Satellite Data Delivery in the IOOS Era

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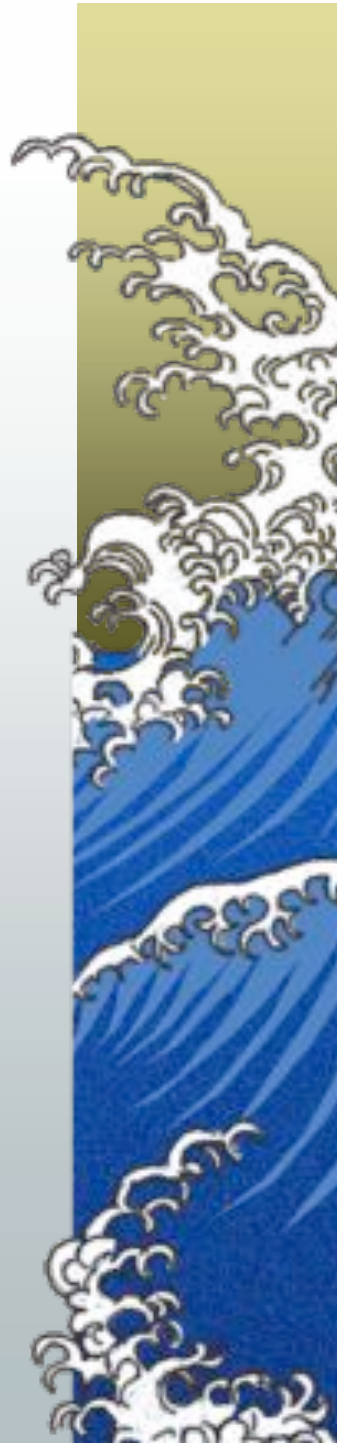
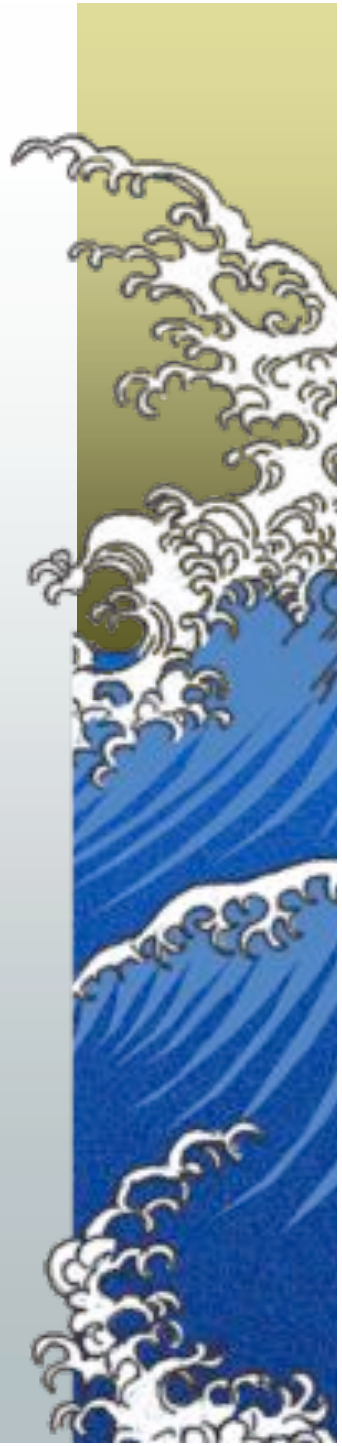


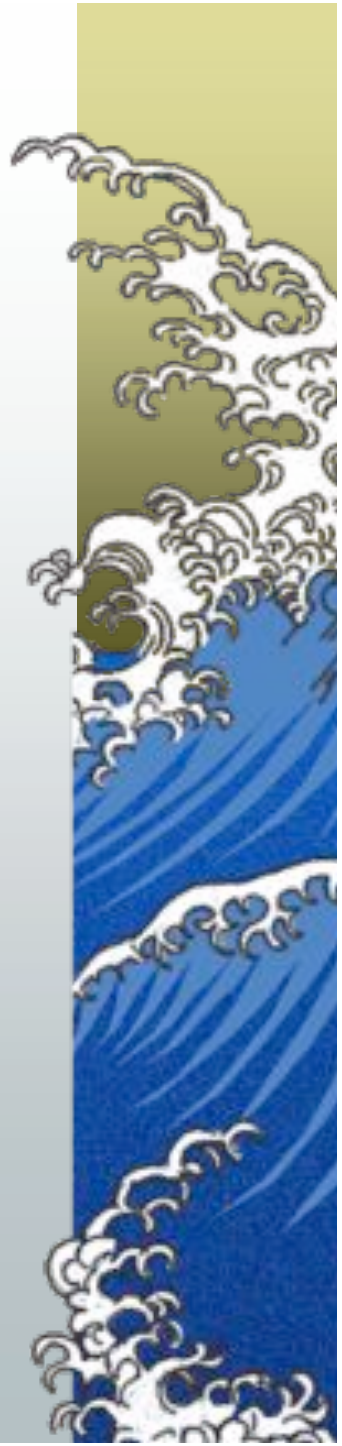
Overview

- *Background on IOOS and Remote Sensing*
  - *Spatial Scales to be a big deal*
- *Data Stewardship at National Level*
- *Data Management at Regional Level*
- *Data Delivery Mechanisms*
- *Illustration by Application*
  - *The need for basic (L2) data*
  - *The need for highly derived properties*
  - *The need for long-term continuity*

