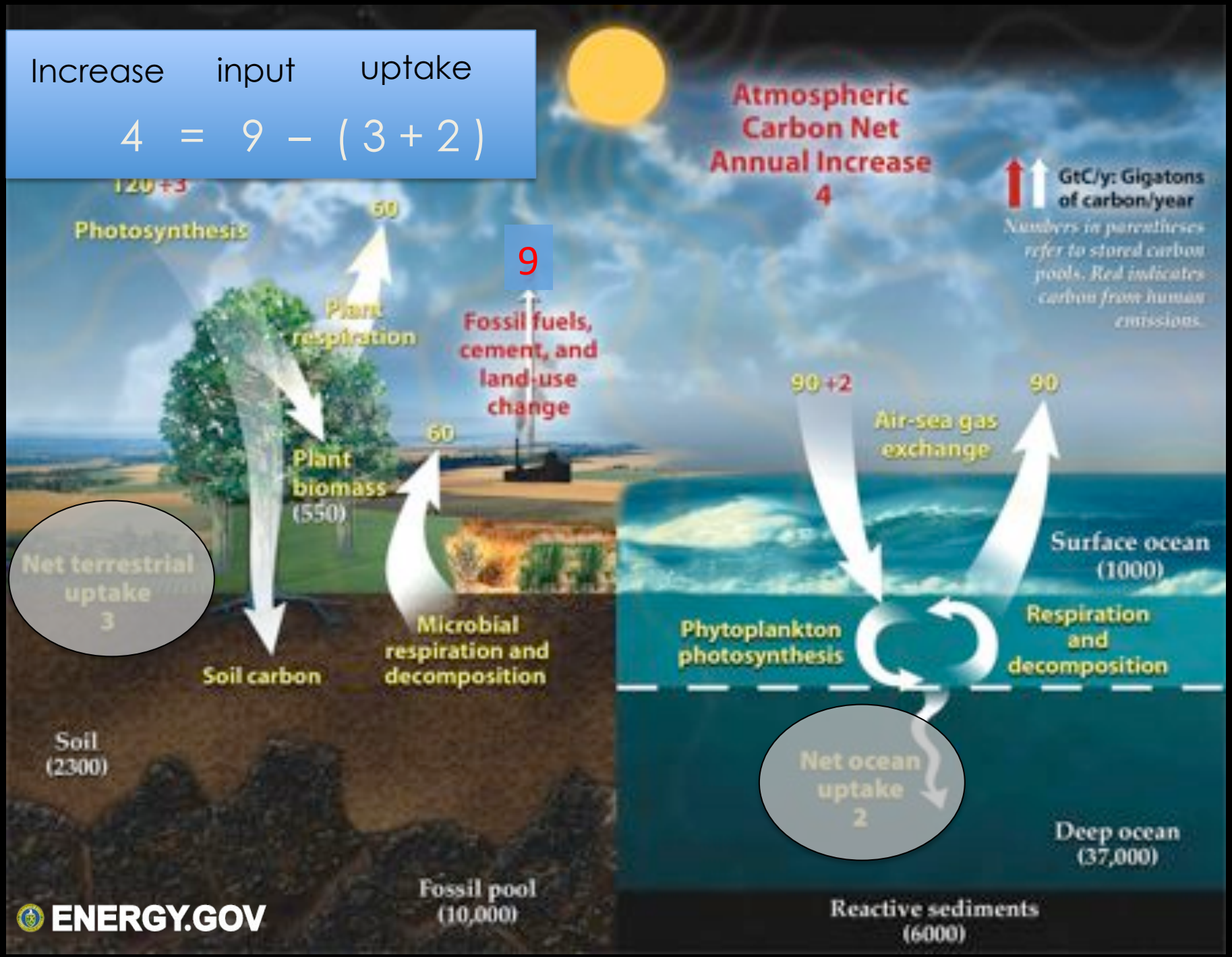
Marine Life on the Climate's Service

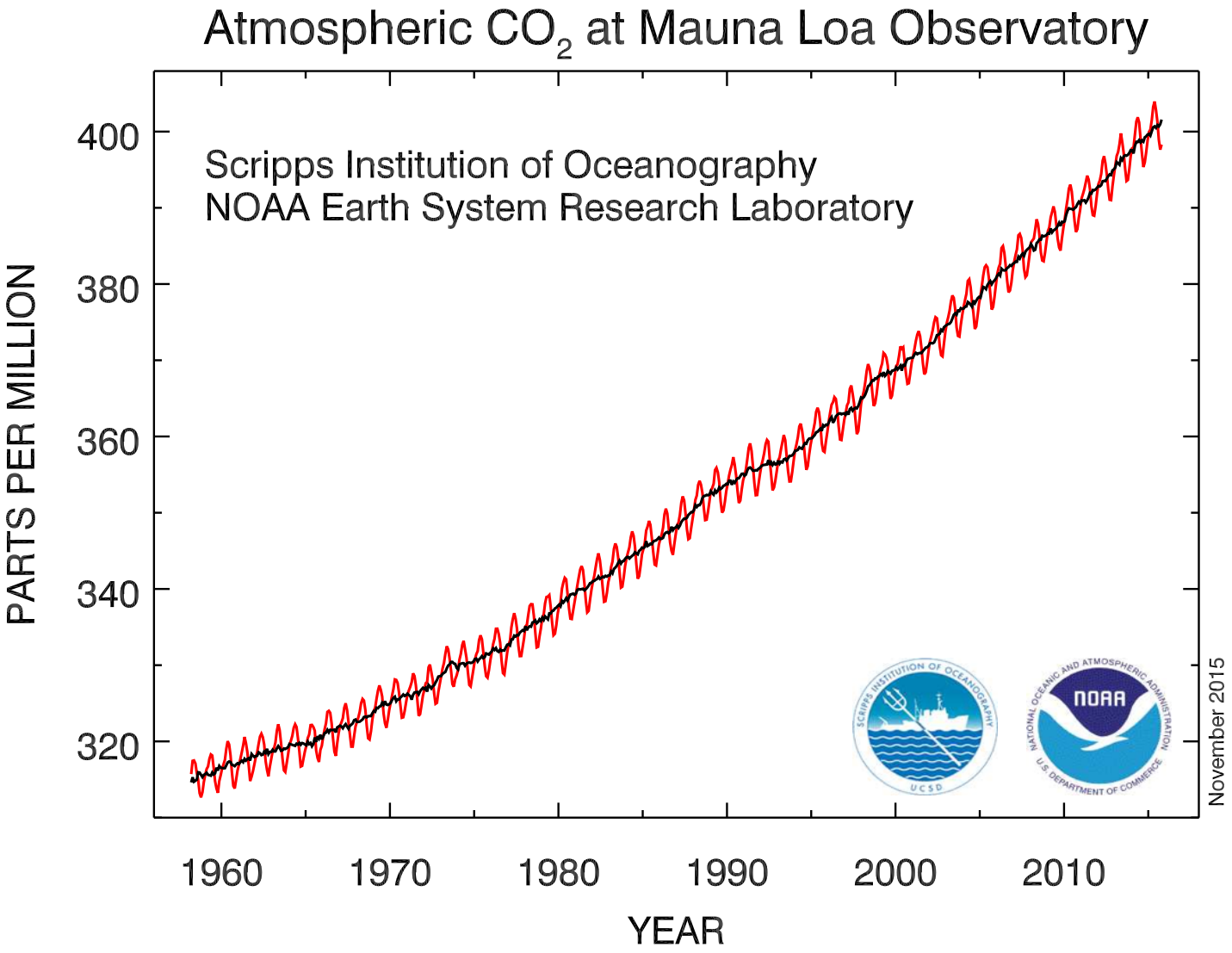
Dr Clive Trueman
University of Southampton

