

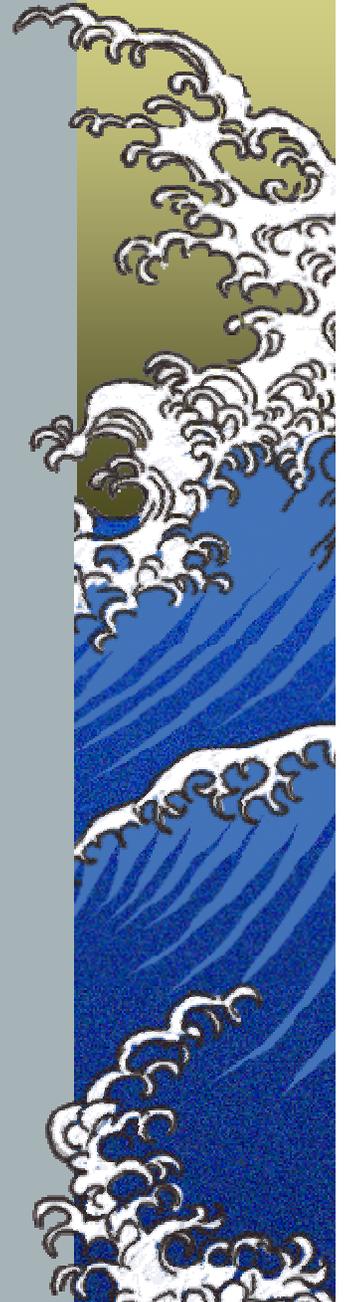
# “How to get Wet and Fat”

(The importance of the Gulf of Maine as a resource to marine mammals)

*Sean Todd*

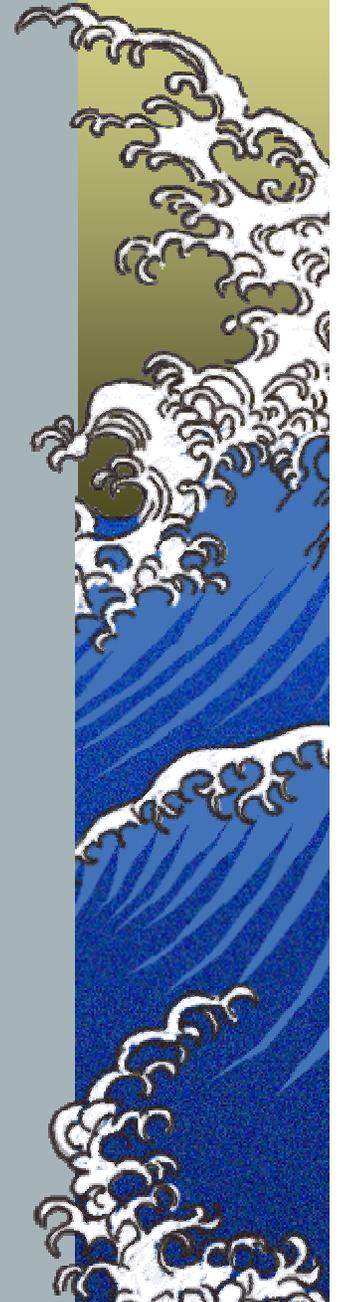
*College of the Atlantic*

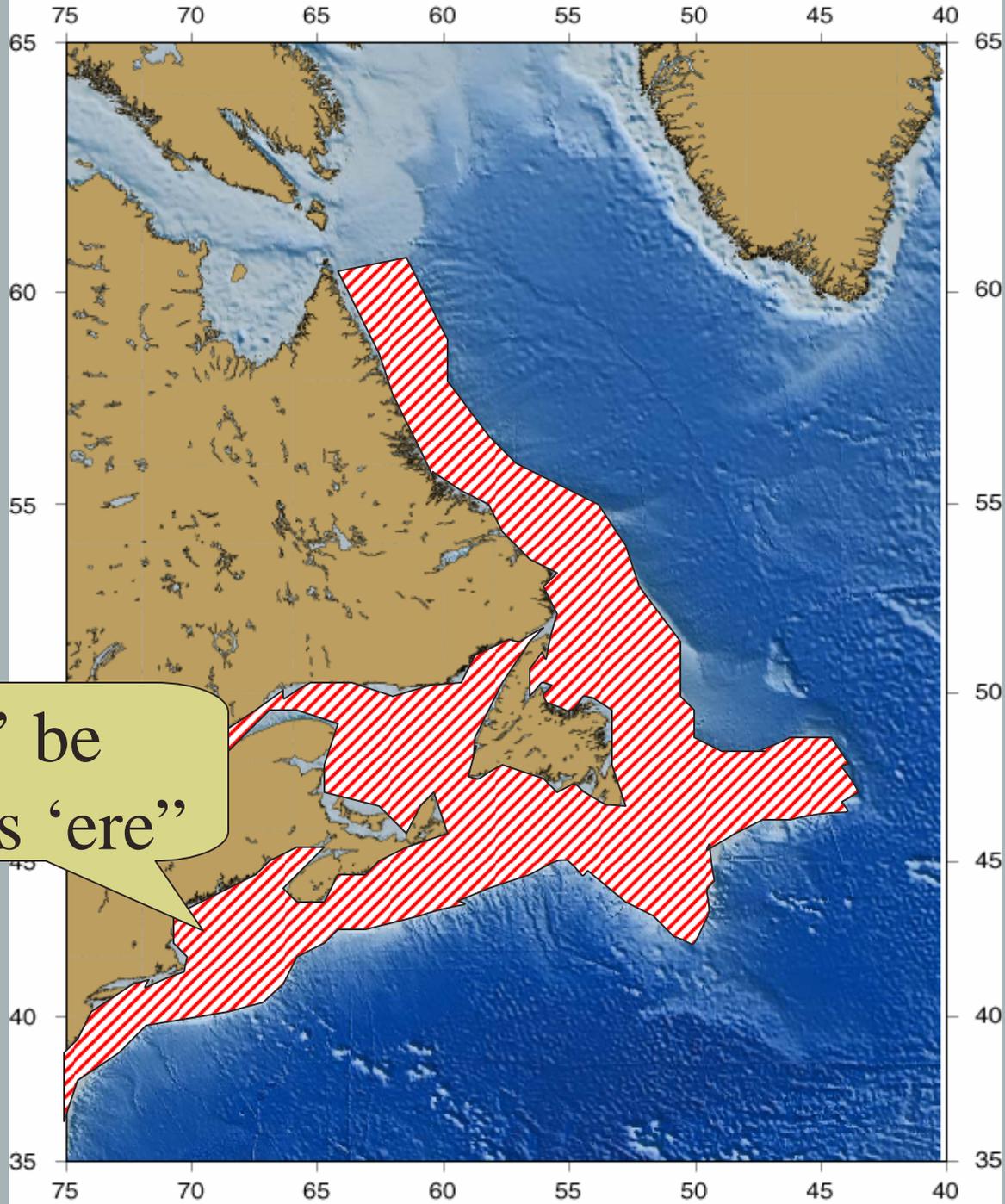
*Senior Scientist, Allied Whale*



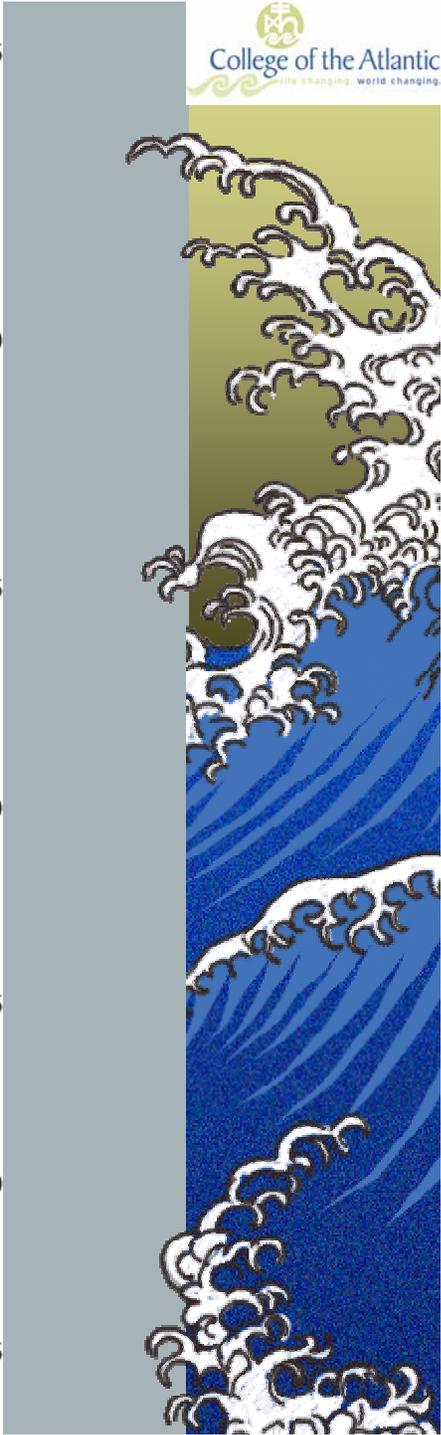
# “How to get Wet and Fat”

- *The Gulf of Maine as a physical system*
- *The players - seals, whales, dolphins and porpoises of the Gulf of Maine*
- *Current issues (...or, how to stop getting dry and thin)*

