

Delivery and Application of Satellite Data in the IOOS Era

Dave Foley

***Joint Institute for Marine and Atmospheric
Research***

University of Hawaii

Environmental Research Division

NOAA Southwest Fisheries Science center

PICES XVI

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What are GEOS/IOOS

★ *“System of Systems*

- *Observations*
- *Data Integration*
- *Dissemination*

★ *Scalability*

- *Regional OOS*
- *Sub-regional oos*

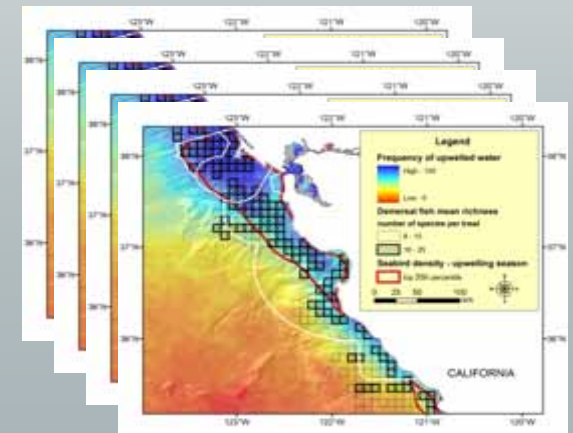
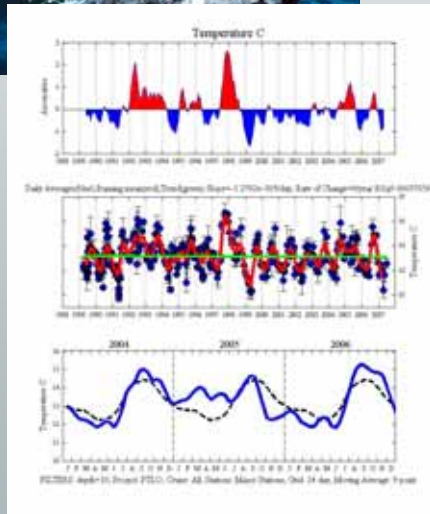
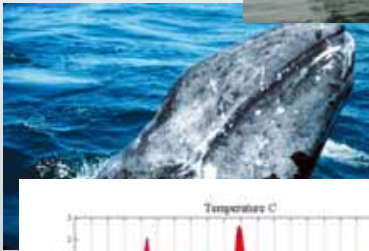
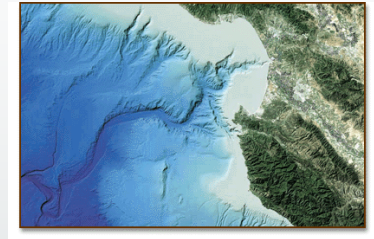
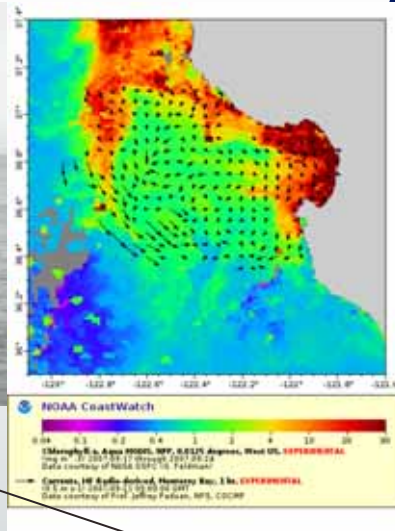
Role of Satellite Data

- ✦ *Relatively easy and available NOW*
- ✦ *Will be integrated with model output via assimilation*
- ✦ *Available for much of the globe*
- ✦ *Currently in the “Golden Age”*

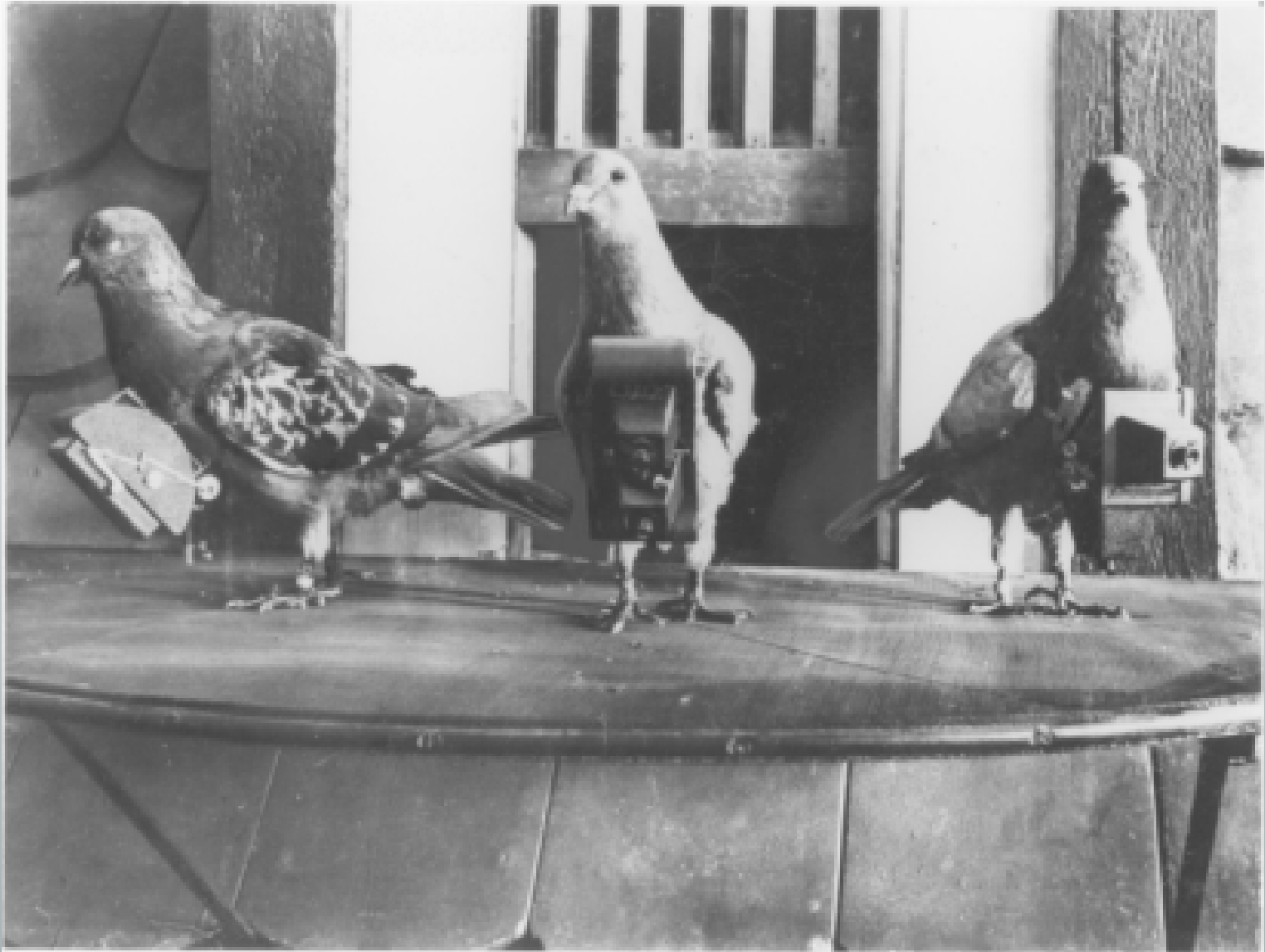
Regional OOS

An aerial photograph showing a coastal region with green hills and blue water. Several ships are visible on the water, including a large white cargo ship, a smaller grey tugboat, and several yellow and orange buoys. A yellow helicopter is flying in the upper left, and a white jet is in the upper right. A red biplane is also visible. White curved lines represent communication or data links between the aircraft and various points on the coast and in the water. A rainbow-colored wake is visible behind one of the ships.