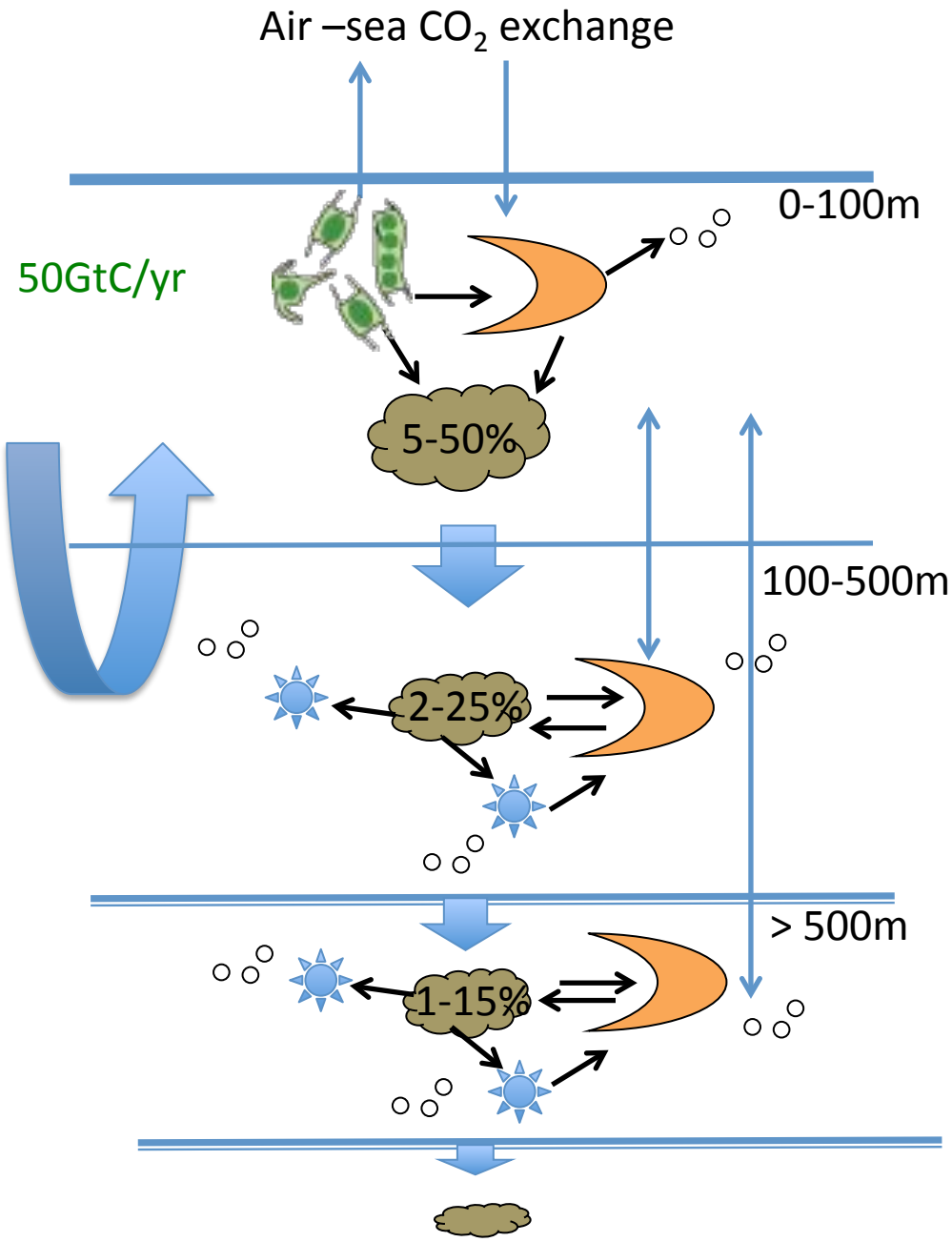
Kirsteen MacKenzie, Richard Lampitt, Stephanie Henson
Francis Neat
Graham Johnson, Brendan O'Hea
David Bailey

