

# Marine Science

Bill Turrell



## Aims of the Talk

### Part 1

- Briefly introduce marine science and marine scientists
- Explain how science, management and fishing fit together

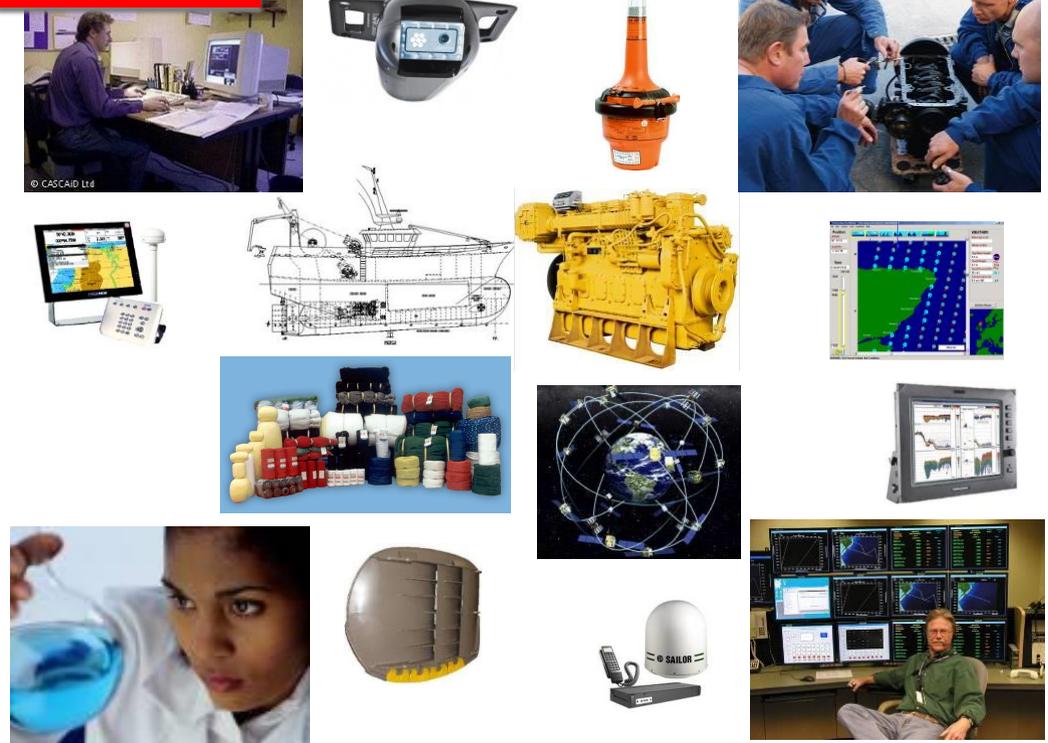
### Part 2

- Introduce the biological cycle in the sea

### Part 3

- Introduce oceanography and what it can tell us about our seas

**Marine Science**



**Marine Science**

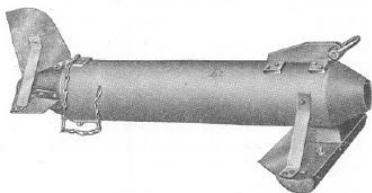


FIG. 4.—The Plankton Indicator.

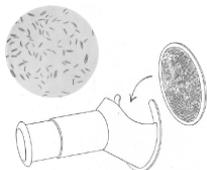


FIG. 5.—The lens holder used for examining the disc for diatom indications.

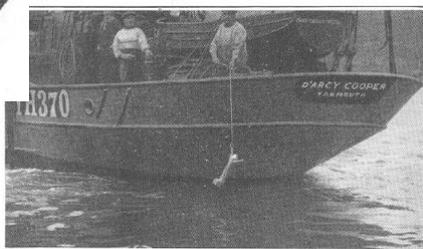
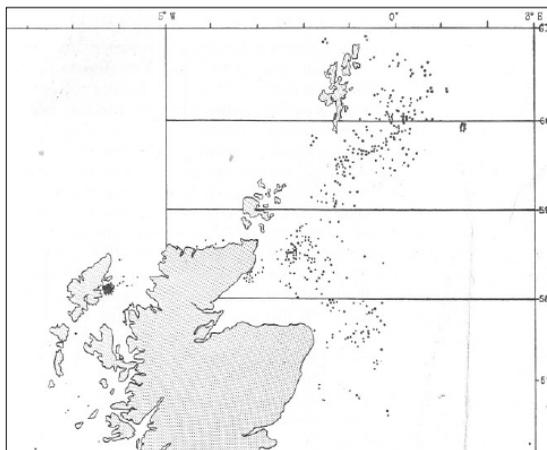


FIG. 6.—The Plankton Indicator in use on a drifter.

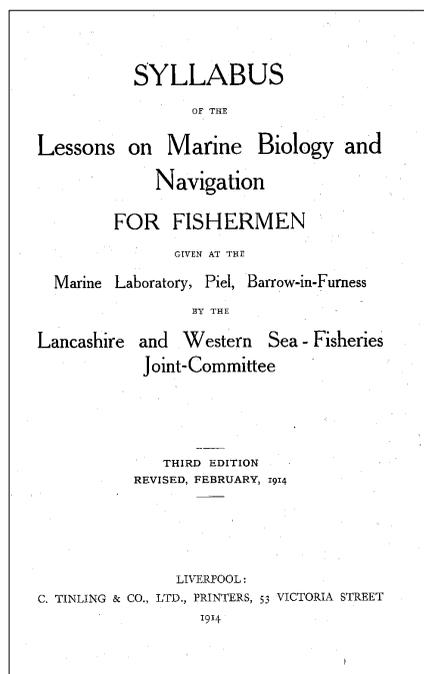
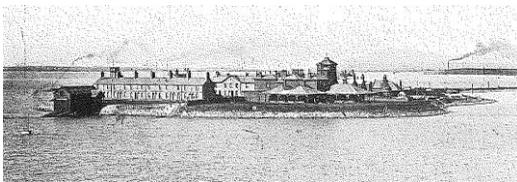


## Marine Science



be used as an aid to fishing. The fisherman, having learnt to distinguish the differences in the appearance of the discs, would, by frequently sampling the water, be guided away from unprofitable water and into that in which he would be more likely to catch fish.