Data Integration

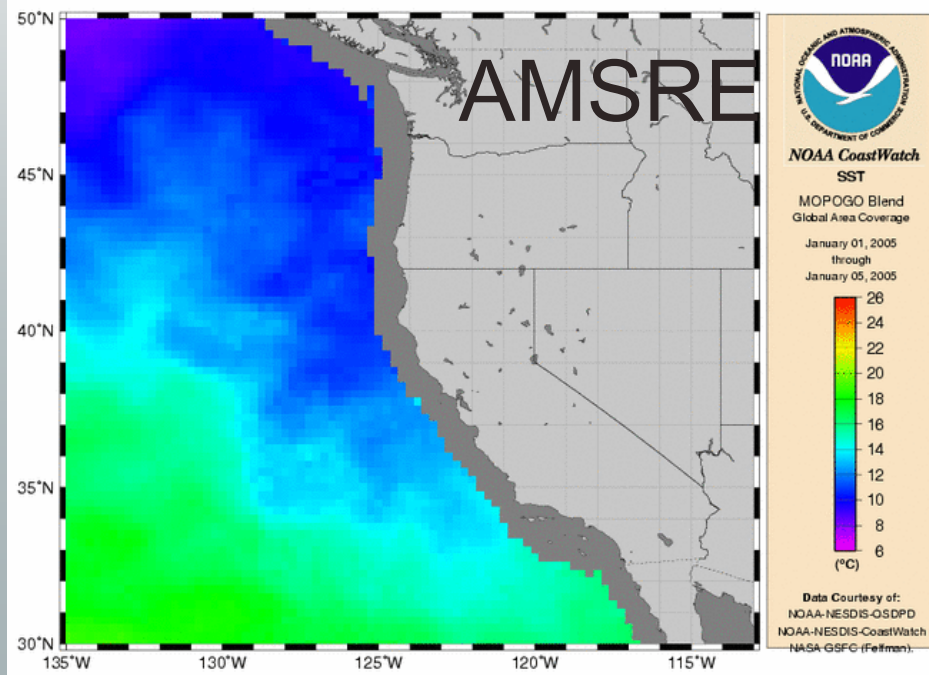
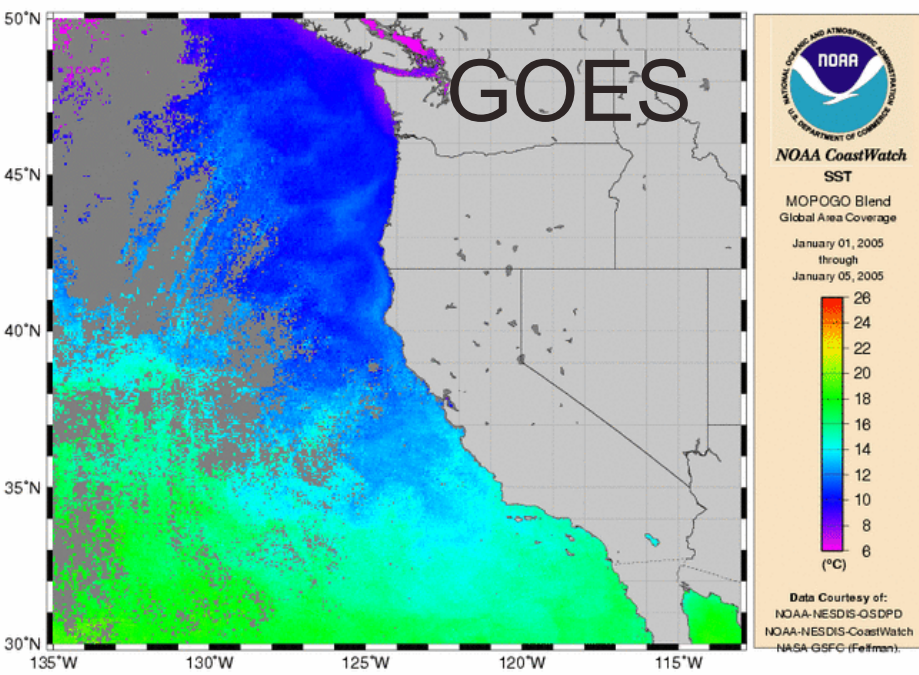
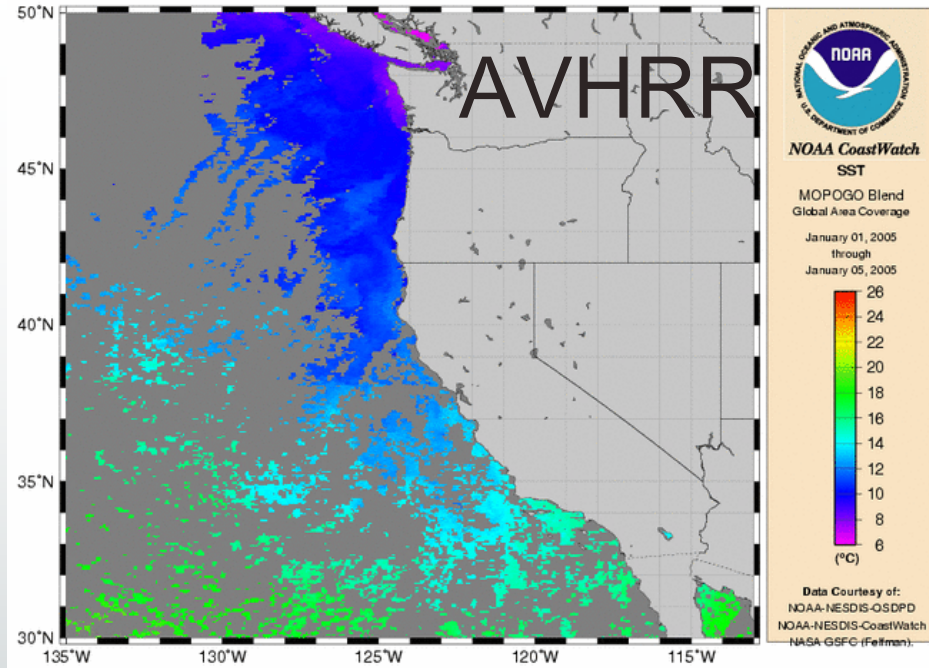
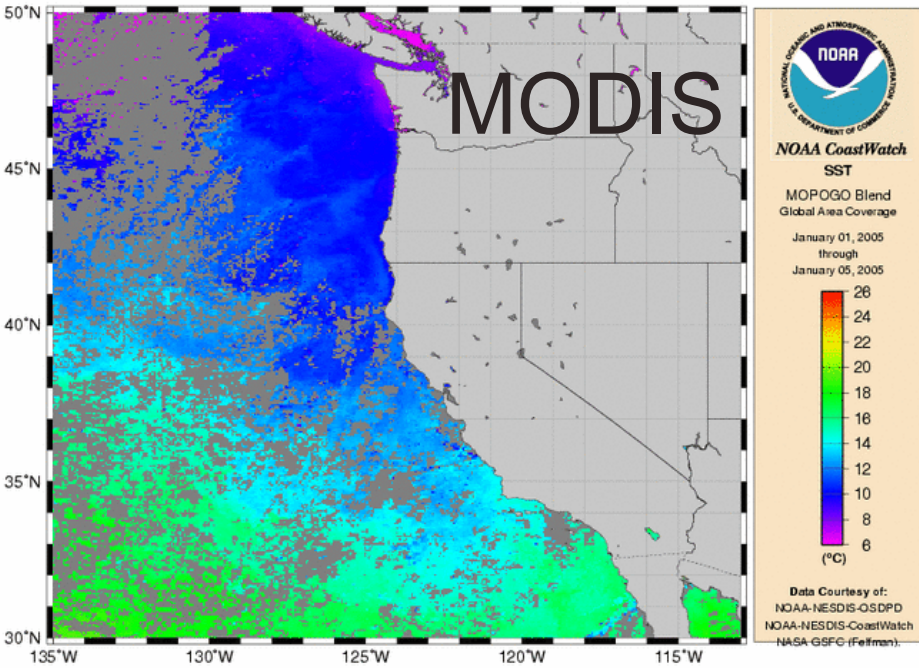


