

# Marine Mammal Adaptations and Climate Change

Northeast Fisheries  
Science Center



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# What is a marine mammal?

Mammals adapted for life in the marine environment



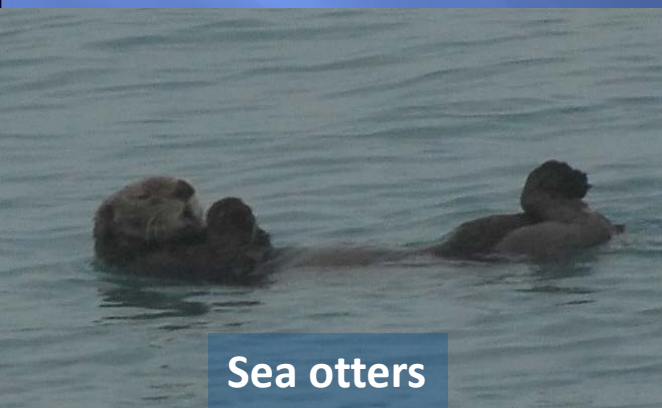
**Cetaceans**  
(whales, dolphins, porpoises)



Photo: Jake Levenson

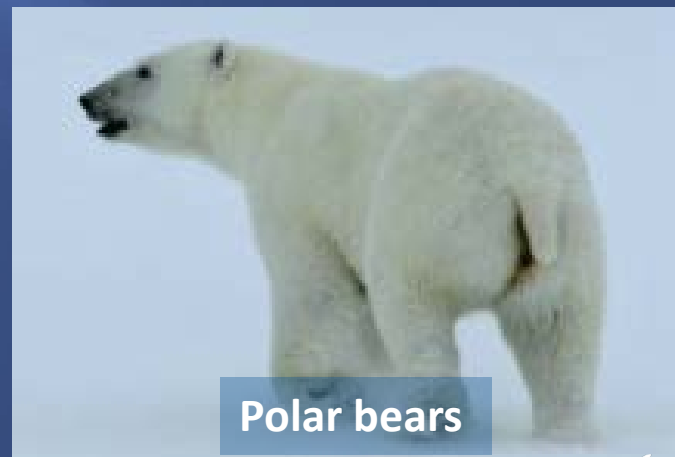
**Sirenians**  
(manatees, dugongs)

What are some local  
marine mammals and  
why study them?



**Sea otters**

**Pinnipeds**  
(seals, sea lions, walruses)



**Polar bears**



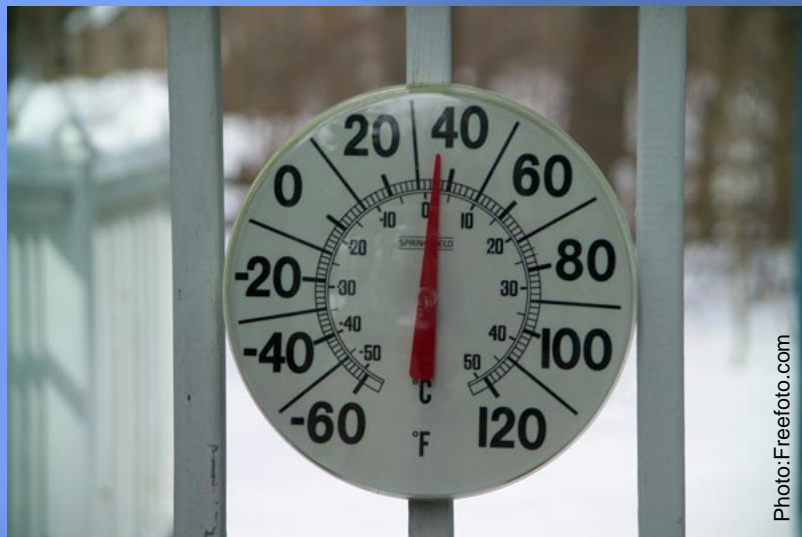
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# Marine Habitat



Temperature?



Rough or Calm?