## Marine Science



**Marine Science**

Mathematicians



Engineers



Biologists



Physicists



Chemists



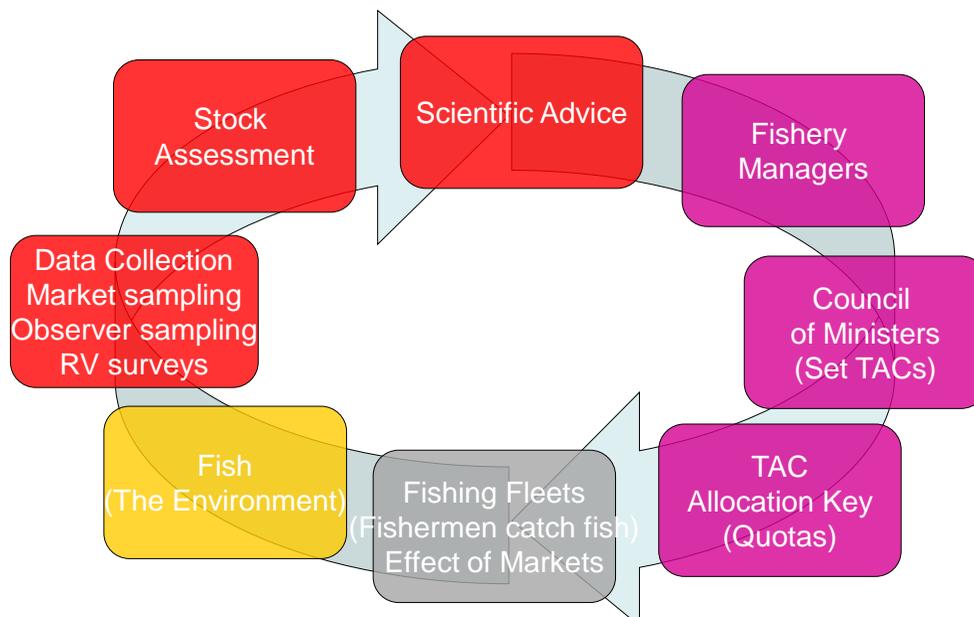
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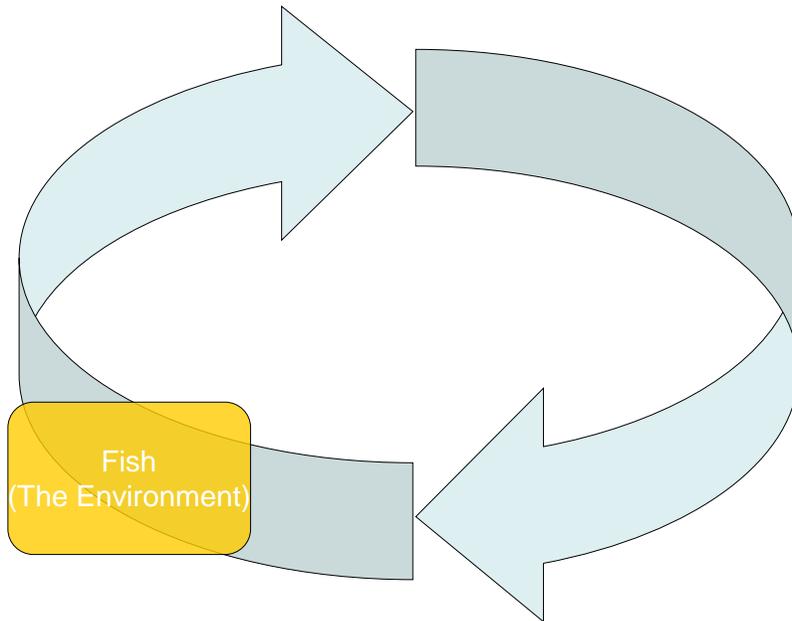
## Marine Science



