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Salish Sea Ecosystem Conference

2018 Salish Sea Ecosystem Conference
(Seattle, Wash.)

Apr 5th, 1:30 PM - 1:45 PM

Salish Sea model ecosystem - lower trophic: episodic nutrient supply in the northern Strait of Georgia

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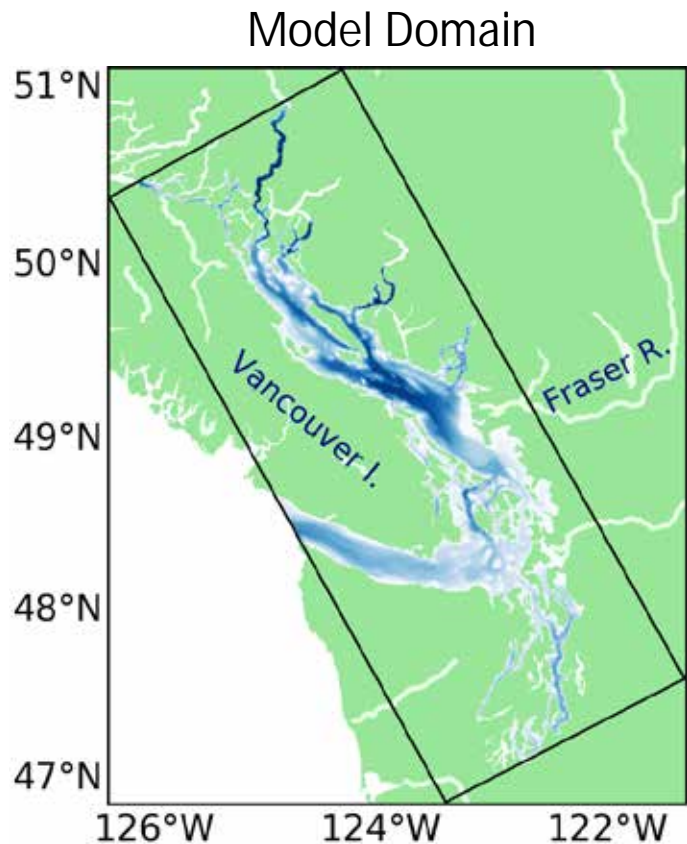
Salish Sea Model Ecosystem - Lower Trophic: Episodic nutrient supply in the Northern Strait of Georgia

Elise Olson, Susan Allen, Vicky Do, Ben
Moore-Maley, Doug Latornell
UBC

Outline

- Background: **Salish Model Ecosystem - Lower Trophic**
- Evaluation: Nitrate in the Northern Strait of Georgia
- Nitrate Supply Events
- Conclusions

Background: Salish Model Ecosystem - Lower Trophic



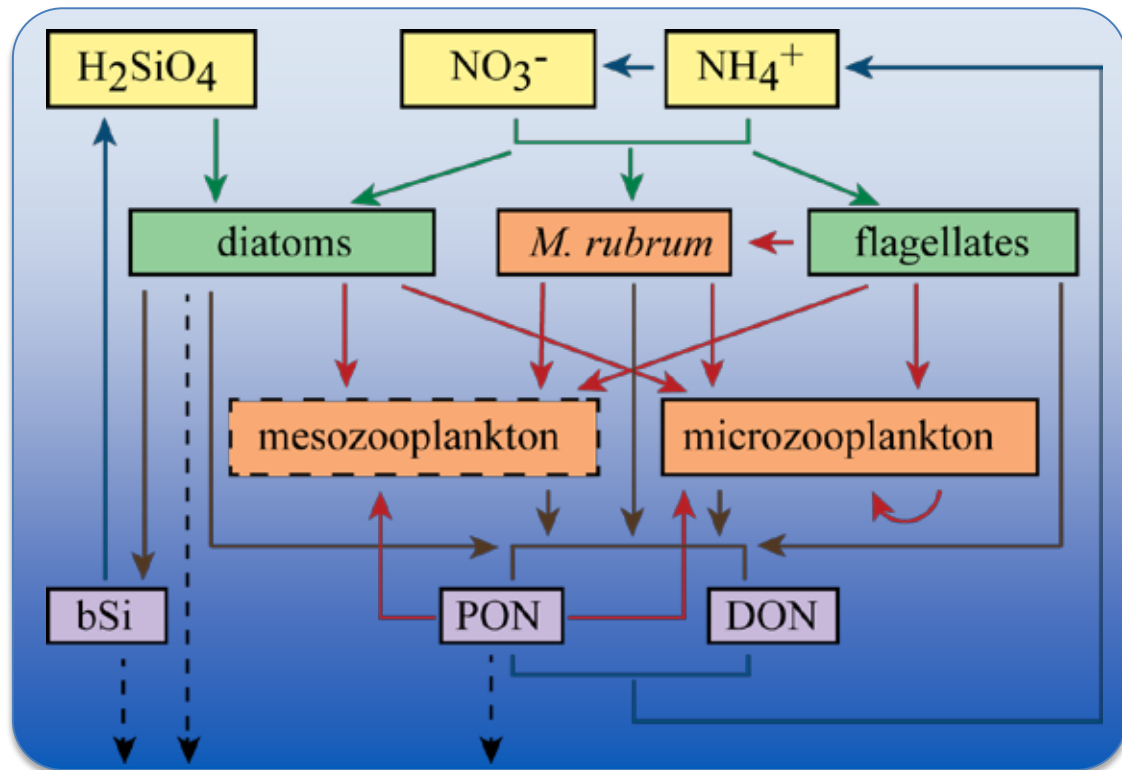
SalishSeaCast Physical Model (Soontiens et al, 2015)