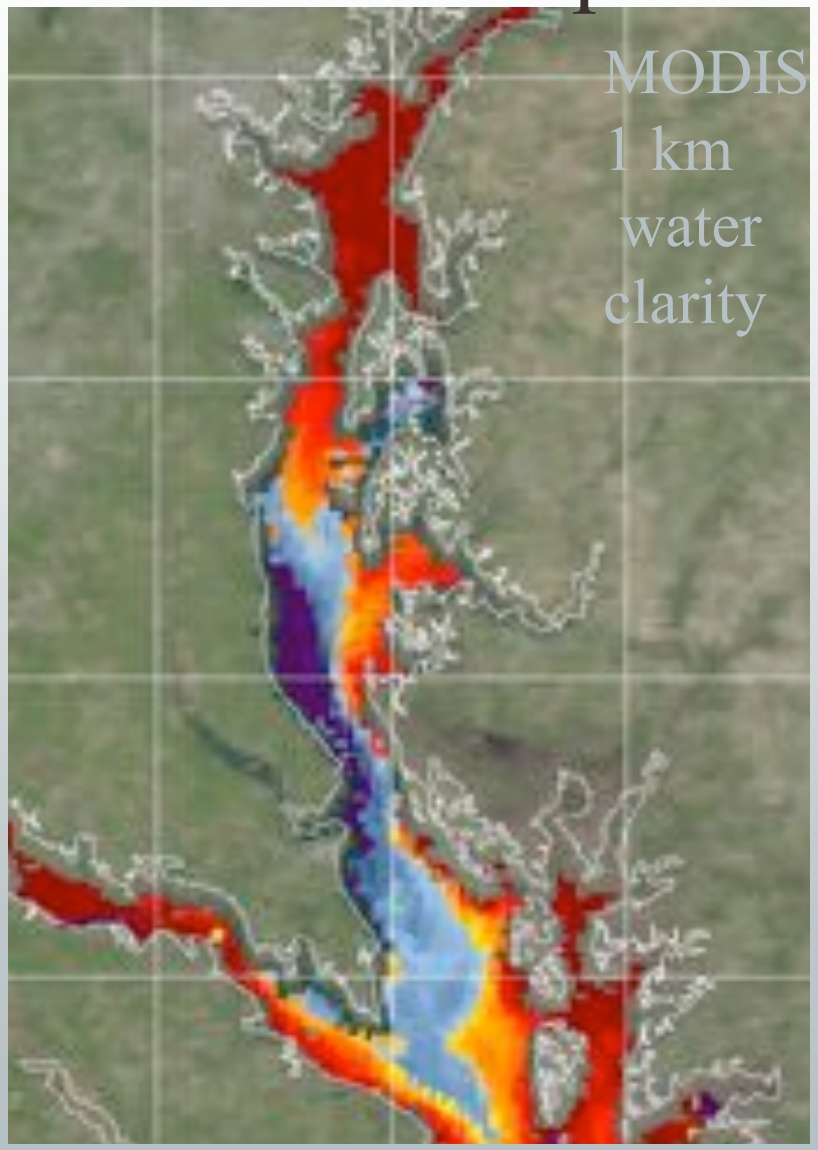


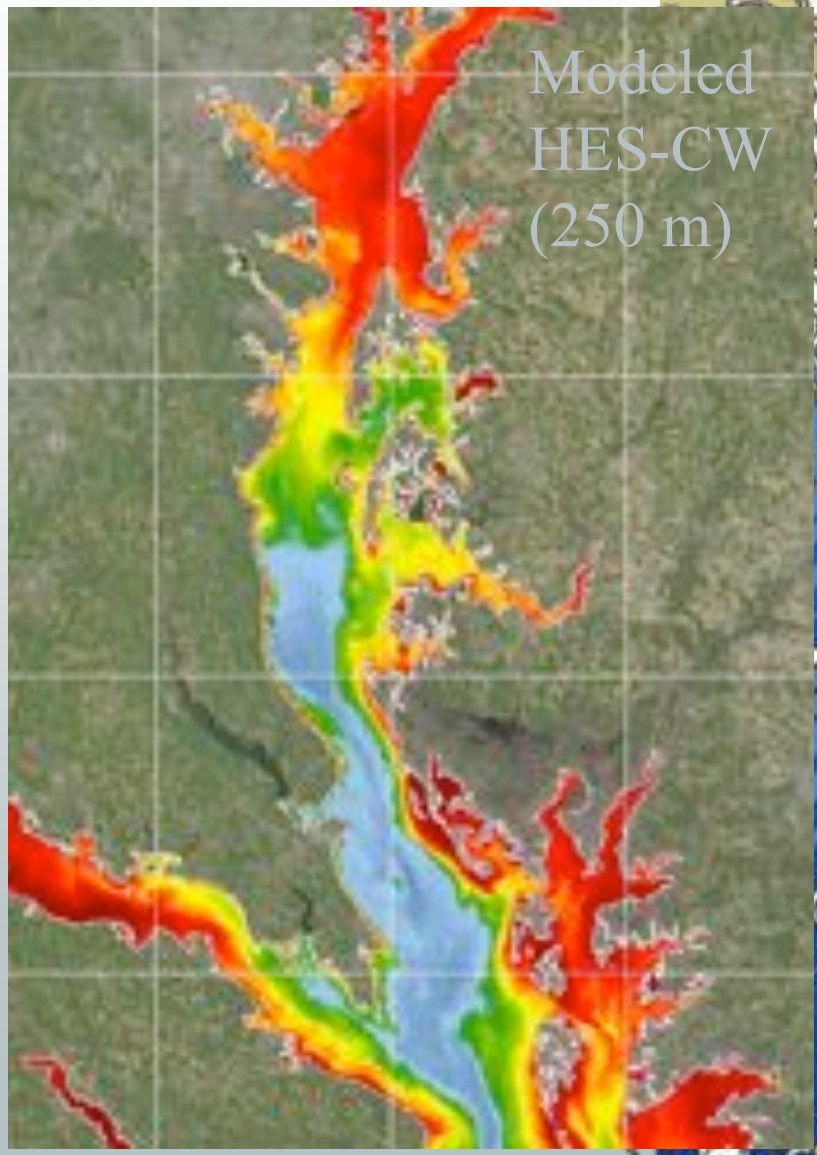
Background: IOOS and Remote Sensing

- *Initial Workshop in Durham, New Hampshire during October 2006.*
- *Generally assumed to be a contribution of the "National backbone". Very few elements of the "backbone" are as yet identified*
- *Many requirements request support possible only by airborne sensors.*