## Science, Management and Fishing

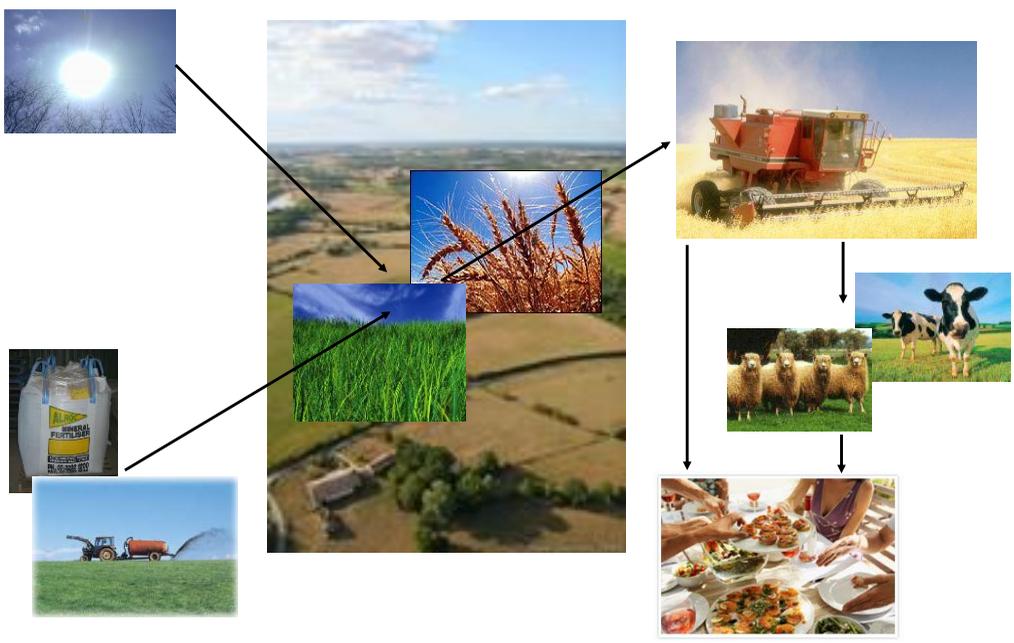


## Science, Management and Fishing



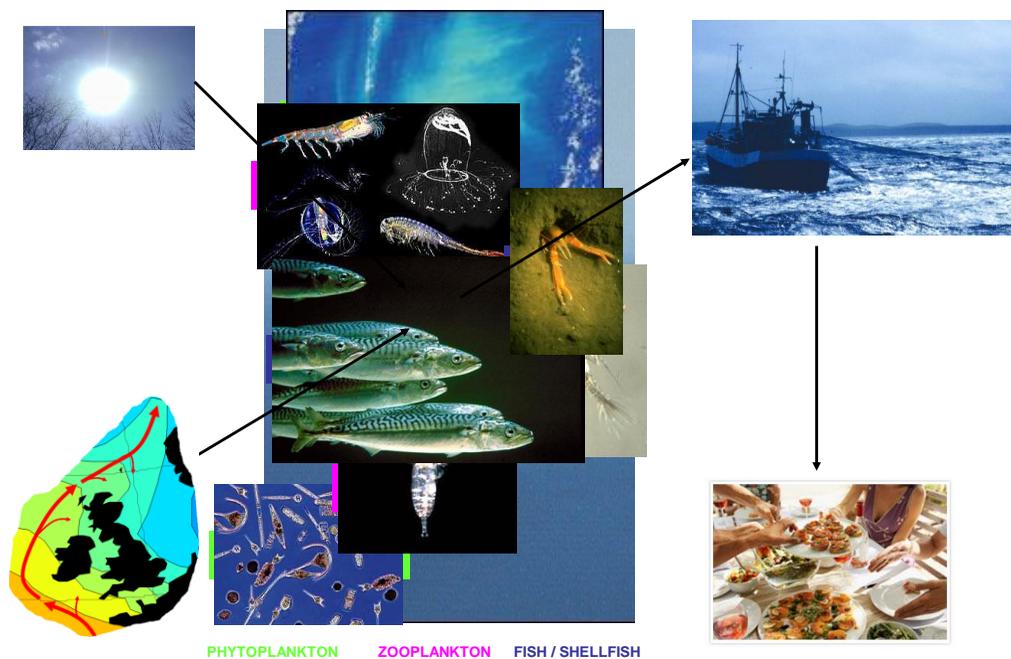
## The Biological Cycle

... on land



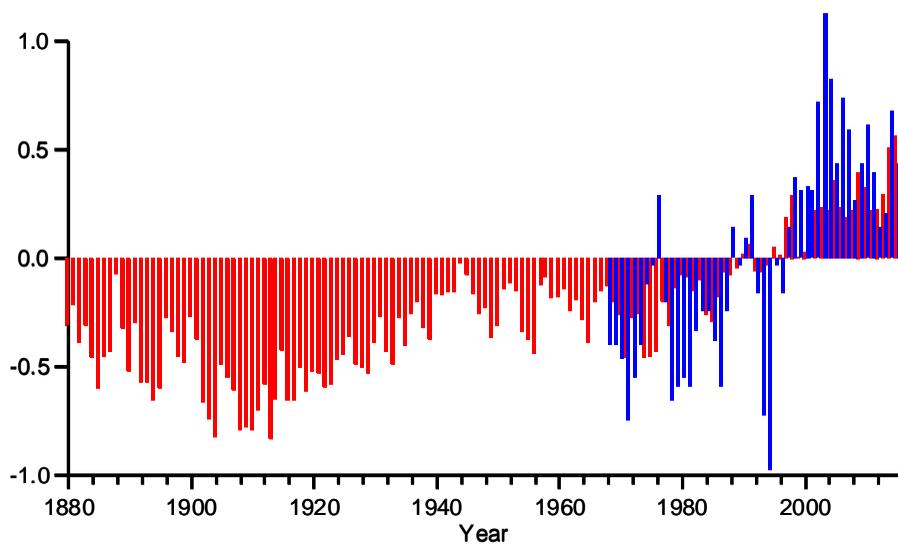
## The Biological Cycle

... at sea



## The Biological Cycle

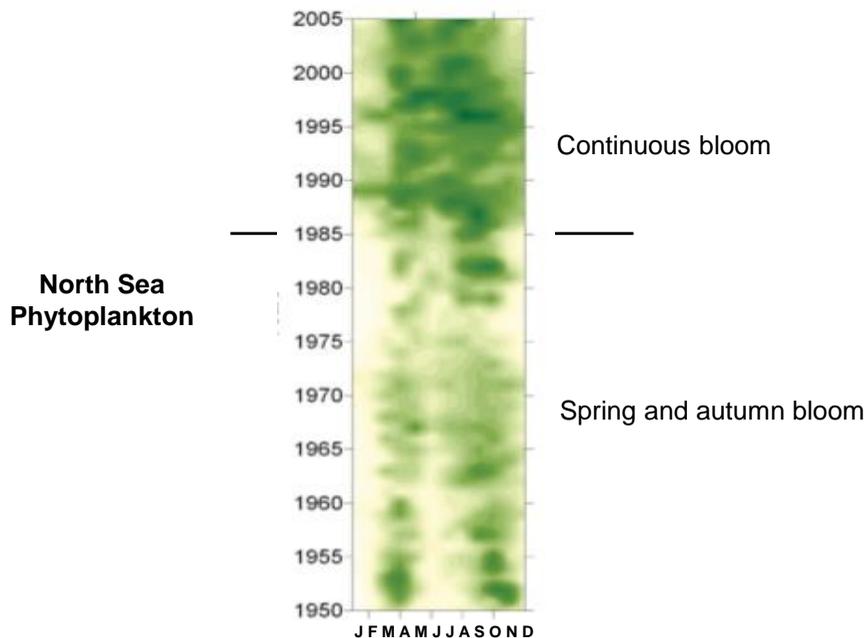
... conditions do change



Average Northern Hemisphere Sea Temperatures in June  
Northern North Sea Temperatures