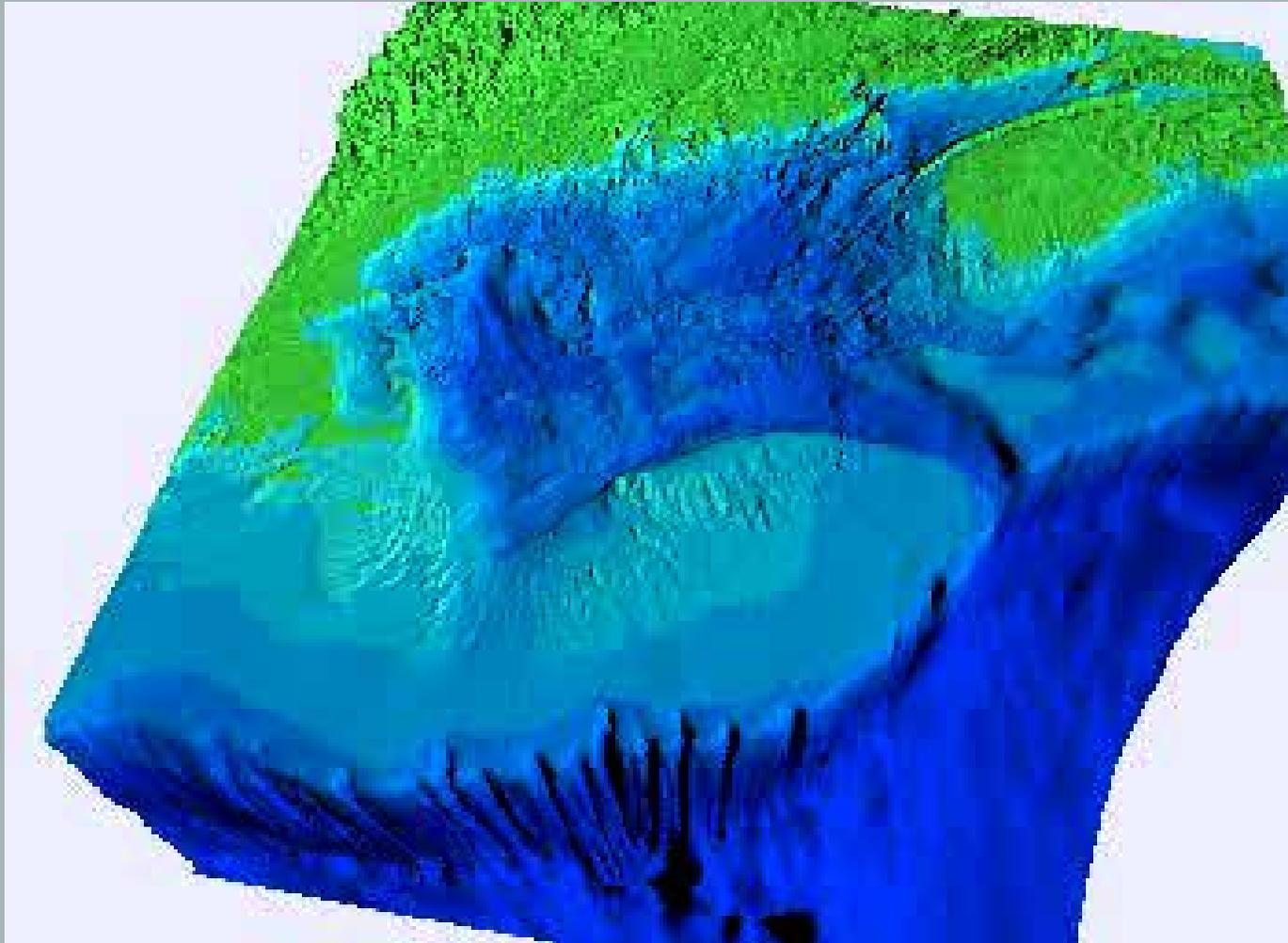




“Thar’ be  
whales ‘ere”



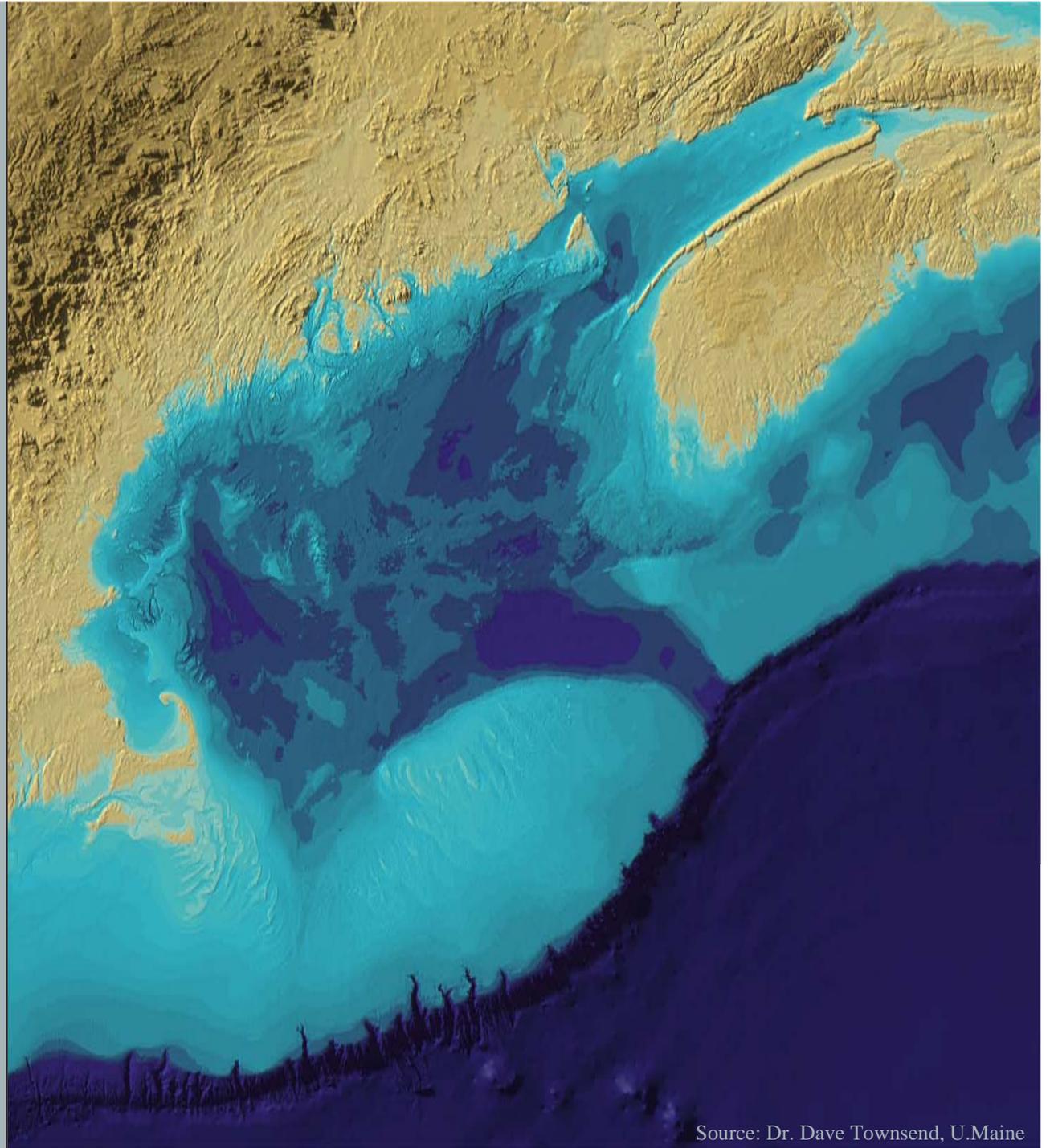
# GoM as a physical system: Bathymetry



Source: USGS

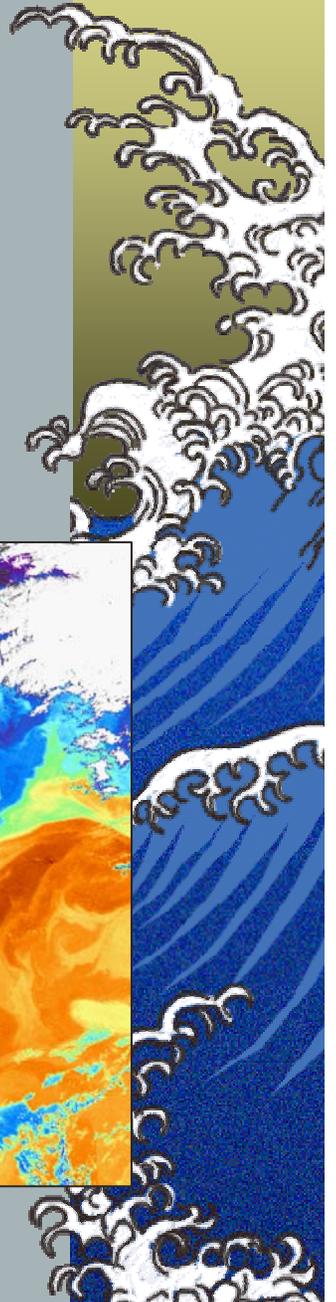
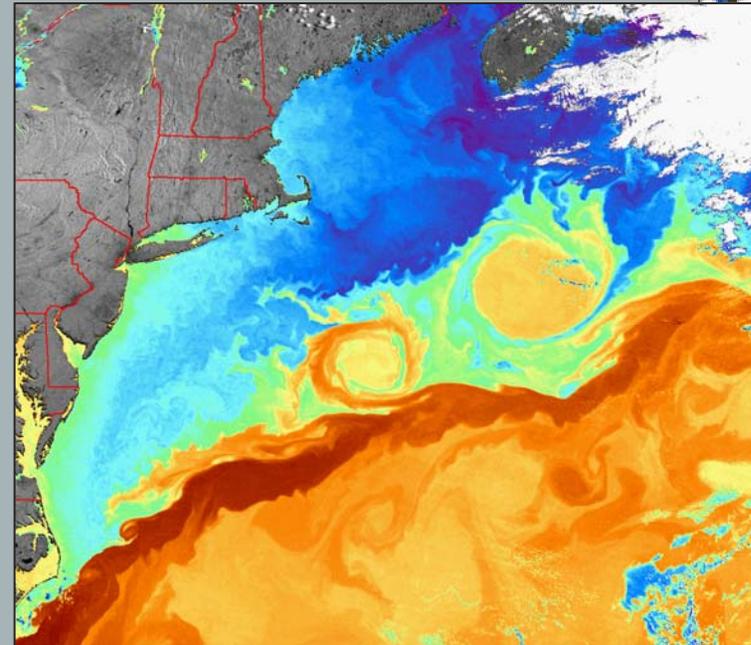
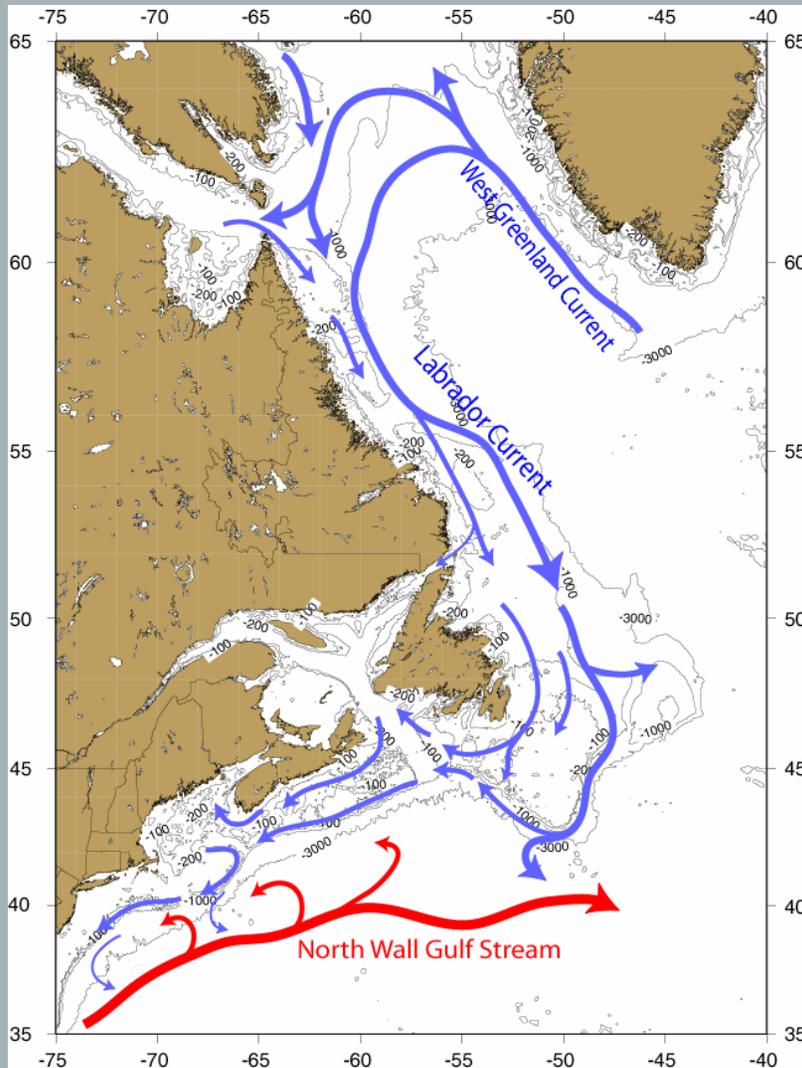


