

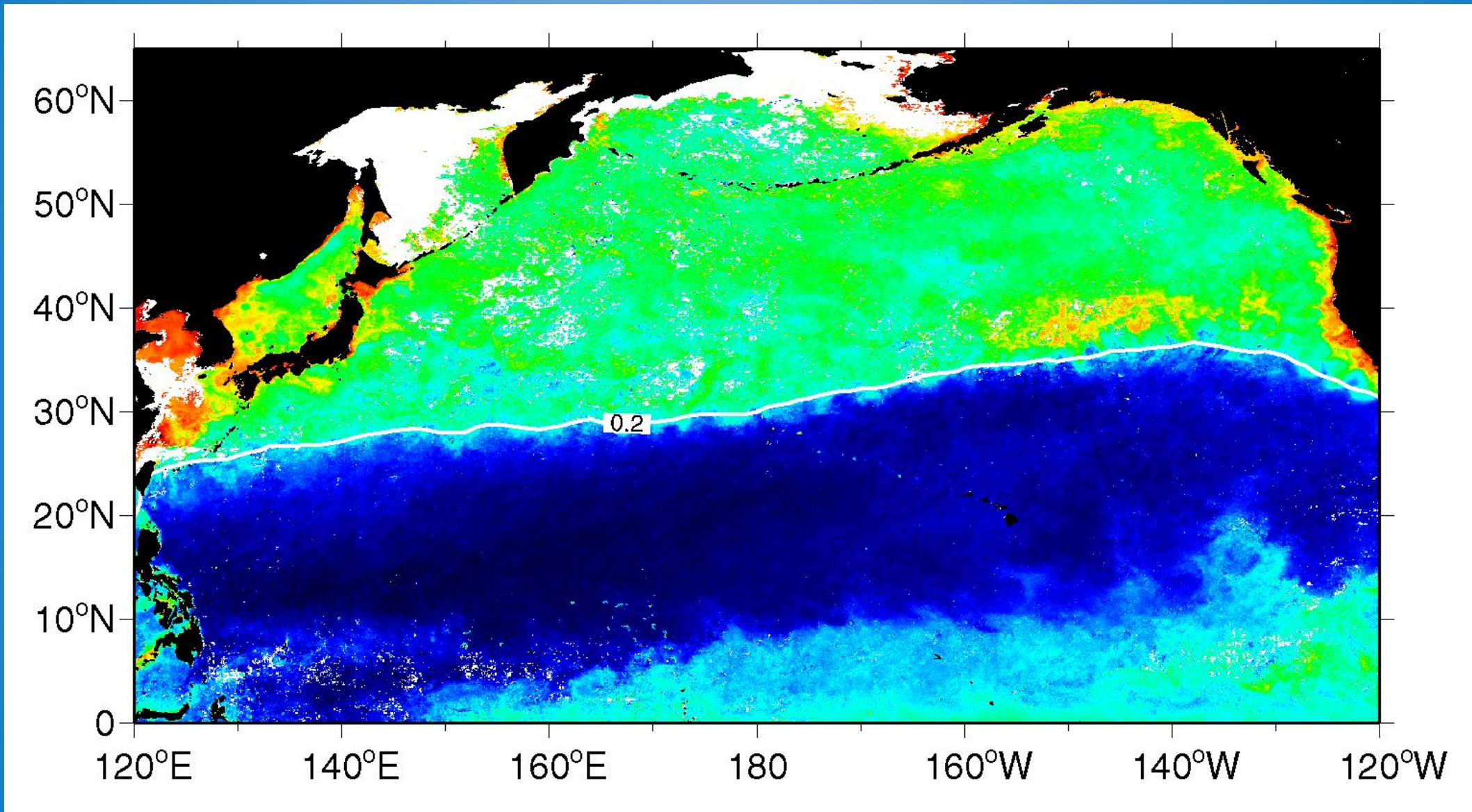
# Small turtles in a big ocean: Loggerhead sea turtle forage habitats in the North Pacific



Jeffrey Polovina, George Balazs, Evan Howell, Denise Parker,  
Marc Rice, and Itaru Uchida