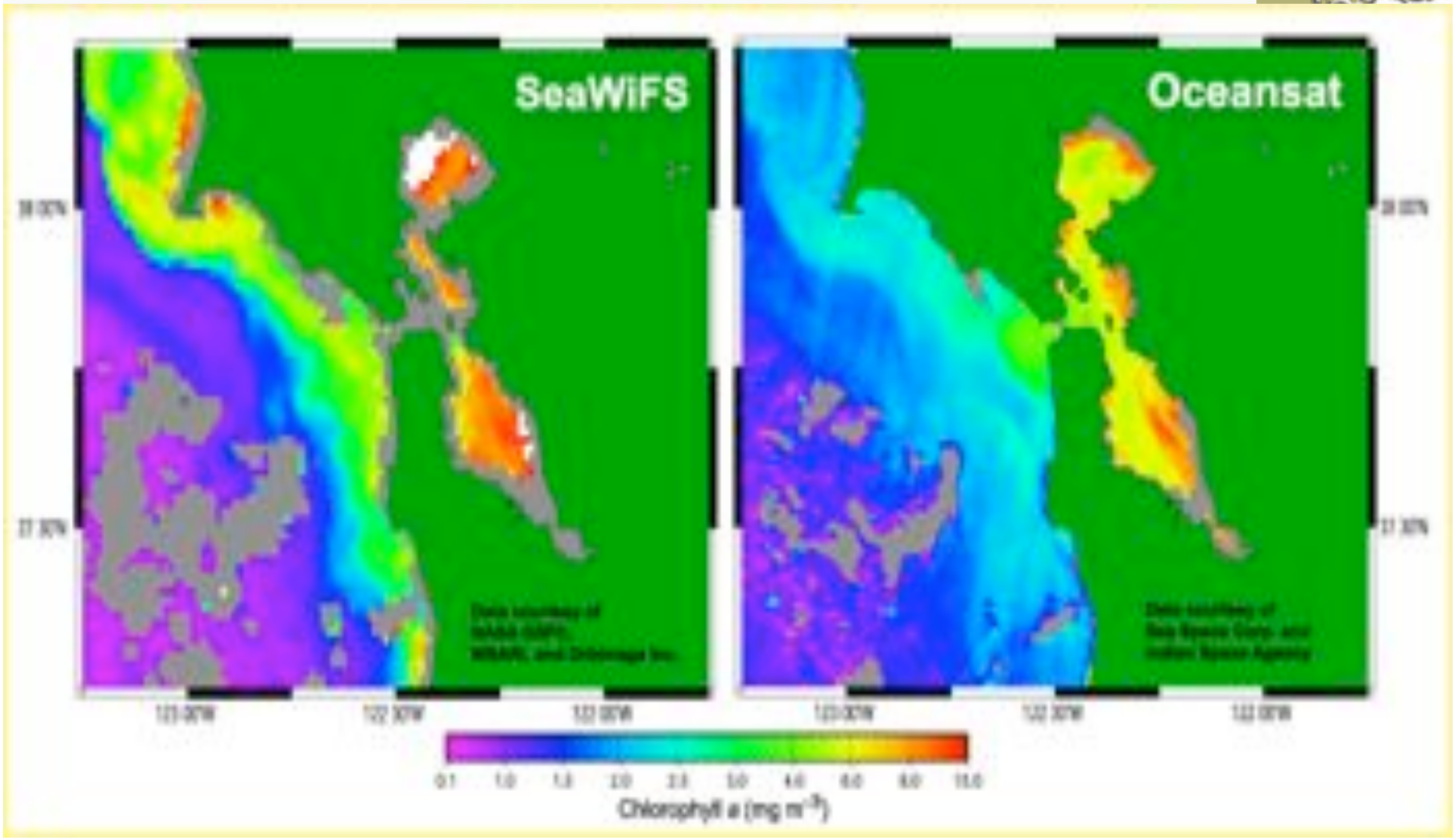


Higher spatial resolution critical to monitor complex coastal waters



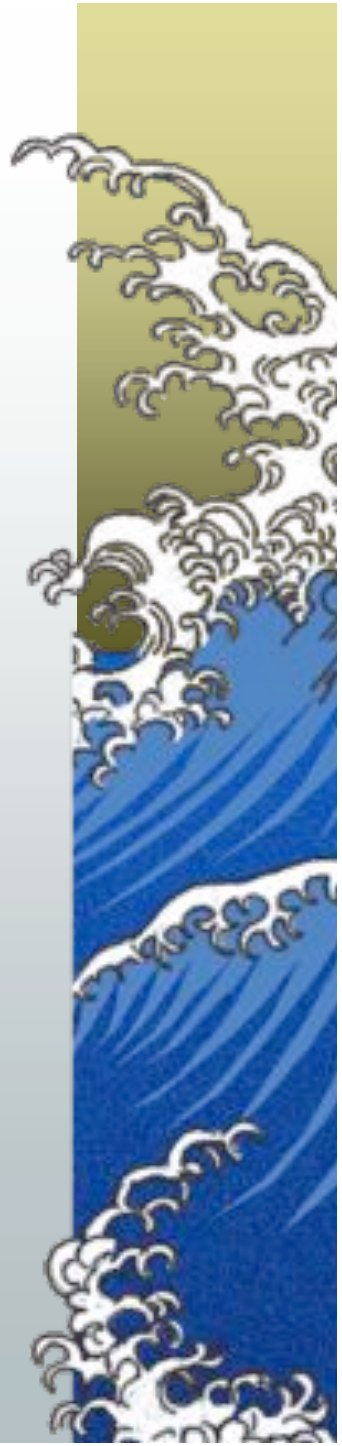


Non-Chesapeake Bay Image



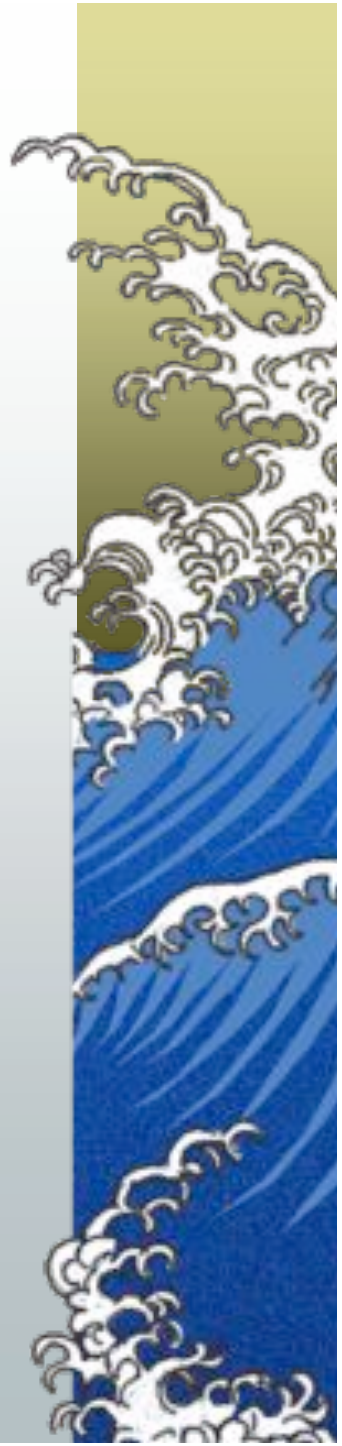
Data Stewardship at the National Level

- *Maintenance of archives*
  - *CLASS (Boulder, CO and Asheville, NC)*
  - *"Nodes"*
- *Reprocessing of climate data records*
  - *Scientific Data Stewardship Committee*
- *Development of New Products*
  - *User driven (e.g., IOOS)*
  - *"Hey let's try this"*