GoM as a  
physical  
system:  
Bathymetry

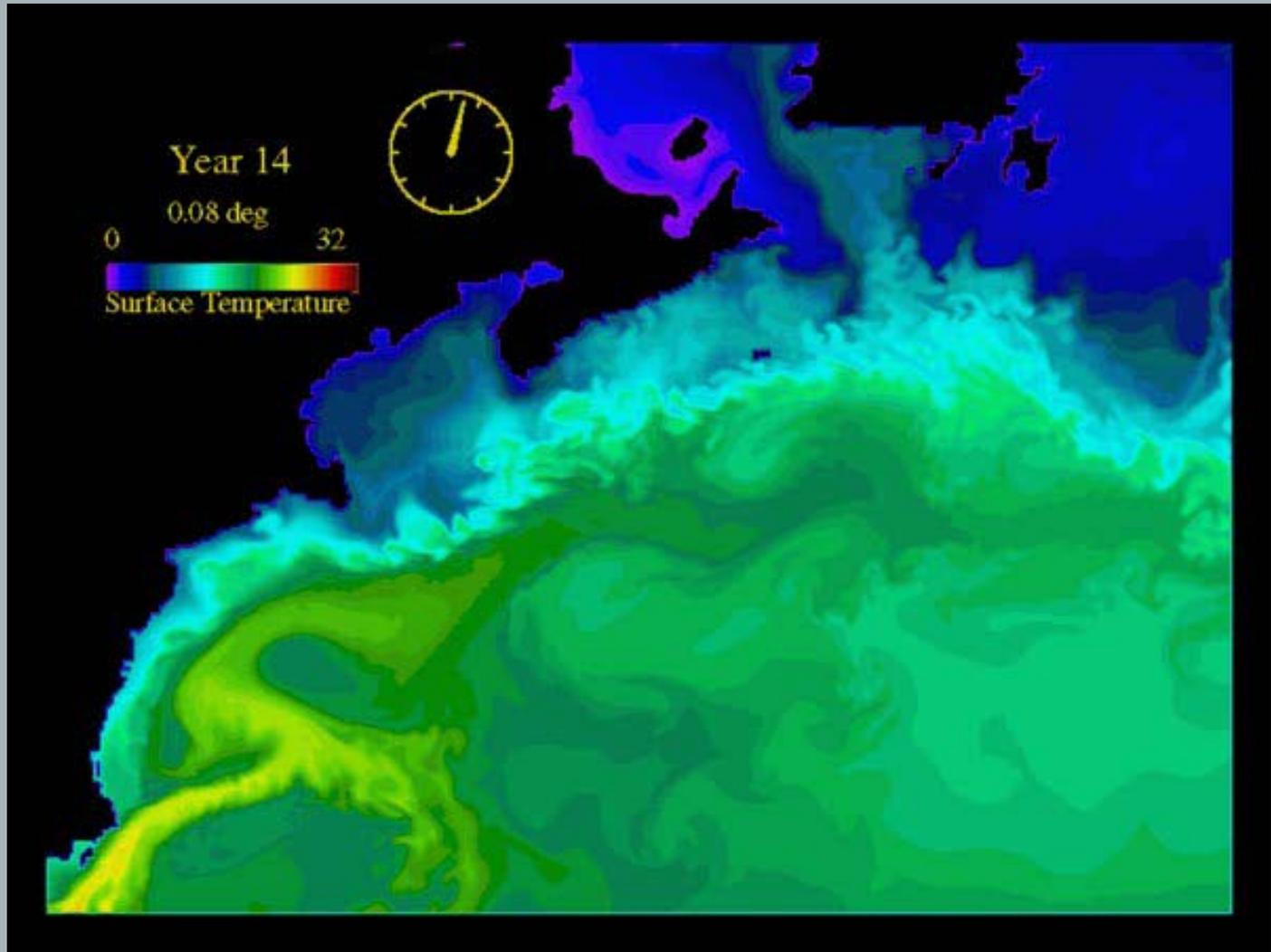


Source: Dr. Dave Townsend, U.Maine

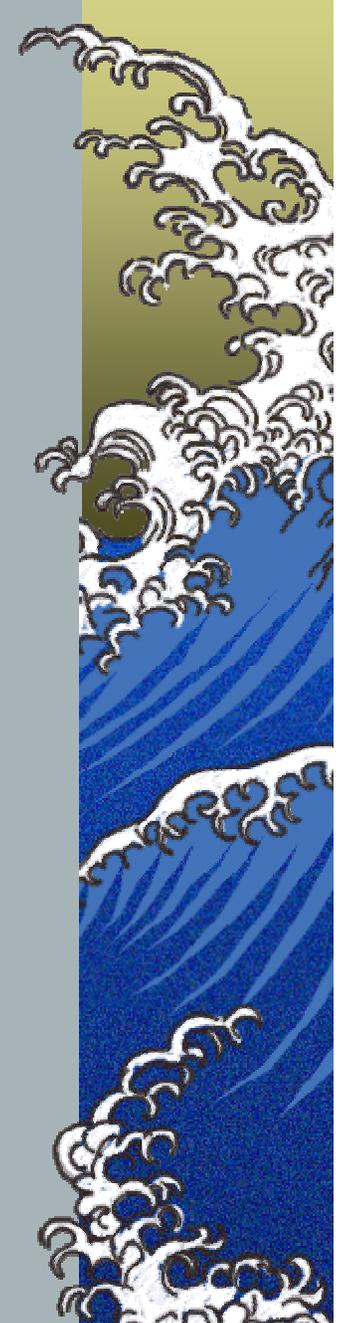
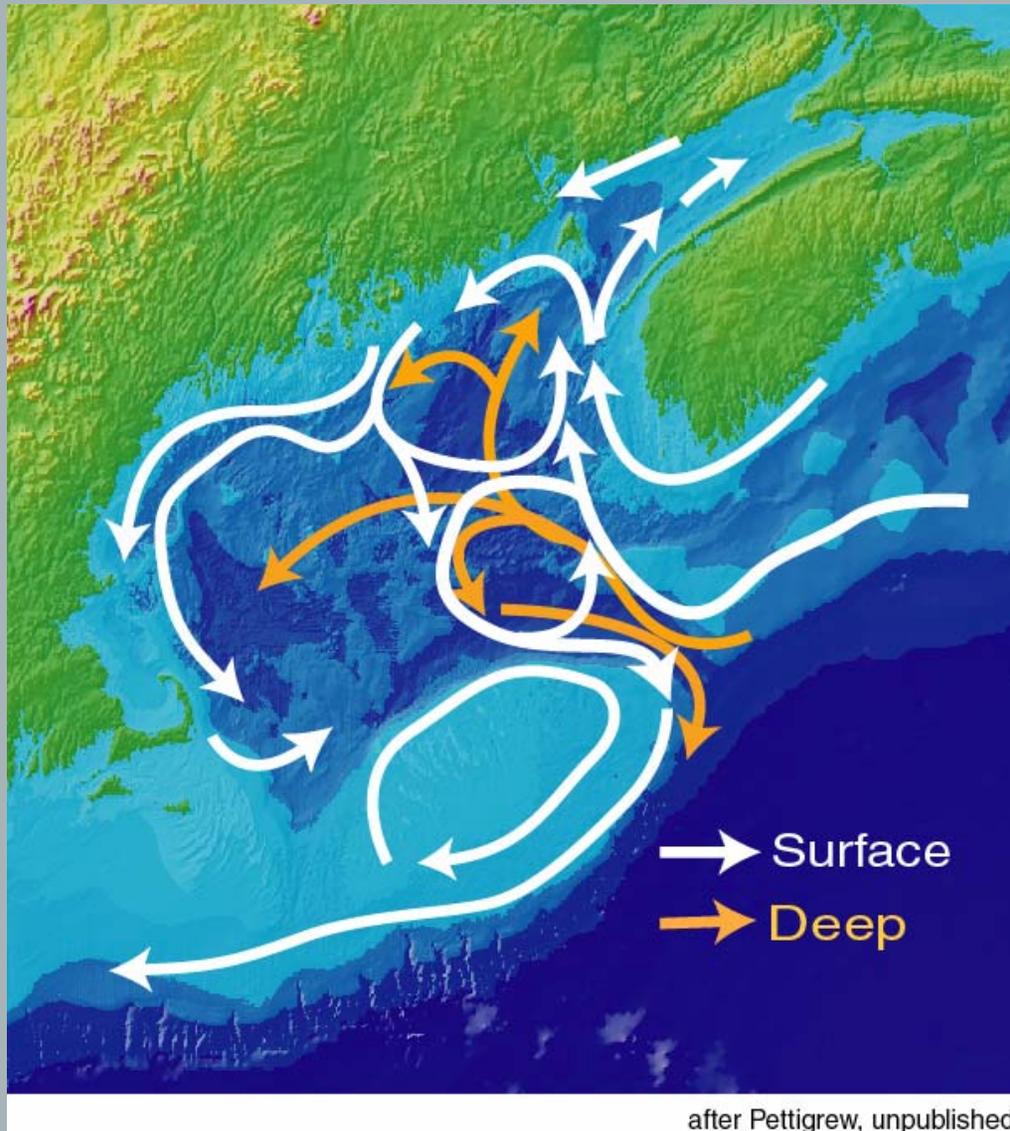
# GoM as a physical system: currents outside the Gulf