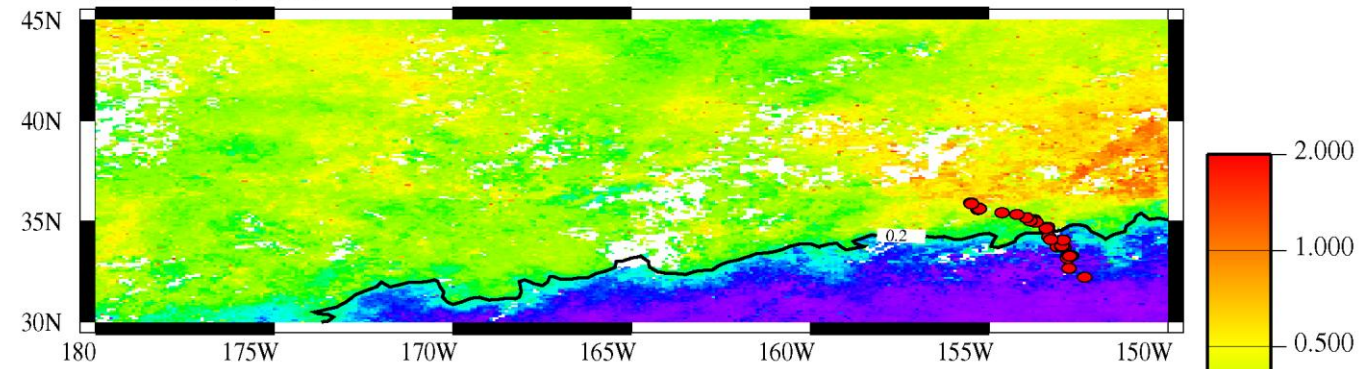


# Transition Zone Chlorophyll Front (TZCF) (0.2mgC/m<sup>3</sup>)

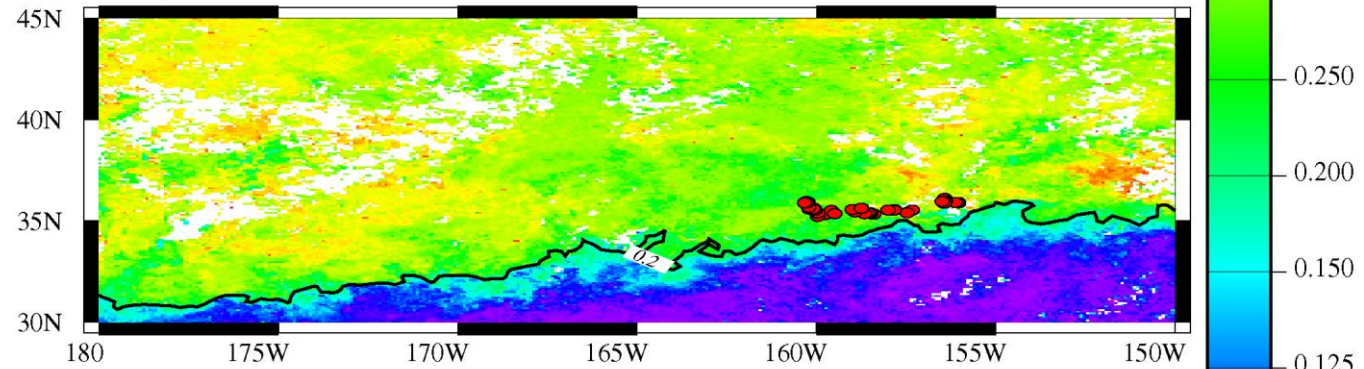


# Mean Daily Position of Turtle 22174 With SeaWiFS Ocean Color

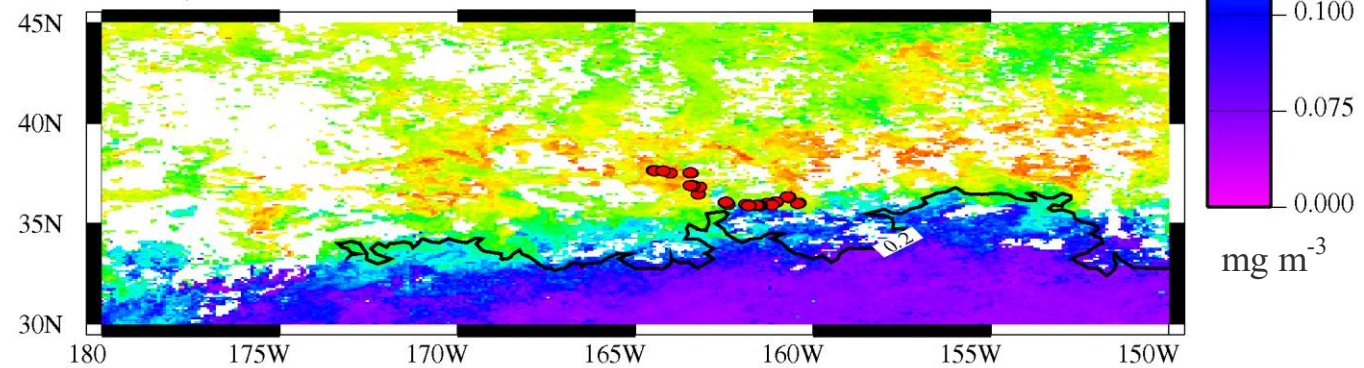
A. March, 2000



B. April, 2000

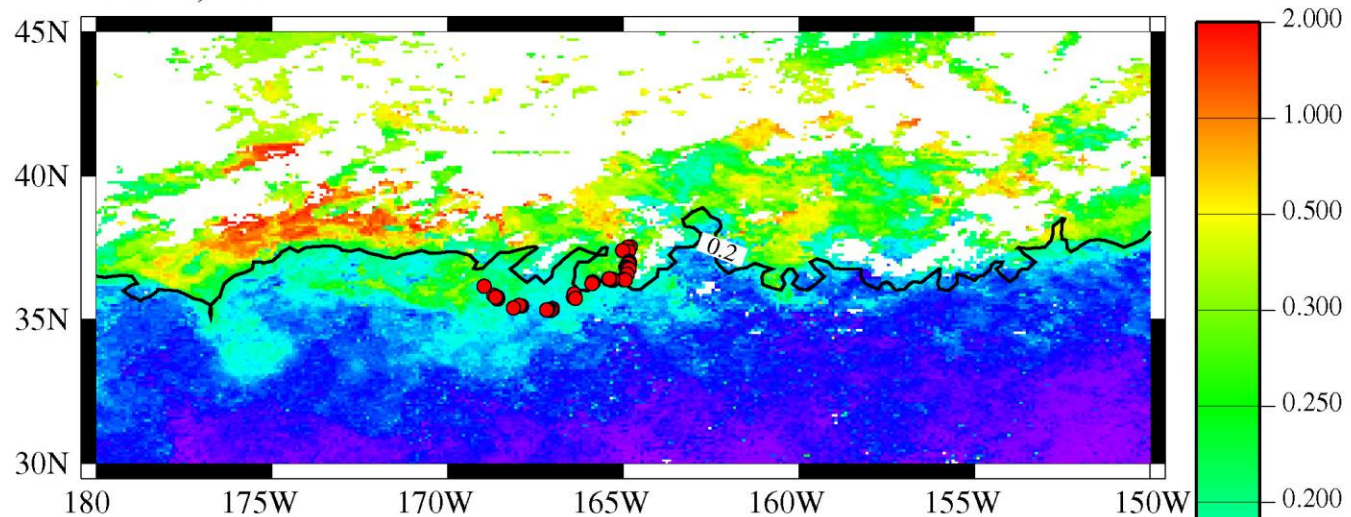


C. May, 2000