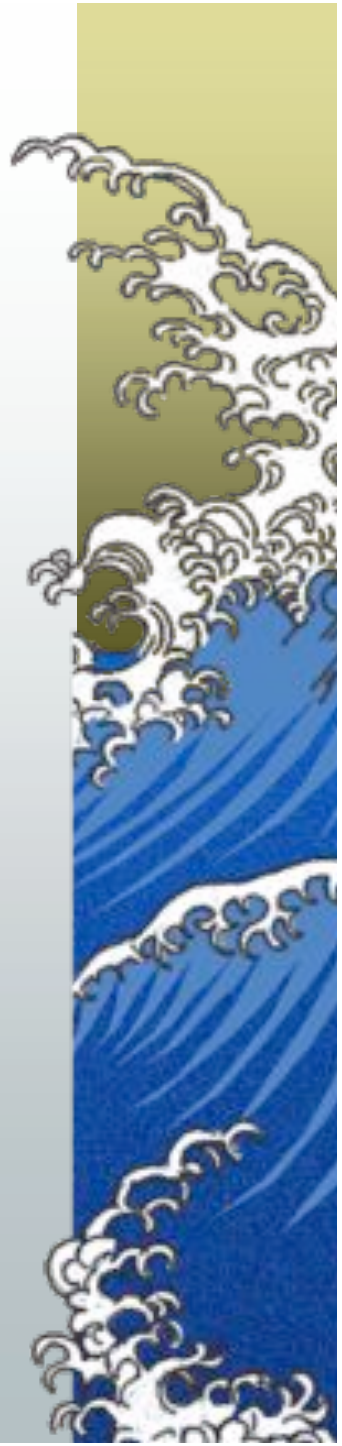
Regional Development Model

- *Form 'centers of excellence" comprised of regional experts*
- *Target specific applications*
  - *Regional algorithms*
  - *Integrated products*
- *Develop and deliver experimental products*
- *Transfer technology to National level for possible implementation elsewhere*



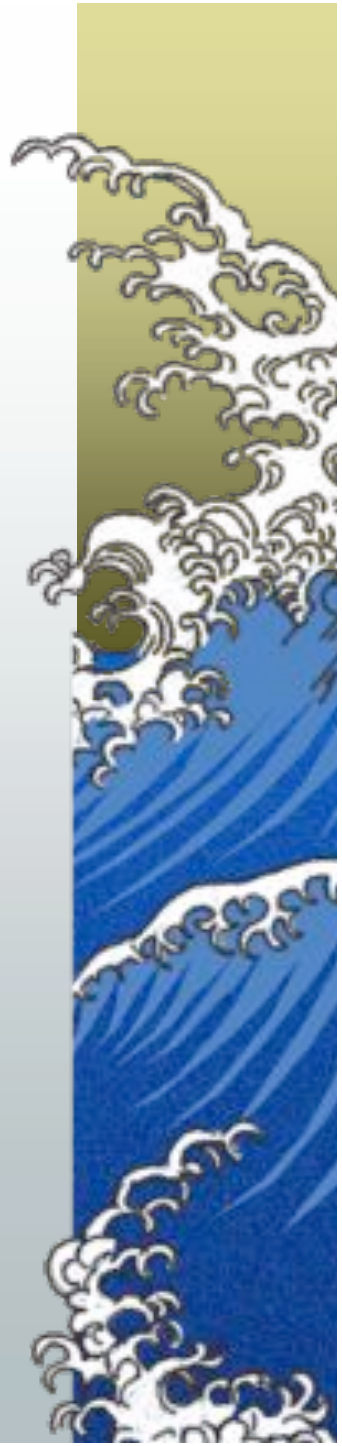
Data Availability

- *Standard transport of large files via ftp or similar means*
- *Live Access Server - browse capability and data delivery of sub-samples in variety of formats*
- *Interoperable (machine to machine)*
  - *OPenDAP*
  - *Web Services (WSC, WMS, WFS)*
- *Aggregators*
  - *THREDDS (inherently supports opendap,wcs)*
- *Transition from web-based to client-side data transfers*

