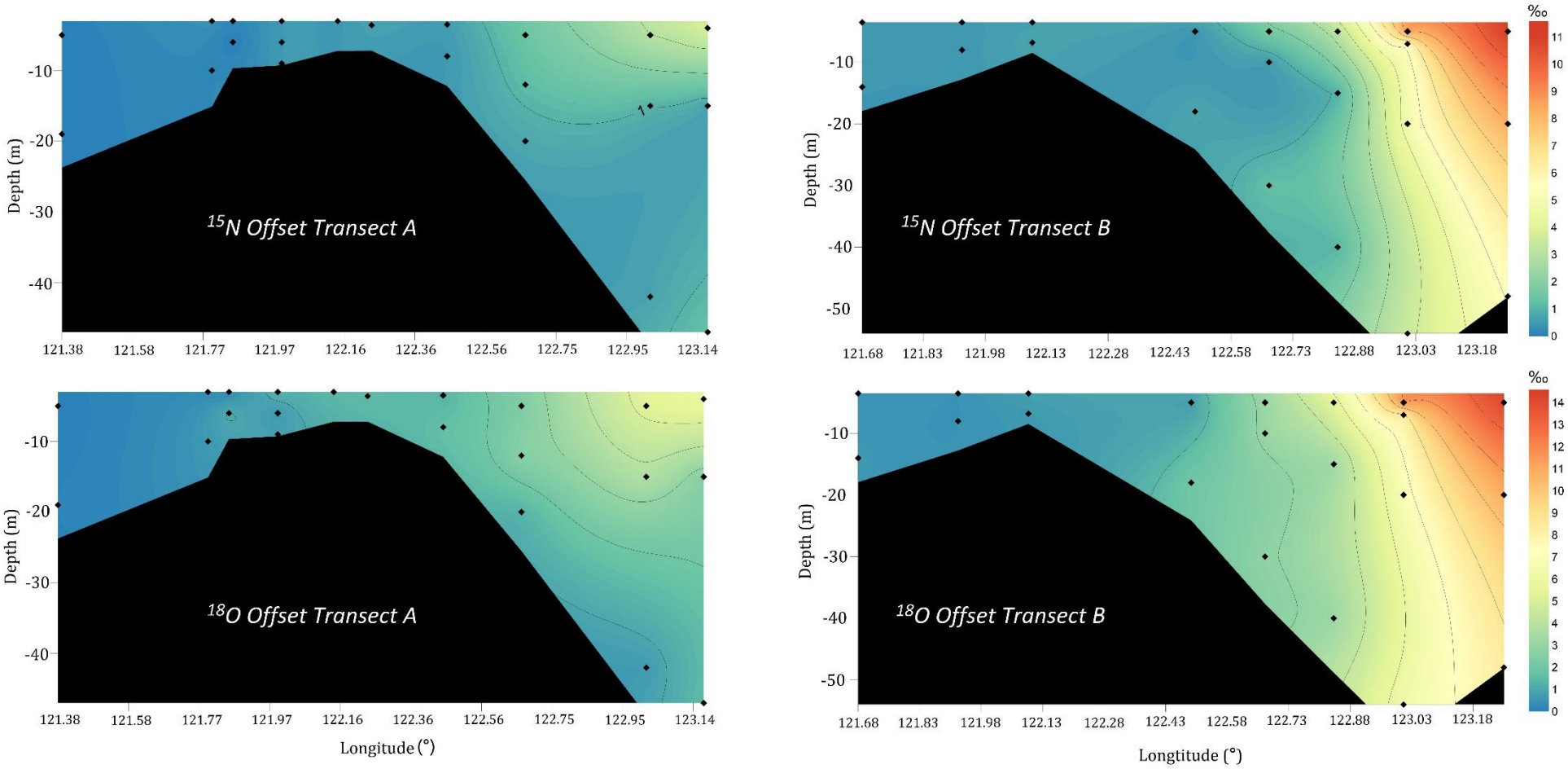
Results

NO_3^- reactions in estuary water



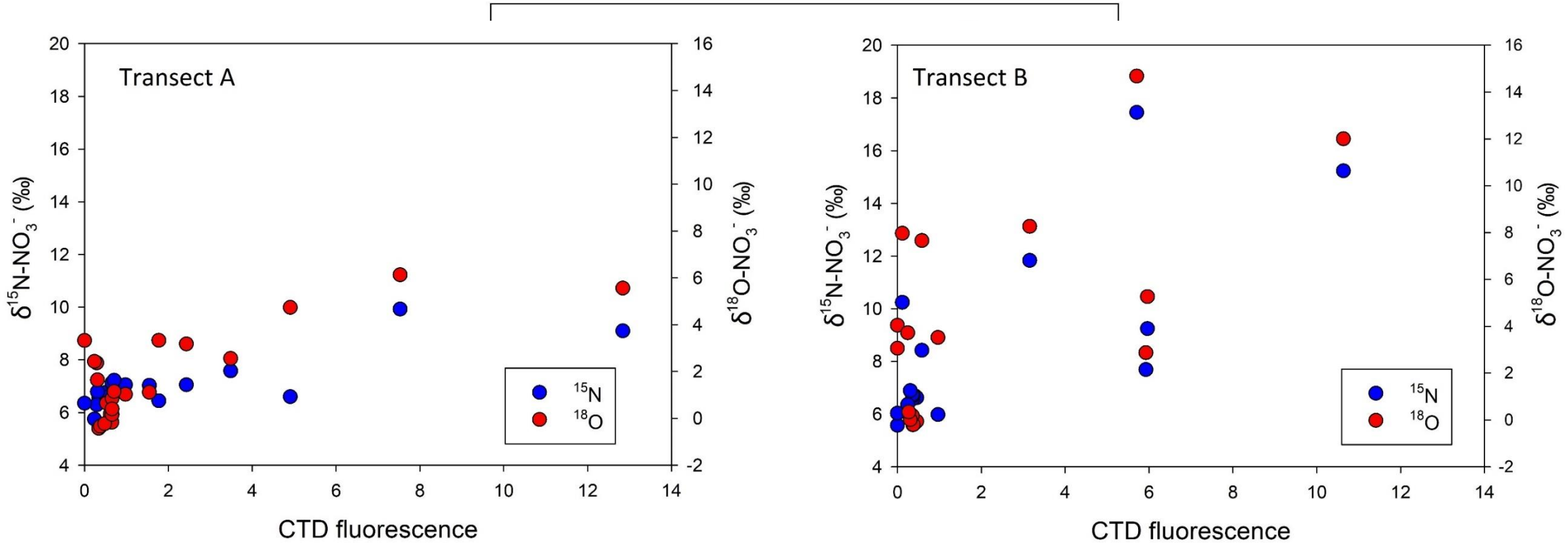
Results