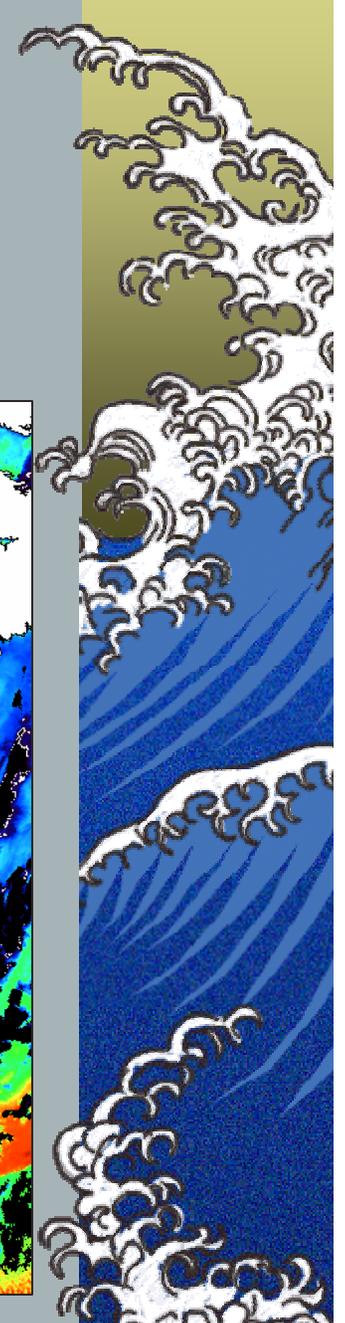
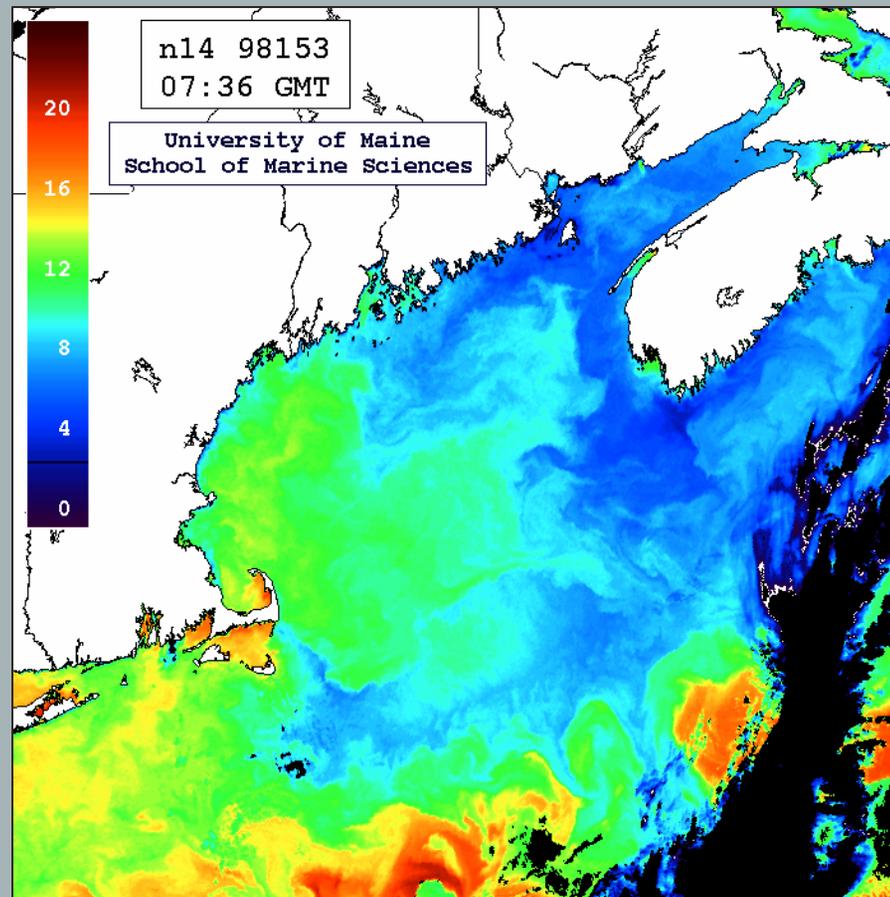
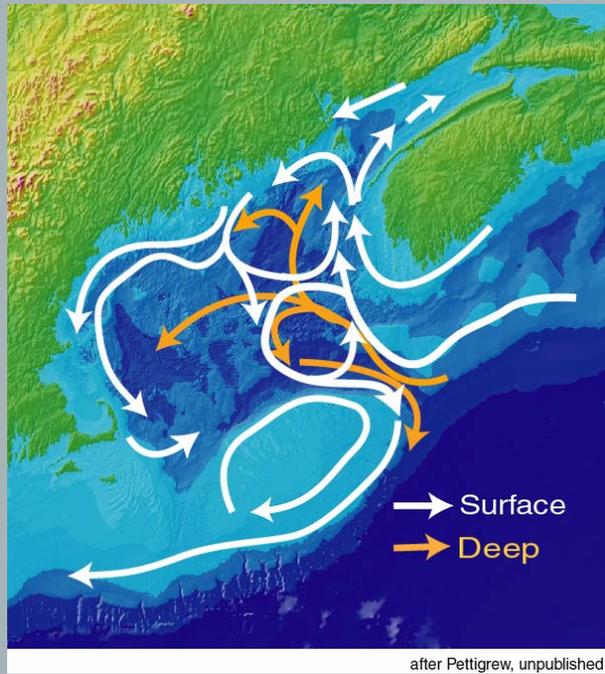
## GoM as a physical system: currents outside the Gulf