Dark or Light?

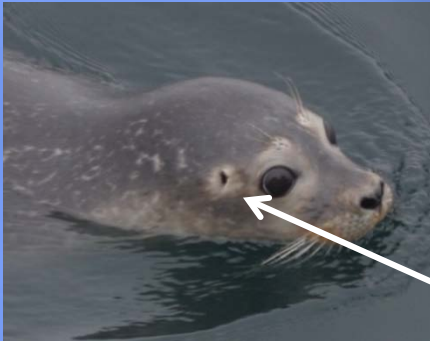


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# Marine Mammal Adaptations



Fins & flippers

Feeding structures: baleen or teeth

No outer ear flap

Insulating blubber

Blowhole

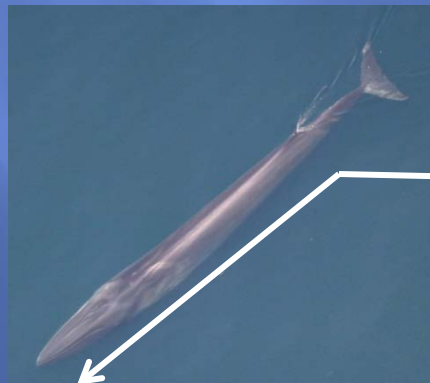
Echolocation/Communication abilities

Streamlined bodies

Camouflage coloring  
(dark top, light bottom)



Photo: Ian Stirling



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# Short-Beaked Common Dolphin



Photo Credit: NOAA/NEFSC/Pete Duley

Image collected under MMPA Research Permit #775-1875



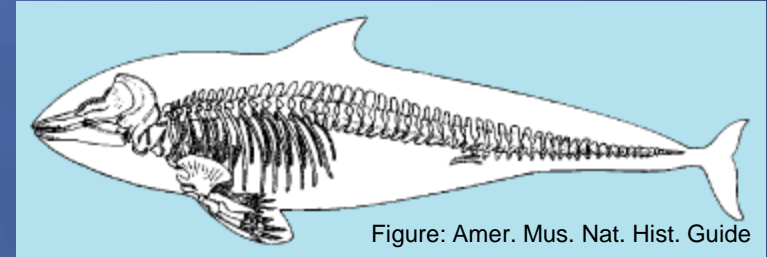
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# Activity 2:

## Compare and contrast skeletons



What is  
the  
same?

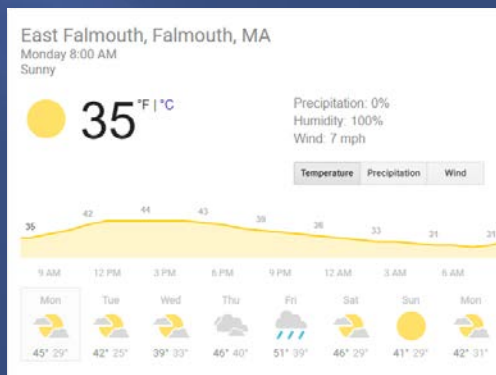


What is  
different?



# Climate versus Weather

Types of Climate on Earth



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# Some of the things that produce heat trapping gases are...