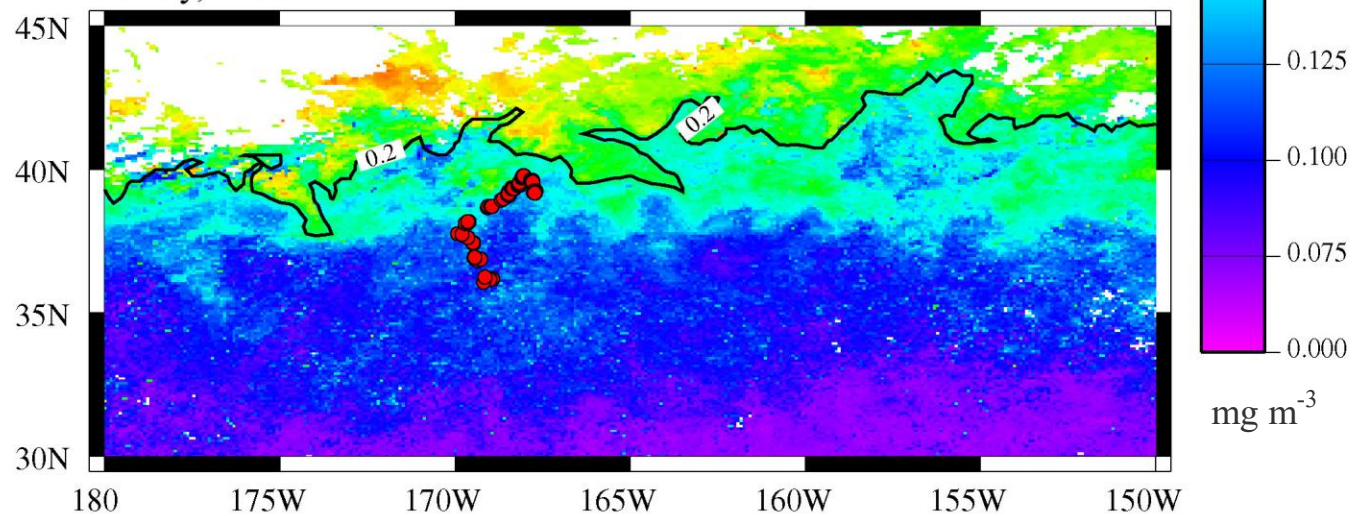


# Mean Daily Position of Turtle 22174 With SeaWiFS Ocean Color

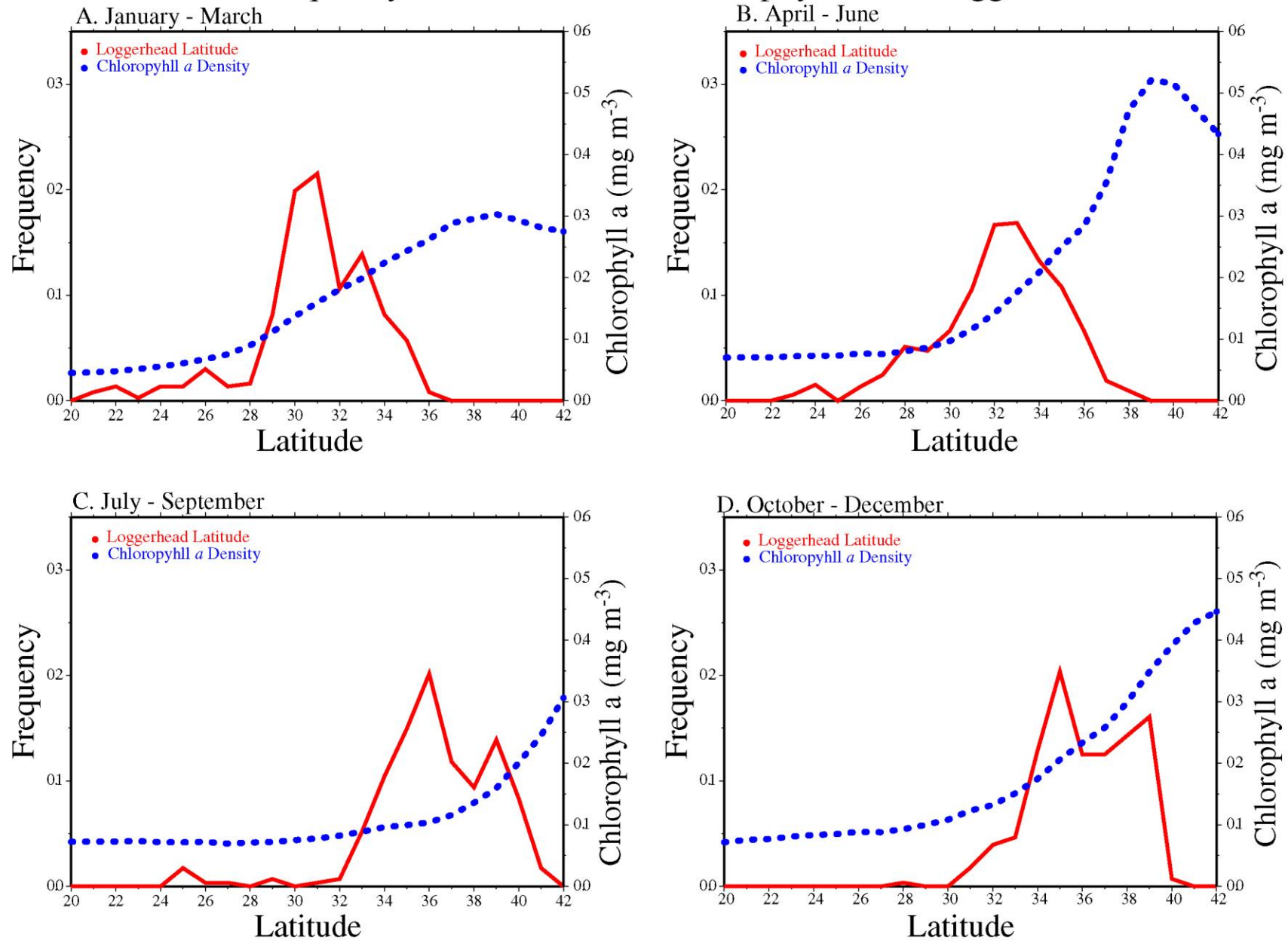
## A. June, 2000



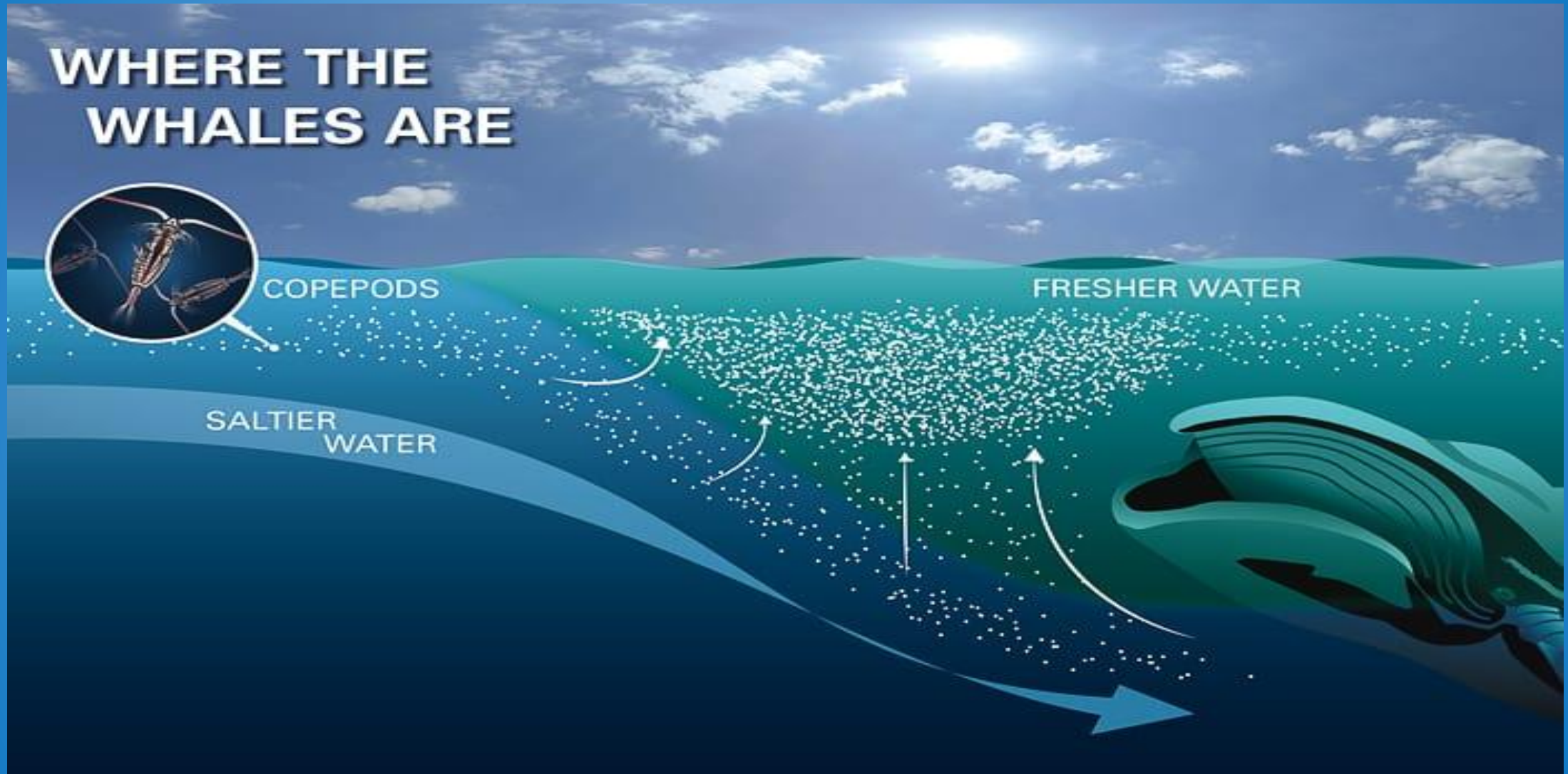
## B. July, 2000



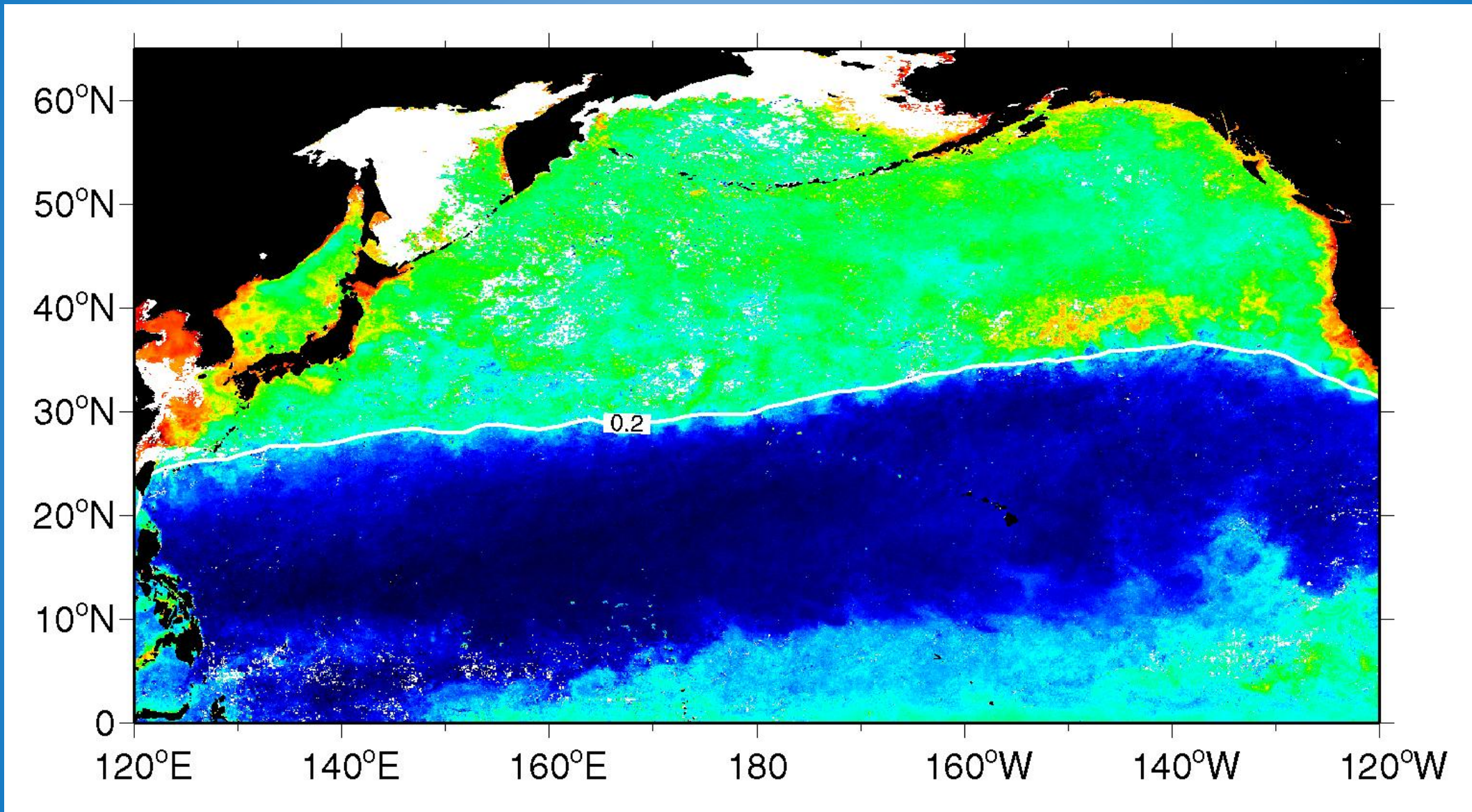
# Latitude Frequency Distribution and Chlorophyll A for Loggerhead Turtles



