

# 2024 State of the NEP Meso- and Submesoscales

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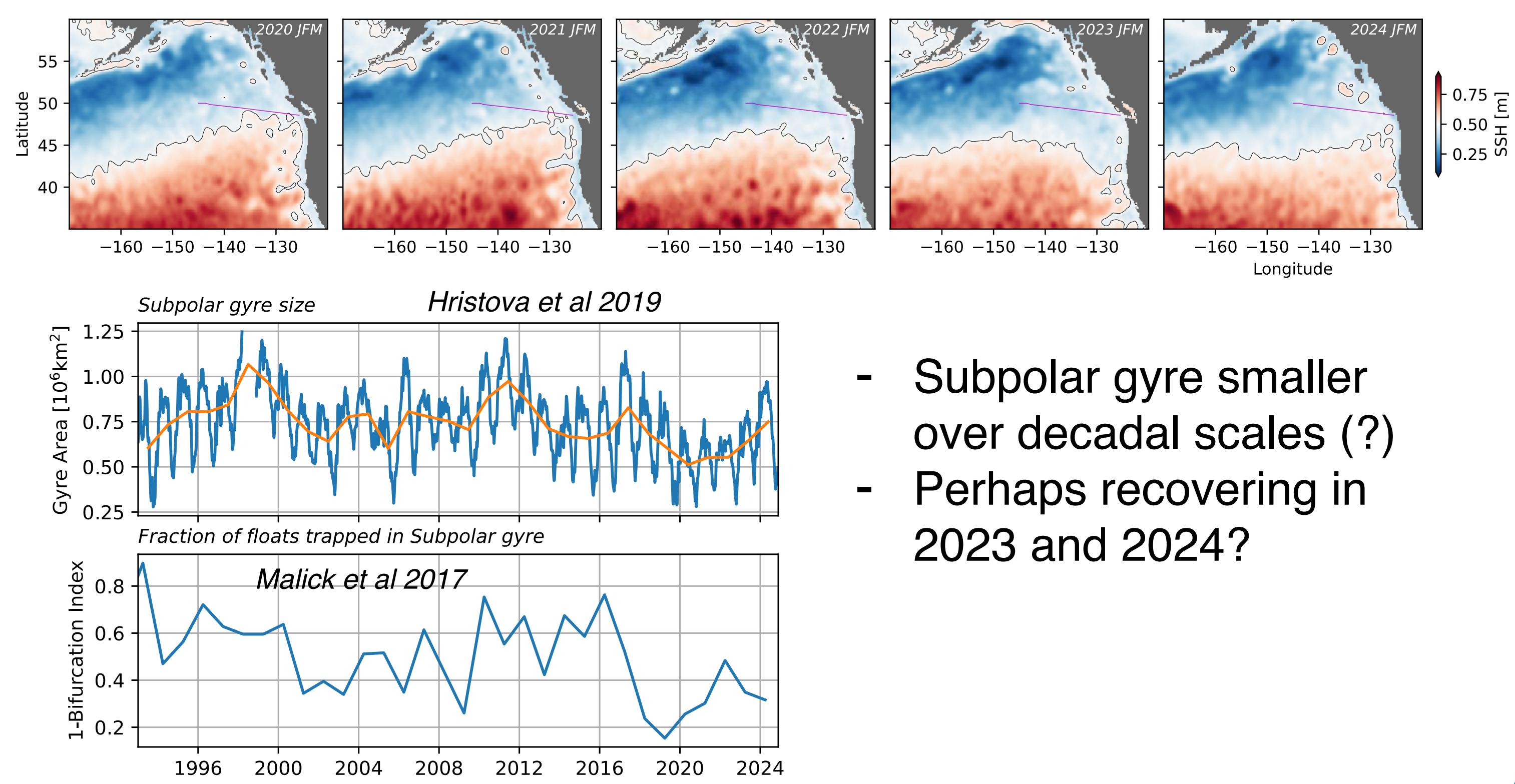


