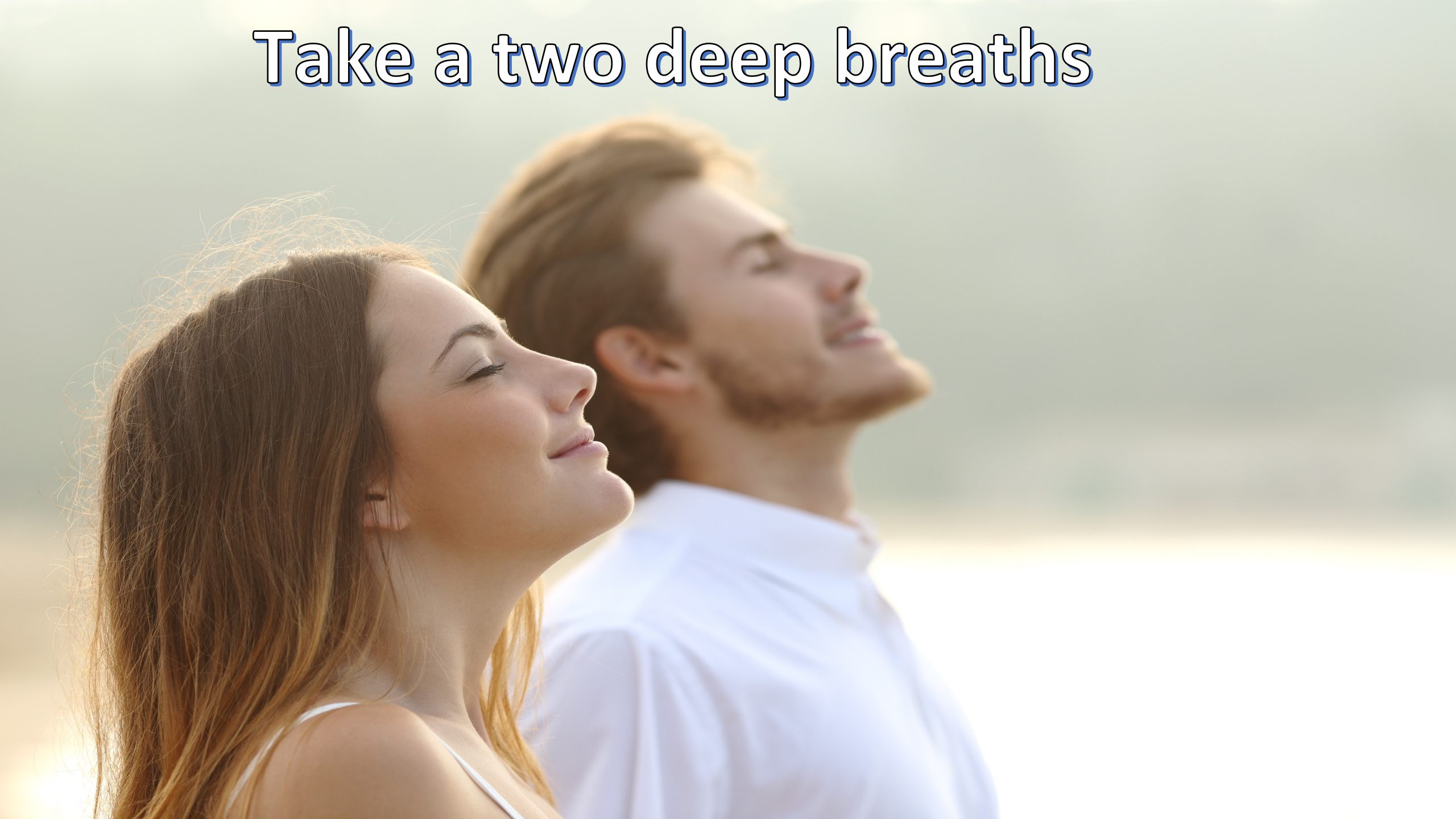
CHOOSE YOUR LIFELINE