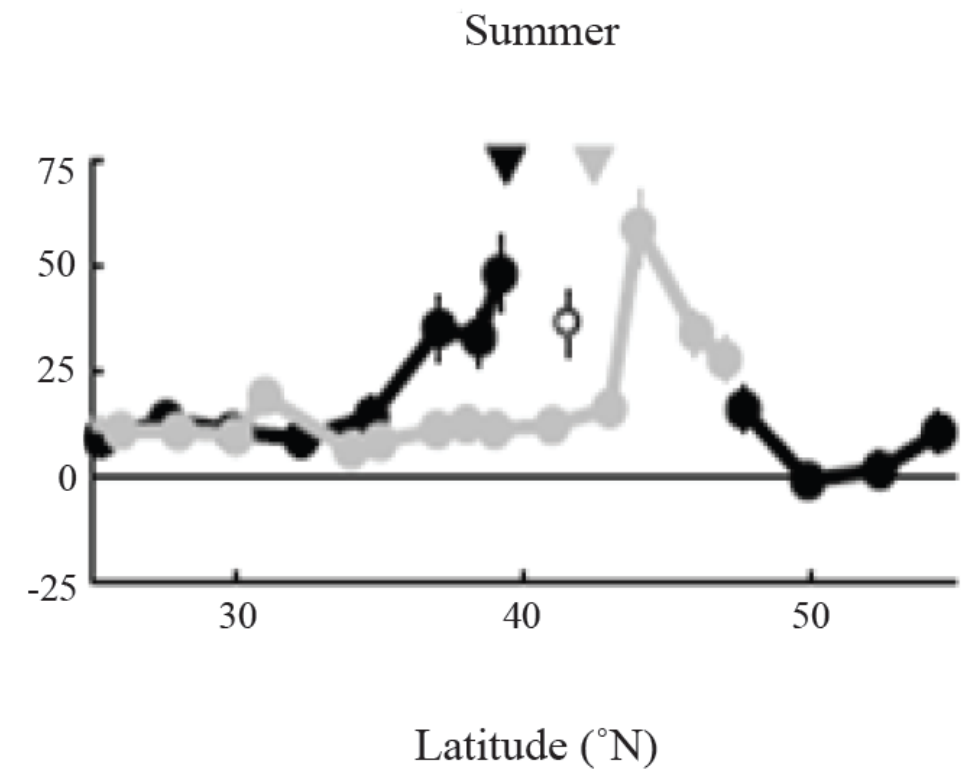
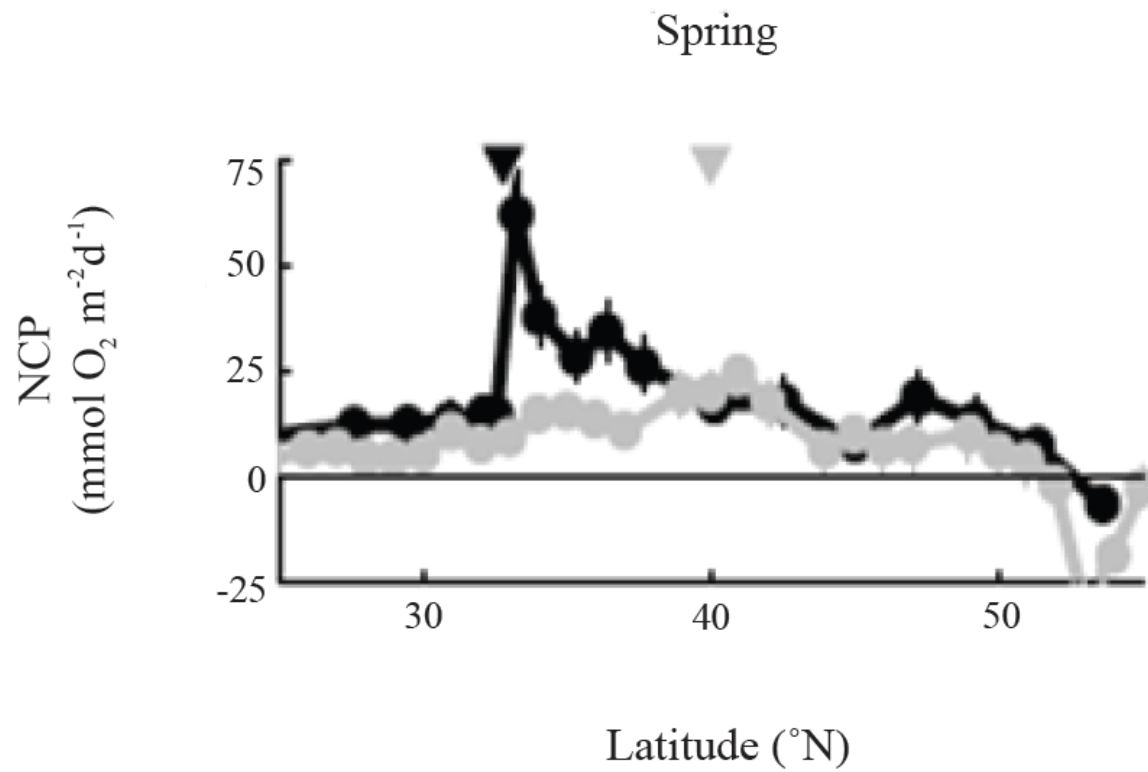
# Oceanic Fronts



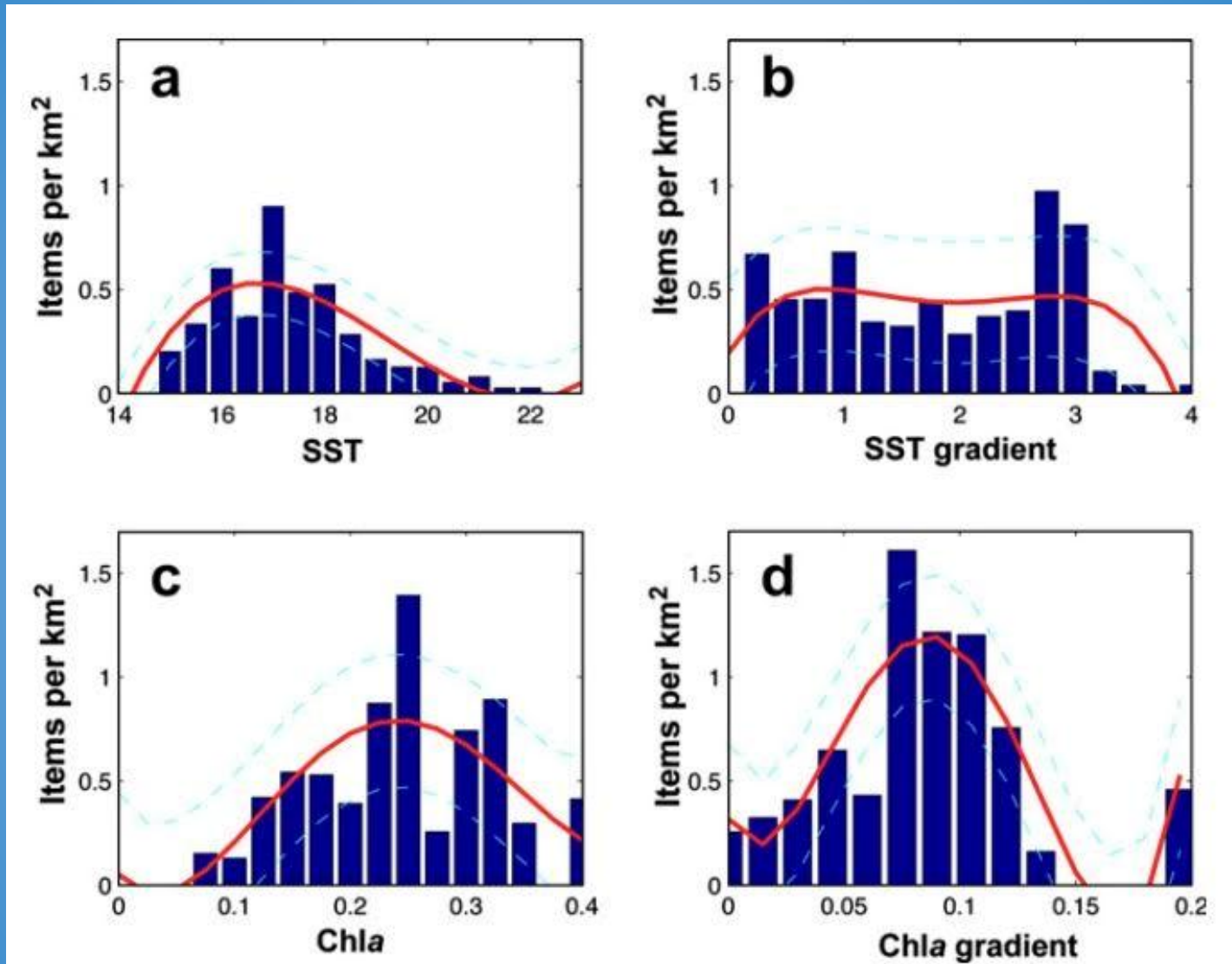
# Transition Zone Chlorophyll Front (TZCF) (0.2mgC/m<sup>3</sup>)



the TZCF, results in significant enhancements in biological productivity (Juraneck et al. 2012)