<https://cproof.uvic.ca>

## Why?

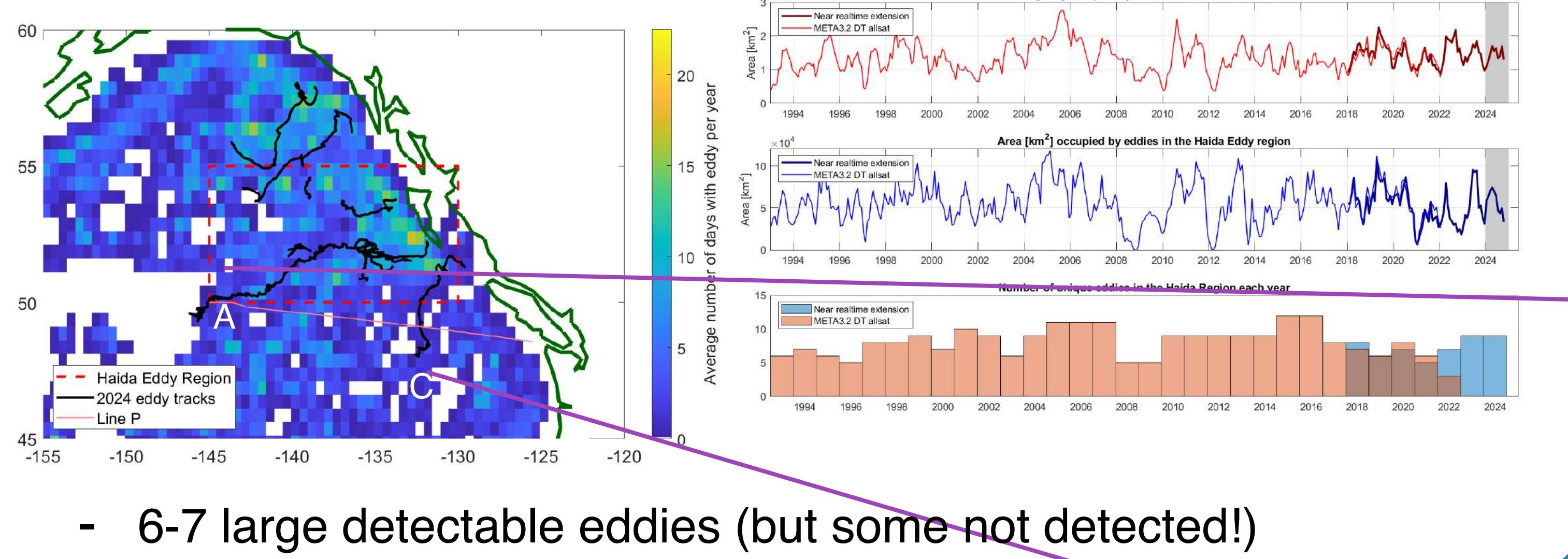
- Carry heat, nutrients, gasses from coastal to offshore
- Simulations can assimilate physics, harder to assimilate biogeochemistry
- Better understand mixing processes

## State of the subpolar gyre



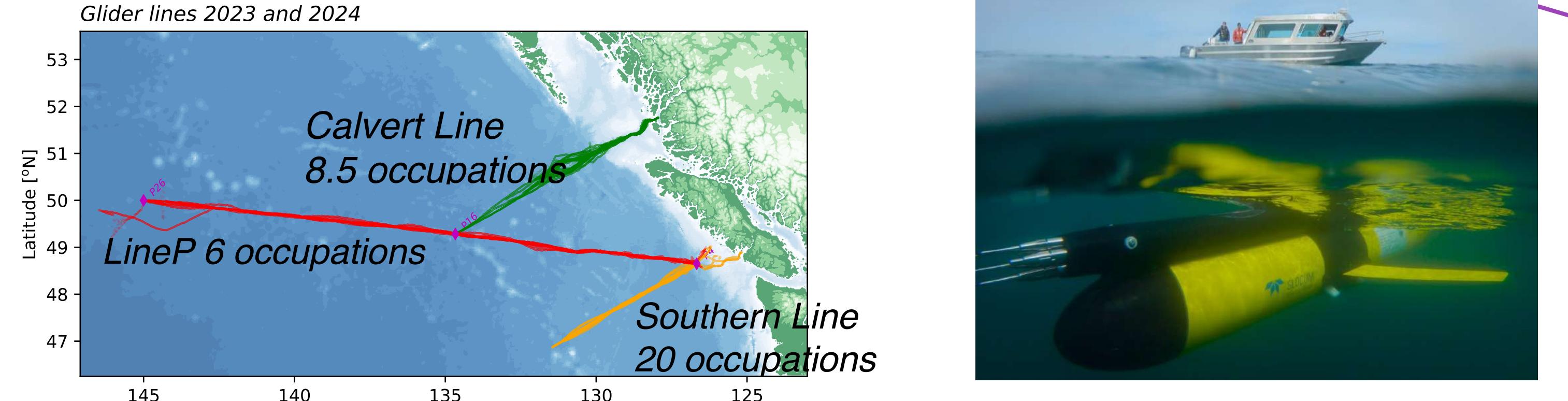
- Subpolar gyre smaller over decadal scales (?)
- Perhaps recovering in 2023 and 2024?