<http://www.carclipart.com/>



<http://www.designedtoat.com/summer2.shtml>



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# The Heat Trapping Blanket

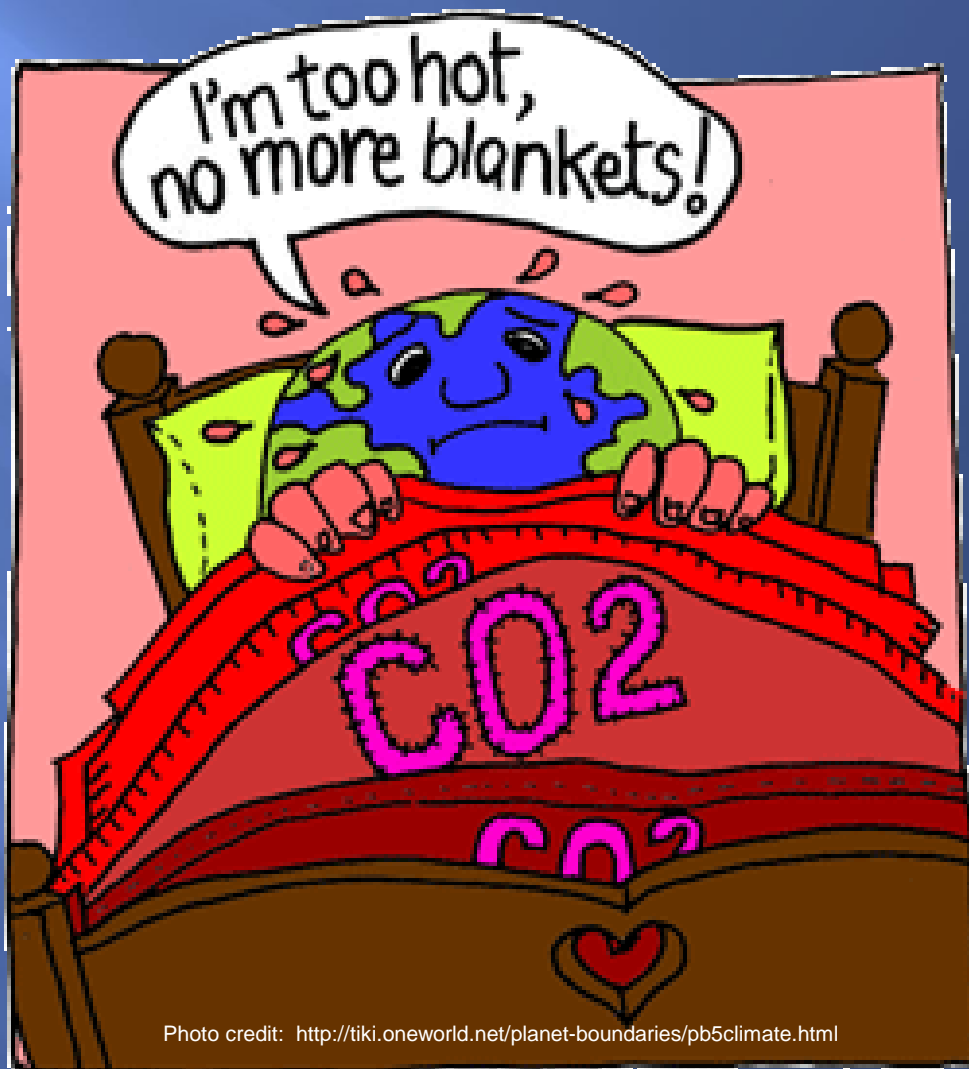


Photo credit: <http://tiki.oneworld.net/planet-boundaries/pb5climate.html>



Photo credit: <http://devilsinquisitor.com/tag/heat/>



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# What does it mean for marine mammals?

As global temperature rises:

- sea temperature rises
- sea level rises
- icebergs melt

Results:

- Where animals live shifts
- Loss of habitat
- Change in where food is



Photo credit: Gordon Waring, NOAA/NEFSC





Courtesy of Greg Berman

# Sea level rise

**SIMULATION**

**Normal High Tide**



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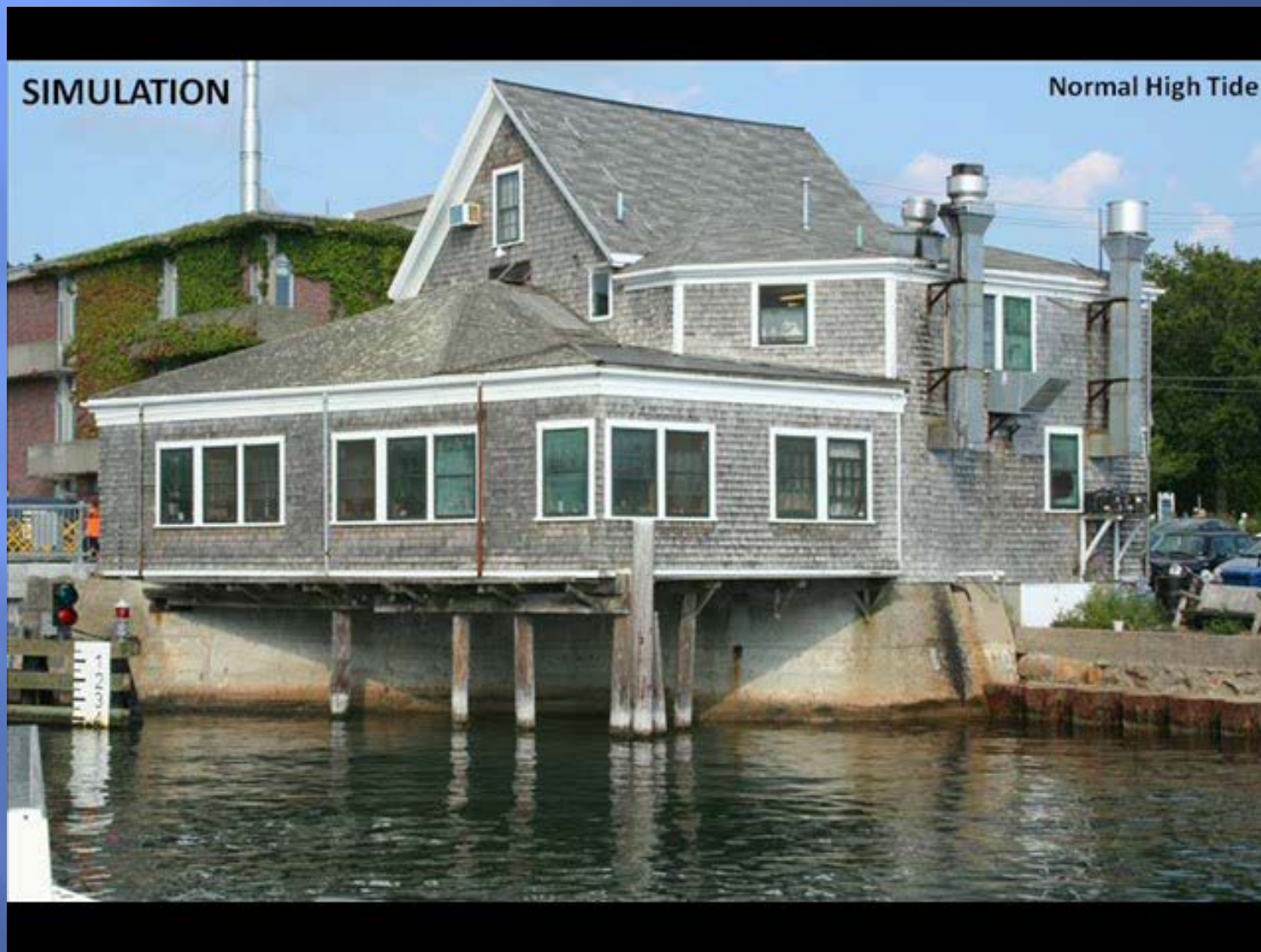
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Courtesy of Greg Berman

# Sea level rise simulation



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# SCIENTIST SPOTLIGHT

Our very own NOAA Fisheries scientist...

**Kimberly Murray** looks at Harbor and Gray Seals numbers and where they are located. She analyzes how they are using their habitat and how that habitat usage changes depending on the season (winter, spring, summer, and fall).



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# SCIENTIST SPOTLIGHT

Our very own Woods Hole Sea Grant scientist...

**Greg Berman** provides technical assistance to local towns on coastal geology topics such as shoreline change, erosion control alternatives, potential effects of various human activities on the coast, coastal flood plains, and dune restoration techniques.



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# How can we help?

Don't litter



Recycle

Buy eco-friendly products



Conserve

Spread  
the word