## The Biological Cycle

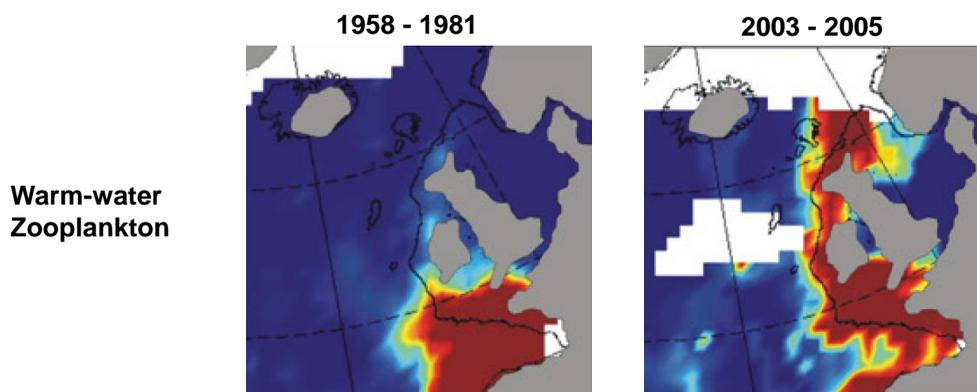
... conditions do change



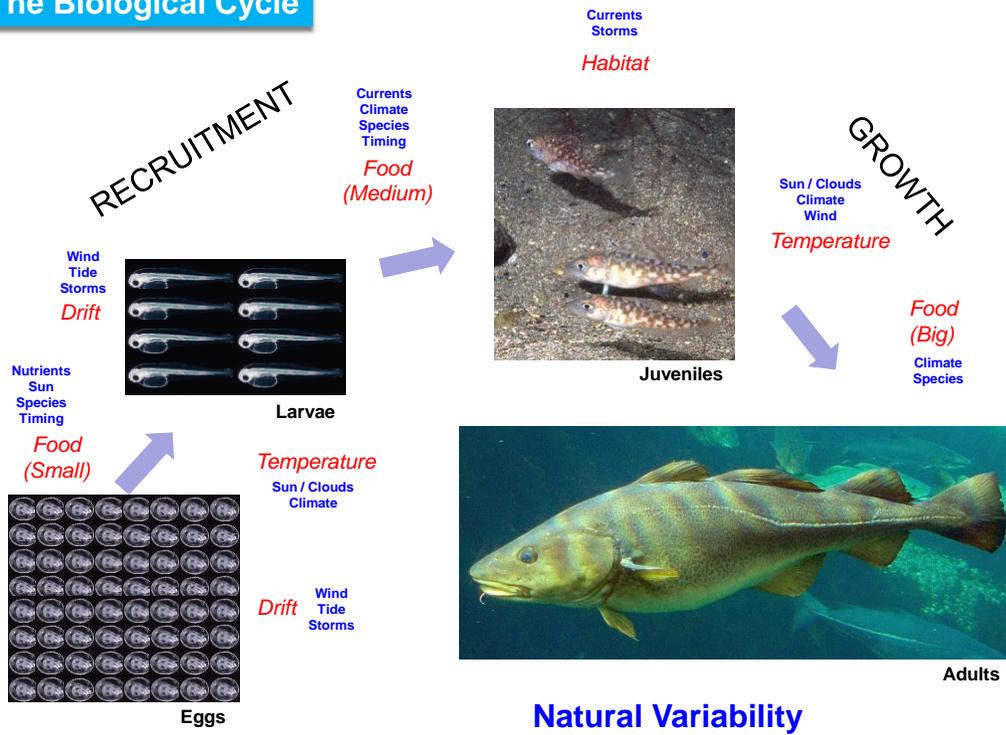
*Reid et al. (1998). Nature, 391, 546-547*

## The Biological Cycle

... conditions do change



# The Biological Cycle

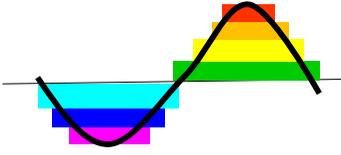


# Oceanography – Currents - Tides

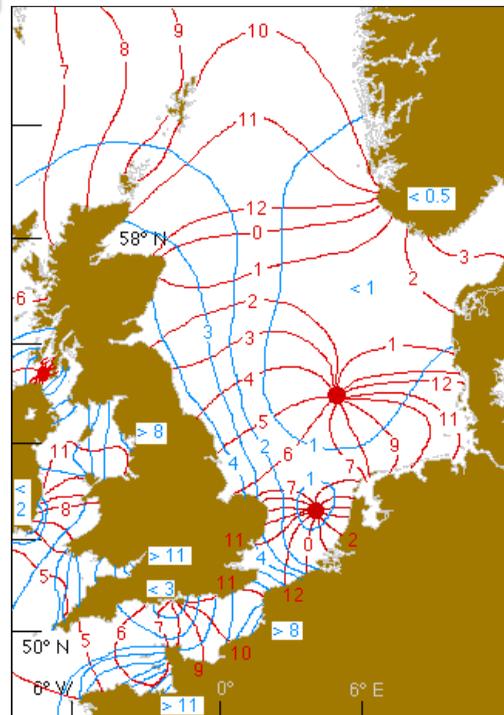


MCMINN MARINE Ltd  
Virtuosus FR253  
For Mr Sandy West and partners of Fraserburgh  
Built Parkol Marine 2010