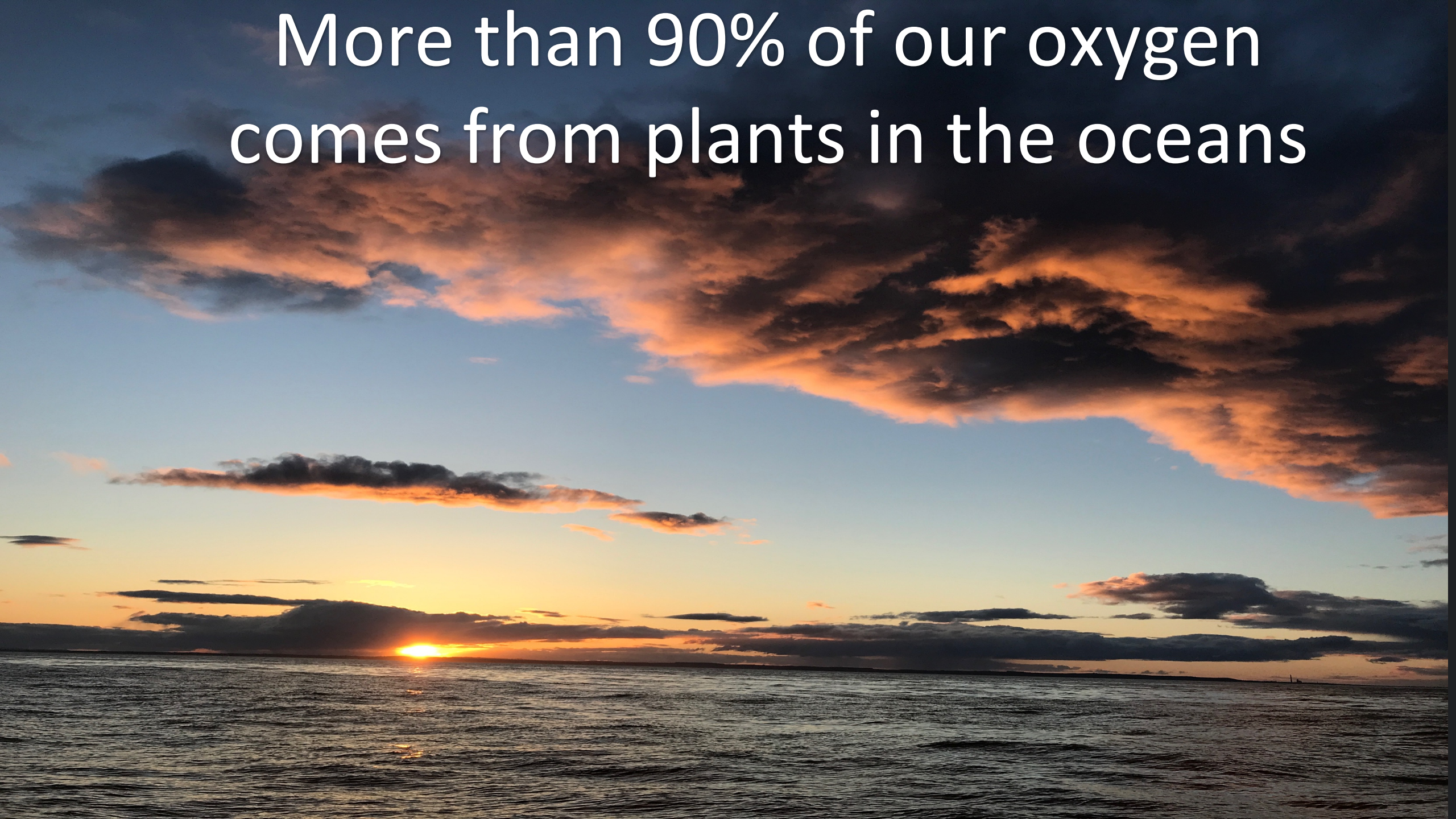
…Because our survival depends upon the health of the Oceans