- NEMO (Madec et al 2012) v3.6 primitive equation, baroclinic model
- GLS vertical turbulence in k- ϵ regime
- 398 x 898 x 40 grid
 - ~500 m horizontal, 1-20 m vertical
- forcing:
 - tides: 8 constituents
 - atmospheric: hourly 2.5 km resolution from Environment Canada
 - open boundary SSH (west)
 - rivers (150+): climatology except for Fraser measured at Hope

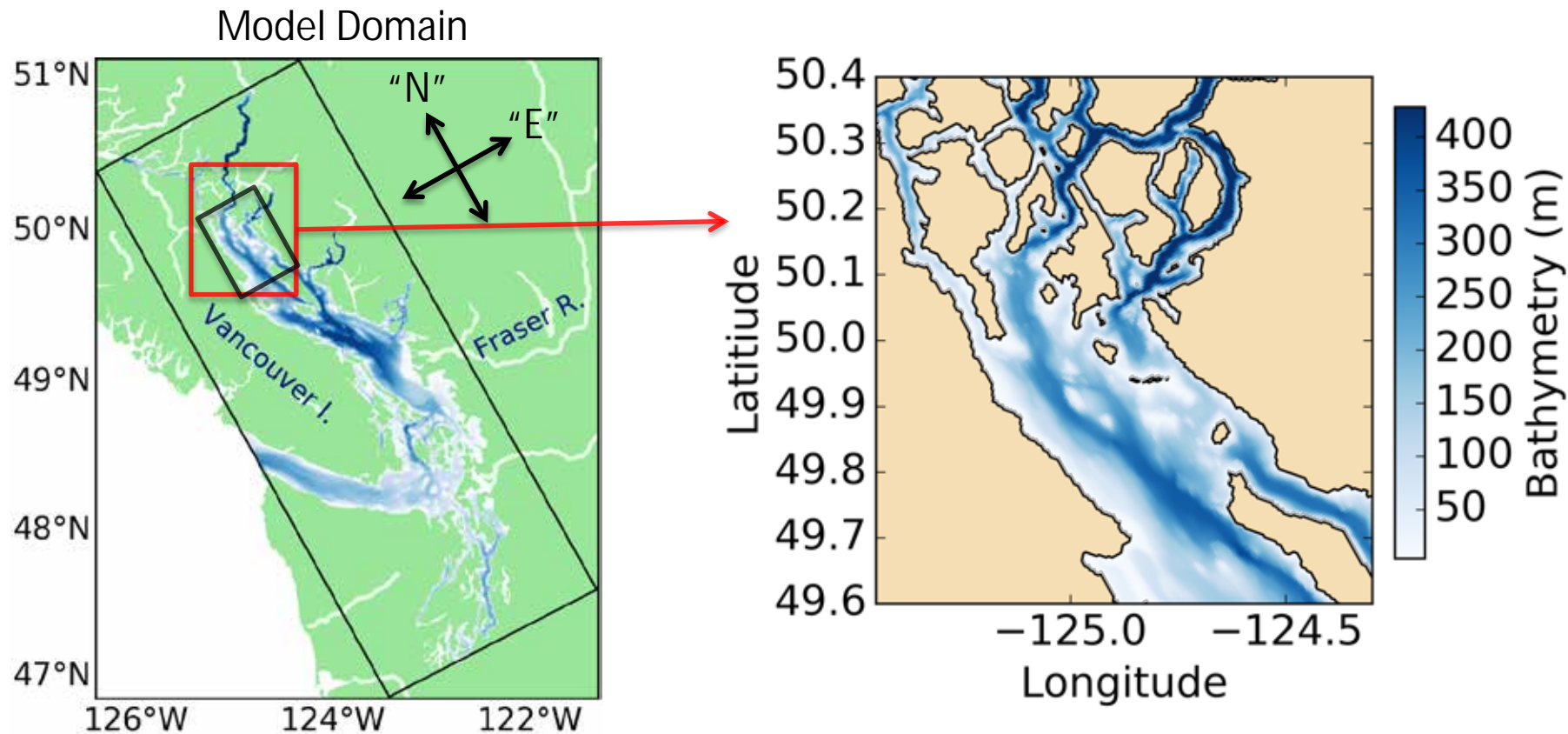
Background: Salish Model Ecosystem - Lower Trophic

SMELT Biological Model – Based on 1-d SOG Model (Allen and Wolfe, 2013; Moore-Maley et al., 2016)