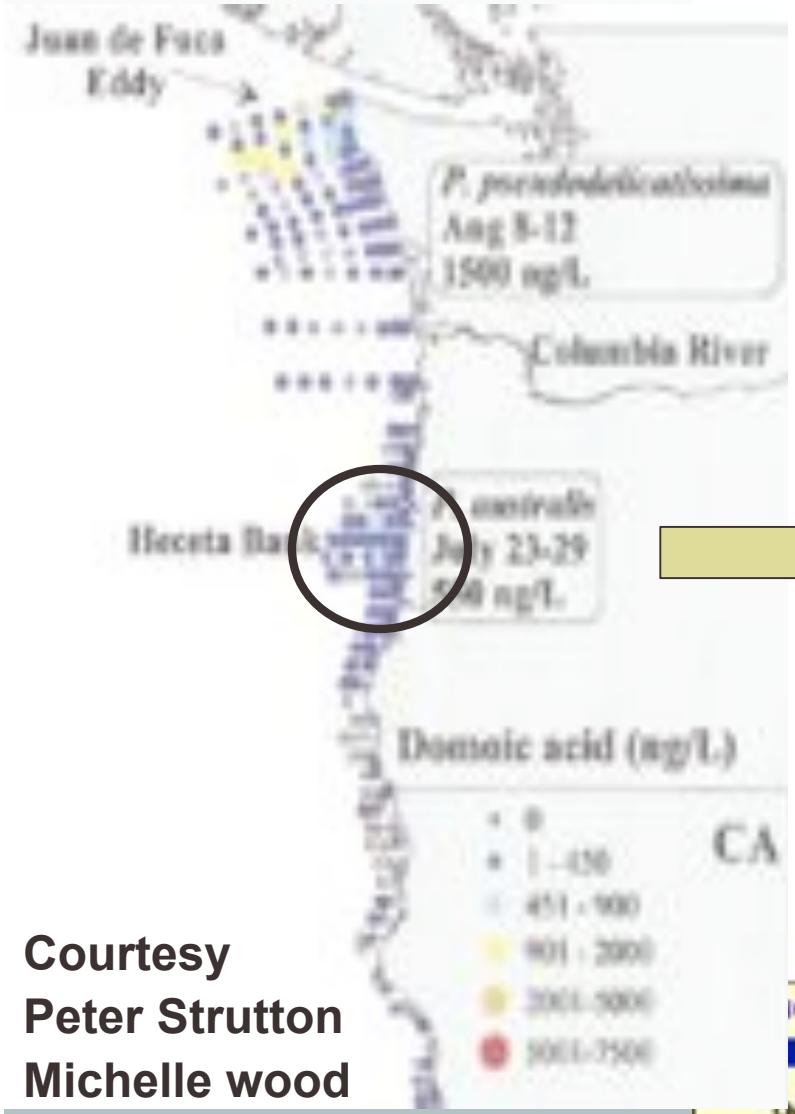


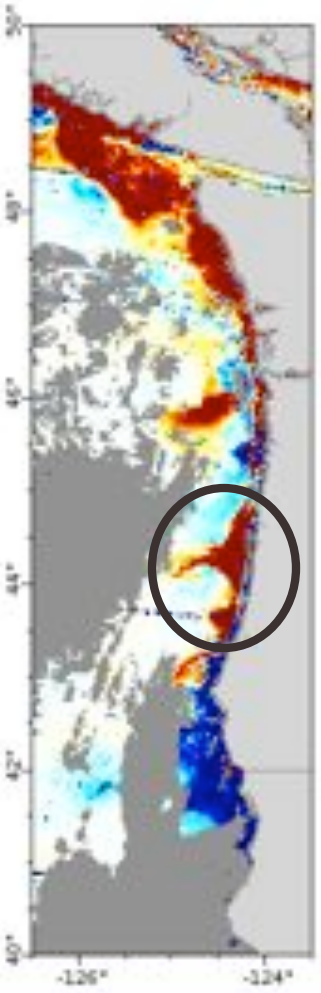
Client-side Services

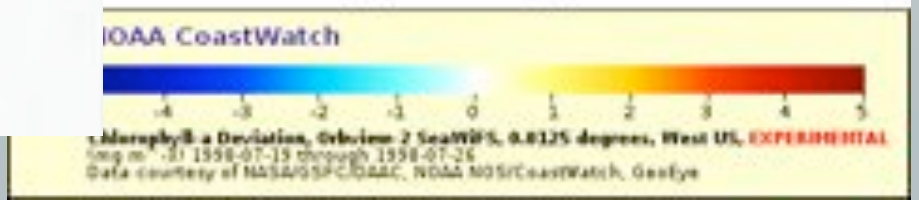
- *Client accesses the required data from within their favorite application*
  - *Matlab*
  - *IDL*
  - *ArcGIS*
  - *Excel (??)*
  - *R /S+*
- *All relevant data available by a common interface*
- *Allows them to integrate their data without sending it in to some [non-existent] grand data base.*



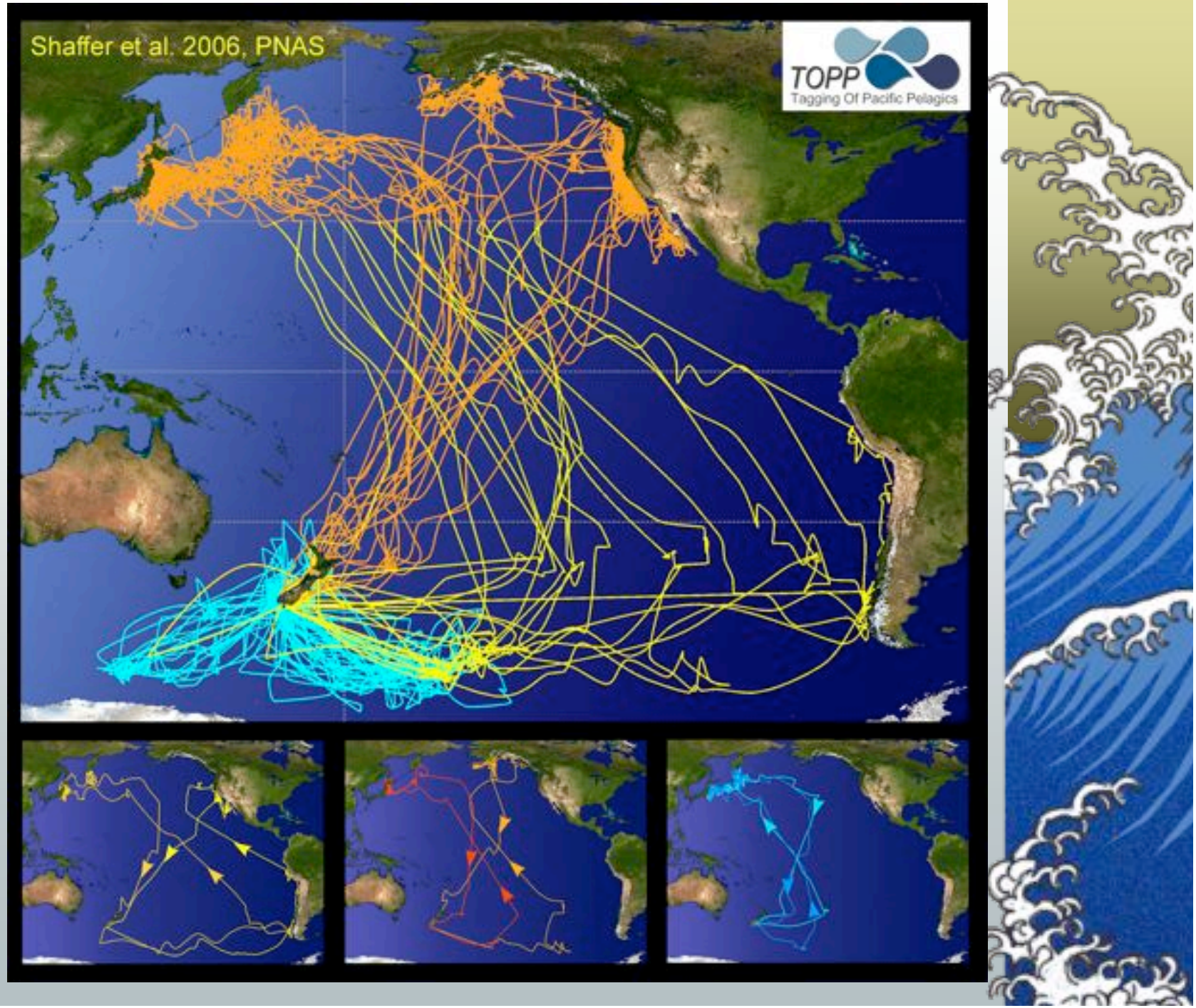
Heceta Bank HAB: A Juan de Fuca eddy analog?