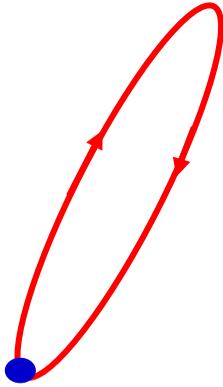
## Oceanography – Currents - Tides



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## Oceanography – Currents

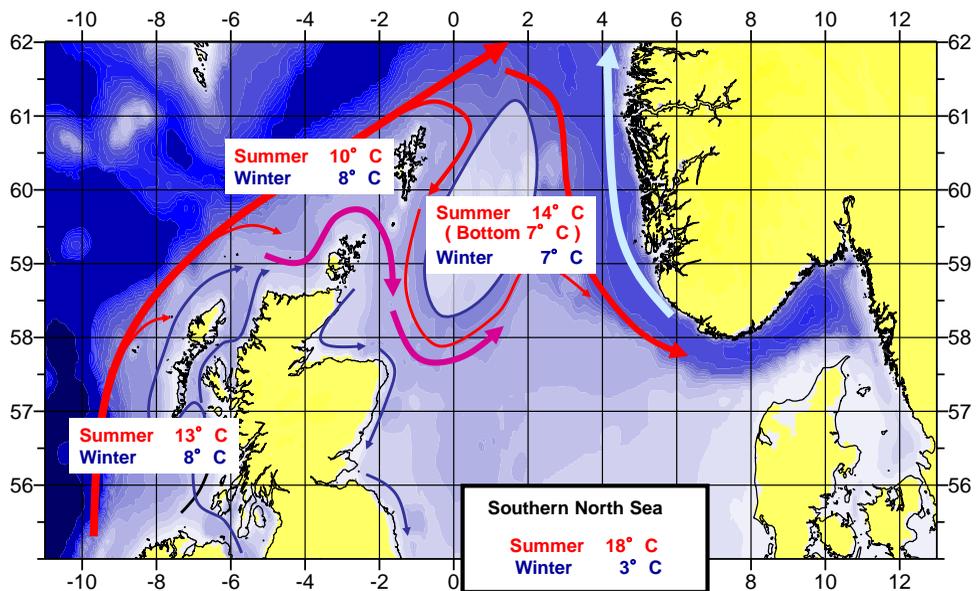


### Tide

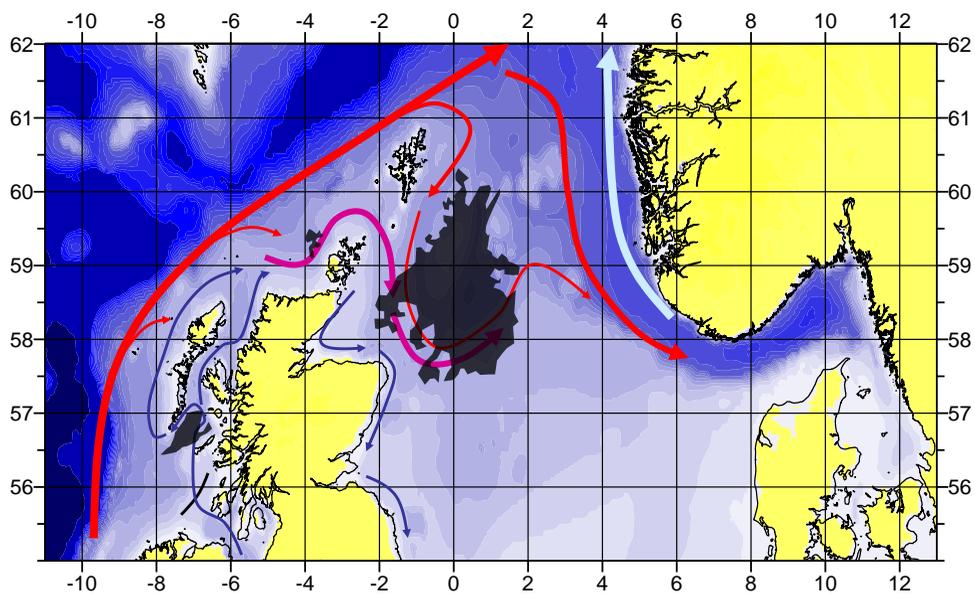
0 to 5 knots

Driven by  
ocean tide

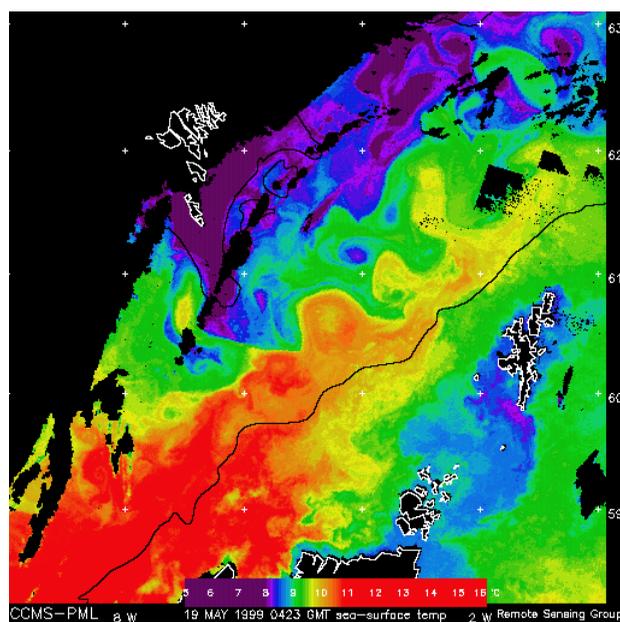