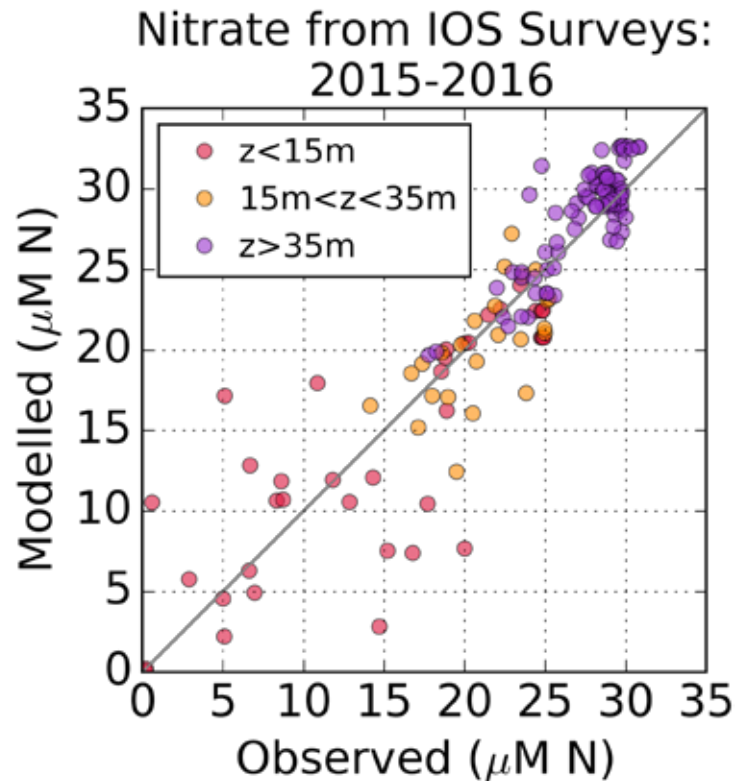
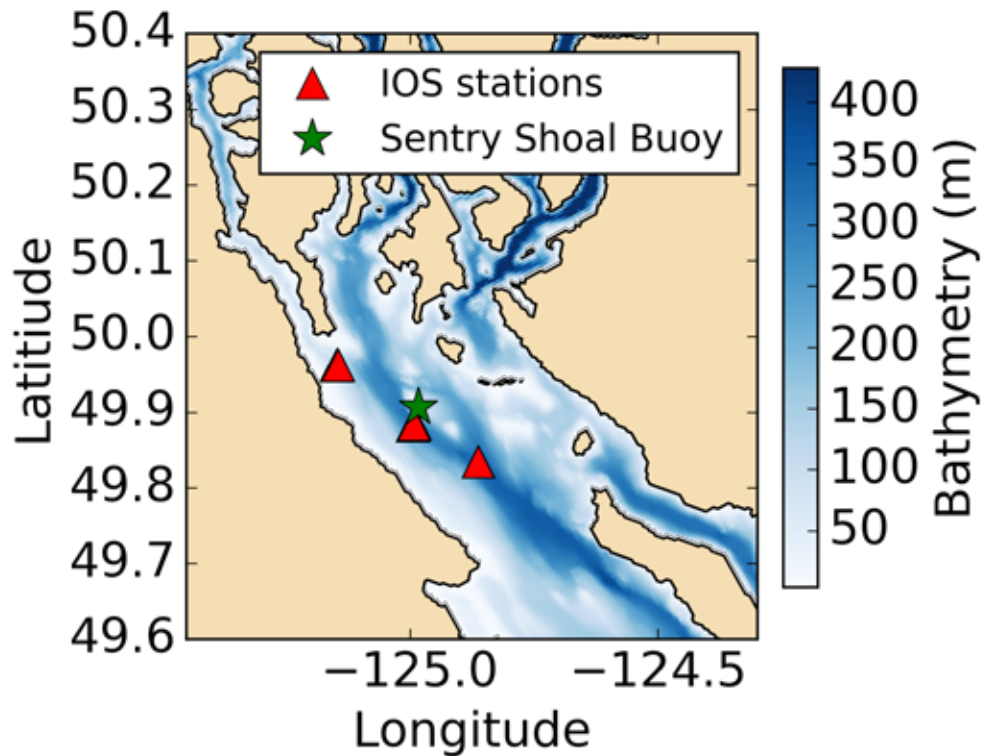
- nutrients, phytoplankton, zooplankton, detritus
 - *M. rubrum* is a mixotroph
- mesozooplankton closure based on climatology
- forcing: inputs of nutrients through rivers and at open boundaries (based on climatology), light



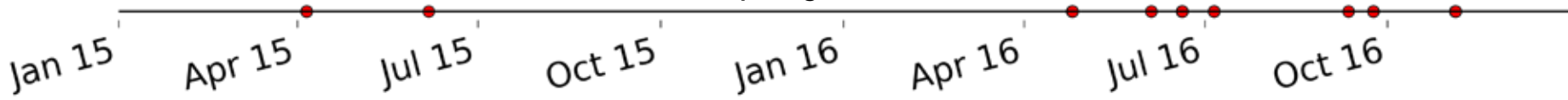
Background: Salish Model Ecosystem - Lower Trophic