GOES

GLOBAL OCEANIC ENVIRONMENTAL SURVEY

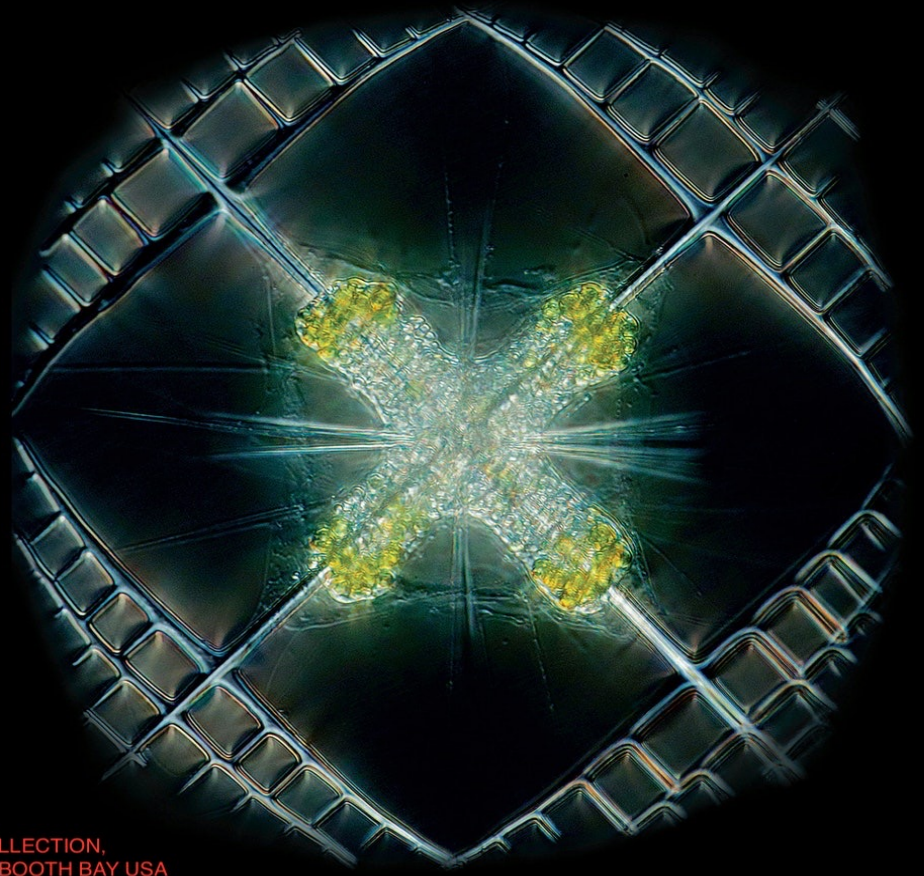
Take a two deep breaths



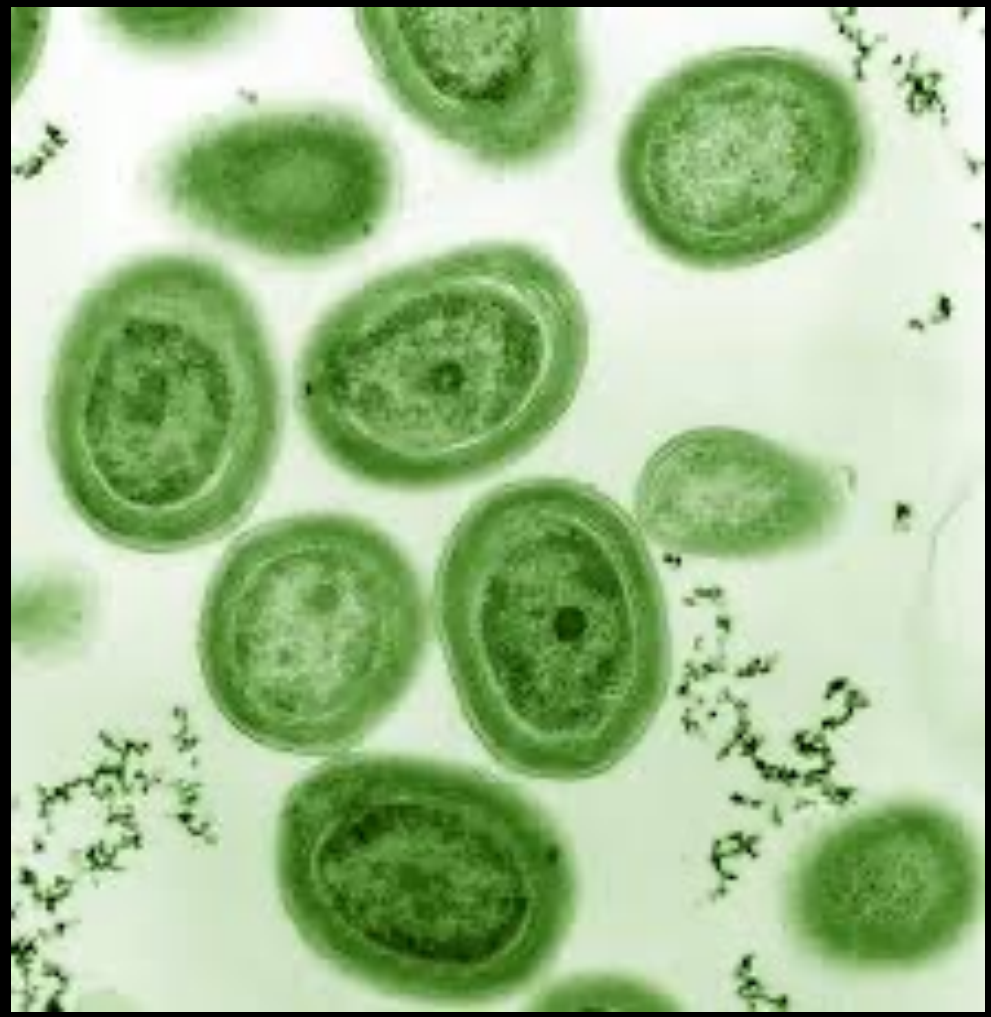

More than 90% of our oxygen
comes from plants in the oceans

Acantharian

A Strontium based Radiolarian

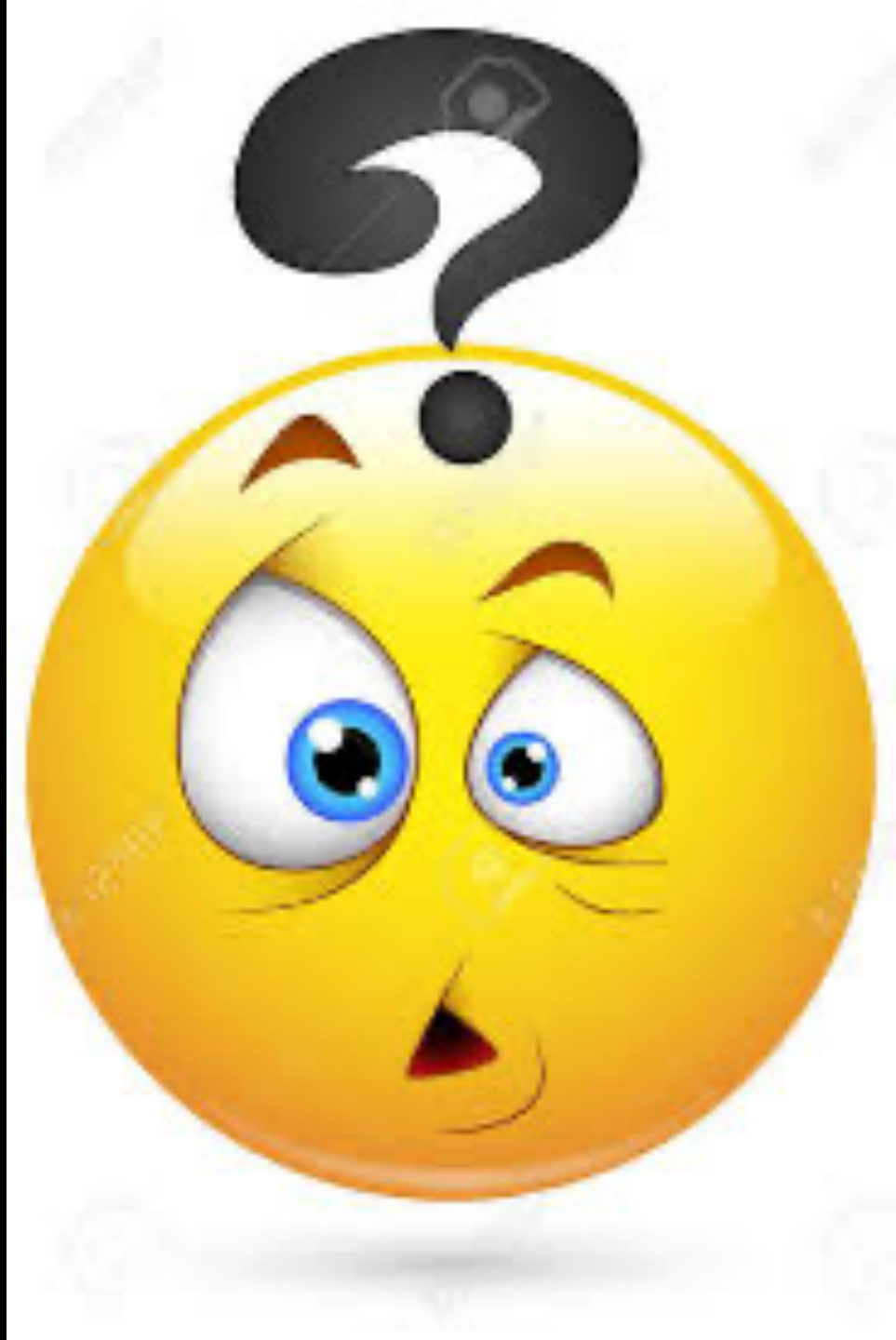


