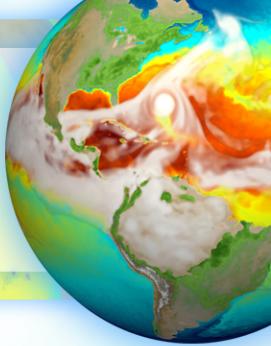


Toward a coastal BGC capability



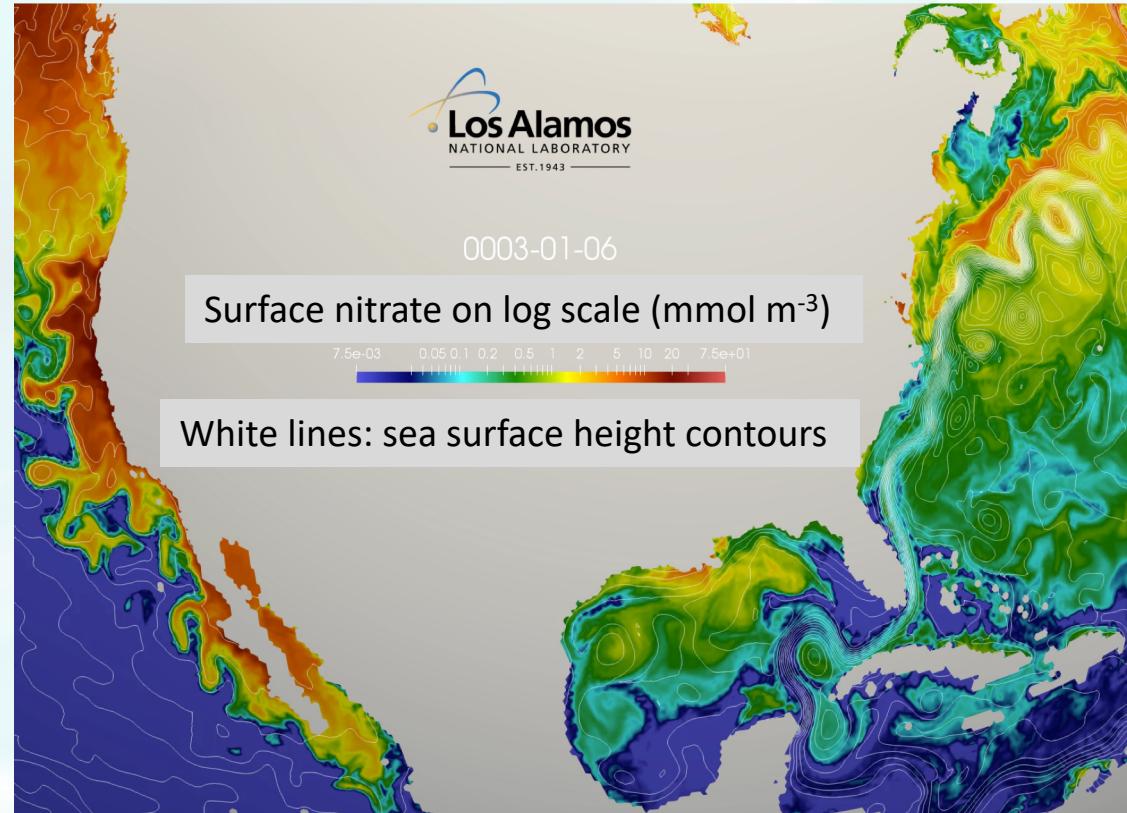
Phillip J. Wolfram and Ruby Leung
Coastal BGC session