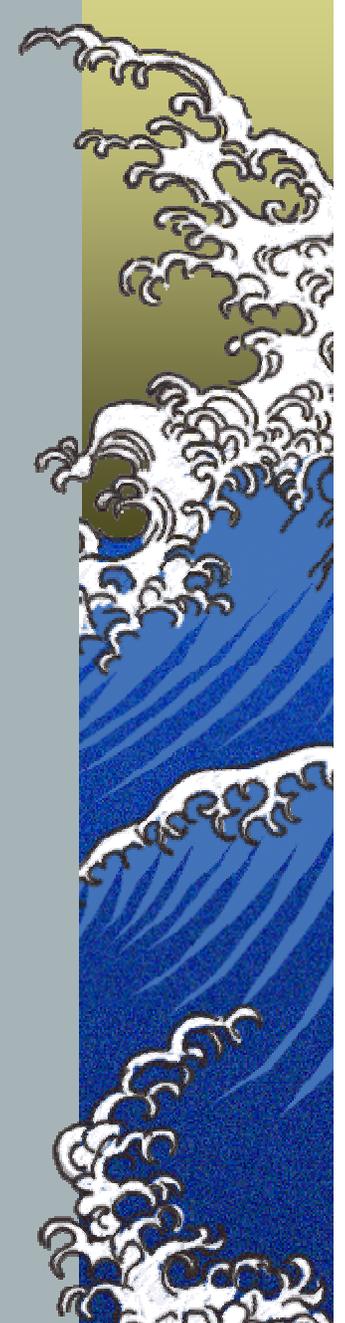
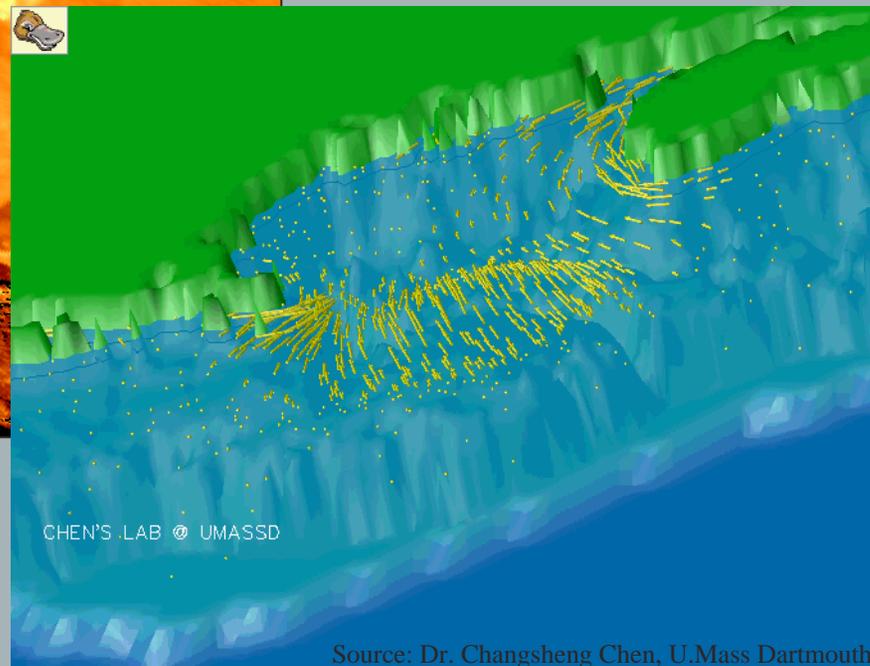
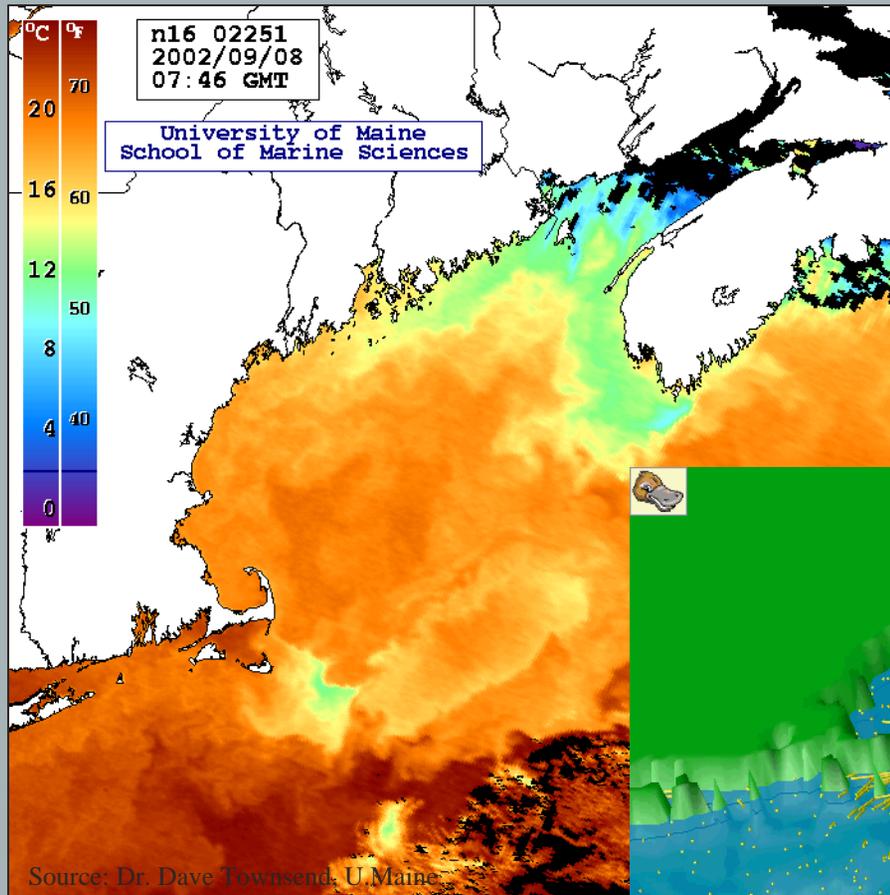
## GoM as a physical system: Currents in the Gulf



## GoM as a physical system: Currents in the Gulf

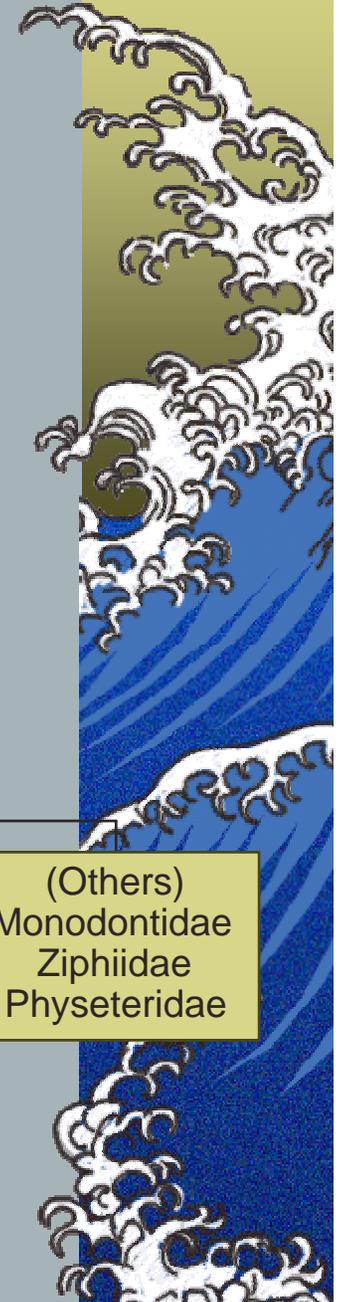
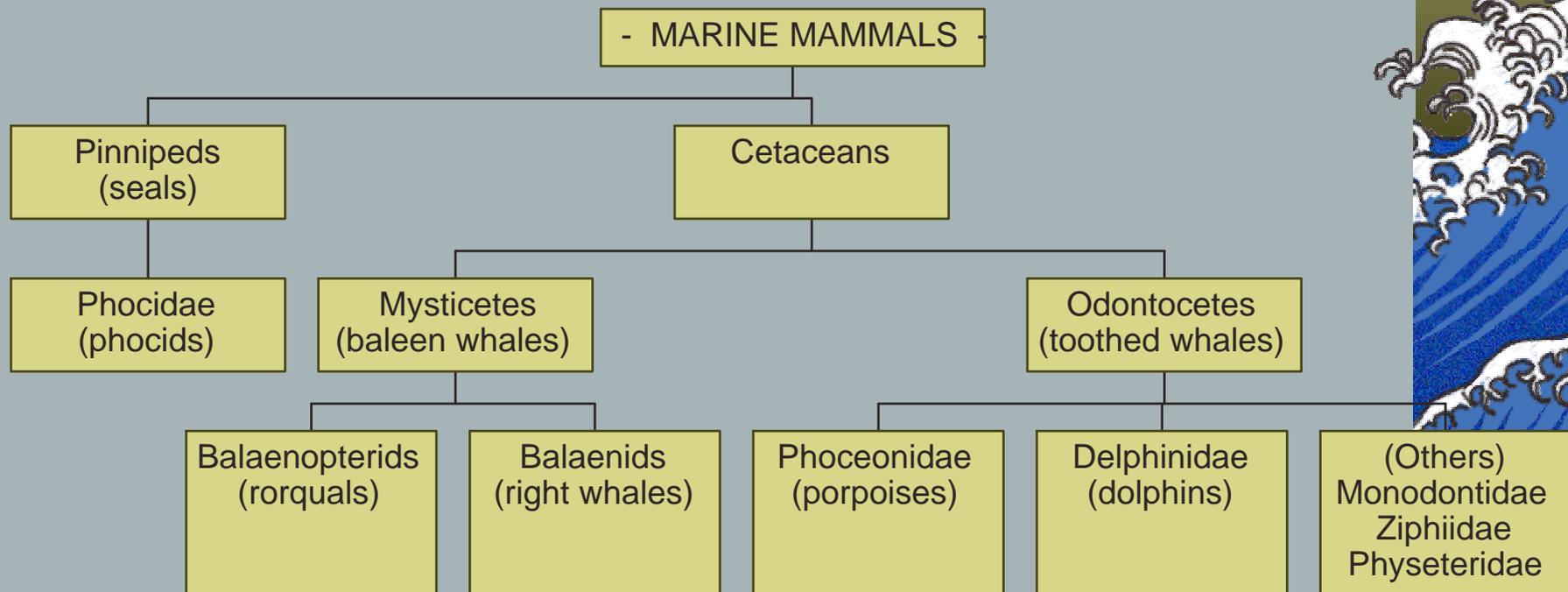


# GoM as a physical system: tidal mixing



# The Players...

## Marine Mammals in the Gulf of Maine



# Phocids

- *Harbor Seals*

(*Phoca vitulina*), pup  
May-June, molt July-  
August



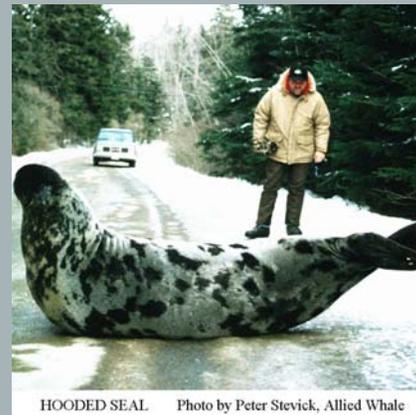
- *Gray Seals*

(*Halichoerus grypus*), pup  
Jan-Feb, molt July-  
August

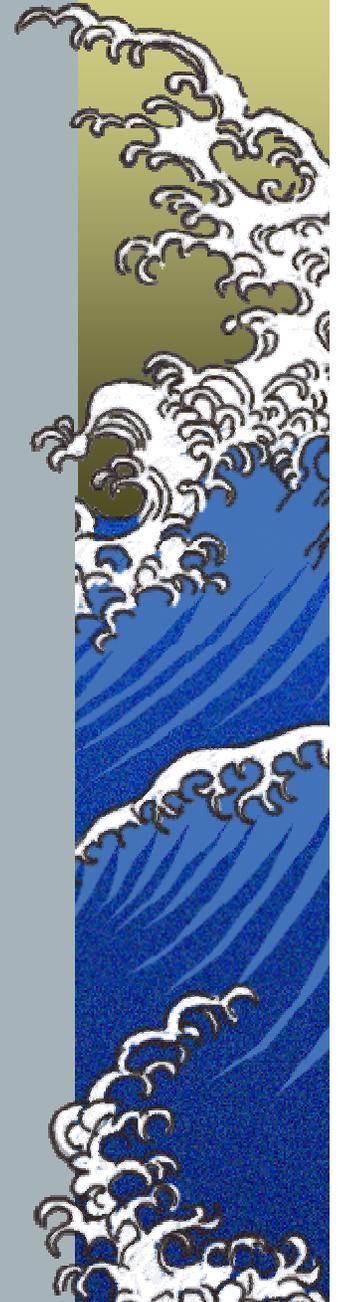


# Winter phocids

- *Harp seal, (Phoca groenlandica)—moves south to GoM during winter (range expansion?)*
- *Hooded seal (Cystophora cristata)—overwinters in GoM*
- *(rare) Ringed seals (Phoca hispida)*