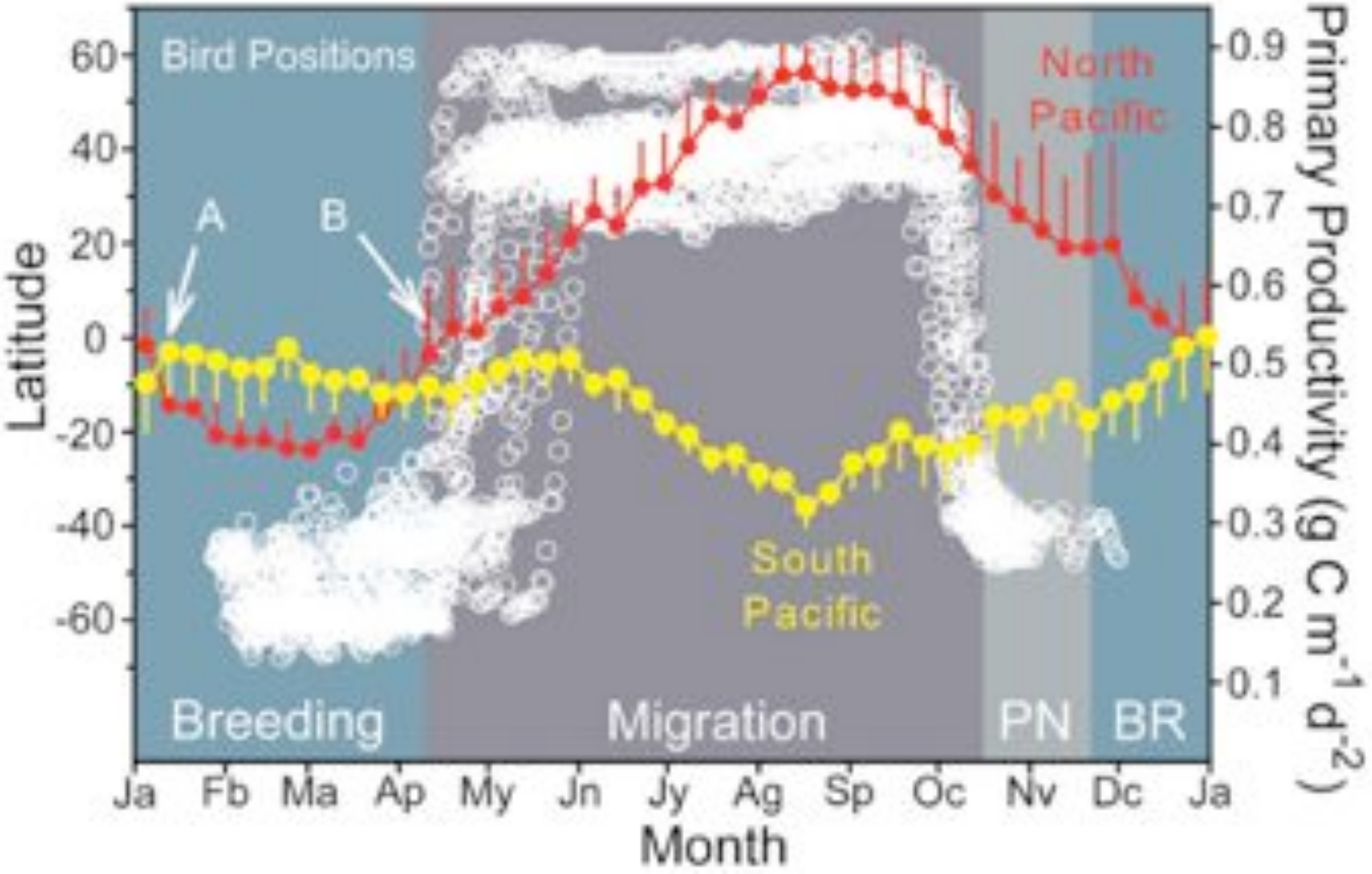






Courtesy
Peter Strutton
Michelle wood

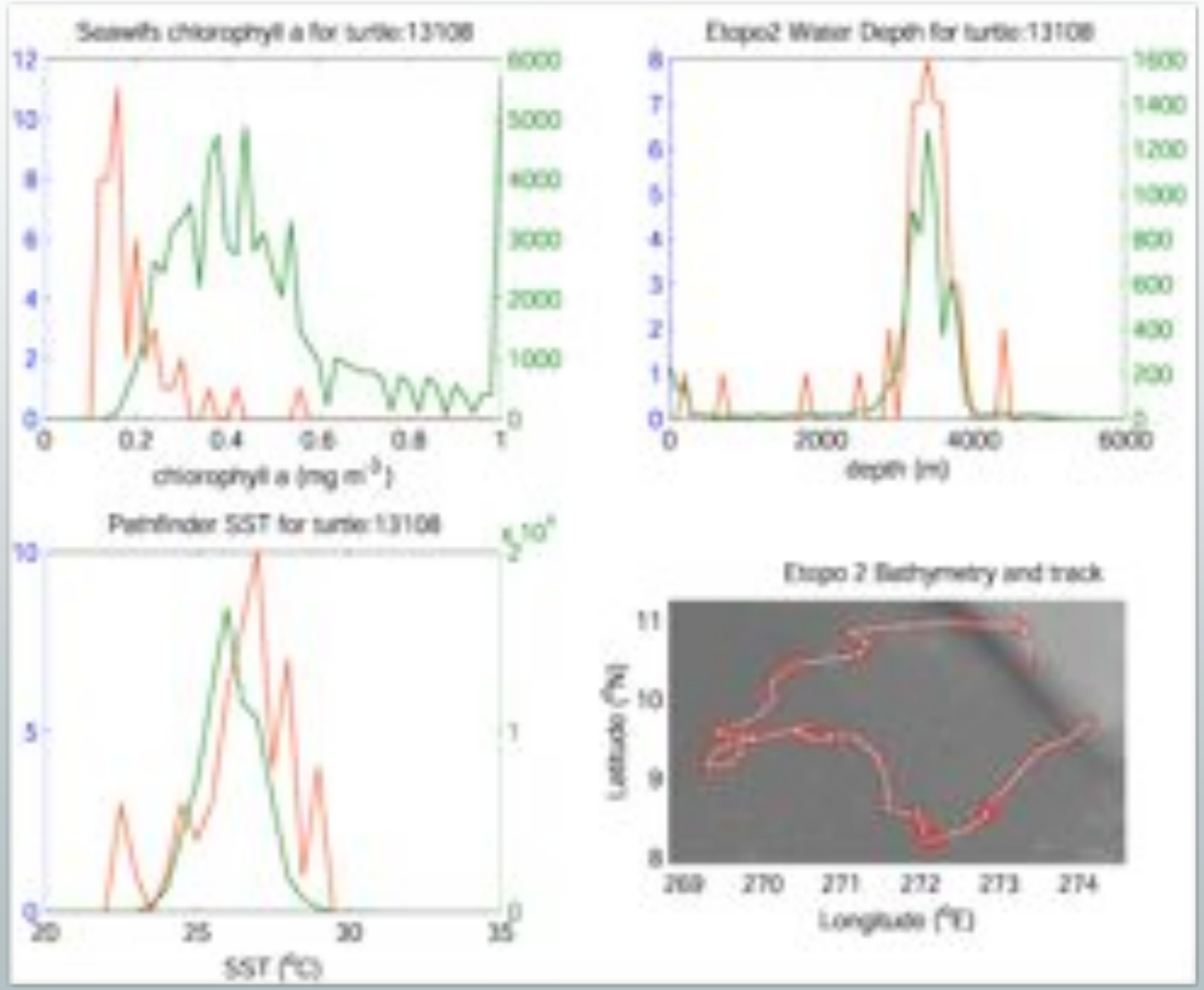

Shaffer et al. 2006, PNAS
TOPP
Tagging Of Pacific Pelagics


Bird Positions
North Pacific
South Pacific
A
B
Breeding
Migration
PN
BR
Latitude
60
40
20
0
-20
-40
-60
Ja
Fb
Ma
Ap
My
Jn
Jy
Ag