NO_3^- reactions in estuary water



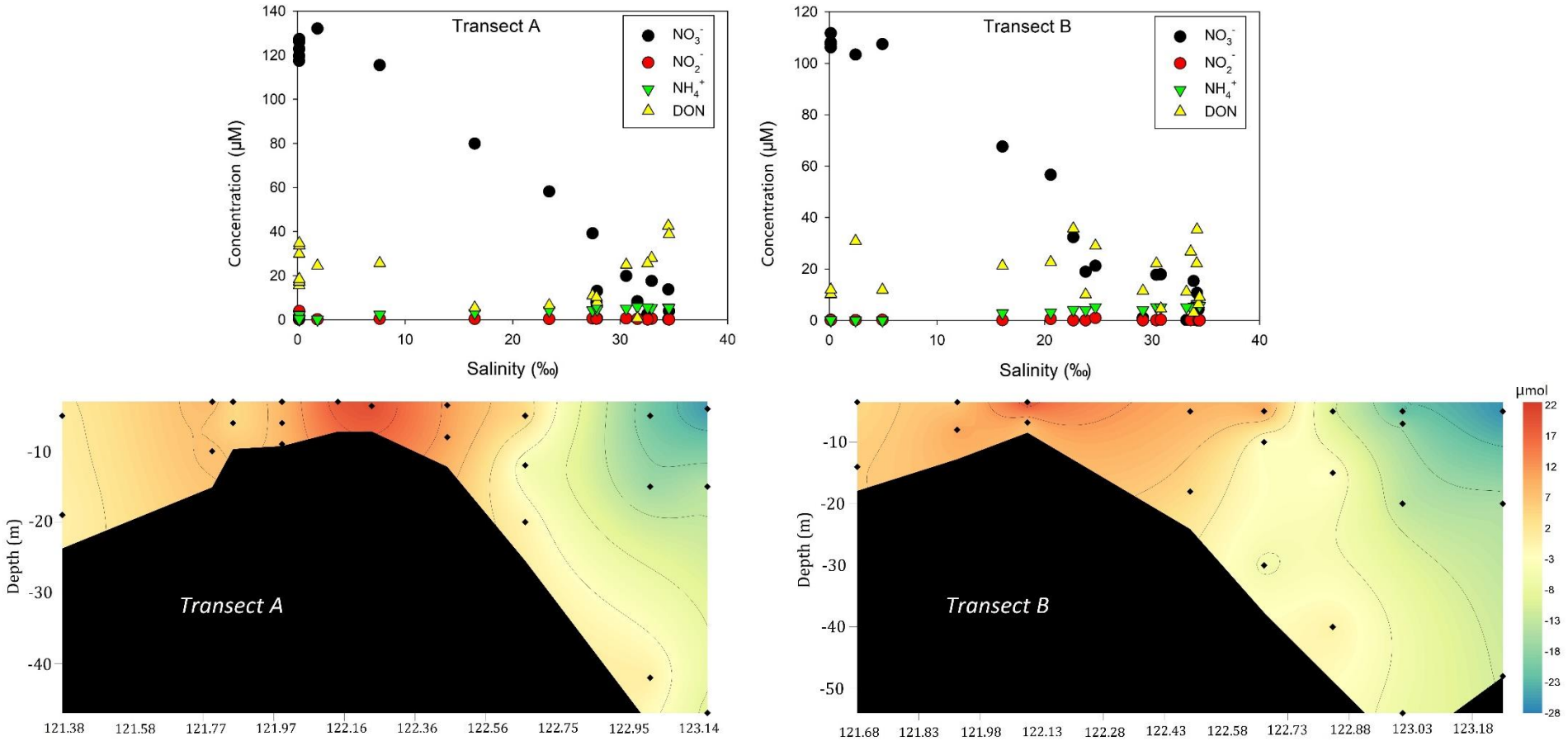
Results

NO_3^- reactions in estuary water