NCMA SAMPLE COLLECTION,
BIGELOW LABORATORY BOOTH BAY USA



Prochlorococcus

But, I thought trees and plants produced our oxygen



Forests do not remove CO_2 or produce oxygen

Growing Trees

<= EQUILIBRIUM =>

Decomposing Trees

Oxygen production = Oxygen consumption

Carbon dioxide adsorption = Carbon dioxide release

90% of our O_2 and 70% of CO_2 fixed

Plankton in the Oceans remove CO_2 because when they die, they fall in to the Abyss and do not decompose

Oil & Gas

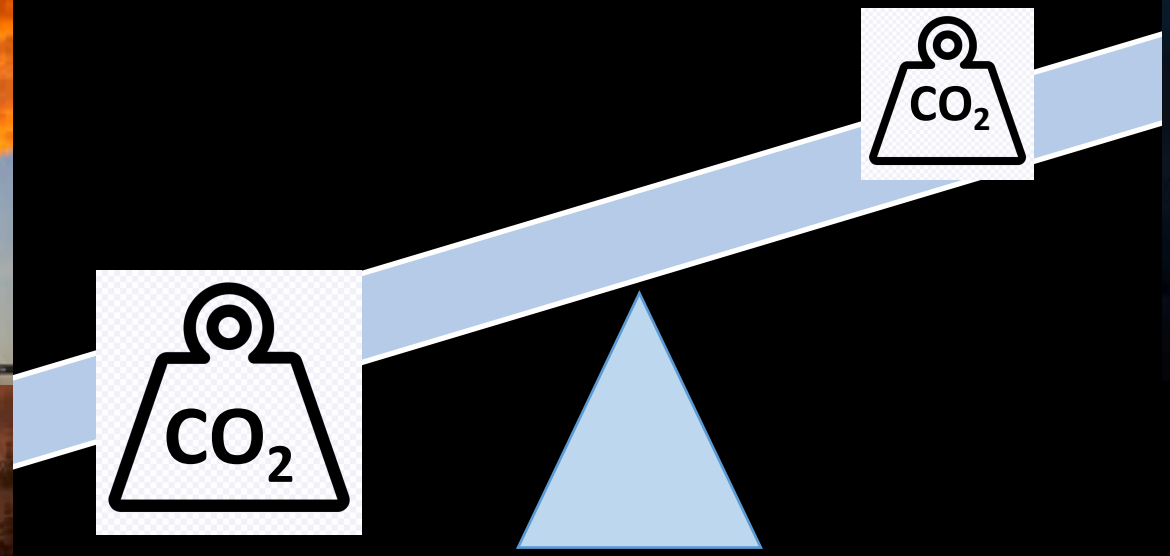
10% of our O_2 and 10% of our CO_2 fixed