Increase input uptake

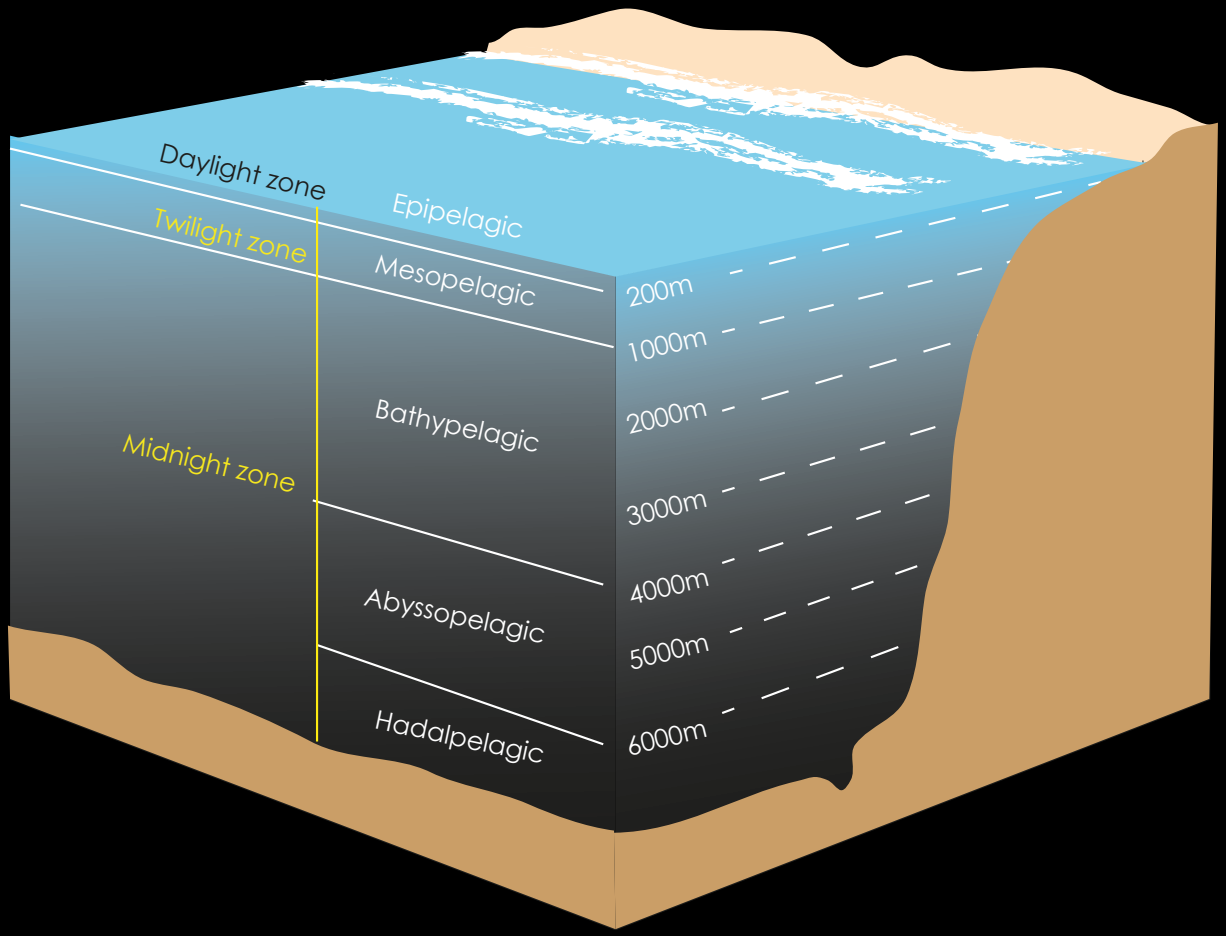
$4 = 9 - (3 + 2)$

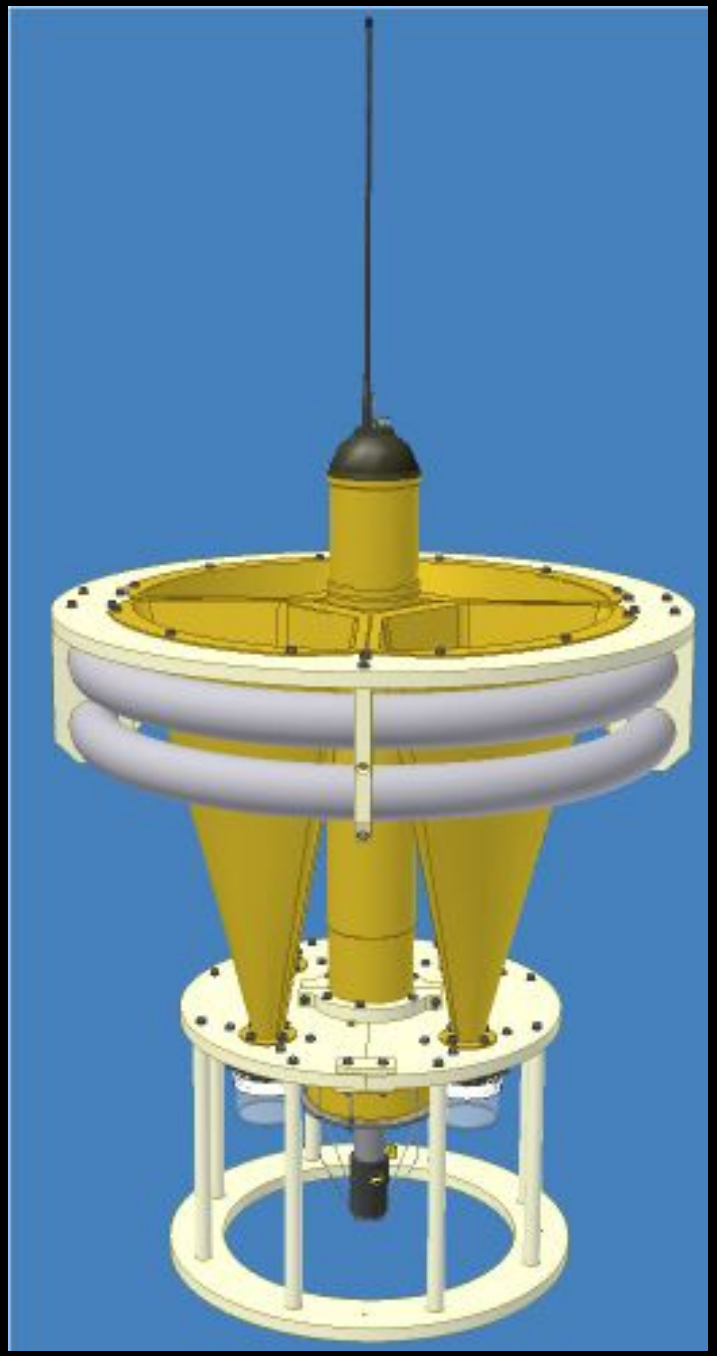


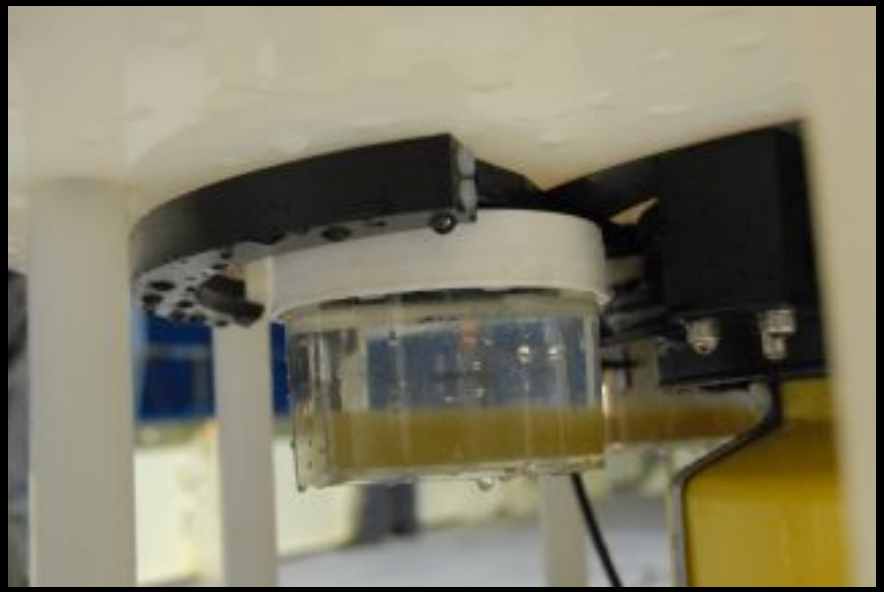

Atmospheric CO_2 at Mauna Loa Observatory
Scripps Institution of Oceanography
NOAA Earth System Research Laboratory
PARTS PER MILLION
400
380
360
340
320
1960
1970
1980
1990
2000
2010
YEAR
November 2015