Early Autonomous Platforms

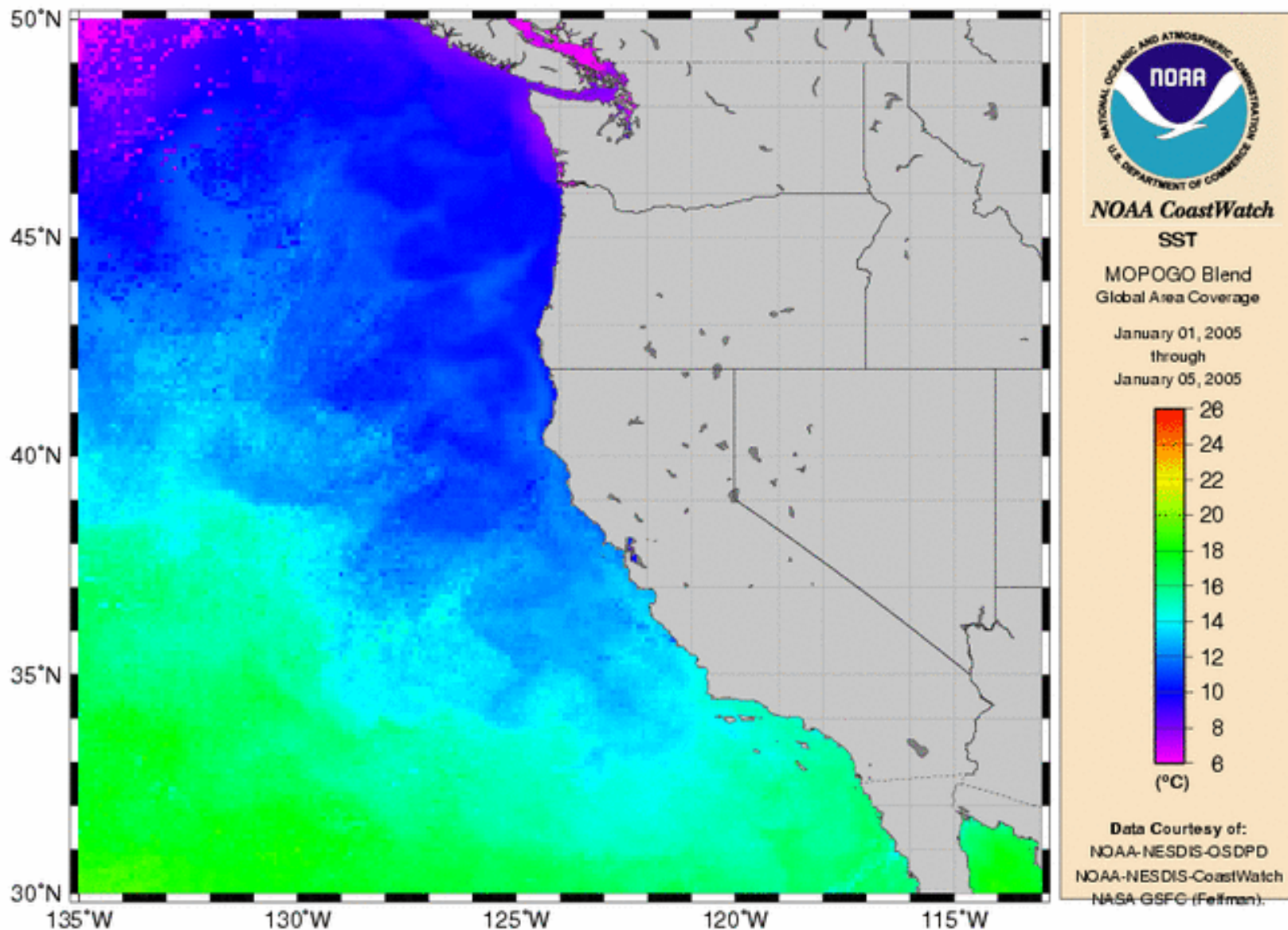


Composite product

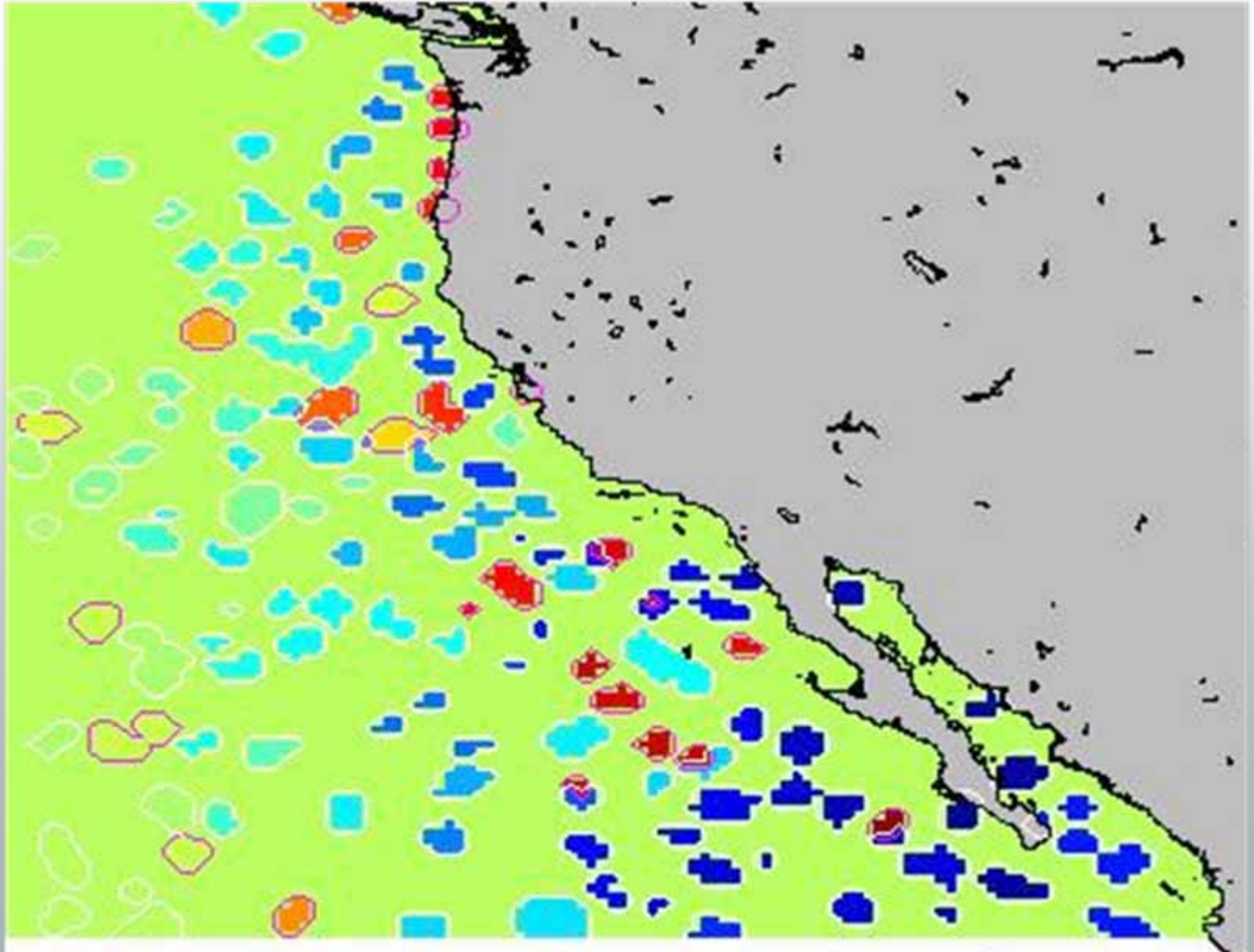




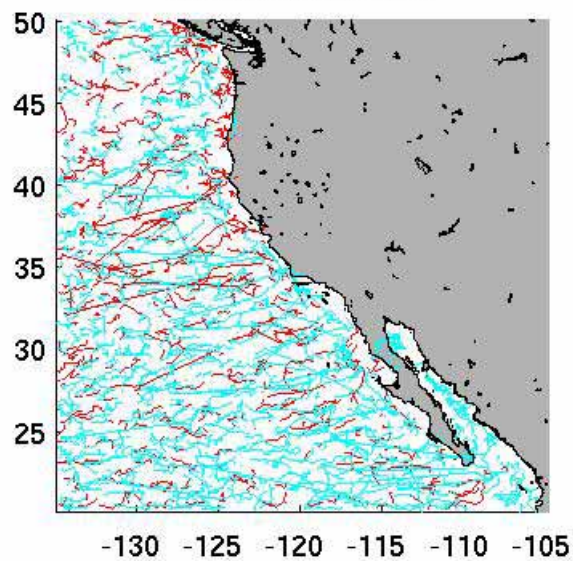
Blended 5-day SST



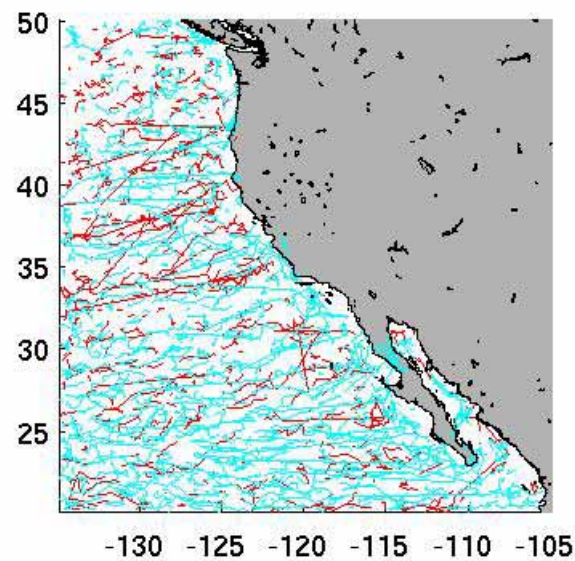
Feature Tracking - Eddies



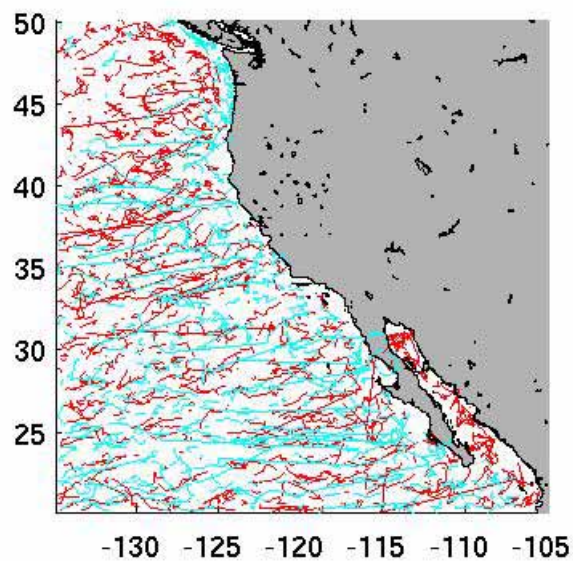
All Eddies Quarter:1



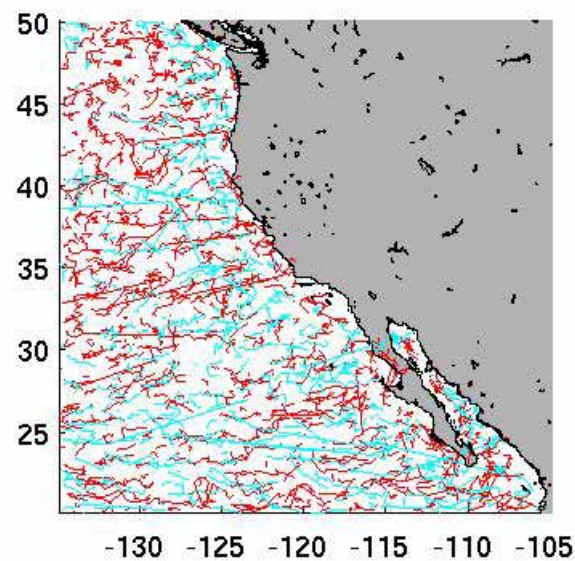
All Eddies Quarter:2



All Eddies Quarter:3



All Eddies Quarter:4



Data Dissemination

- ★ *Data Discovery*
- ★ *Data Browse*
- ★ *Inter-operability*
 - *(Machine to machine access)*

CoastWatch Browser

Create custom maps and download near-real-time oceanographic data. [\[Help\]](#)

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☐ The Map ☐ Grid Data ☐ Bathymetry ☒ Contour Data ☐ Vector Data ☐ Station Vector Data
☐ Station Data 1 ☐ Station Data 2

Wind, QuikSCAT SeaWinds, 0.25 degrees, Global, Near Real Time*

☐ 1 day ☐ 3 day ☐ 4 day ☒ 8 day ☐ 14 day ☐ 1 month

2006-08-01 00:00:00 |< - + >| Or, 2006 08 01 00:00:00

[small.gif](#) | [medium.gif](#) | [large.gif](#) | [.mat](#) | [.nc](#) | [.ncHeader](#) | [.xyz](#)
[File Type Info](#) | [GET Queries](#) | [u OPeNDAP](#) | [v OPeNDAP](#) | [Data Set Info](#)

-



8 11 14 17 20 23 26 29 32

SST, NOAA GOES Imager, Day and Night, 0.05 degrees, Western Hemisphere
(degree C) 2006-07-28 through 2006-08-04
Data courtesy of NOAA NESDIS

→ **Wind, QuikSCAT SeaWinds, 0.25 degrees, Global, Near Real Time**
(10 m s⁻¹) 2006-07-28 through 2006-08-04
Data courtesy of NASA JPL (Cal. Inst. of Technology)

How do I view and then download time series data for one station?