## Eddy census

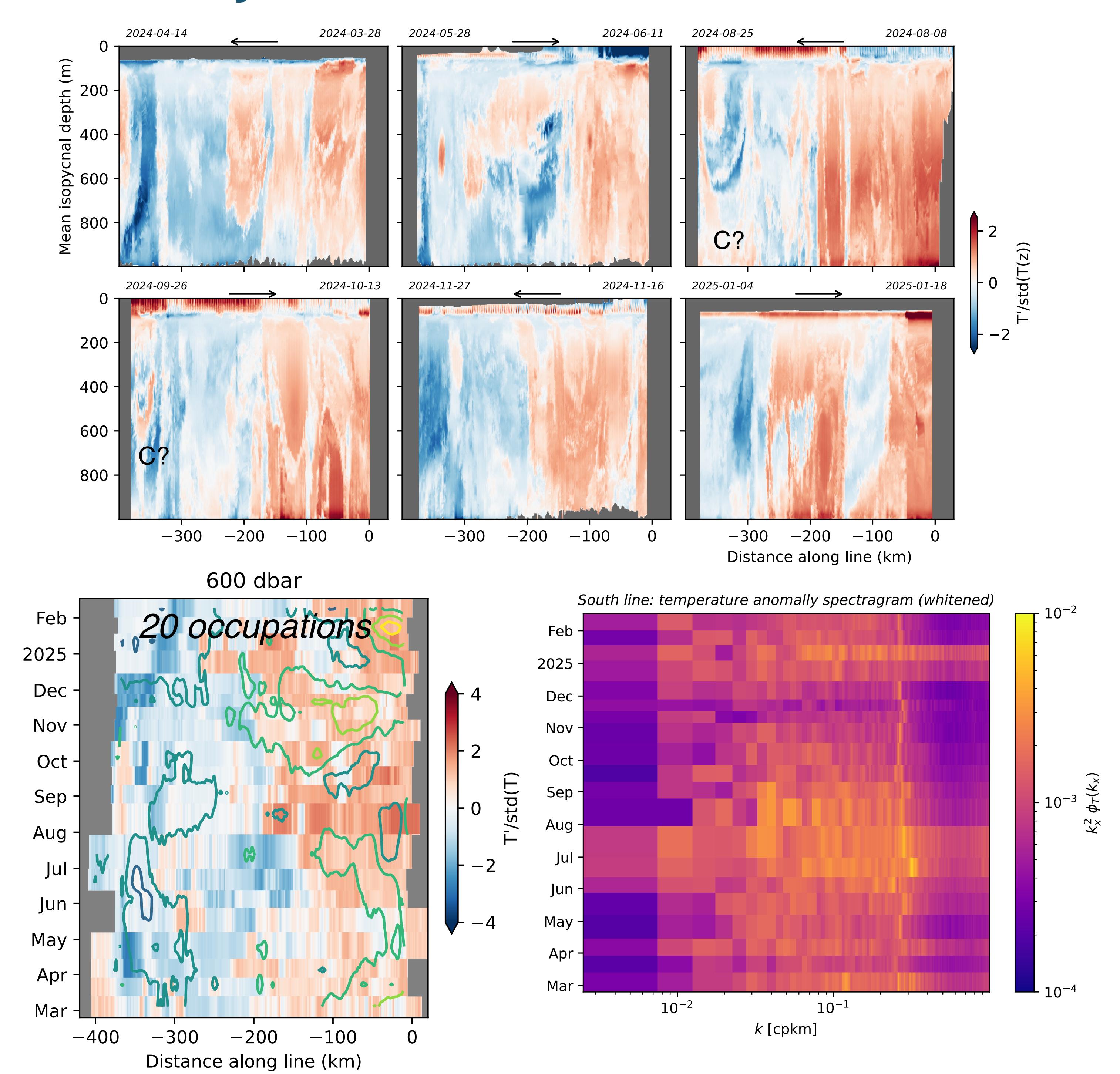


- 6-7 large detectable eddies (but some not detected!)