HOODED SEAL Photo by Peter Stevick, Allied Whale



# Cetaceans: Balaenids

- *Northern right whale*  
(*Eubalaena glacialis*)
- *Calve in winter,*  
*move to GoM in*  
*Summer/Fall to feed*
- *Highly endangered,*  
*~300 animals*



# Cetaceans: Balaenopterids

- *Humpback whale (Megaptera novaeangliae), calves in winter, moves to GoM for summer feeding*
- *Finback whale (Balaenoptera physalus), moves to GoM for summer feeding*
- *Minke whale (B. acutorostrata), moves to GoM for summer feeding*
- *Others (blue, sei: reflect a more offshore environment*



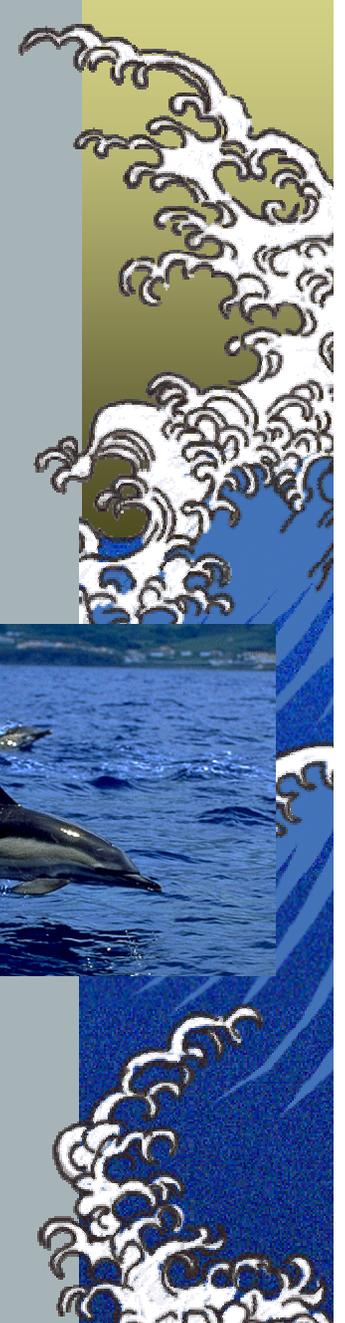
# Cetaceans: Phocoenidae

- *Harbor porpoise*  
(*Phocoena*  
*phocoena*); coastal  
distribution,  
apparently sensitive  
to habitat degradation



# Cetaceans: Delphinidae

- *White-sided dolphin*  
(*Lagenorhynchus acutus*)
- *White-beaked dolphin*  
(*Lagenorhynchus albirostris*)
- *Common dolphin* (*Delphinus delphis*)
- *Long-finned pilot whale*  
(*Globicephala melas*)
- (rarer) *Risso's dolphin*  
(*Grampus griseus*)
- (rare) *Killer whales* (*Orcinus orca*)

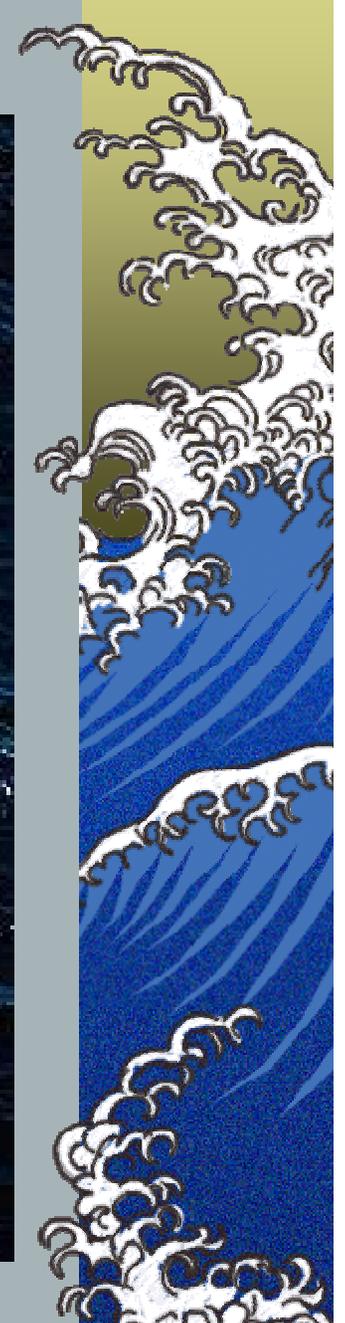
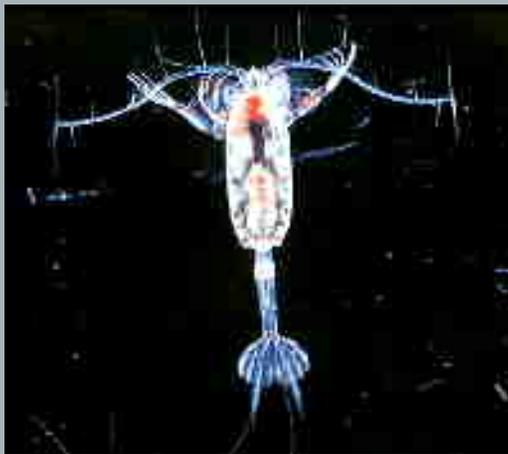


# Rare visitors

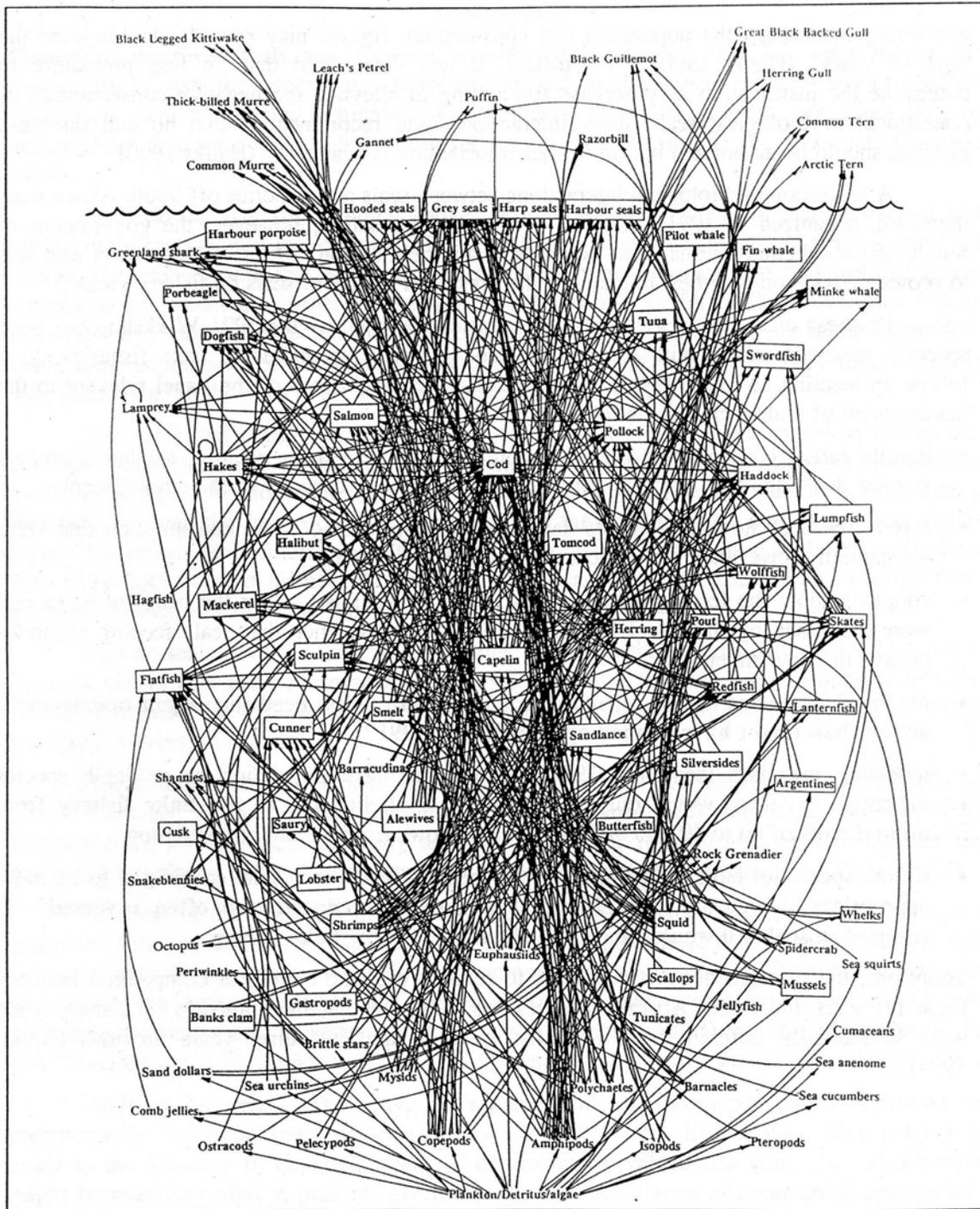
- *Beaked whales*
- *Belugas*
- *Sperm whales*
- *...and the really lost*



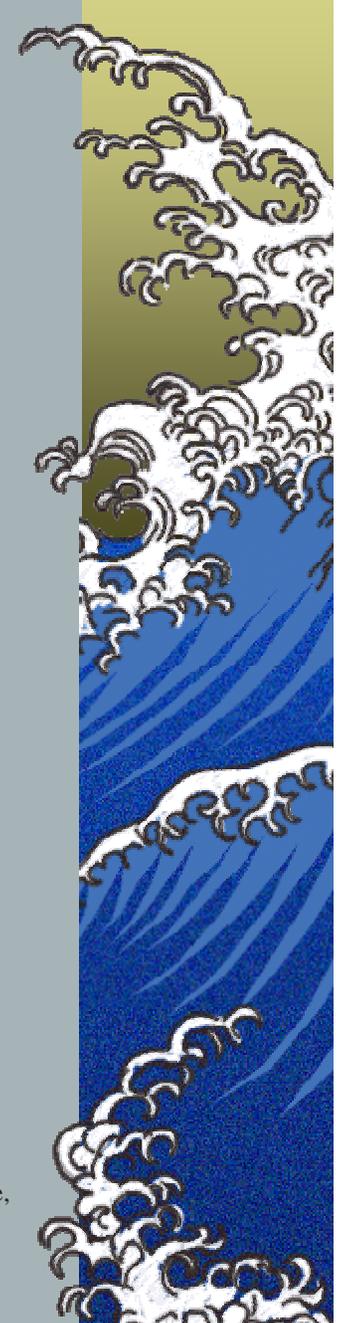
# The Common Theme? Here to get fat!