1. Follow the instructions above to select a station data set.
 2. Either:
 - Pick a station from the list.
 - Click on a station on the map.
 3. You should then see the time series graph with the time period-averaged data points for the begin time through the centered time.
 4. To download the time series data, click on one of the file type links to the right of
- 6) Download time series.**

CoastWatch Browser

CoastWatch West Coast Regional Node

Create custom maps and download near-real-time oceanographic data. [\[Help\]](#)

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Edit:

☐ The Map ☐ Grid Data ☐ Bathymetry ☐ Contour Data ☐ Vector Data ☐ Station Vector Data ☒ Station Data 1 ☐ Station Data 2

1) Select a data set:

SST (NDBC)

2) Select a depth:

0 meters

3) Select a time period:

☐ 1 observation ☐ 1 day ☐ 3 day ☒ 8 day ☐ 10 day ☐ 14 day ☐ 1 month

4) Select a centered time (GMT):

2006-08-01 00:00:00

5) Select the units:

☒ degree C

6) Select a palette:

Rainbow Scale: Linear Min: 8.0 Max: 32.0

7) Select a line color:

8) Download averaged data:

asc | small | gif | medium | gif | large | gif | Google Earth | html | mat | nc | ncHeader | File Type Info | GET Queries

9) Plot a time series:

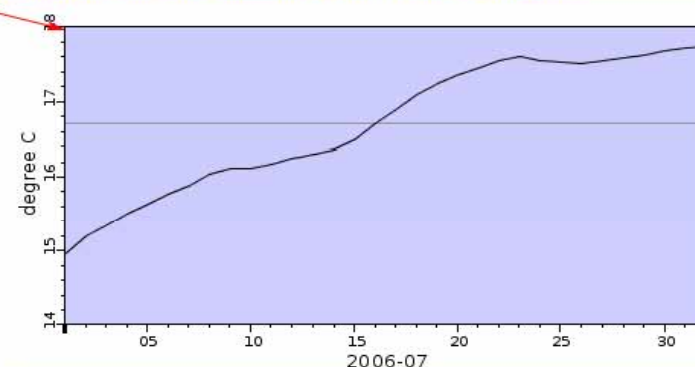
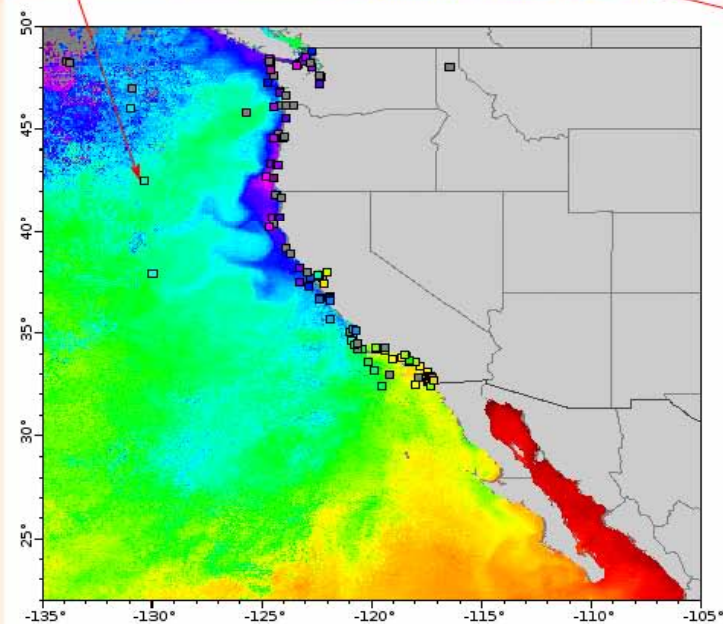
of Time Period' averages, for Station NDBC 46002 met (42.58°N, -130.36°E) Or, click on a station marker on the map.

10) Select a begin time (GMT):

2006-07-01 00:00:00 |< - + >

11) Download time series:

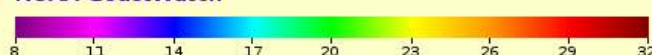
[.asc](#) | [small.gif](#) | [medium.gif](#) | [large.gif](#) | [Google Earth](#) | [.html](#) | [.mat](#) | [.nc](#) | [.ncHeader](#) | [File Type Info](#) | [GET Queries](#)



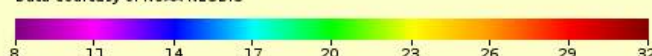
NOAA CoastWatch

SST (NDBC) Station NDBC 46002 met, 42.58°N, -130.36°E
(degree C) time series of 8 day averages, depth = 0 meters. (Horizontal line = average)
Data courtesy of NOAA NDBC and Other Station Owners/Operators

NOAA CoastWatch



SST, NOAA GOES Imager, Day and Night, 0.05 degrees, Western Hemisphere
(degree C) 2006-07-28 through 2006-08-04
Data courtesy of NOAA NESDIS



SST (NDBC)
(degree C) 2006-07-28 through 2006-08-04, depth = 0 meters
Data courtesy of NOAA NDBC and Other Station Owners/Operators

Client-side Access

★ *Import the data directly into the users working environment*

- *Matlab*
- *R*
- *IDL*
- *ArcStuff*
- *Excel (??)*

Albatross Biology (Costa, Shaffer, Tremblay)