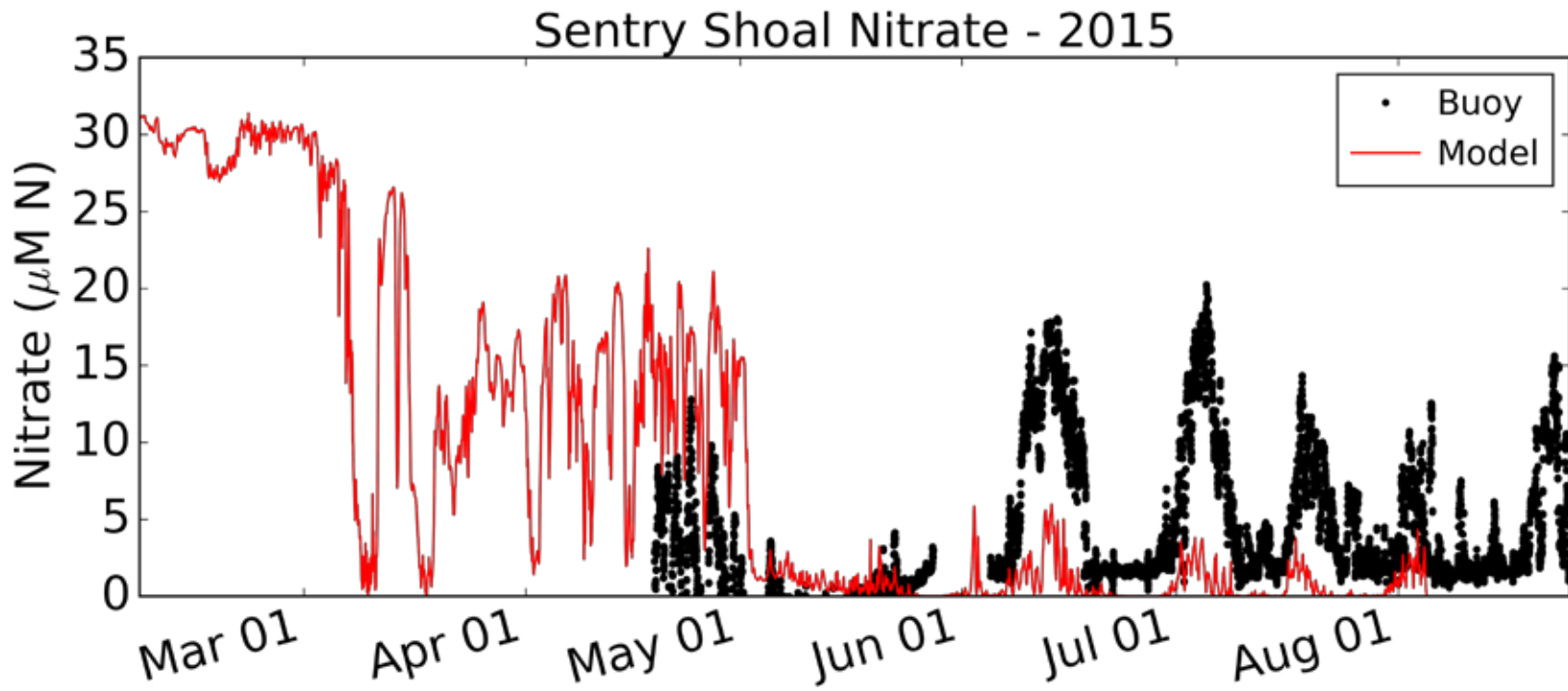
Evaluation: Nitrate in the Northern Strait of Georgia