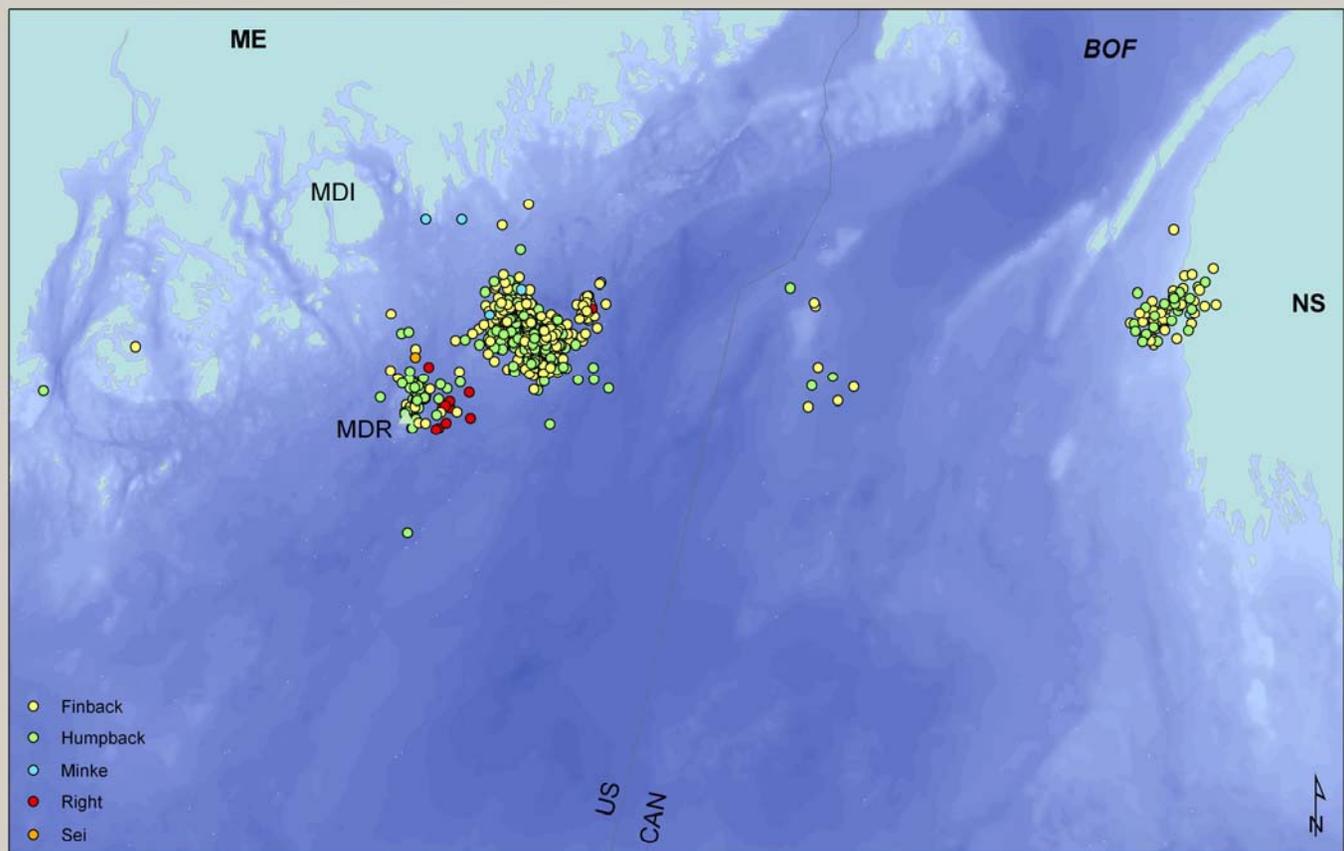




Source:  
 Dr. Dave Lavigne,  
 U. Guelph

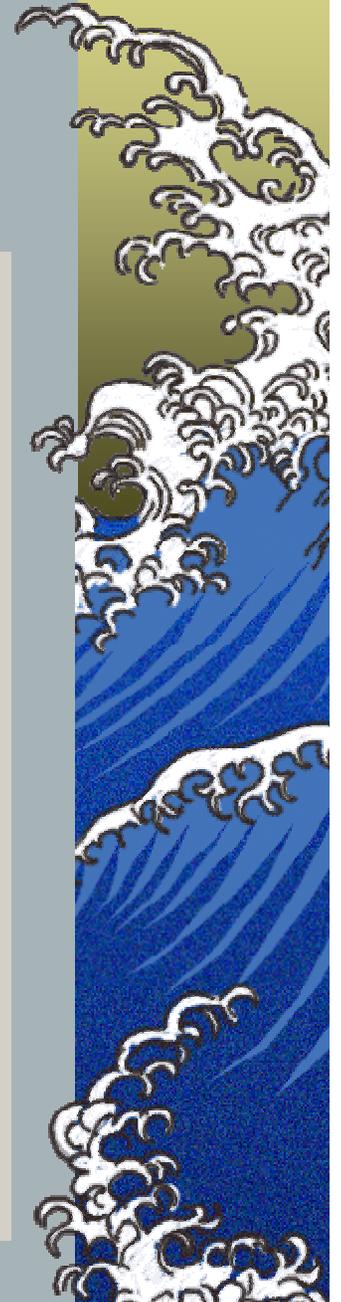


Patchy distribution indicates localized bathymetry-driven production processes...

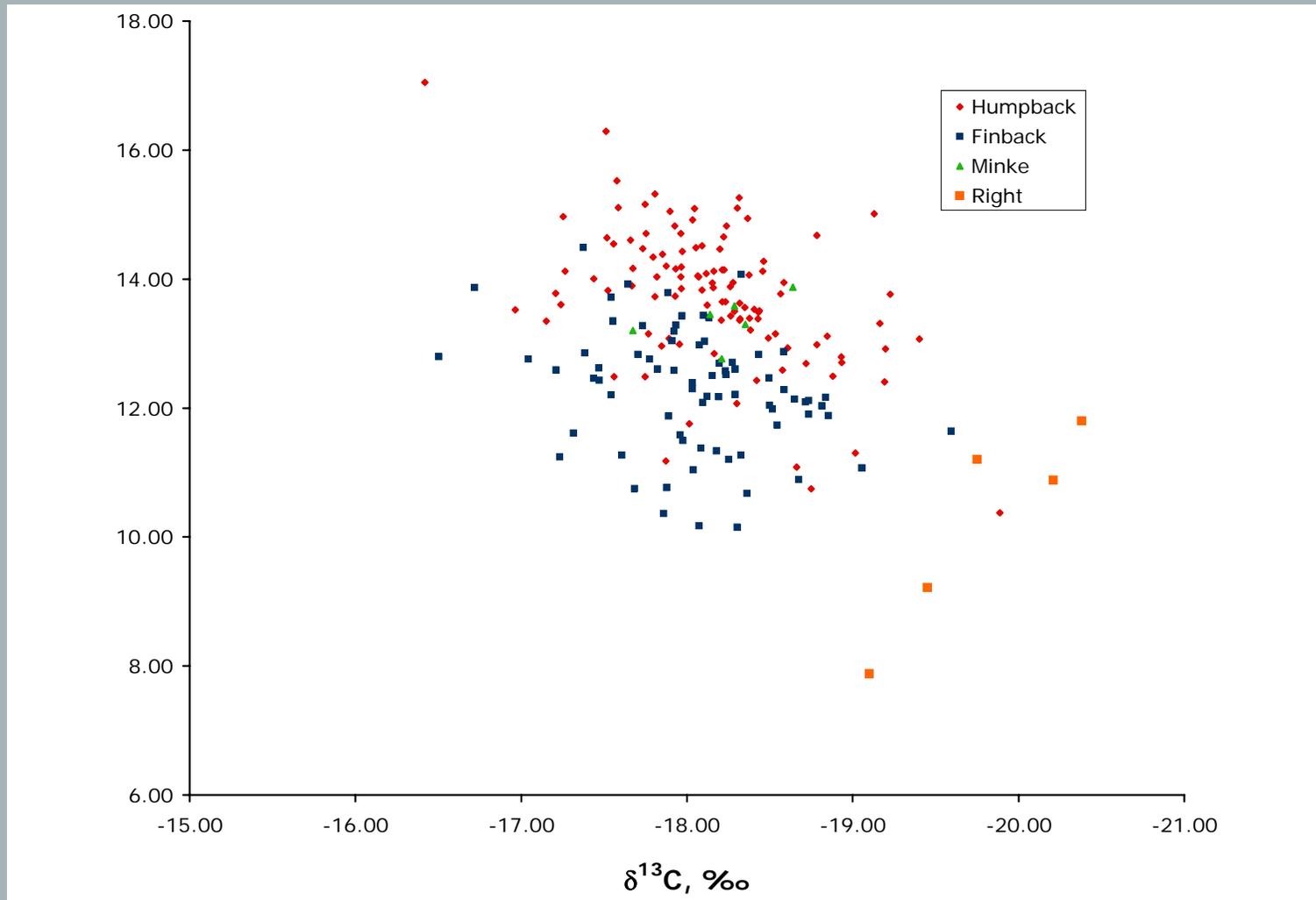


Allied Whale & Bar Harbor Whale Watch Sightings 2003 & 2004

0 5 10 20 Nautical Miles

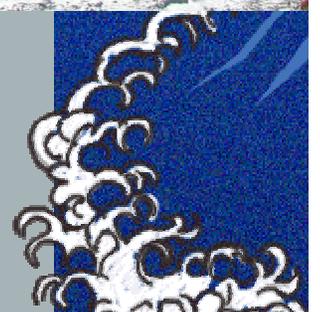
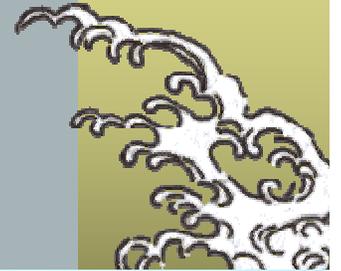