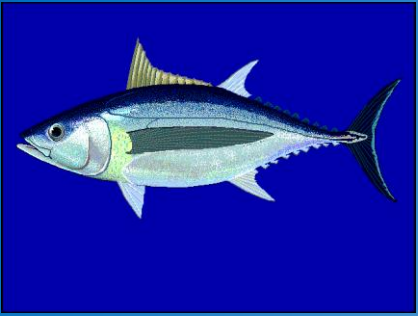


# Marine debris and TZCF



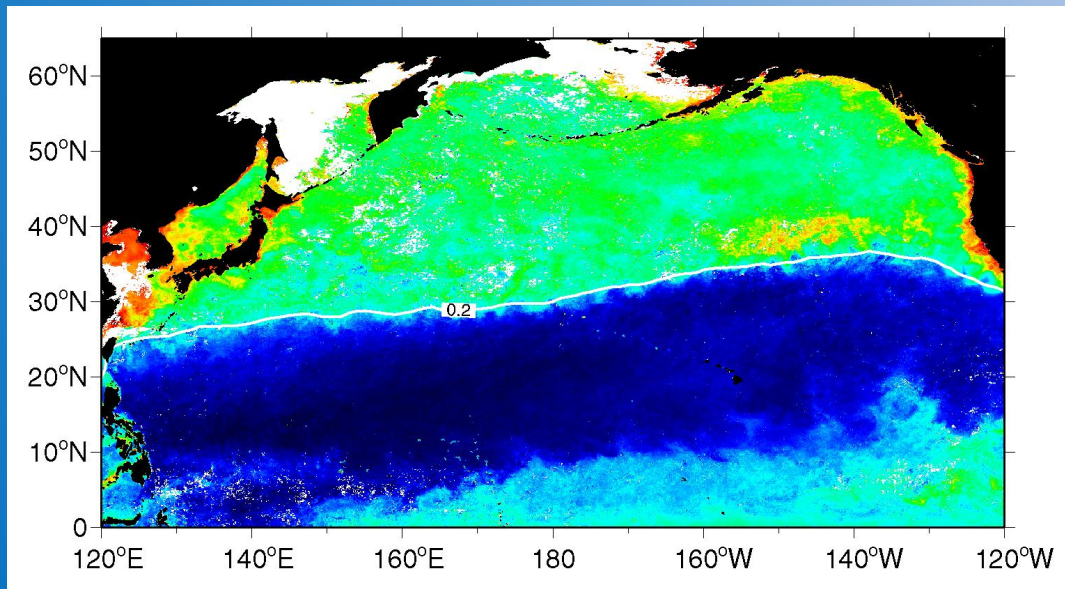
Pichel et al. 2007



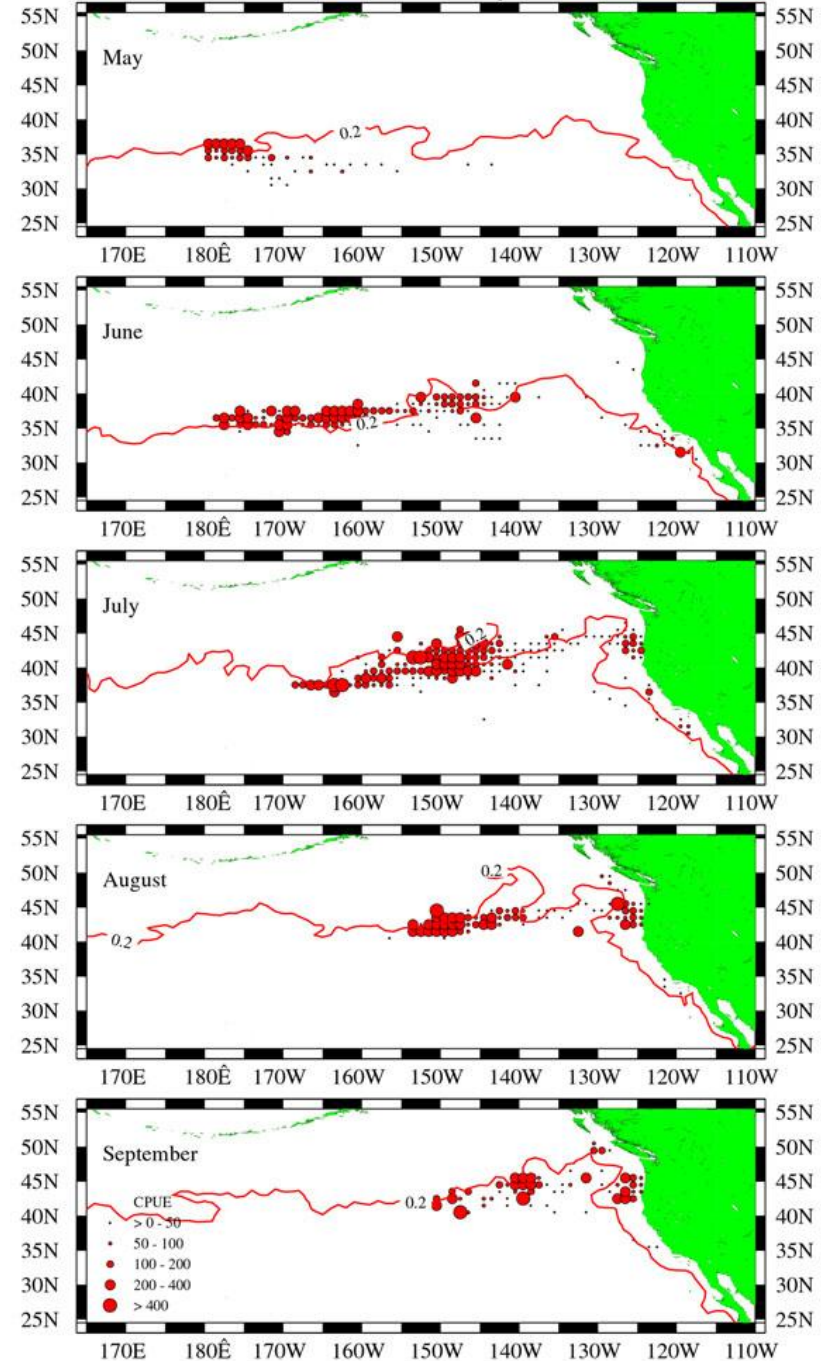


Albacore tuna troll boats catching albacore along the TZCF ( shown in red)