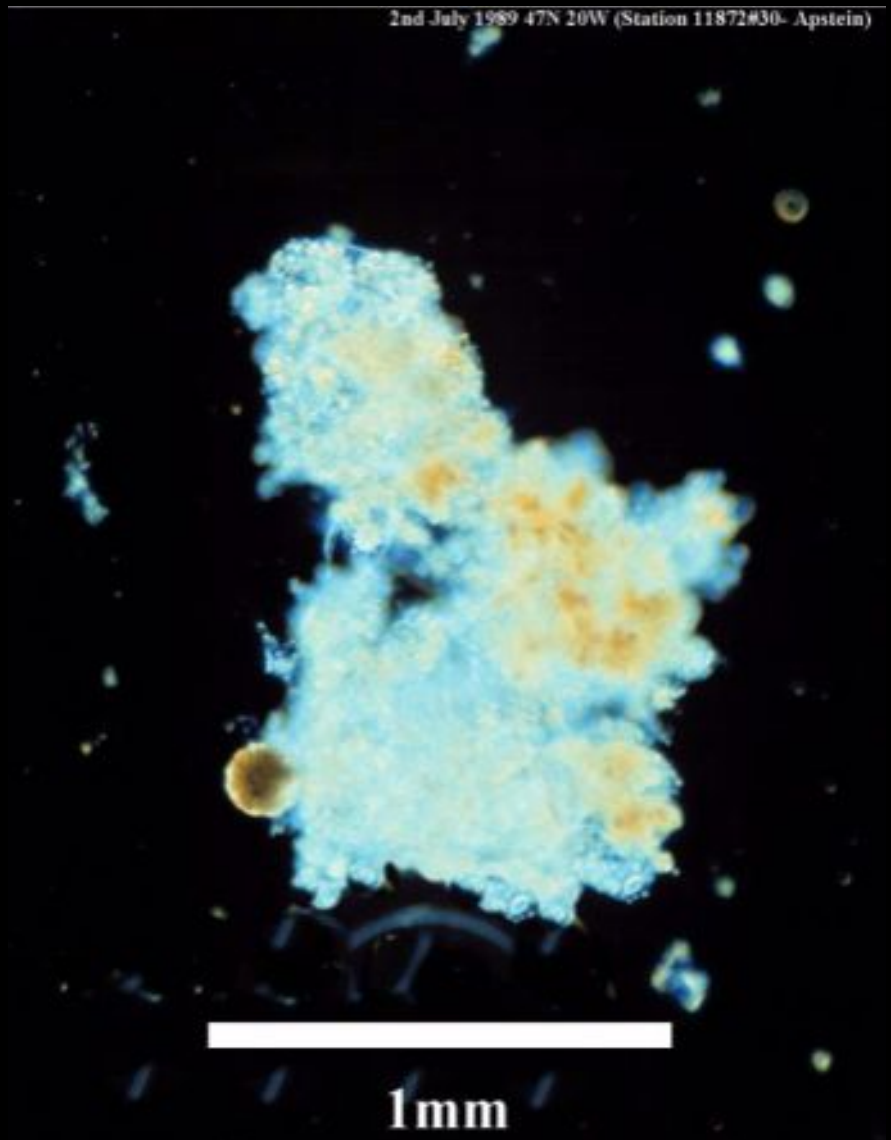


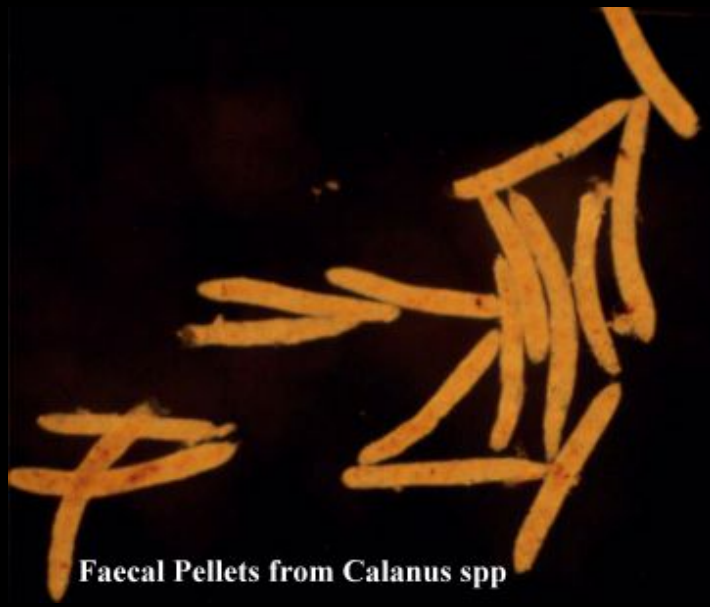
Only 1% enters the deep ocean

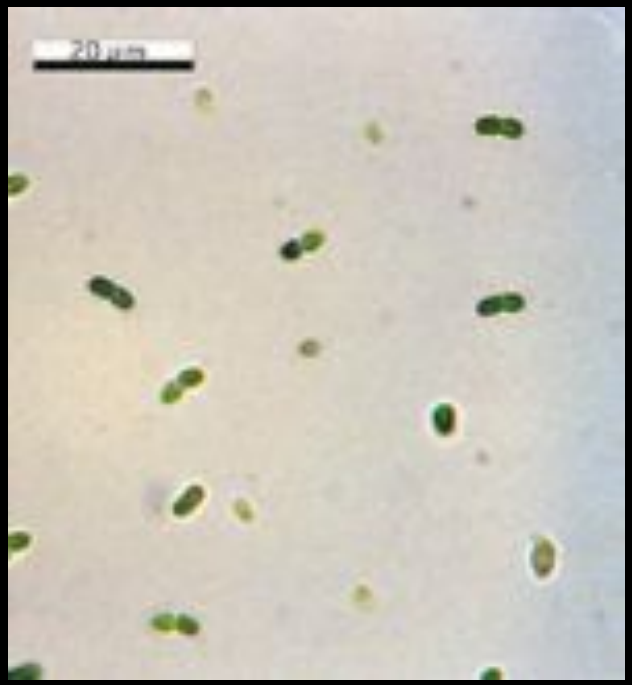

Daylight zone
Twilight zone
Midnight zone
Epipelagic
Mesopelagic
Bathypelagic
Abyssopelagic
Hadalpelagic
200m
1000m
2000m
3000m
4000m
5000m
6000m