Sampling Dates



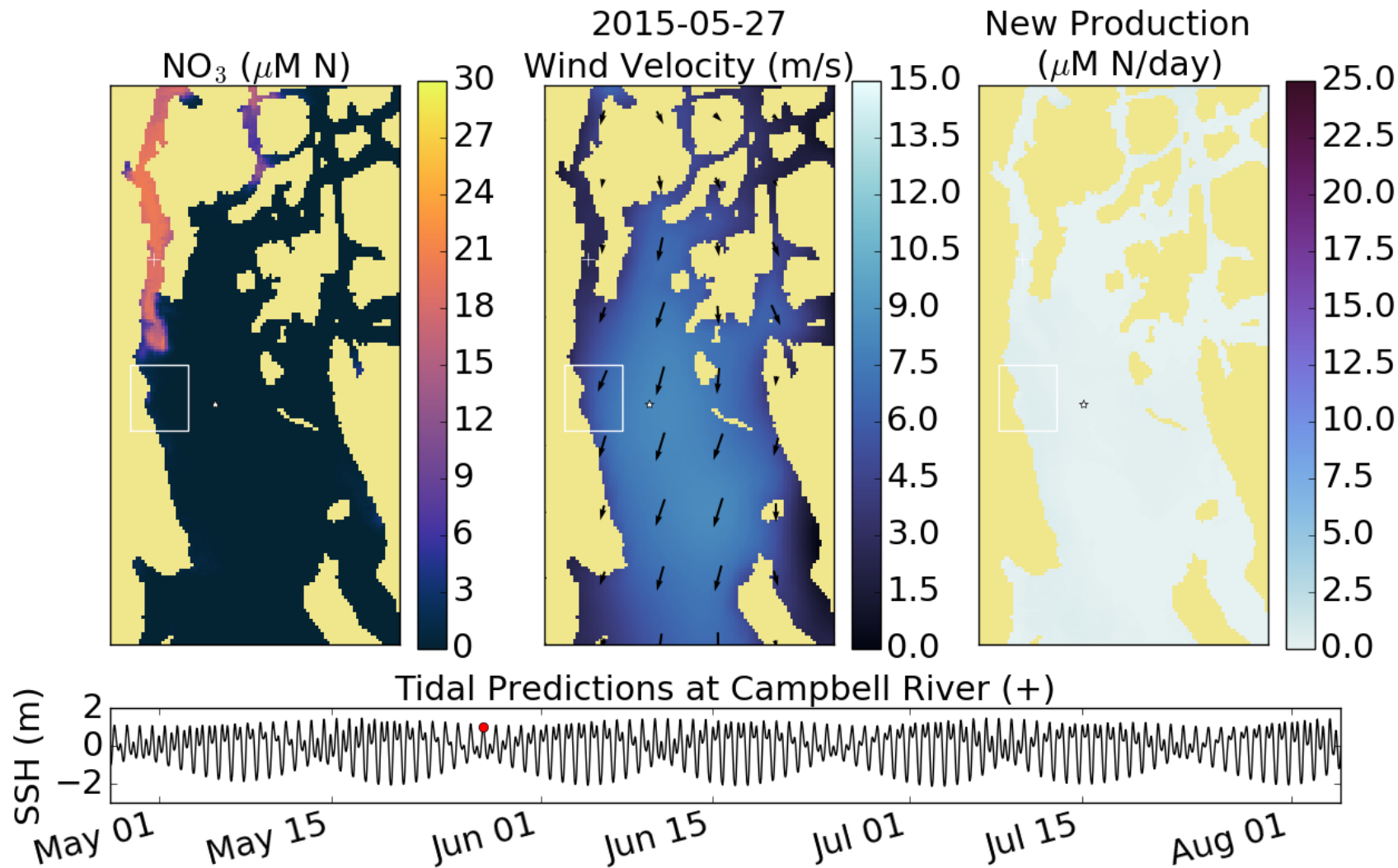
Evaluation: Nitrate in the Northern Strait of Georgia