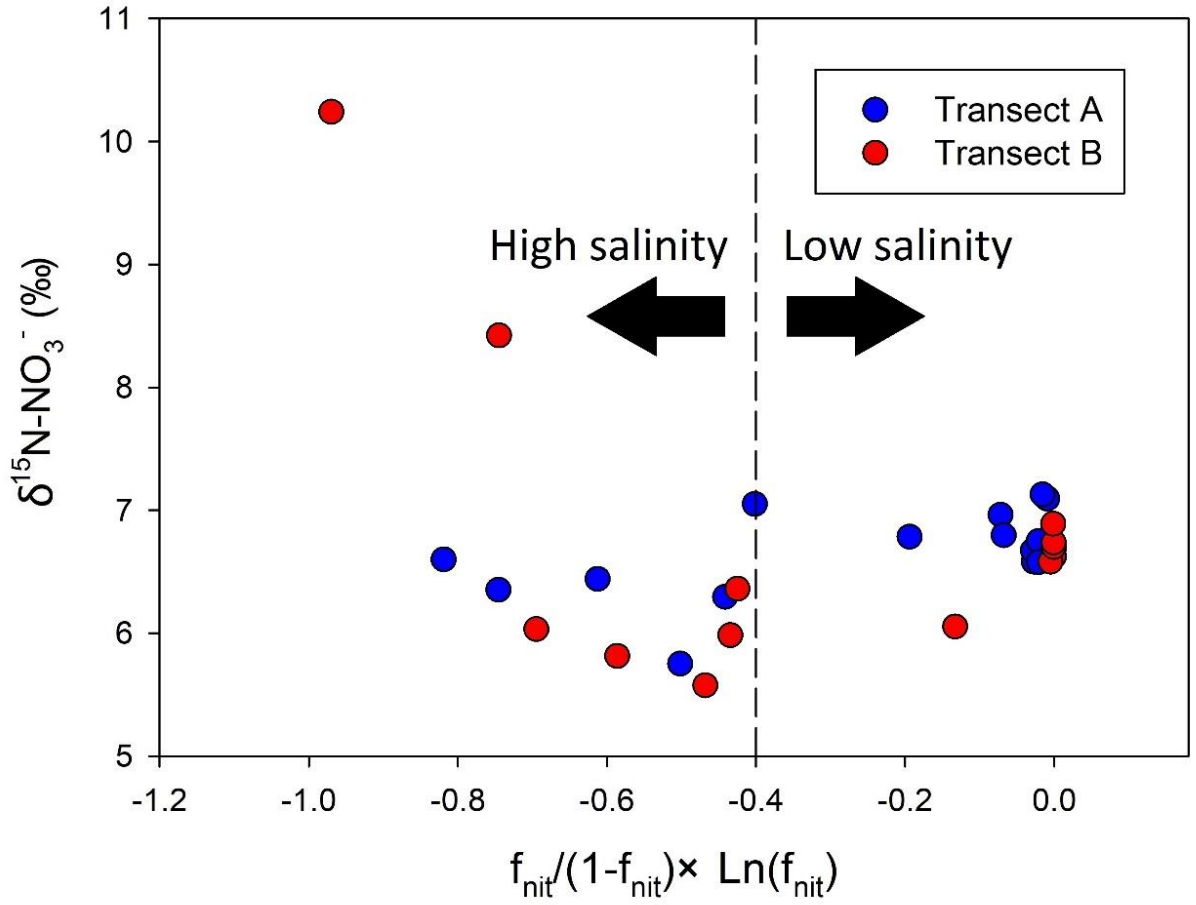
Results

NO_3^- reactions in estuary water

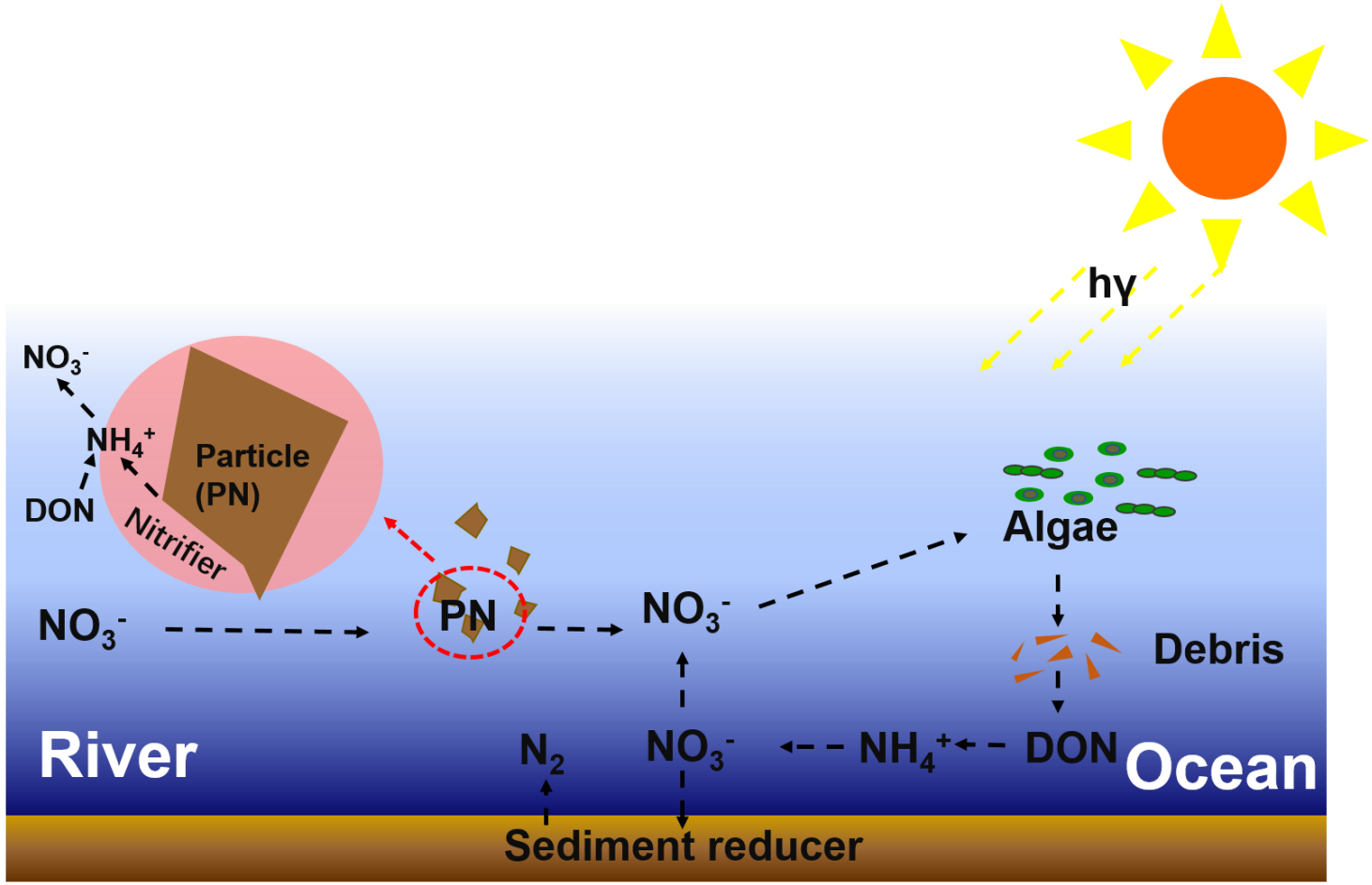


Results

NO_3^- reactions in estuary water



Concluding sketch



ACKNOWLEDGEMENT

Thanks to all the funding support from NNSFC and SKLEC
Thanks to our team members