Terrestrial plants in Marsh, Bogs, Mangroves and Wetlands. Plants do not decompose in zero oxygen under water

Coal

We produce more CO_2 than can be removed by NATURE

MAN

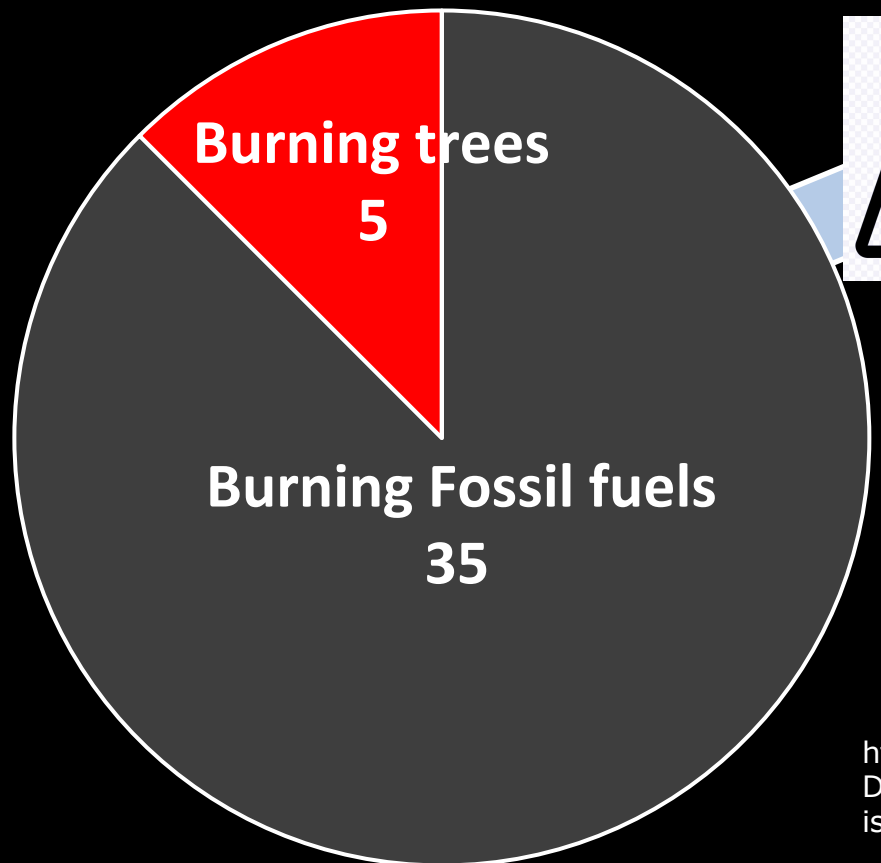


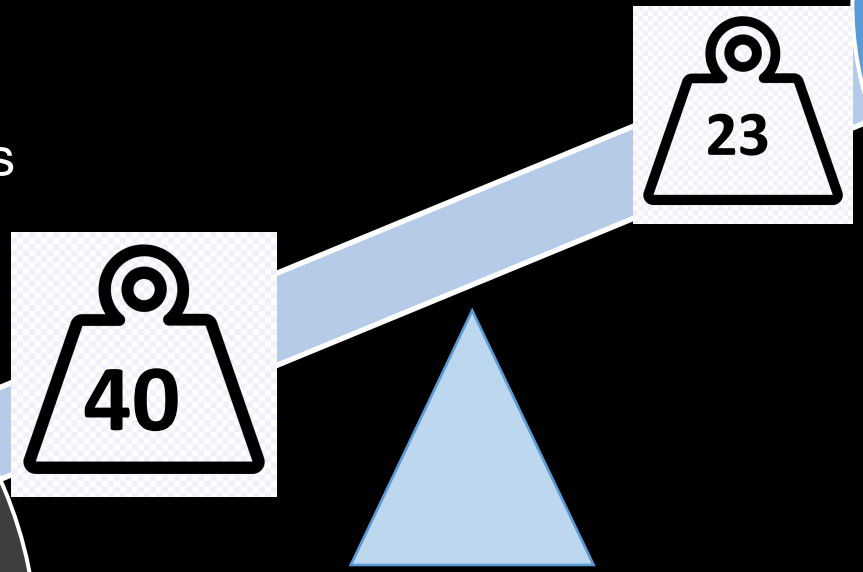
NATURE

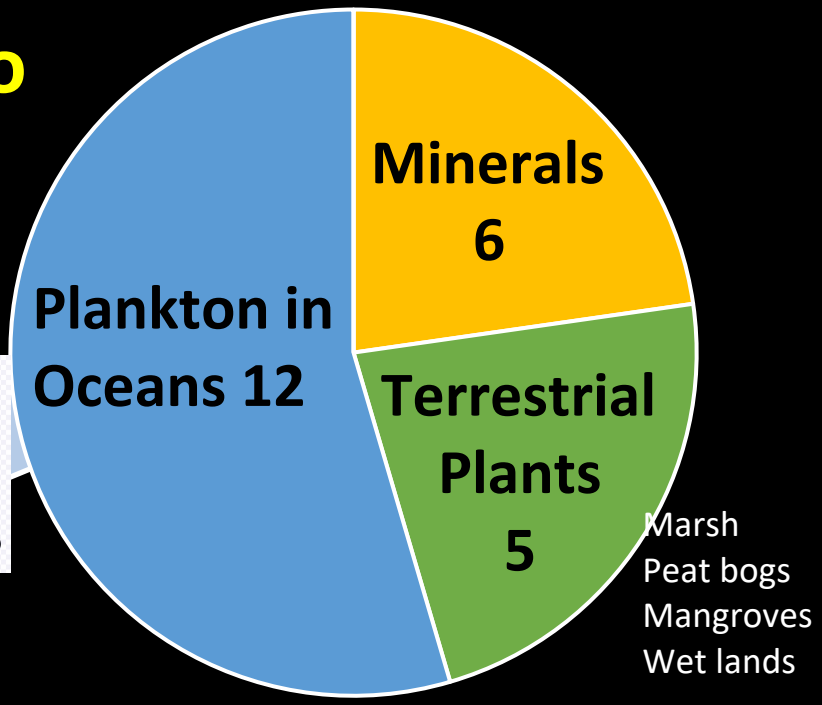