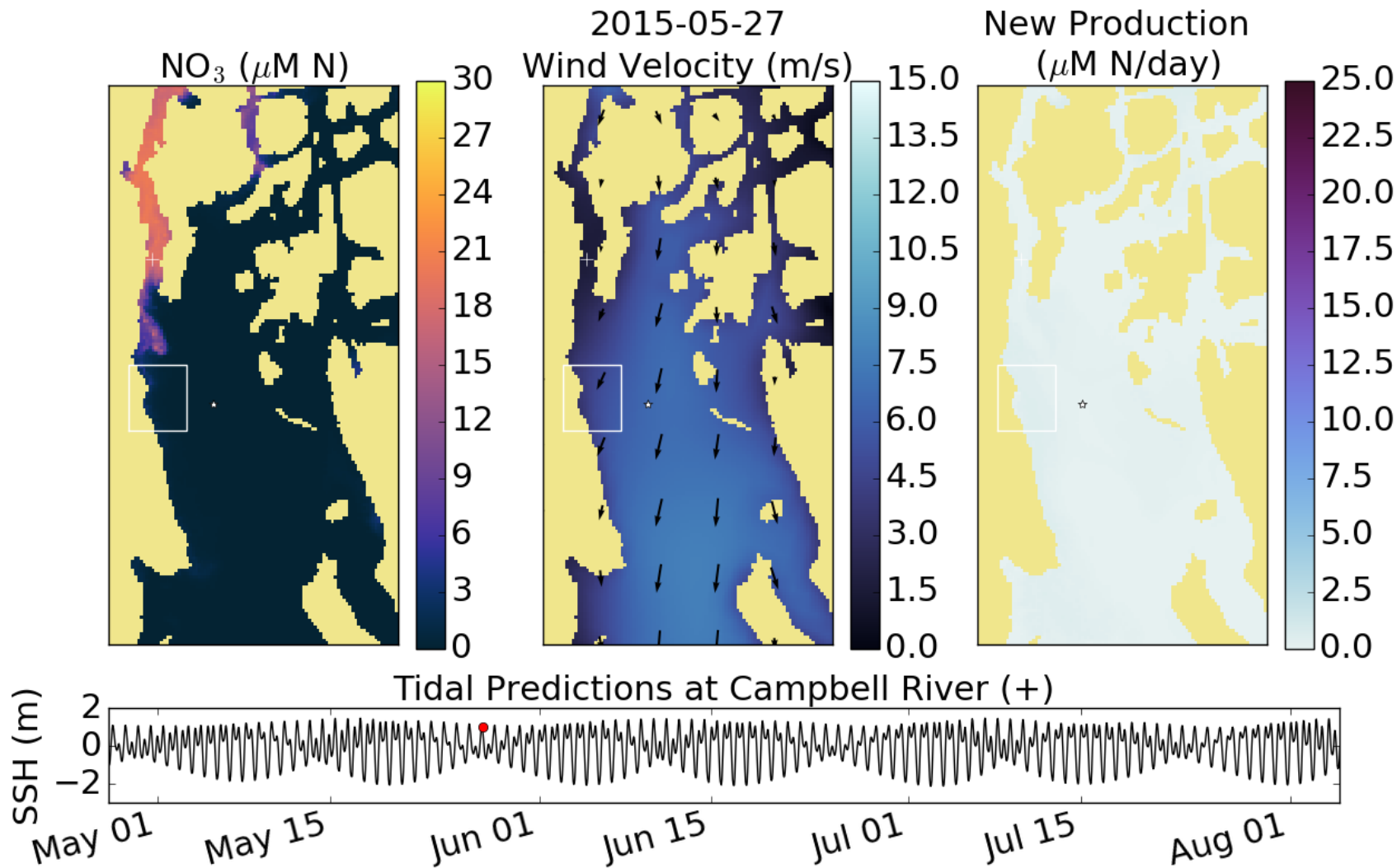


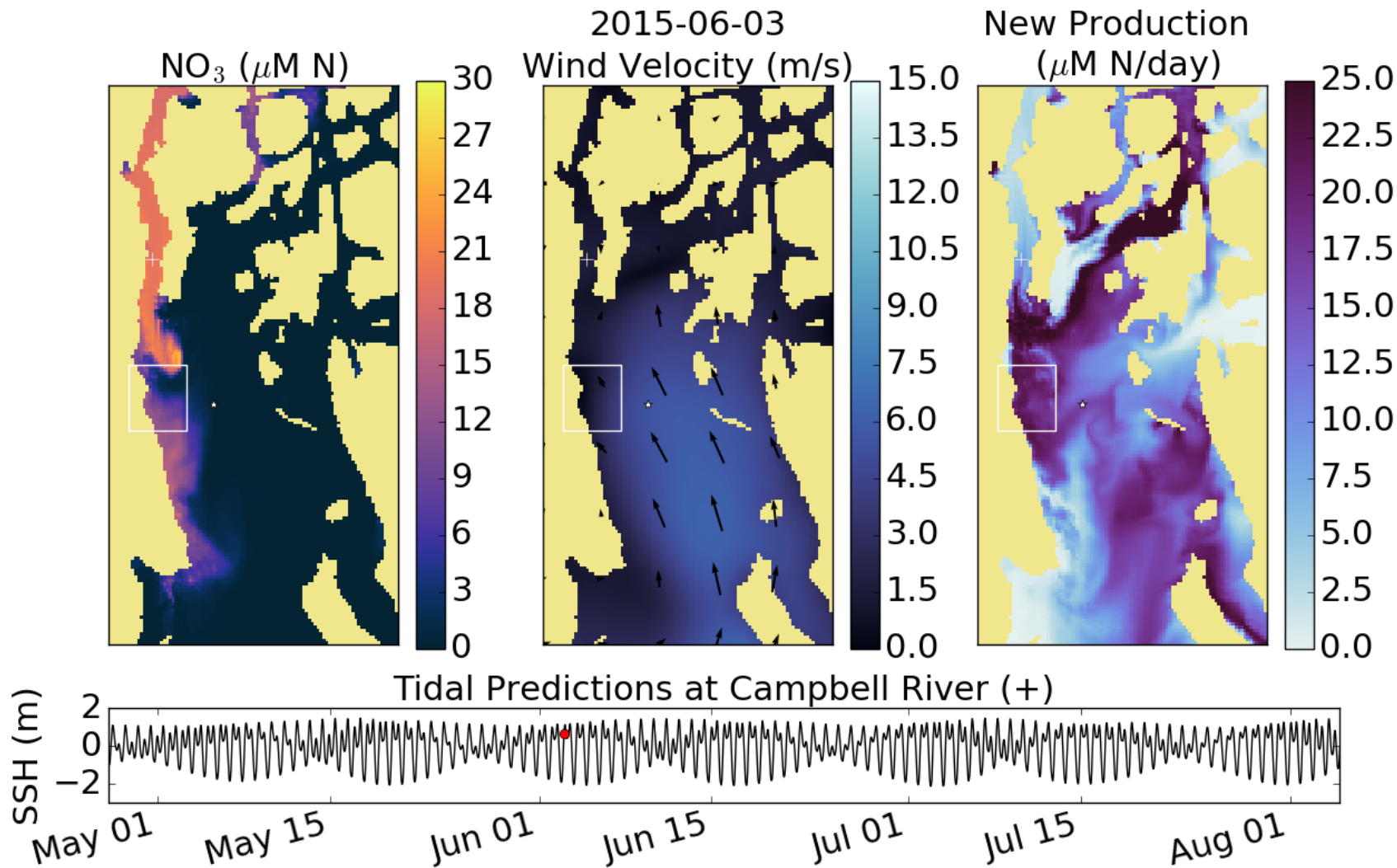
Sentry Shoal Buoy data provided by Stephanie King and Katie Pocock