## Oceanography – Currents - Residual



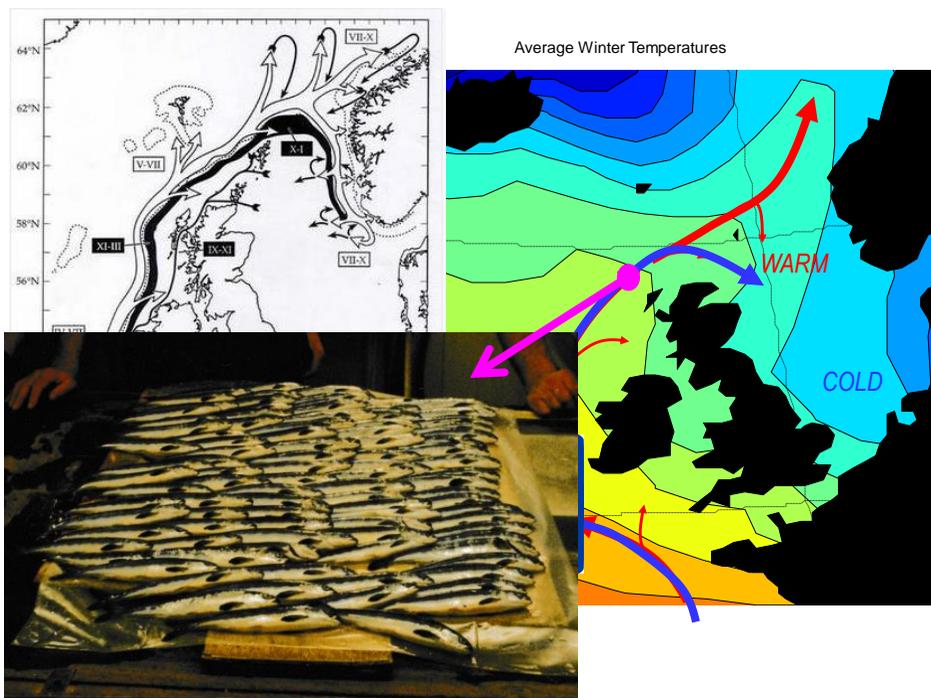
## Oceanography – Currents - Residual



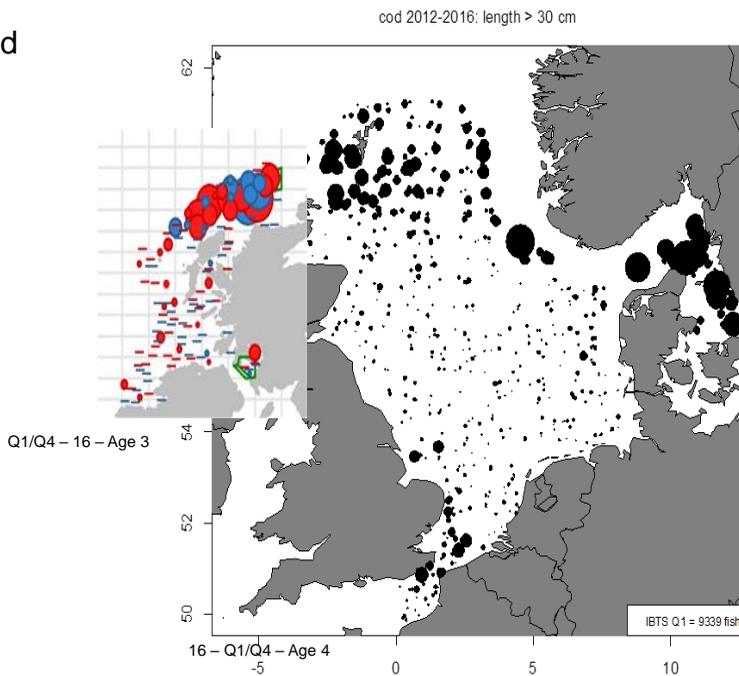
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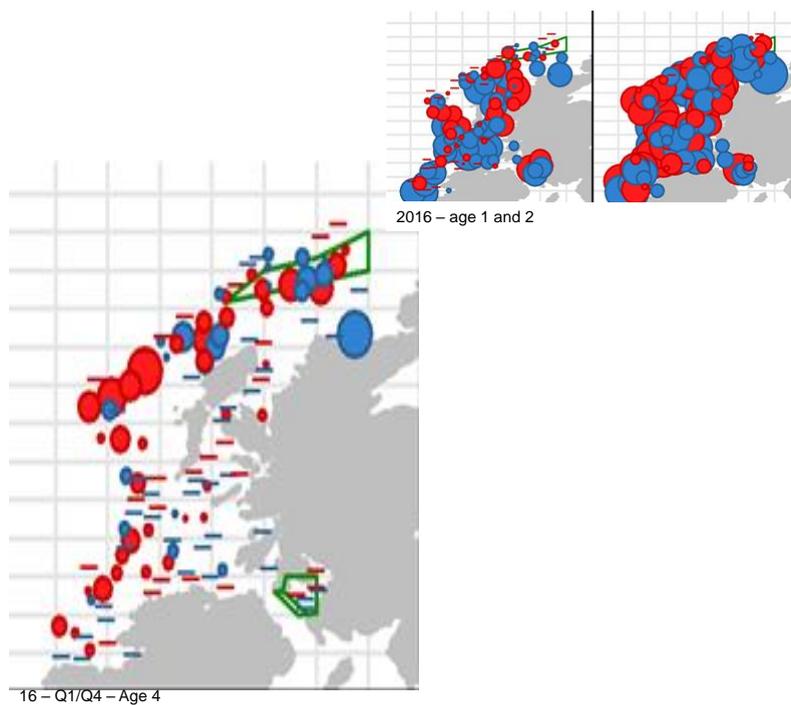
Oceanography – Currents - Residual