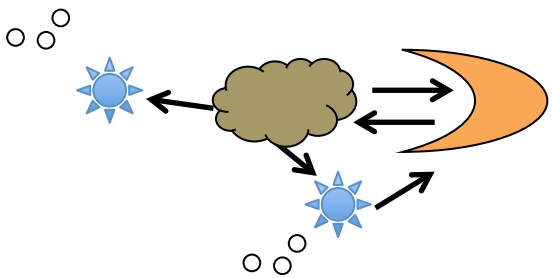


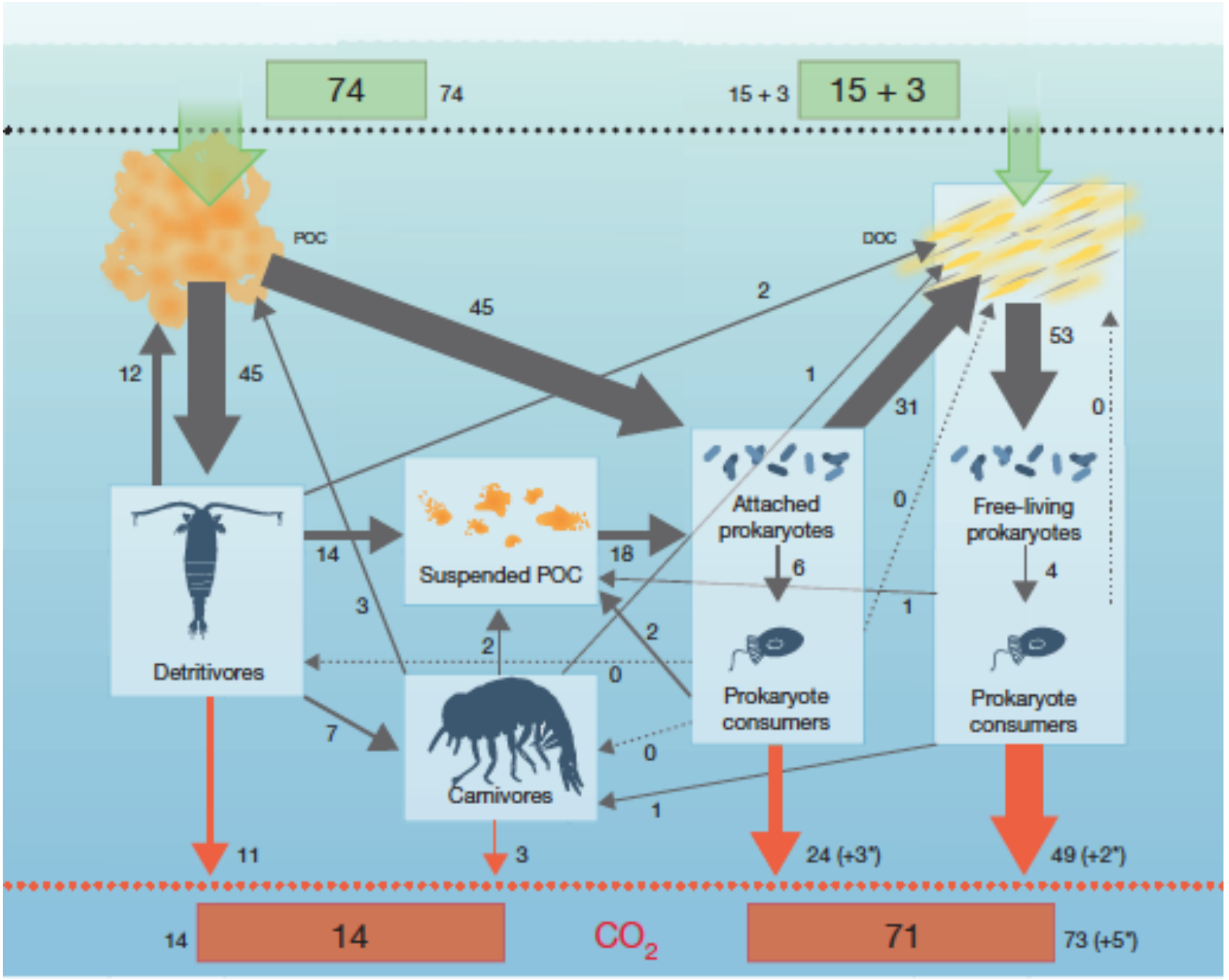

2nd July 1989 47N 20W (Station 11872#30- Apstein)
1mm

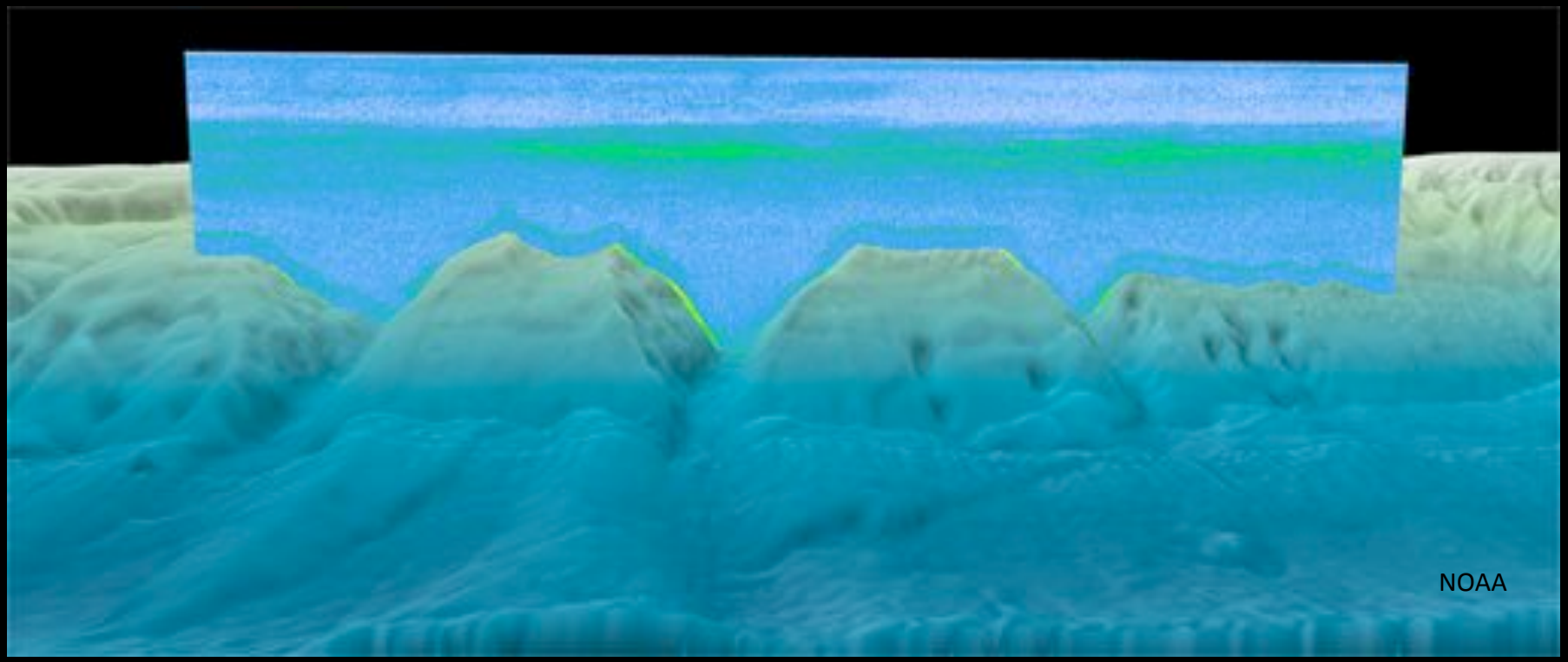

Faecal Pellets from Calanus spp