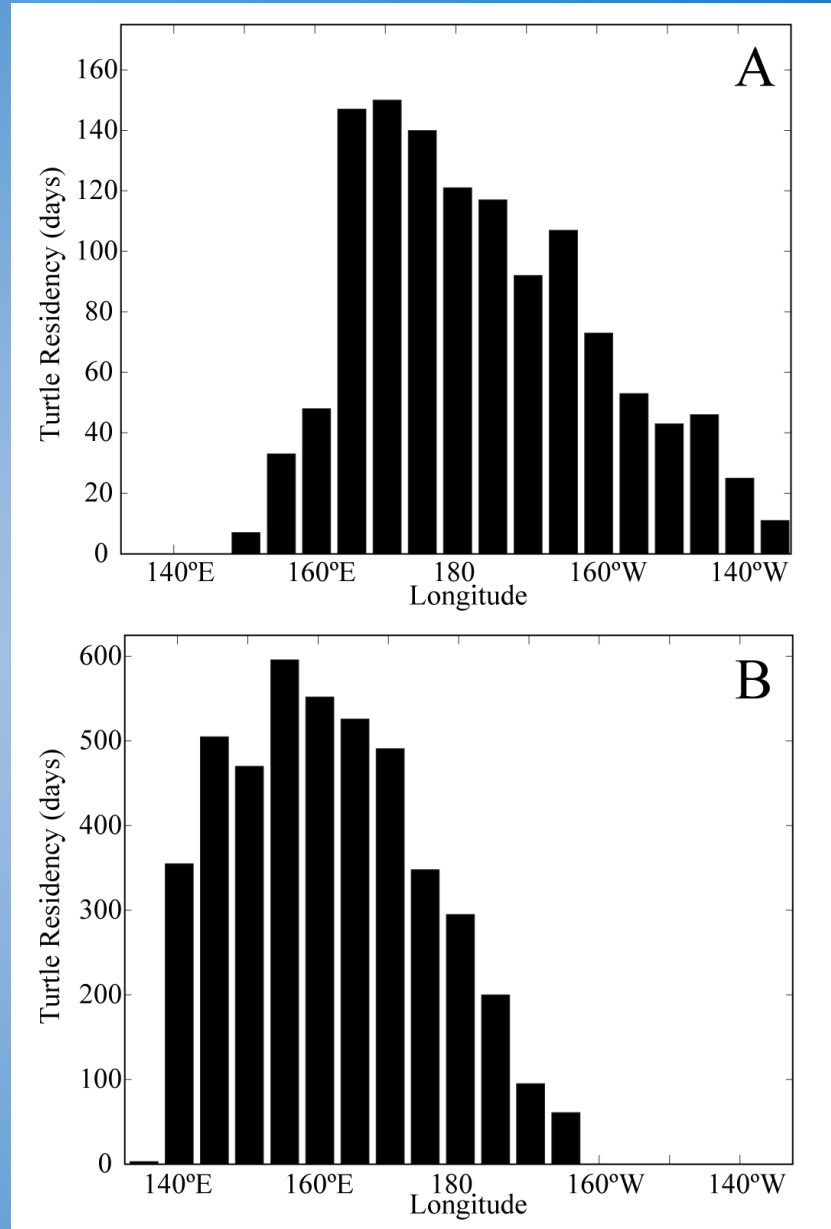
### Surface Chlorophyll



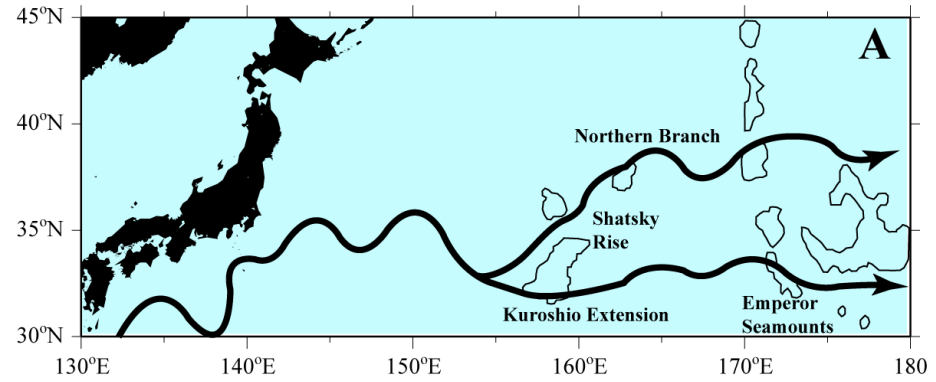
### 1998 Albacore US Troll Fishery CPUE and TZCF



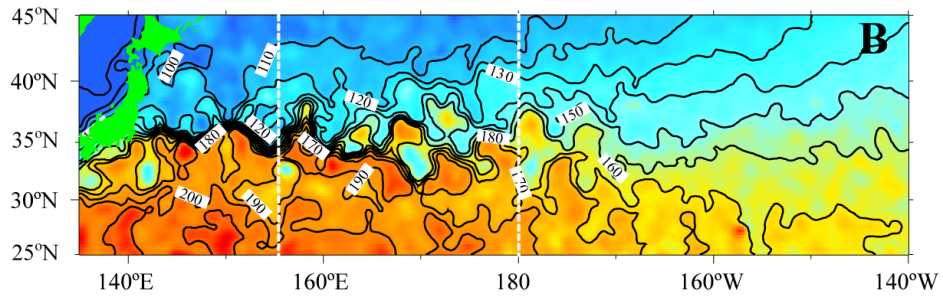
# Frequency distributions of loggerhead turtle residence for CNP releases (A) and Japan releases (B)



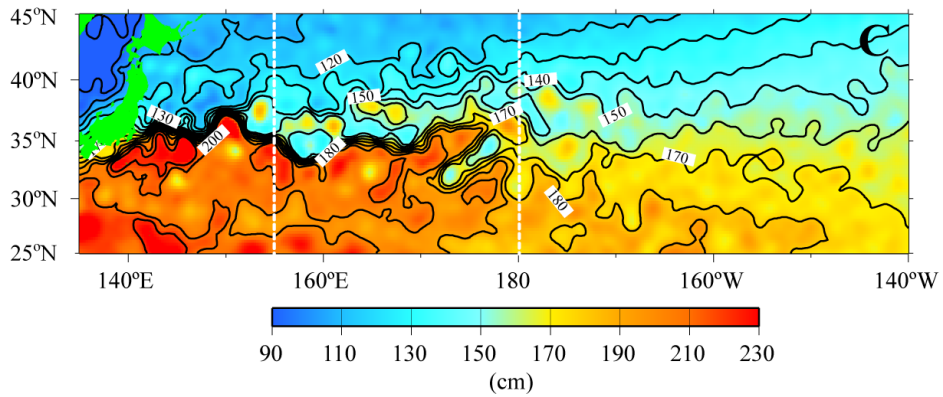
**Schematic of the Kuroshio Extension  
Bifurcation region (A)**



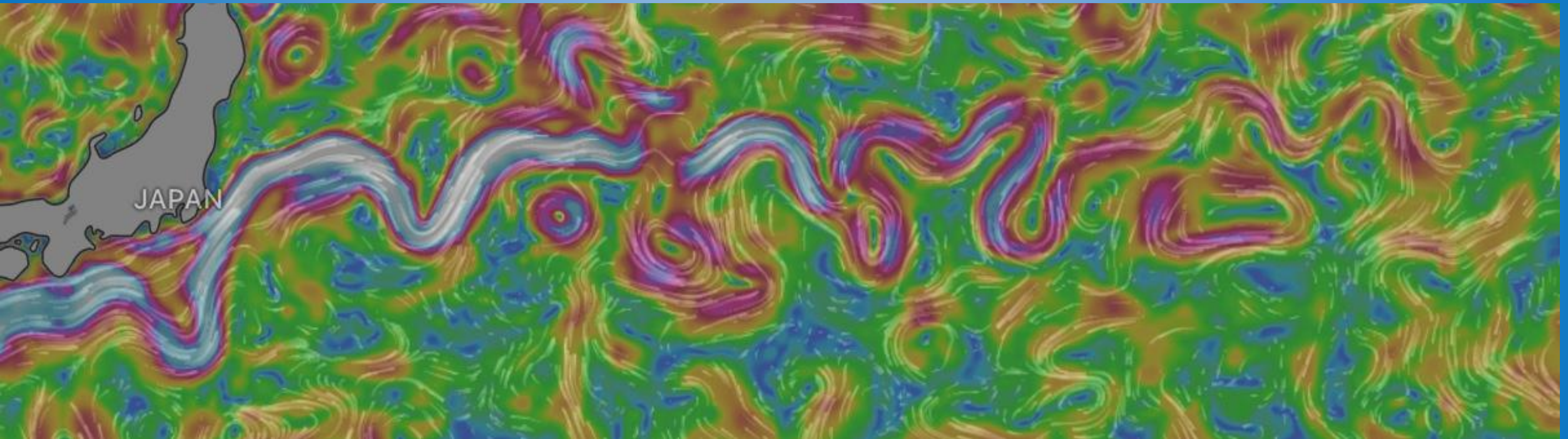
**AVISO altimetry for March 2003**



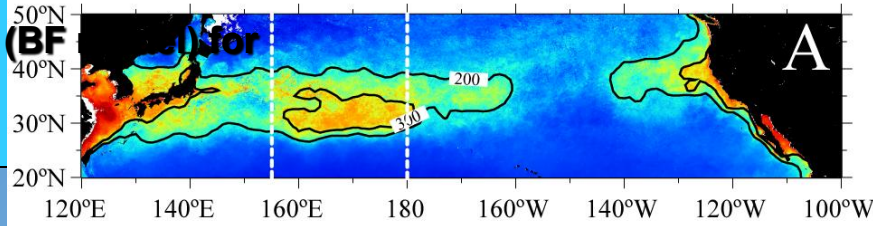
**AVISO altimetry for September 2003**



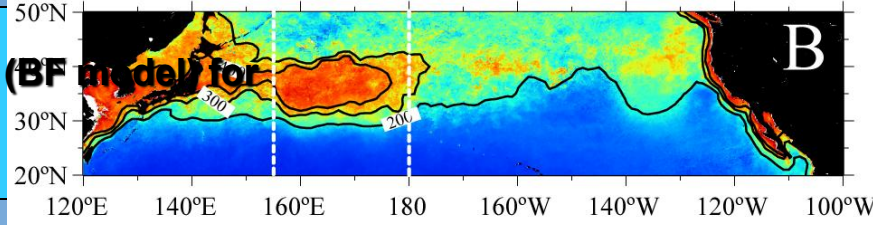
# Kuroshio Extension Current August 7, 2025