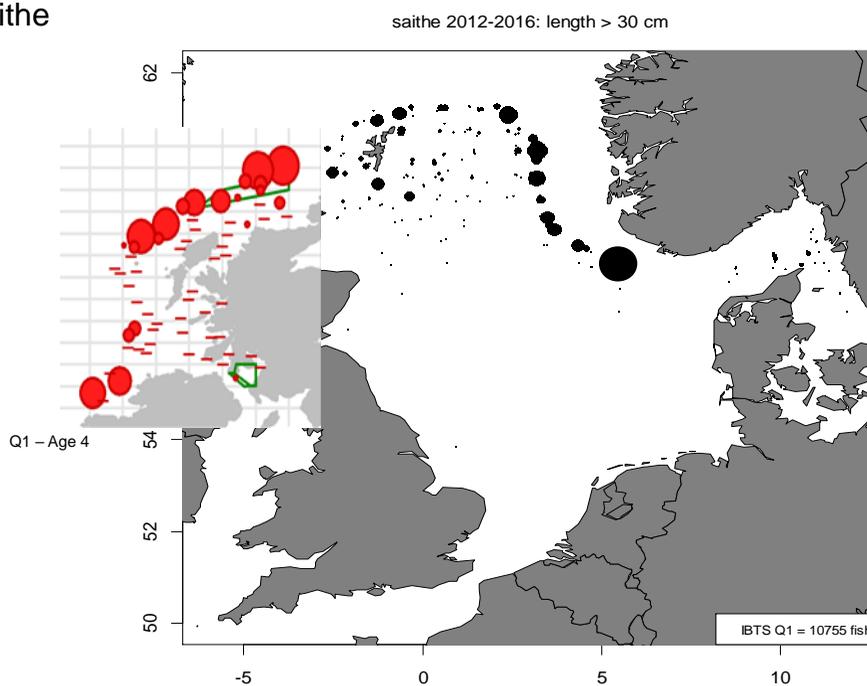
Cod



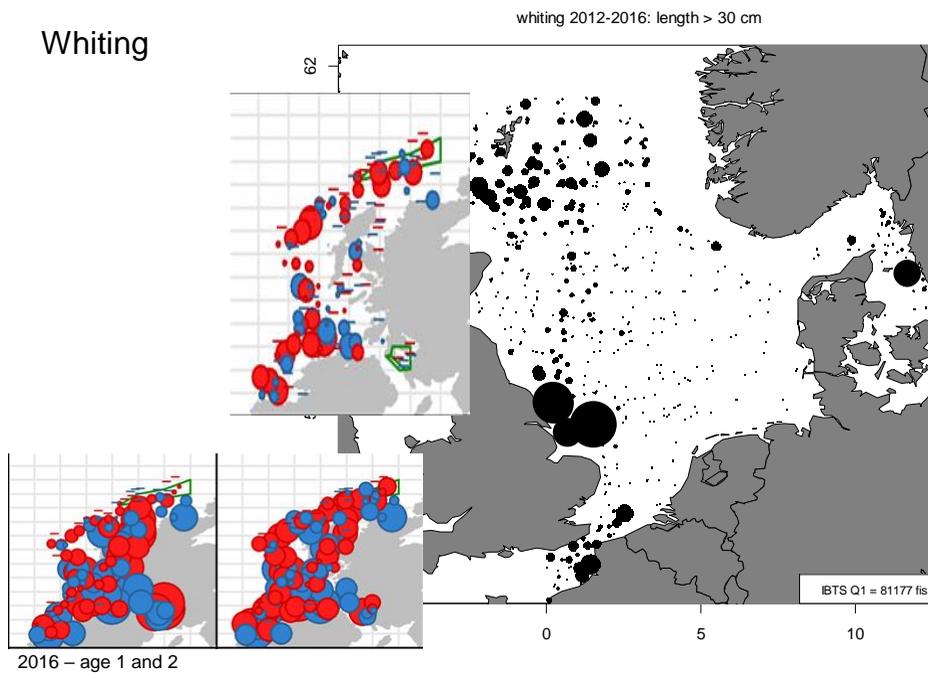
### Haddock



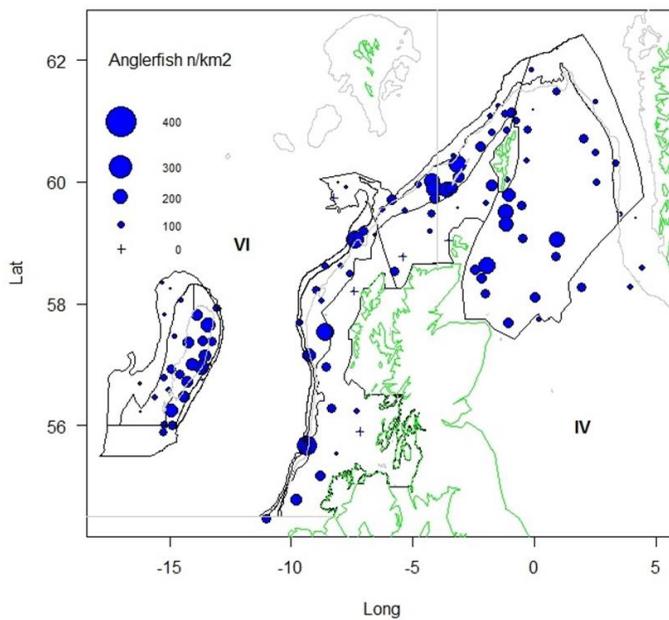
### Saithe



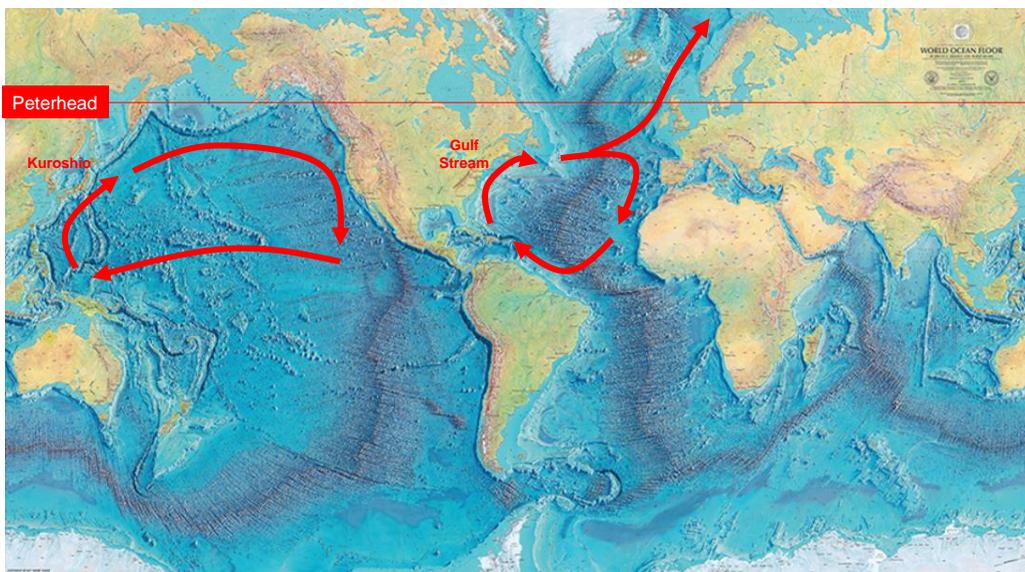
### Whiting



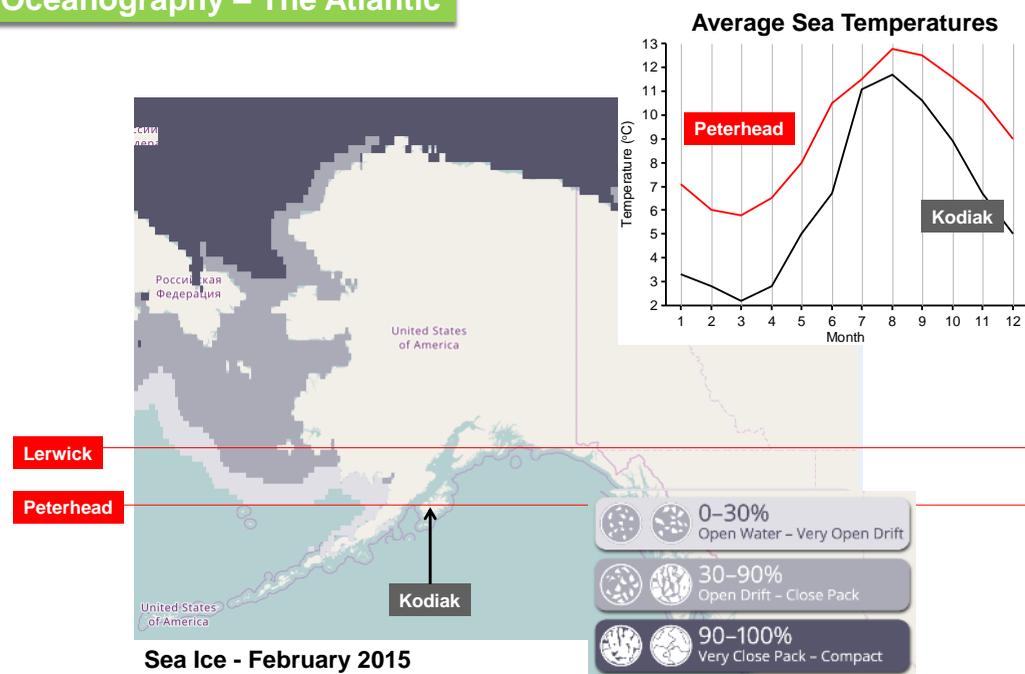
### Monk



Oceanography – The Atlantic