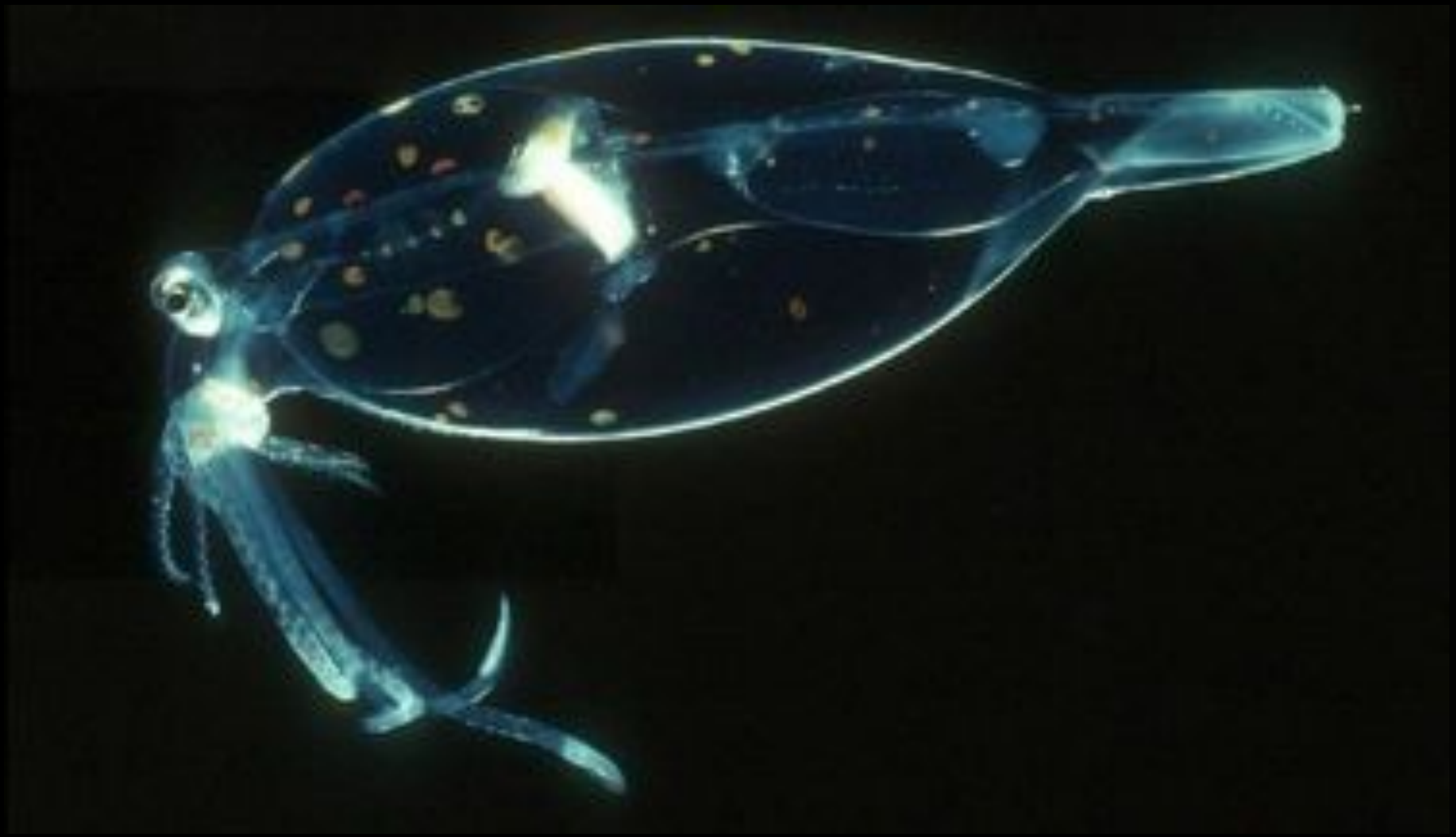

20 µm


salp
copepod
euphausiid
1 mm




74
74
15 + 3
15 + 3
POC
DOC
45
2
12
45
1
31
53
0
0
14
18
3
6
1
4
2
2
0
7
0
1
11
3
24 (+3")
49 (+2")
14
14
CO_2
71
73 (+5")
Detritivores
Suspended POC
Attached prokaryotes