March 20, 2019

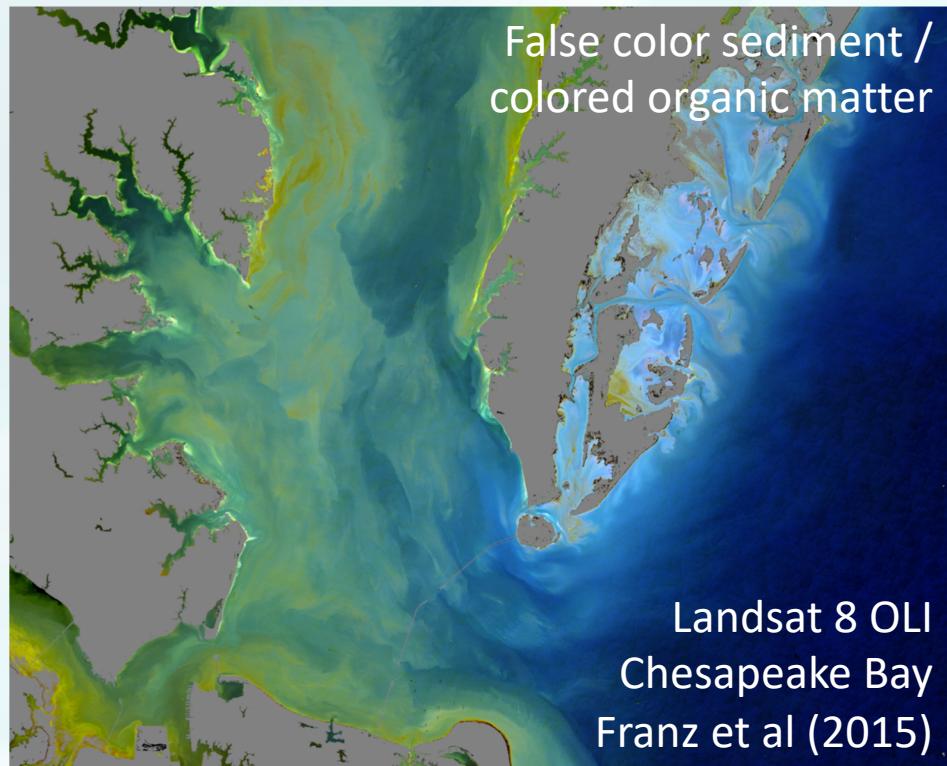
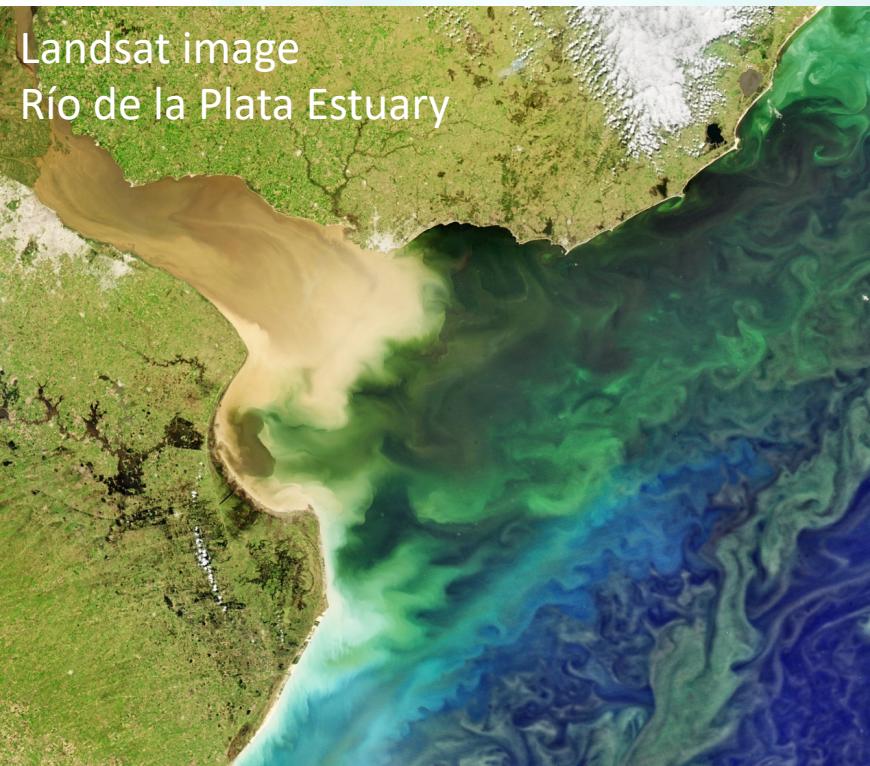
E3SM Spring Meeting
Westminster, CO

Mid-resolution (20km) North America coastal BGC APRAE analysis: P. Wolfram, M. Maltrud, R. Brady

- Mesoscale eddies need resolved to get correct scalar mixing (Wolfram et al, 2015)
- Origins of surface nutrients (e.g., for macroalgae) complex and eddy-dependent
- **Upwelling and river sources of nutrients key to understanding coastal BGC**
- No sediment transport



Coastal BGC remote sensing



Sediment transport fluxes

Op

*Heavy precipitation
and drought*



Fresh-salt water flow balance



MOSART

- Water management
- Urban hydrology

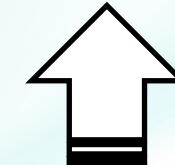
MPAS-Ocean

- Tides
- Salinity
- Waves

ELM

Coastal vegetation

- Variable drag on flows
- Inundation



*Sea level rise
and storm surge*