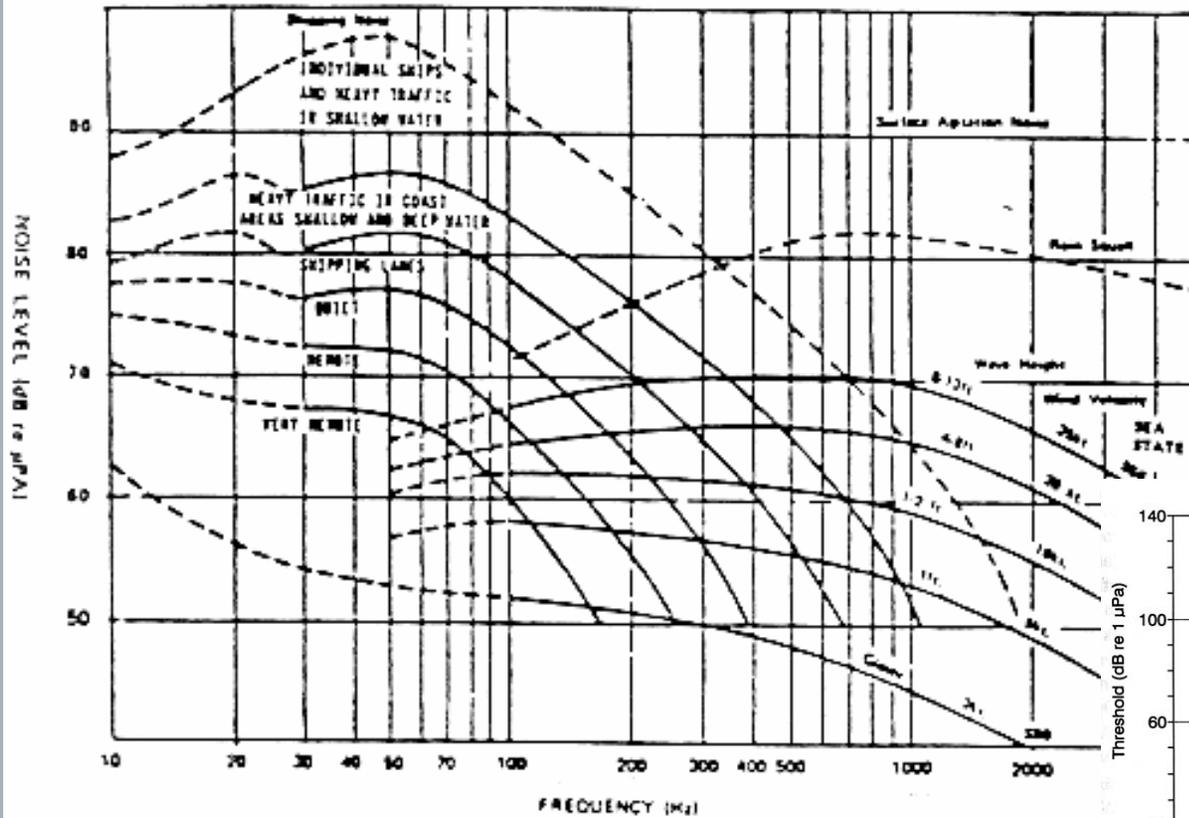
# Resource partitioning in balaenopterids



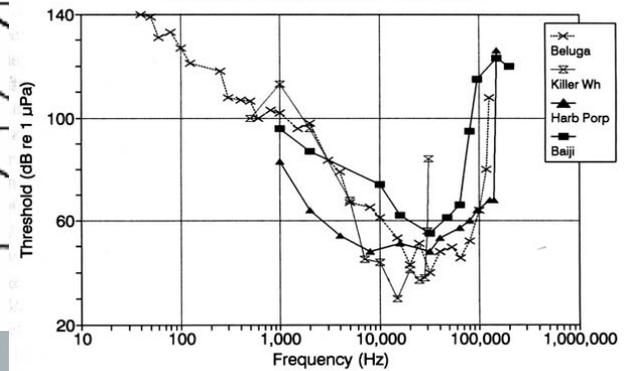
## ...the issues

- *Habitat degradation*
  - *Pollution*
    - *Noise*
    - *POPs*
    - *HABs*
  - *Whale-vessel shipstrikes*
  - *Gear entanglements*

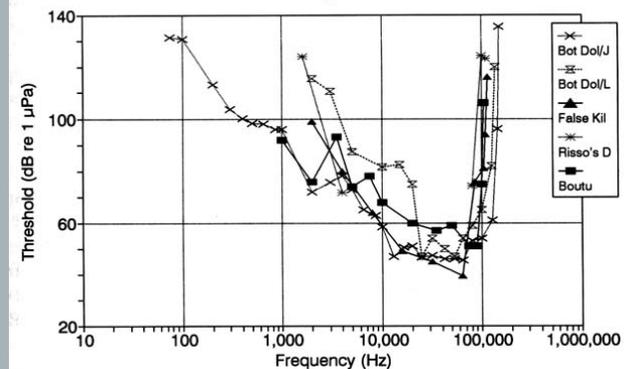




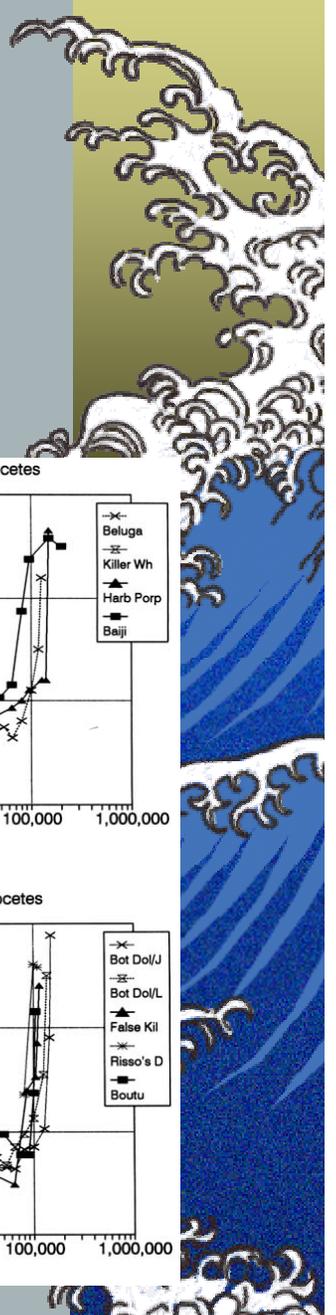
A. Underwater Audiograms of Odontocetes



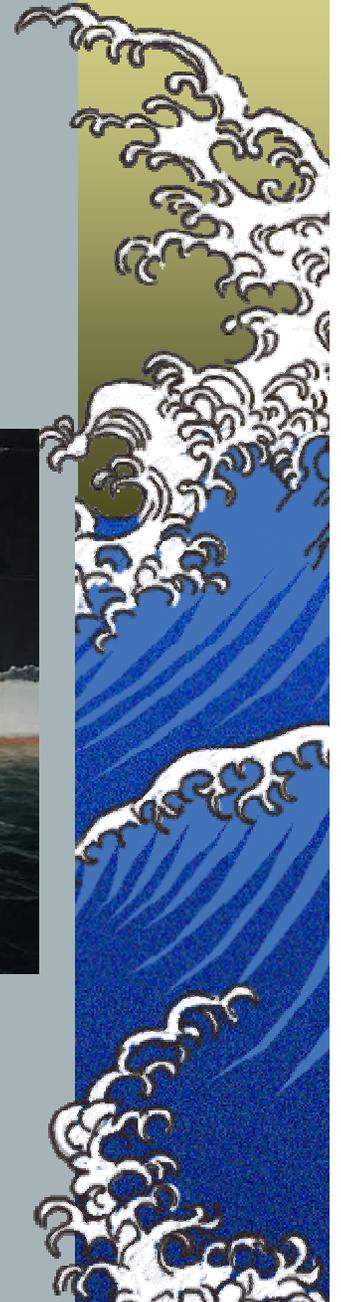
B. Underwater Audiograms of Odontocetes



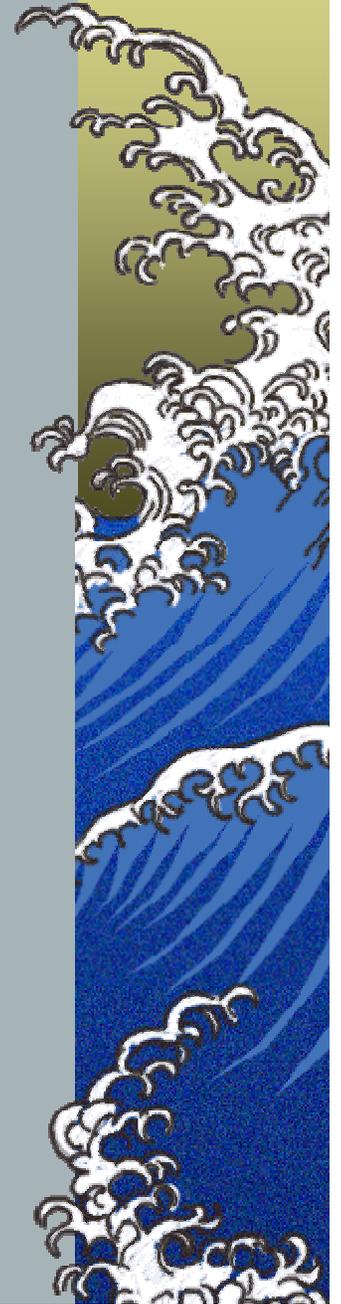
# Noise pollution



# Whale-vessel shipstrike



# Fishing Gear Entanglements



# Solutions?

- *Must involve all stakeholders (science, policy, advocates, industry, management, enforcement, public, etc.)*
- *Must foster stewardship*
- *Must be compatible to multi-species “ecosystem” approaches to management*
- *Must be precautionary in nature and err on the side of conservation*