Body Size: 2.5 to 3.0 kg

Pop Center: NWHI

Est. Pop.: 590,000 pairs

Status: Vulnerable



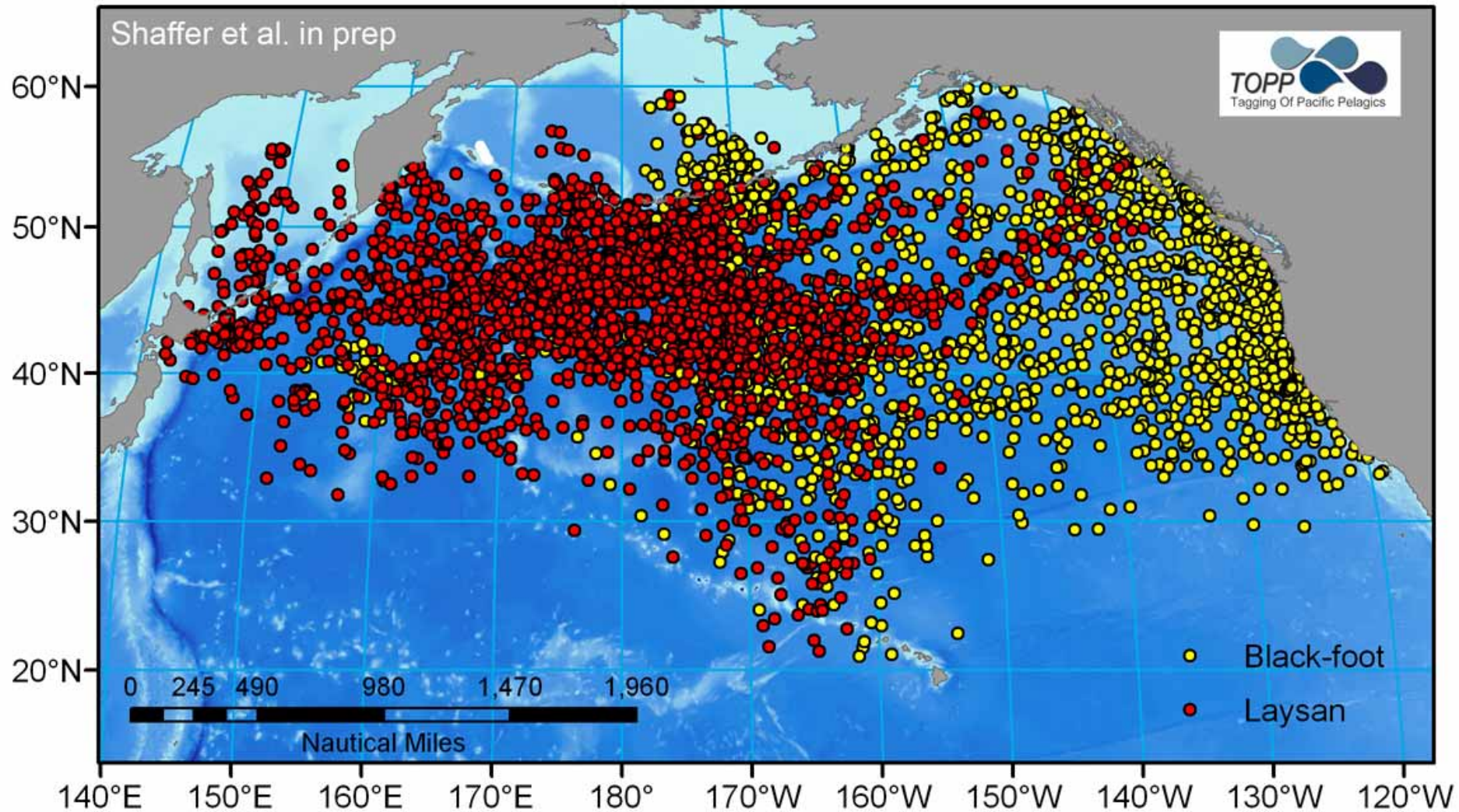
Body Size: 3.0 to 3.5 kg

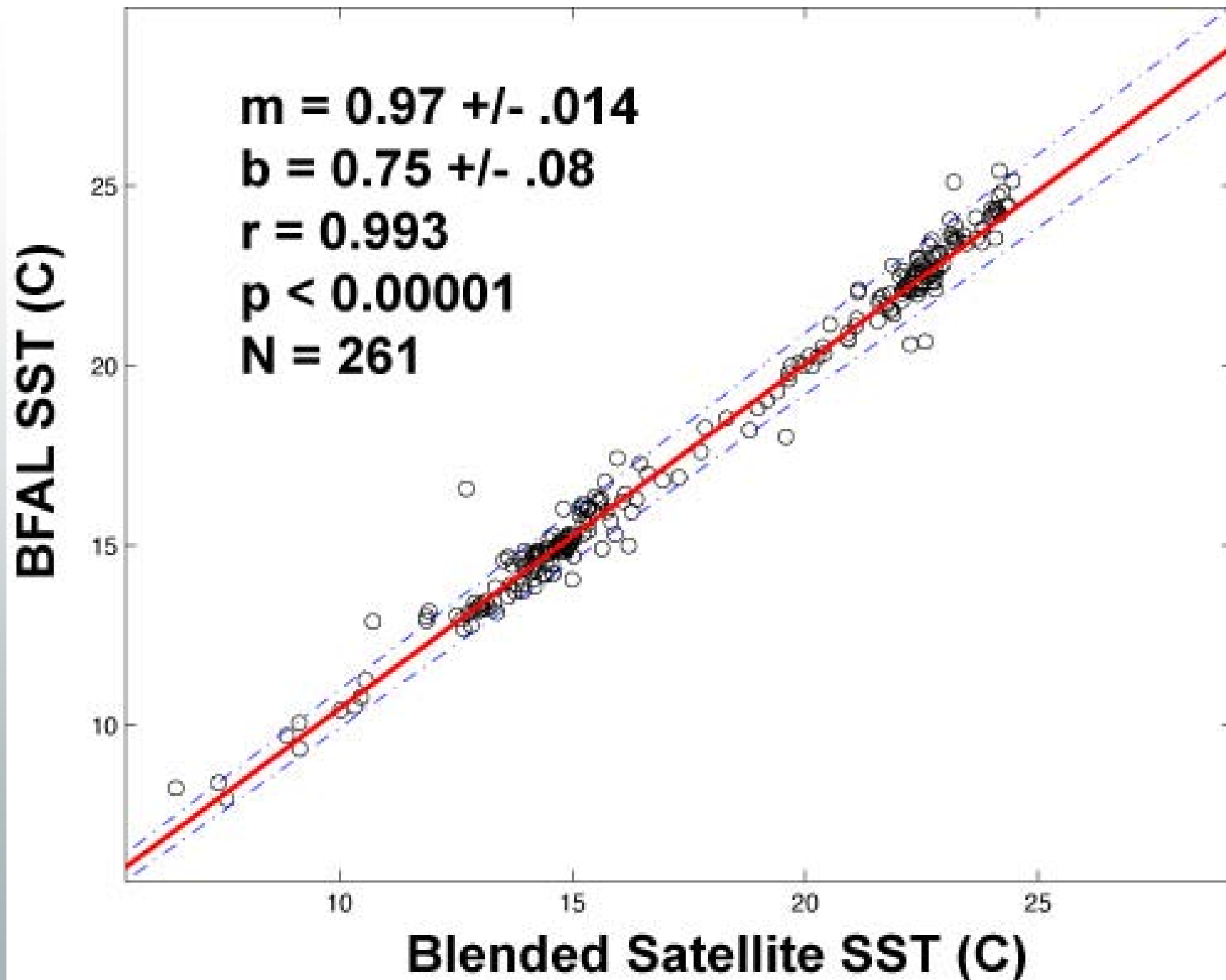
Pop Center: NWHI

Est. Pop.: 61,000 pairs

Status: Threatened