Free-living prokaryotes
Prokaryote consumers
Prokaryote consumers
Carnivores

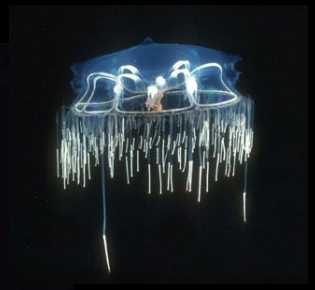

NOAA

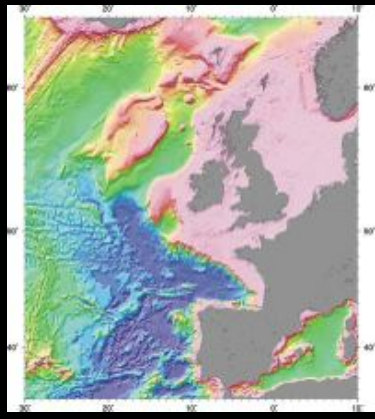


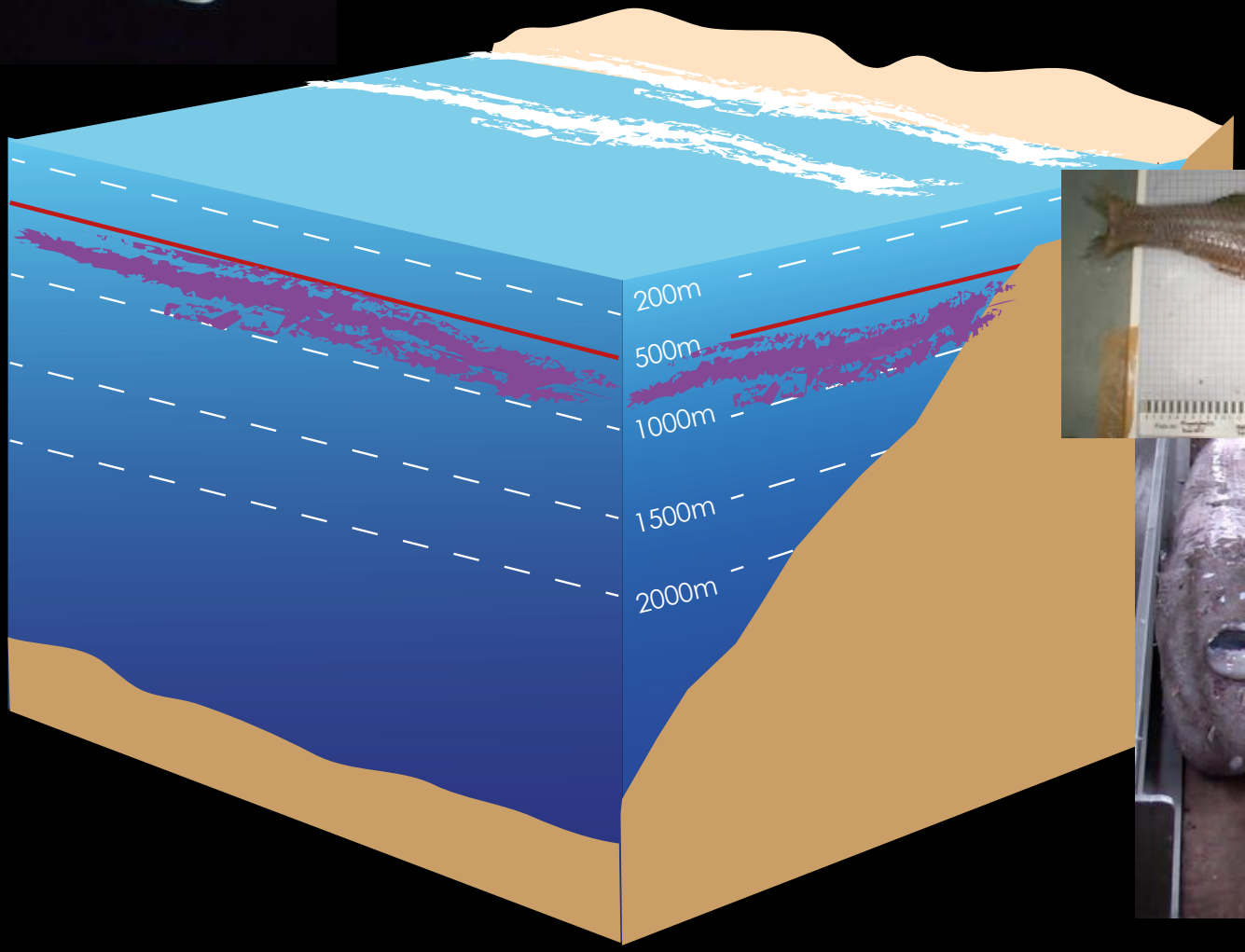
How many fish in the sea?