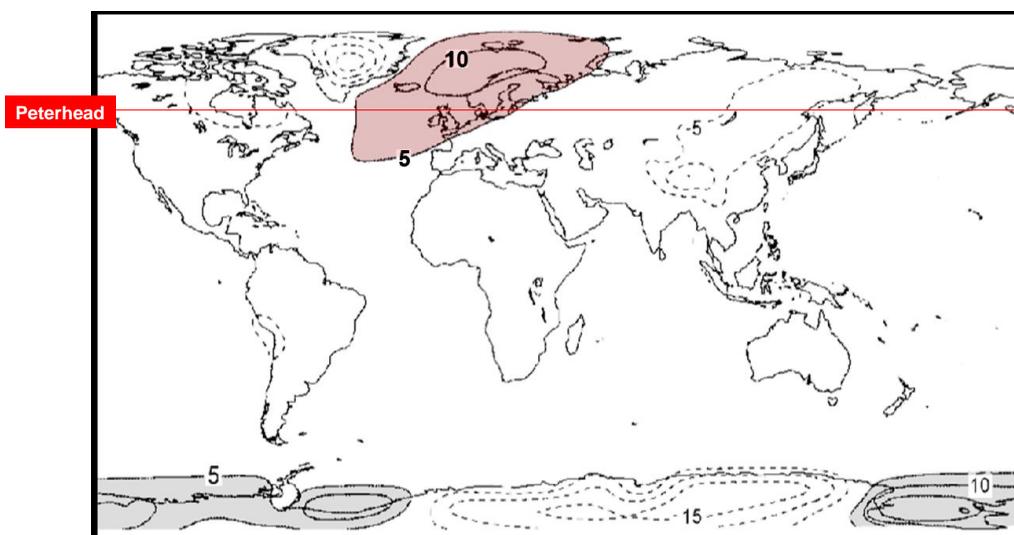


Oceanography – The Atlantic

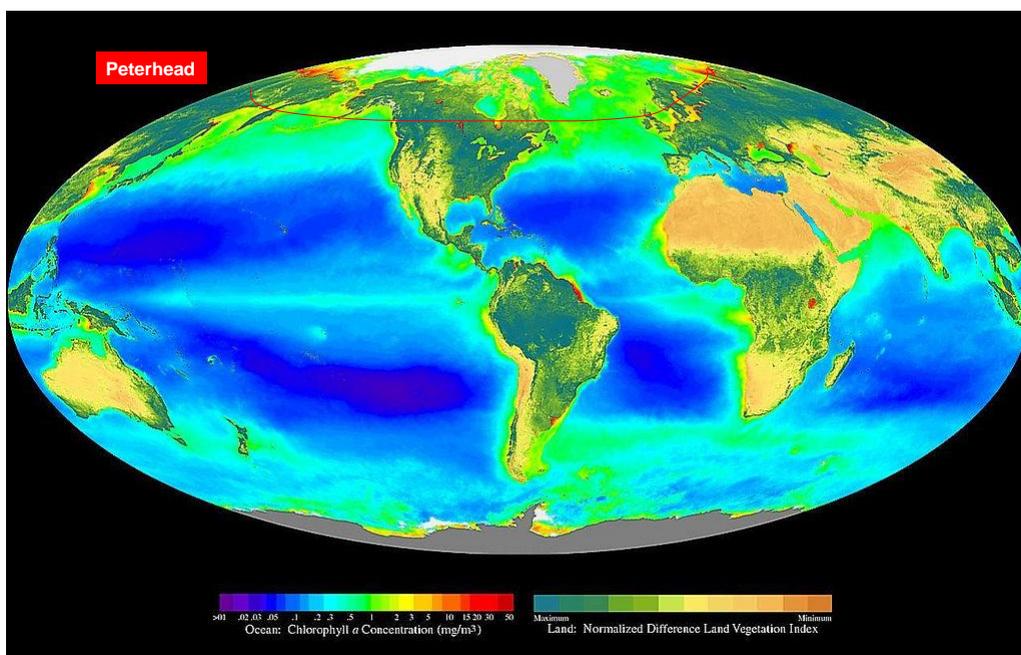


<http://seaiceatlas.snap.uaf.edu/explore#date/2015/02>

## Oceanography – The Atlantic



## Oceanography – The Atlantic



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