Post Breeding





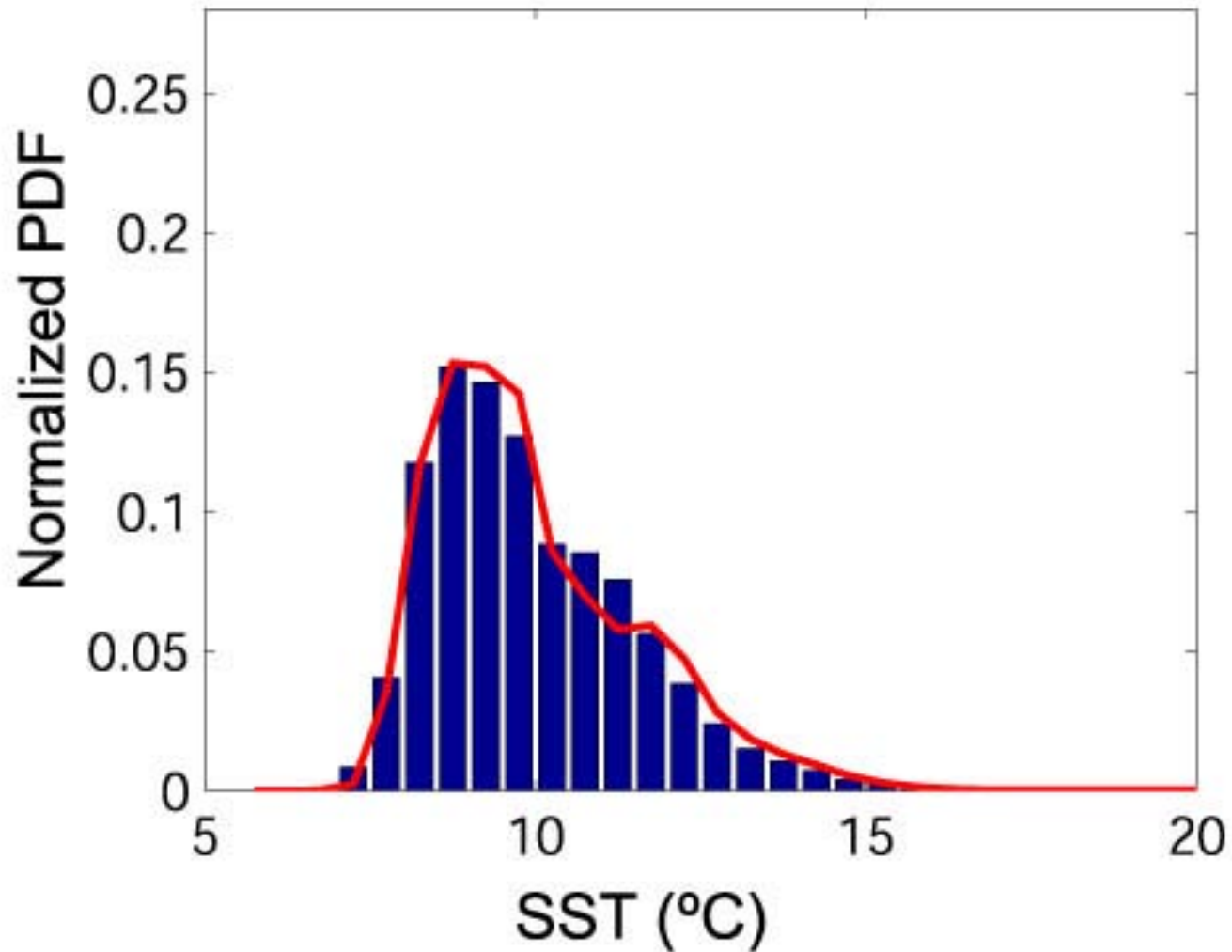
Application: Refining Definitions of Chinook Salmon Habitat (Hinke, Watters, Wilson)

- ✦ *Temperature and pressure from electronic tags placed on Chinook Salmon*
- ✦ *Environmental data from satellite and model*