Sp
Oc
Nv
Dc
Ja
Month
Primary Productivity (g C m-1 d-2)
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1

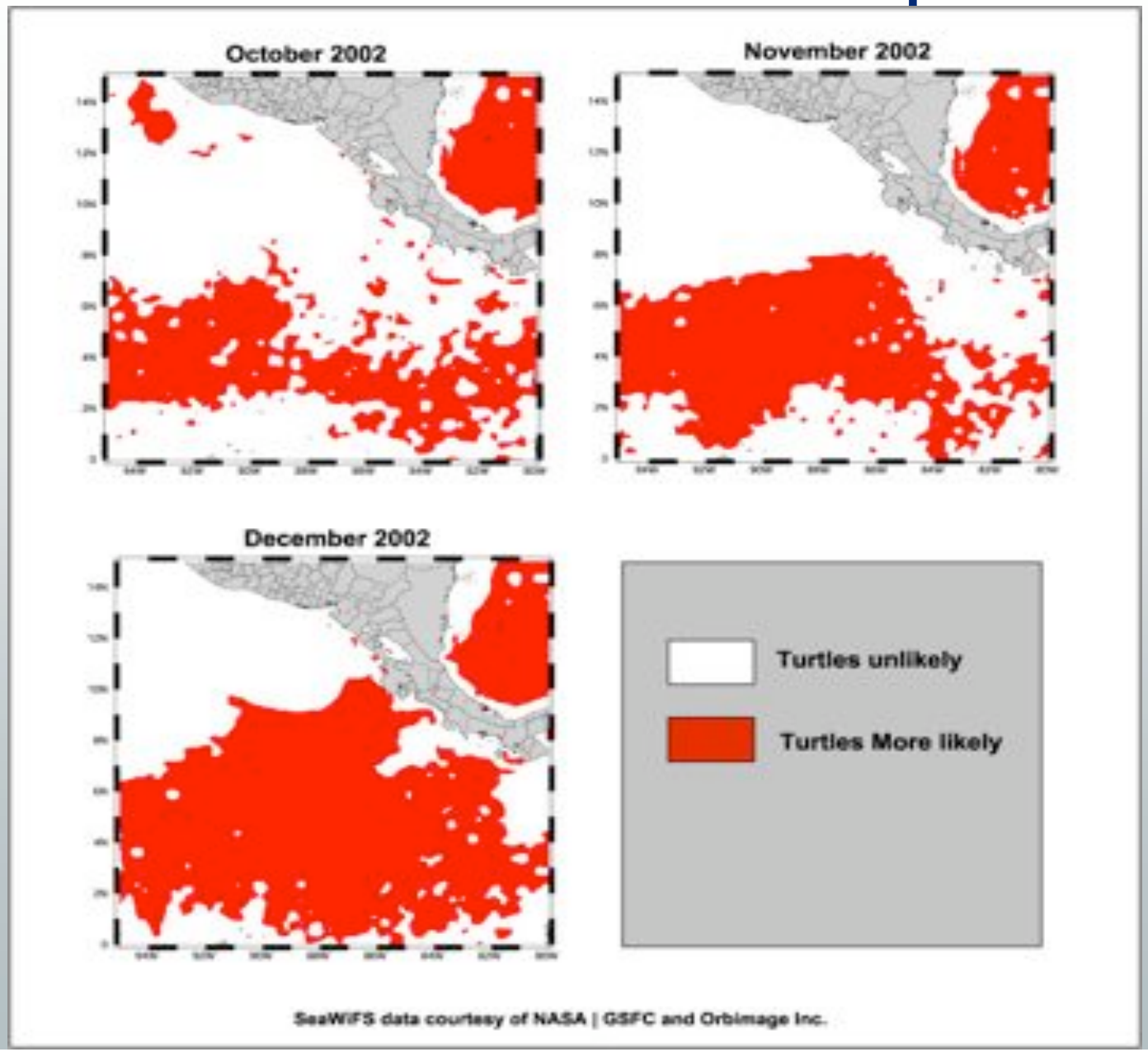
Olive Ridley Turtles

- *Yonat Swimmer, Lianne McNaughton and others (NMFS/PIFSC).*
- *Anders Nielson and John Sibert (U. Hawaii/ PFRP).*
- *Mike Laurs (NMFS/SWFS*