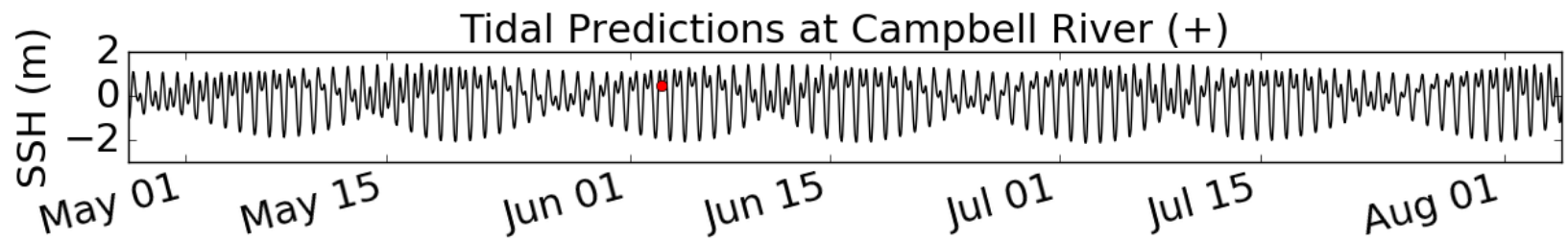
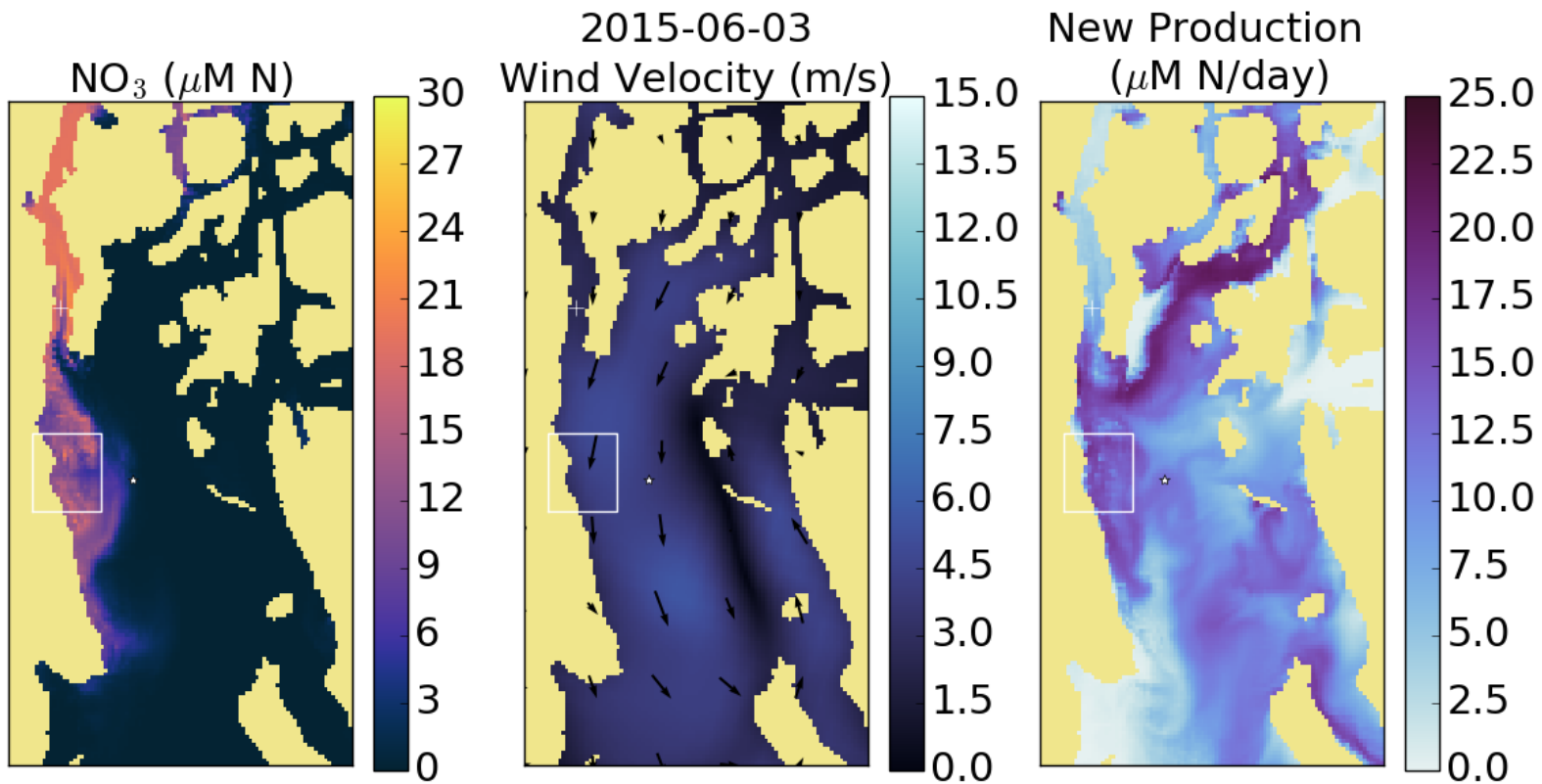
Nitrate Supply Events