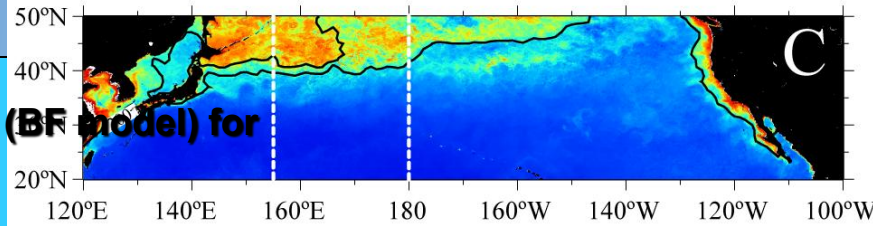
**MODIS primary productivity (BF model) for Quarter 1 2003**



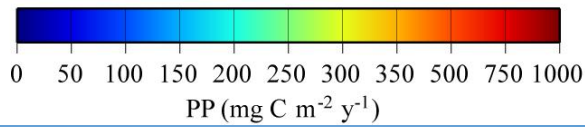
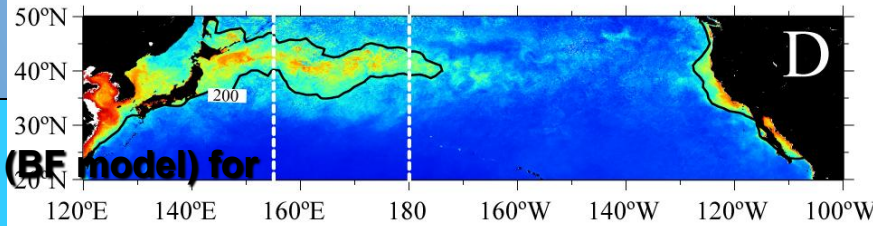
**MODIS primary productivity (BF model) for Quarter 2 2003**

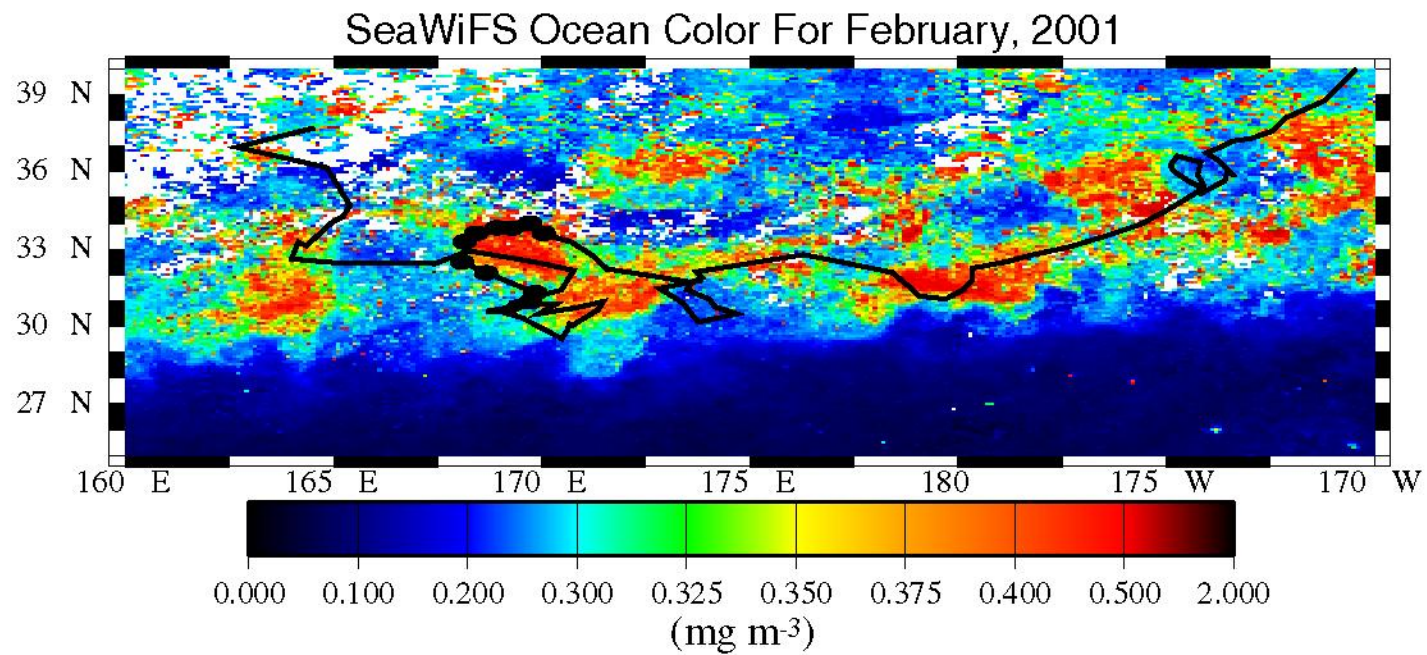
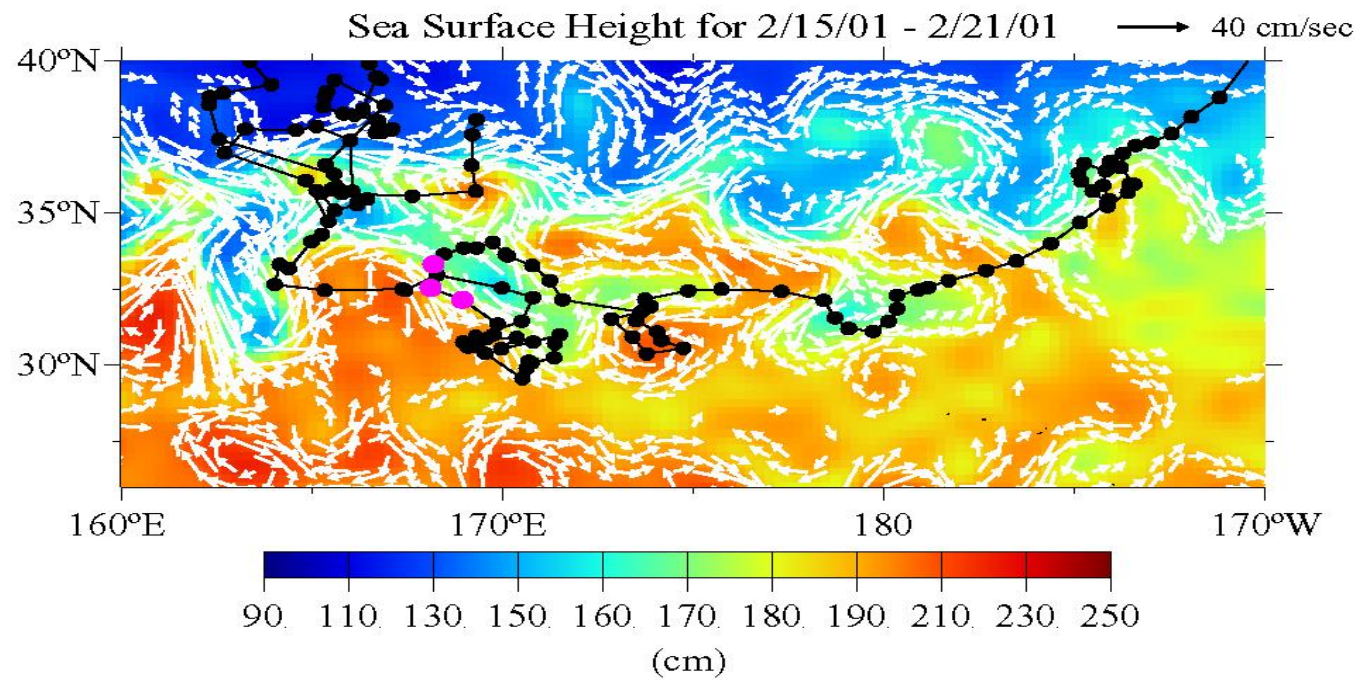