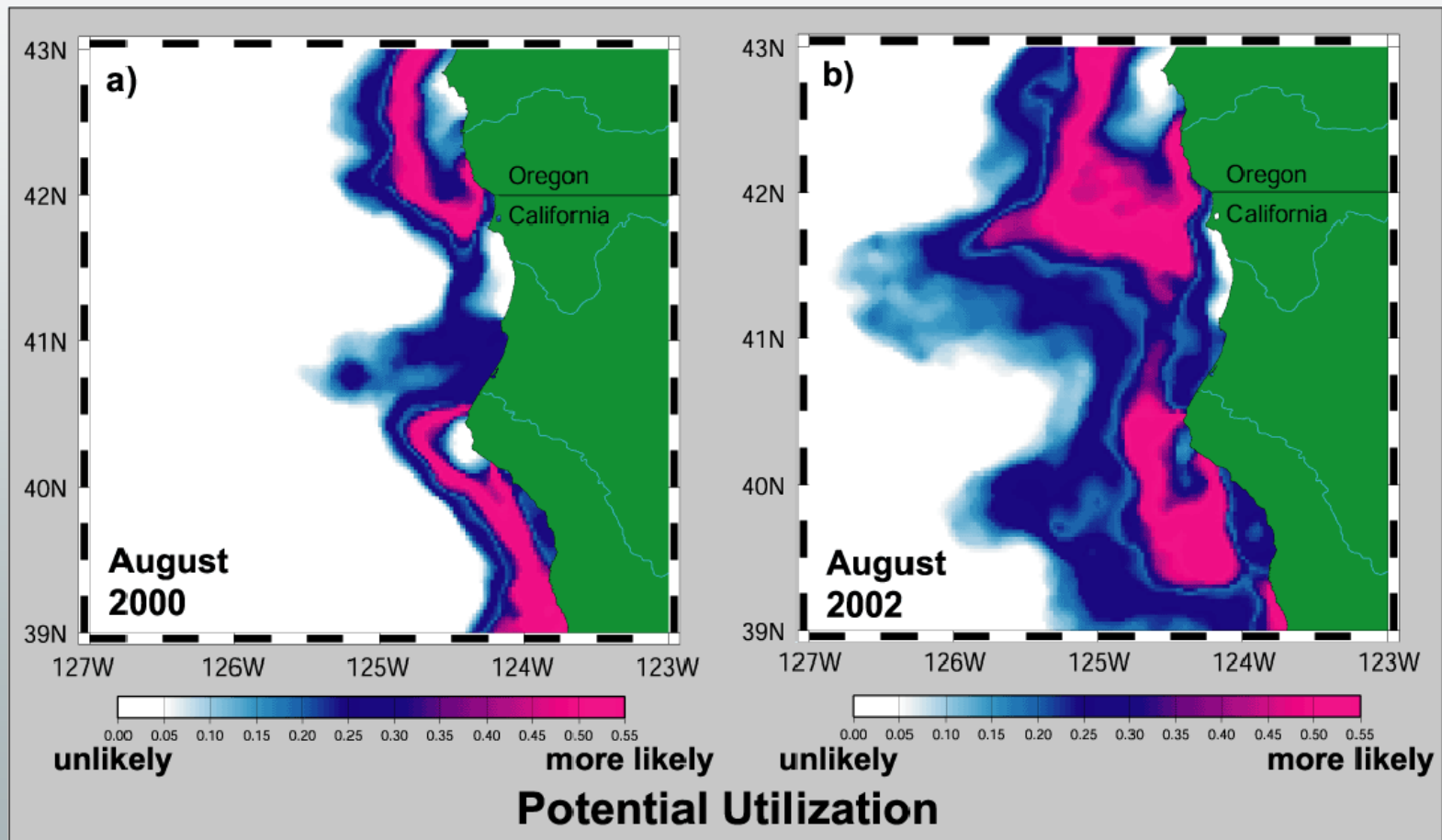
TDR Tag Placed on Chinook



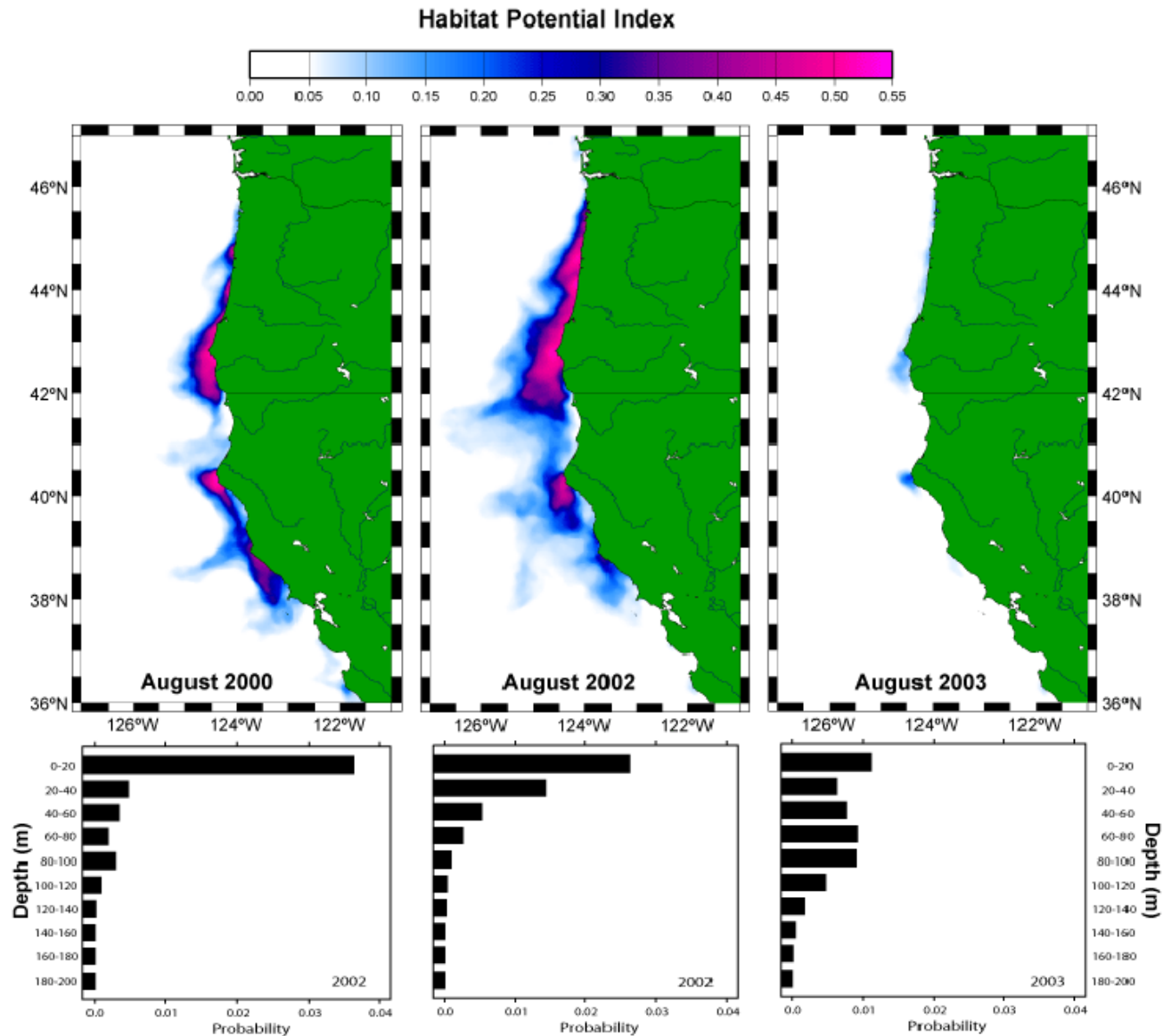
Chinook Temperature PDF



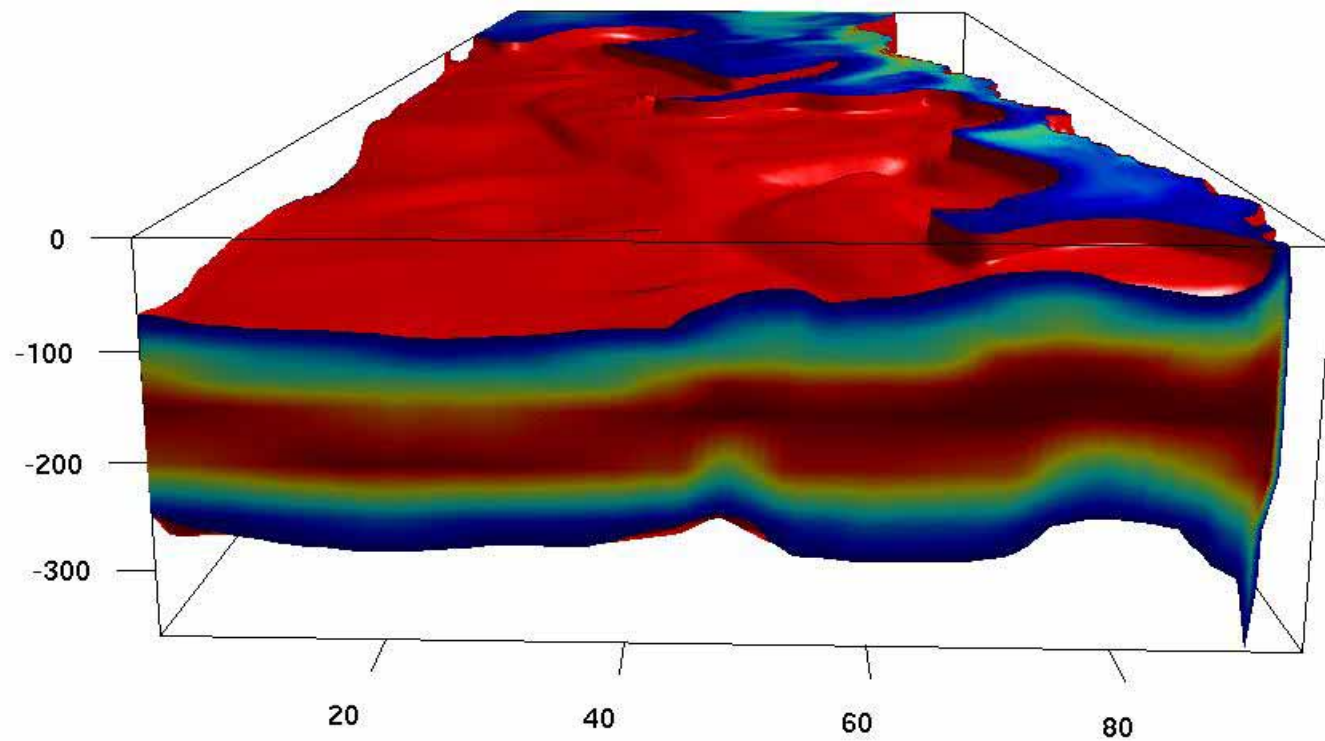
Chinook Potential Habitat (August)



Link to Behavioral Variations



ROMS w/ Salmon



Role for PICES

- ✦ *Users of data*
- ✦ *Scientific Guidance*
 - *Suggesting products*
 - *Assessing products*

CONTACT INFO

Dave Foley

(831) 648- 0632

Dave.foley@noaa.gov

WestCoast:

<http://coastwatch.pfel.noaa.gov/coastwatch/CWBrowser.jsp>

Global:

<http://coastwatch.pfel.noaa.gov/coastwatch/CWBrowserWW360.jsp>