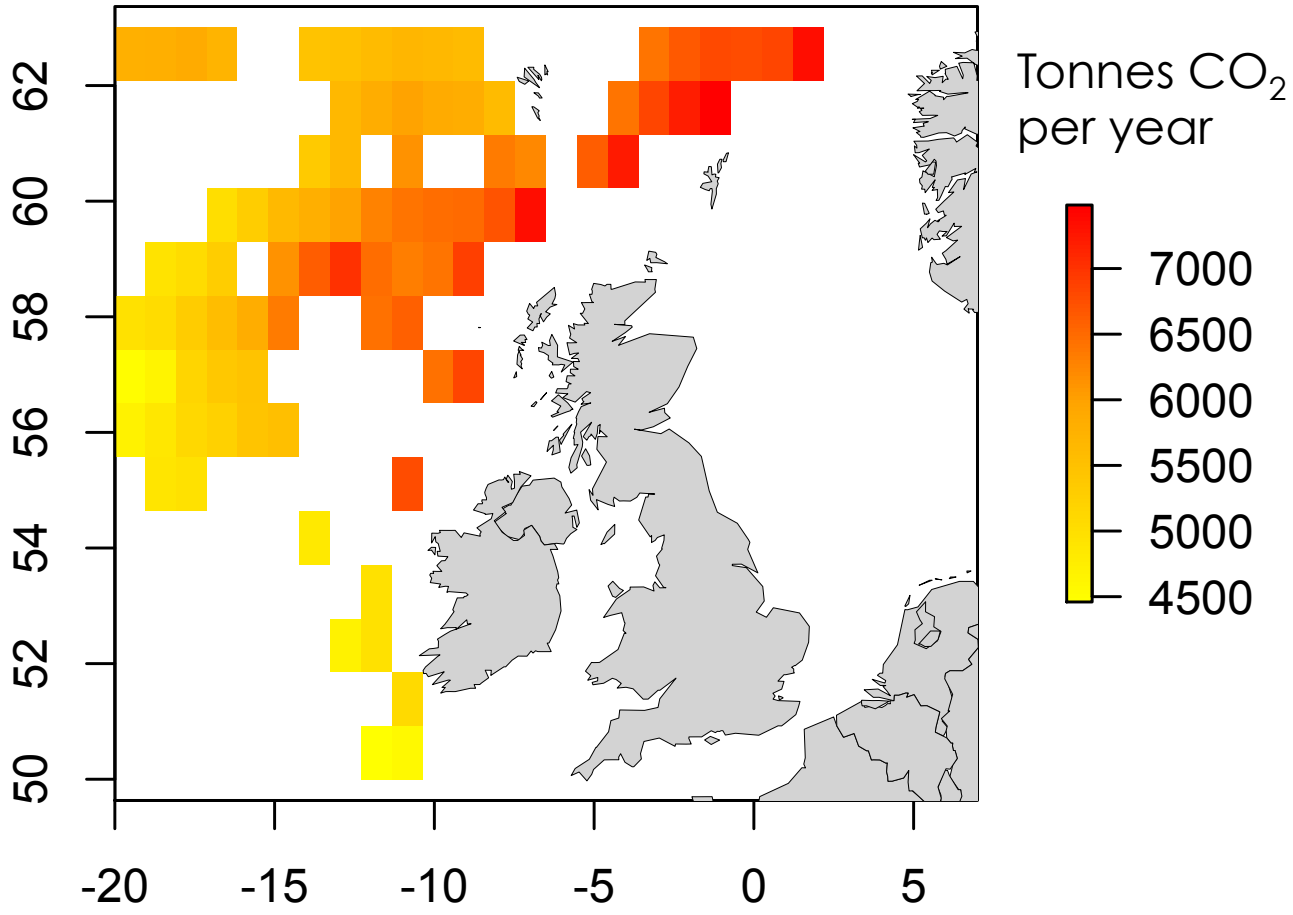
2014

2005






200m
500m
1000m
1500m
2000m



Estimated CO_2 capture: 1 – 2.5 million tonnes per year

Equivalent area sequestration

c. 30,000 km^2

1 000 000 -2 500 000 Tonnes CO_2 captured and stored per year

£1 Billion

Estimated annual value or cost of deep water fish ecosystem services (€ Millions)