## Ocean gliders:

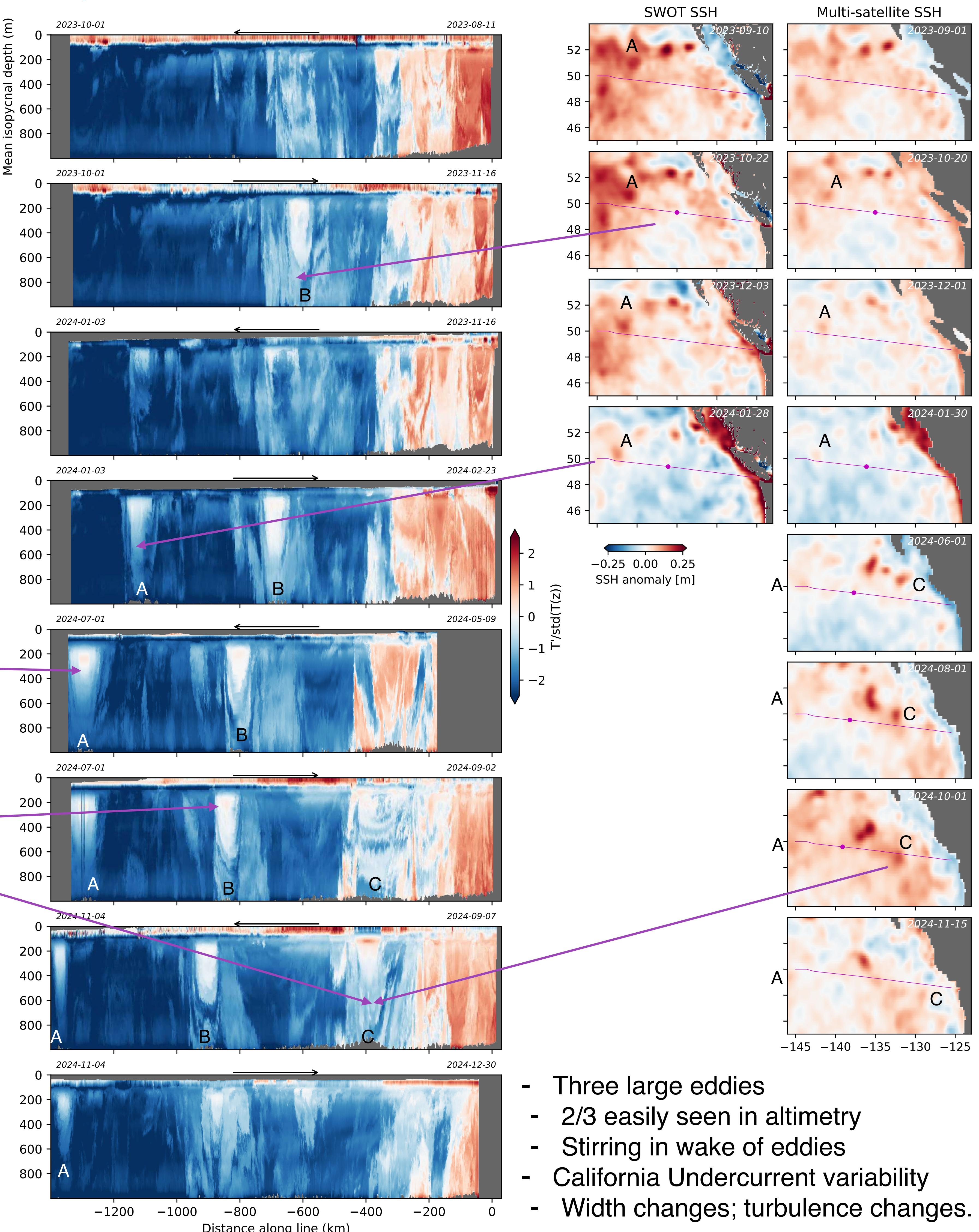


## Variability in California Undercurrent



- Warm water width varies 100-250 km (even more inter-annually)
- Temperature varies, cohesiveness varies.
- More variability Jun-Aug?