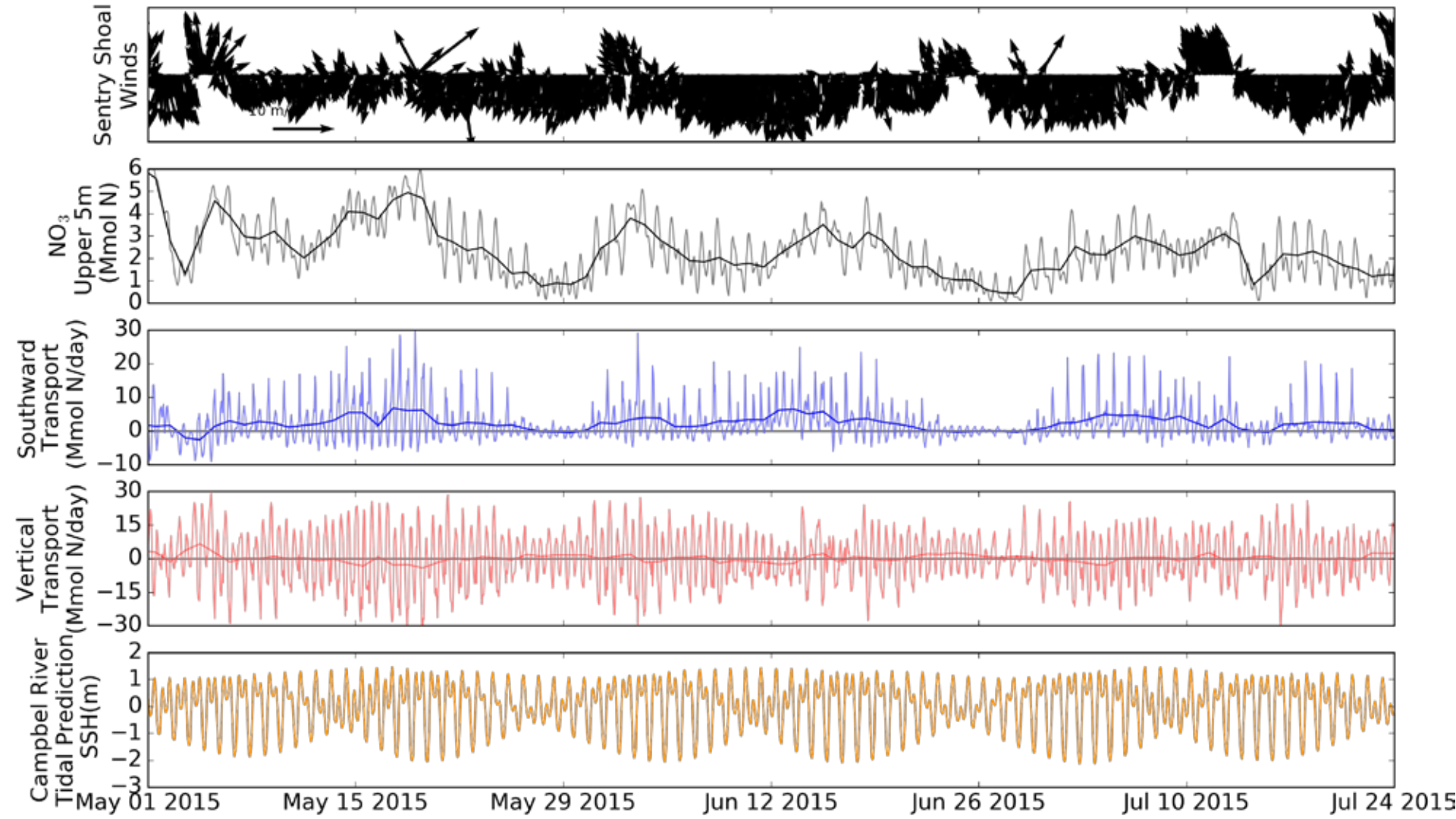












Conclusions

- High nitrate surface waters pulse southward out of Discovery Passage into the Northern Strait of Georgia
- Intensity and southward extent of the surface pulse tends to be stronger during spring tides

Acknowledgements

Salish Sea NEMO Model group: Tereza Jarnikova, Michael Dunphy, Nancy Soontiens, Jie Liu

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Thank you!