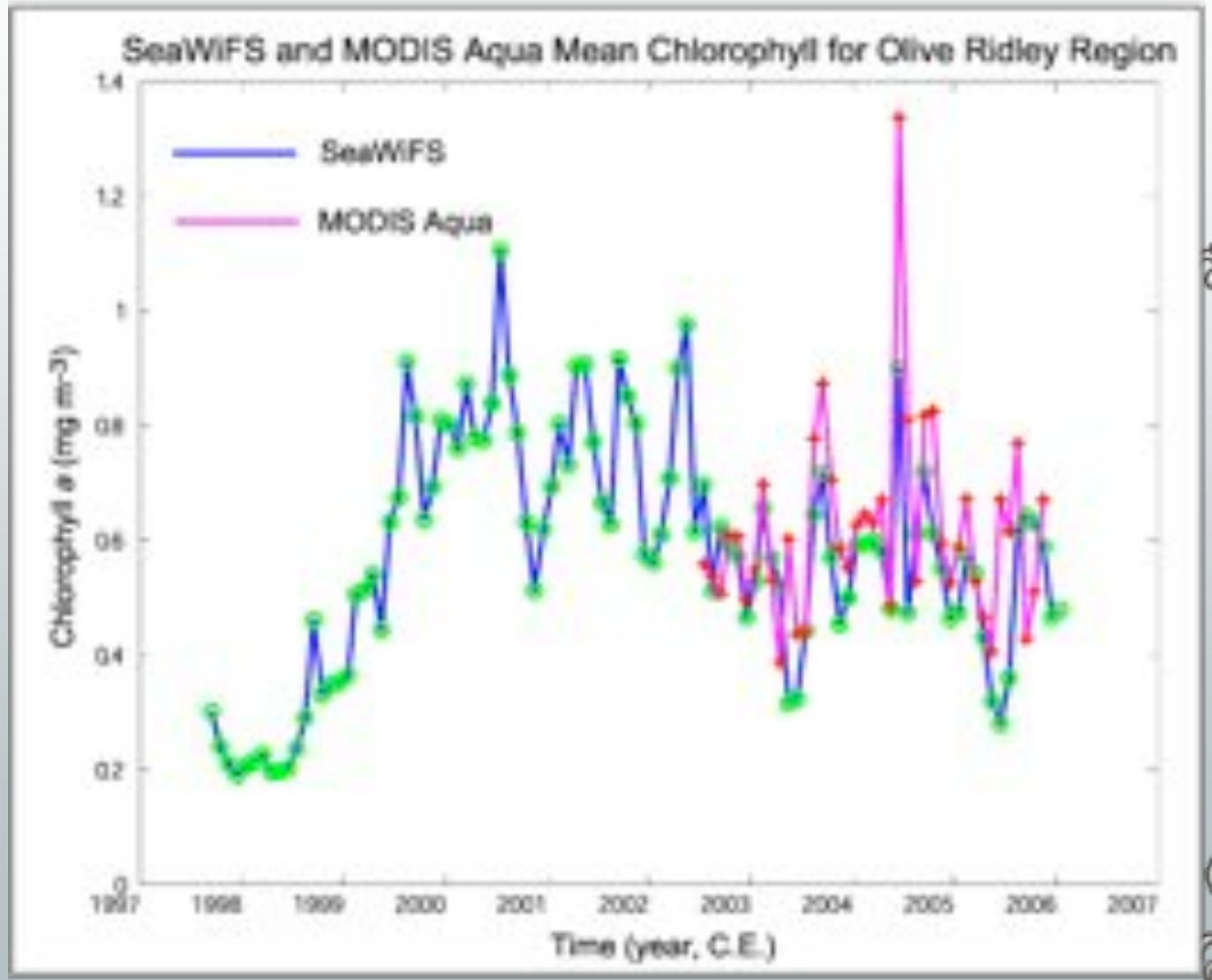
Examining Habitat Preferences



Potential Habitat Maps

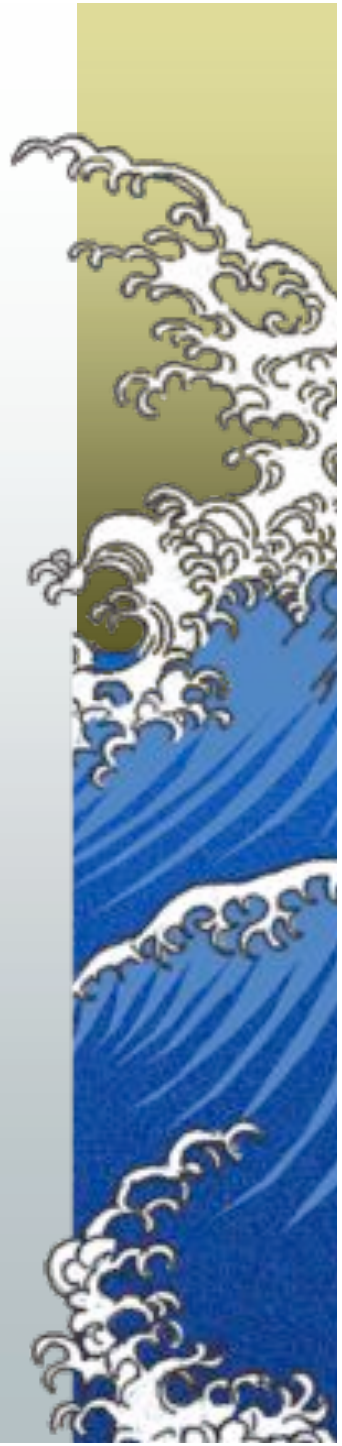


Need for Long-term Continuity



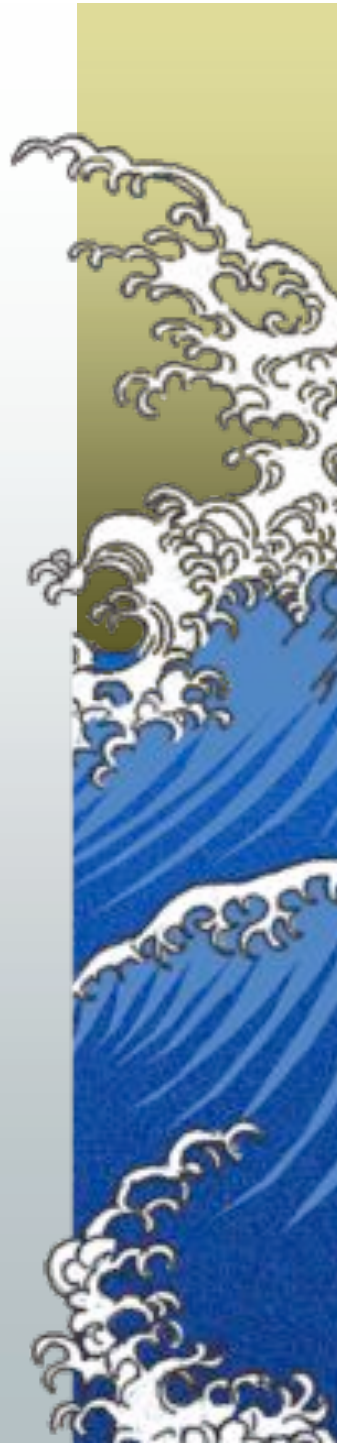
Ongoing Efforts

- *Learn to handle L1A and L2 swath data with new transport tools.*
- *Form partnerships with end users to develop appropriate products.*
- *Develop systematic metadata standards, and the ability to translate between those and various existing standards*
- *Develop access tools for common clients*



Concerns for the Future

- *Continuity*
  - *VIIRS (??) - who'll fix it if it flys?*
- *Access*
  - *Would like the DAACS to adopt services such as THREDDS*
- *Archives*
  - *CLASS has a LONG was to go, especially with regards to science-quality data records.*
  - *Will the DAACs be there in the interim, under the new NASA model.*
- *Advocacy*
  - *We continue to build advocacy within the Marine resources community; success stories will be shared with NASA as they emerge.*



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