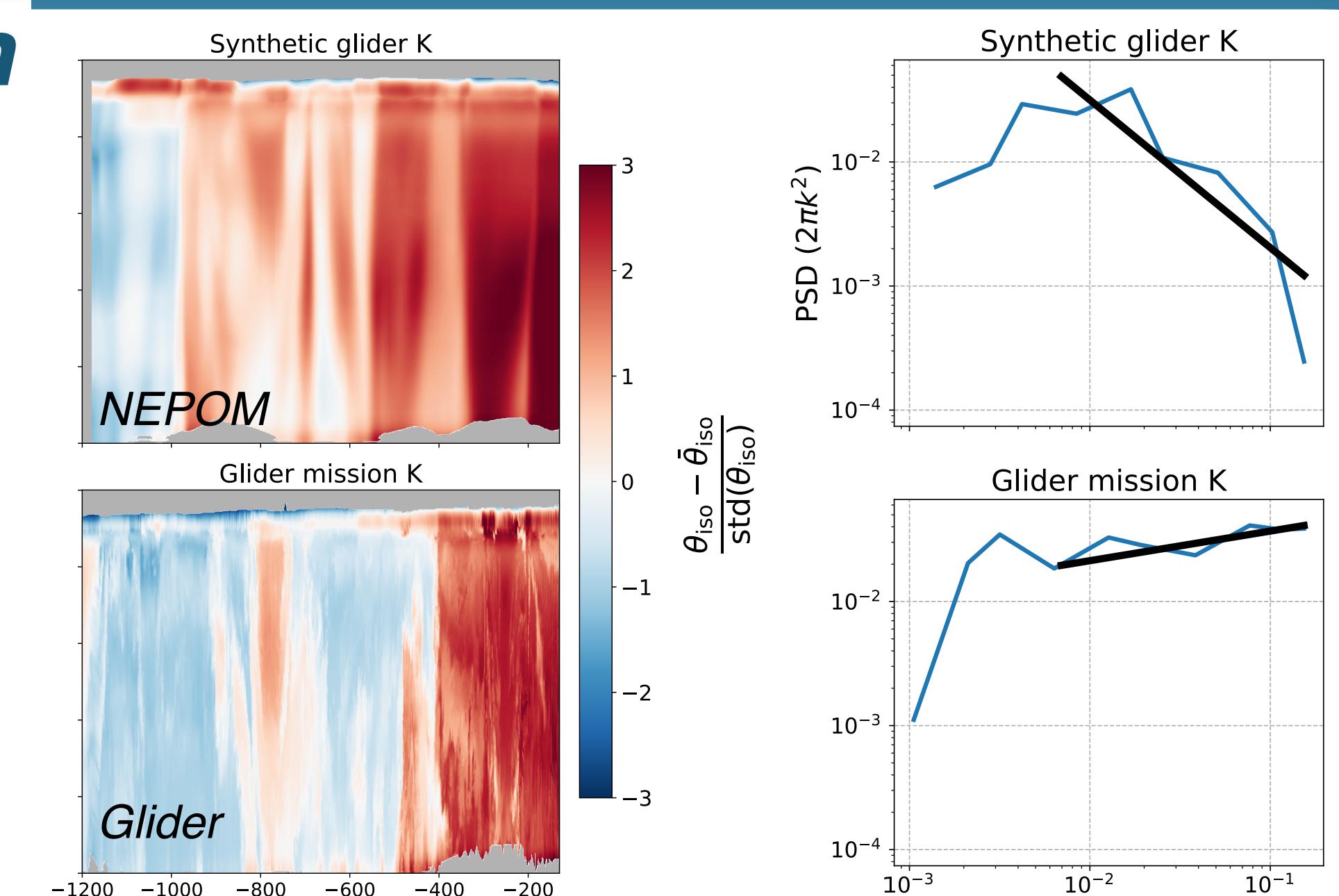
## LineP



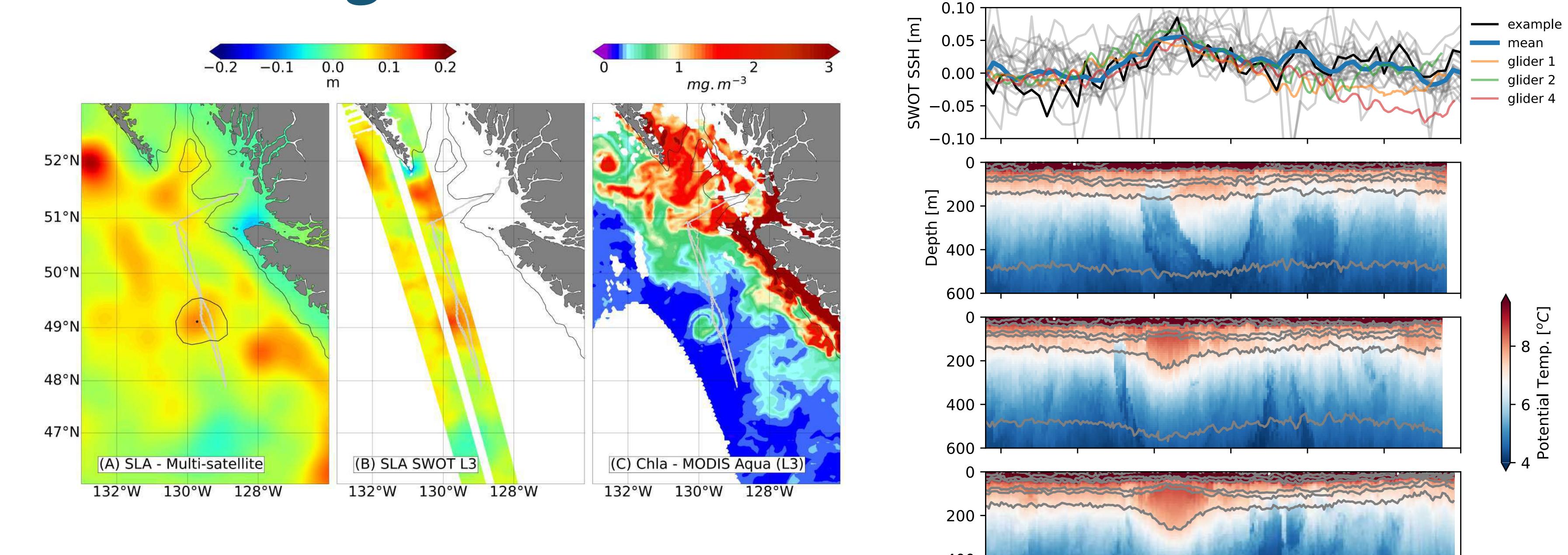
- Three large eddies
- 2/3 easily seen in altimetry
- Stirring in wake of eddies
- California Undercurrent variability
- Width changes; turbulence changes.

## Model-data comparison

- GIOPS-west config
- Near-slope temperature anomaly more diffuse
- Far less variance at higher wavenumber
- In-situ observations are important!
- Effect on large scale?
- Work to be done!



## Combining methods



Understanding and measuring mesoscales requires a variety of approaches and statistics.