**MODIS primary productivity (BF model) for Quarter 3 2003**

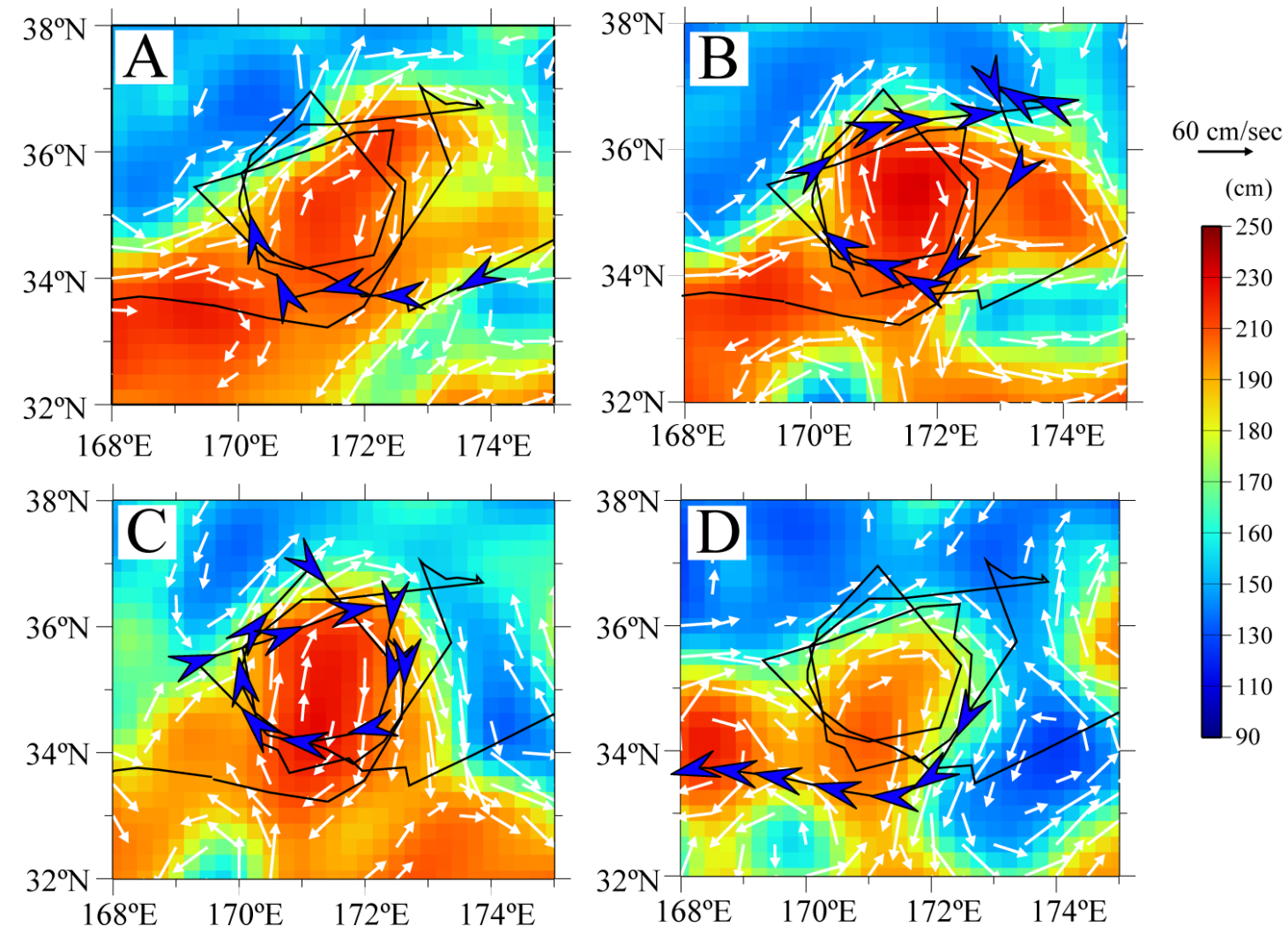


**MODIS primary productivity (BF model) for Quarter 4 2003**

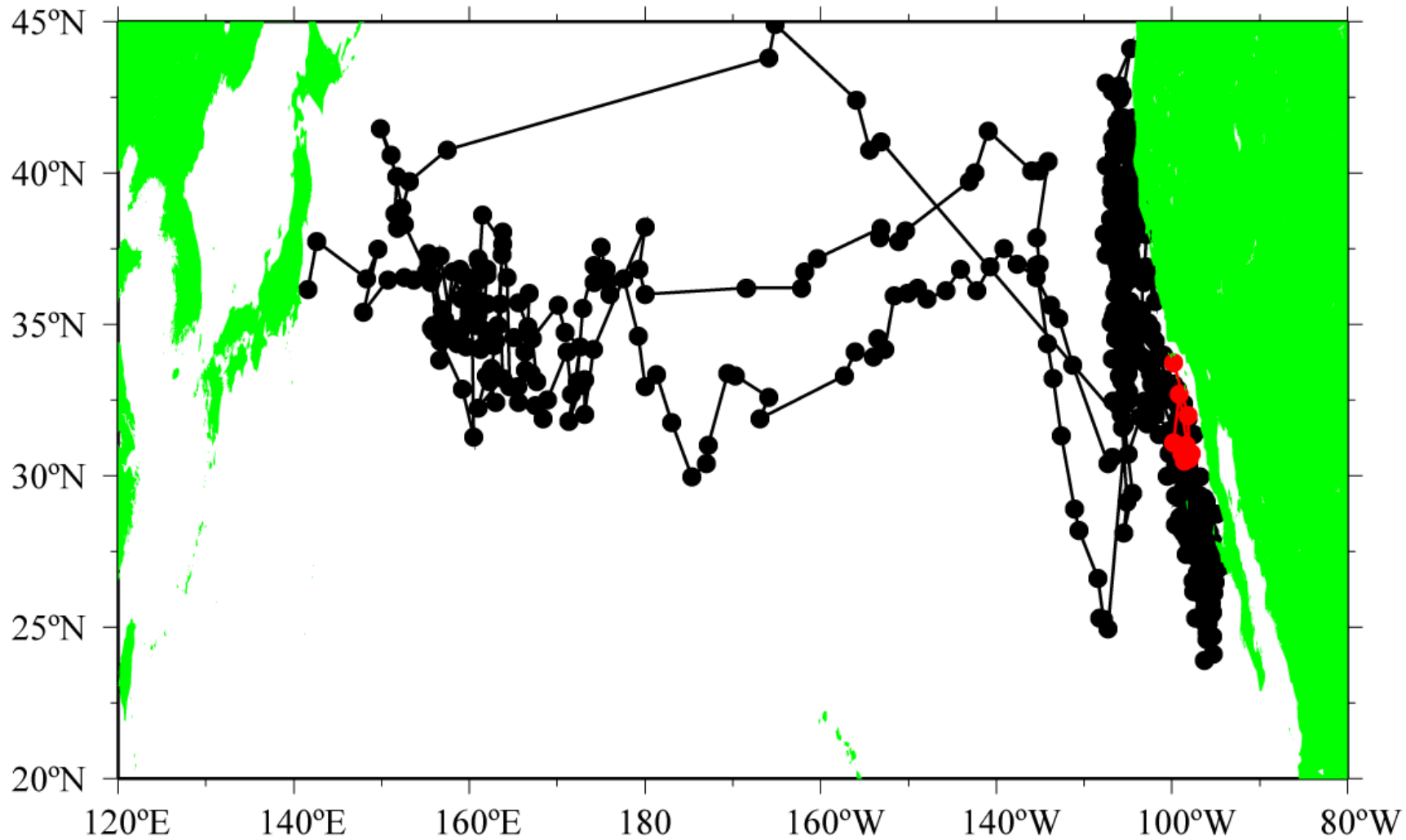




**Loggerhead track over SSH and geostrophic currents for October 2003 (A), November 2003 (B), December 2003 (C), and January 2004 (D)**



### Bluefin Track for August 2002



Bluefin Tuna

Dr. Barb Block, Hopkins Marine Lab



# Summary

Electronic tags on loggerheads and satellite remotely-sensed oceanographic data have identified two important forage habitats – the basin-wide transition zone chlorophyll front and the regional Kuroshio Extension Bifurcation Region

These habitats are characterized by nutrient input to support the base of the food web and Ekman or geostrophic currents producing surface convergence to concentrate surface prey