Plants remove CO_2

+ 17 Giga tonnes CO_2 released into atmosphere every year

40 Giga tonnes/year CO_2
from burning fossil fuels and trees







23 Giga tonnes /year CO_2
Removed by Nature

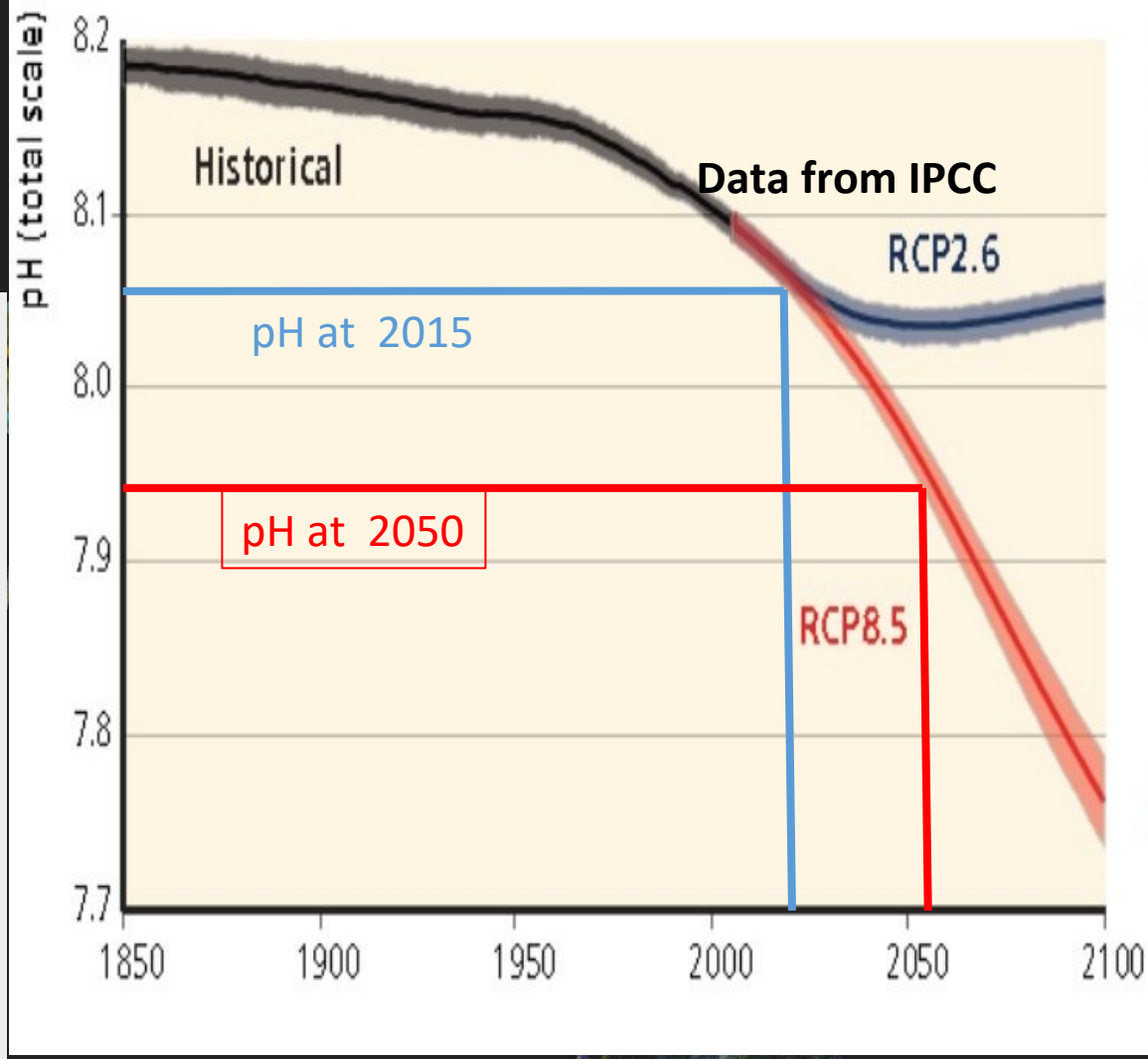
https://essd.copernicus.org/articles/11/1783/2019/
Data presented in chart has been adjusted to include mineral adsorption of CO_2 but is based on the reference above


Climate Change
Ocean Acidification

pH and ocean acidification

CO_2 dissolves into the water to make it acidic.

In 25 years it will be too acidic to support most marine life forms.



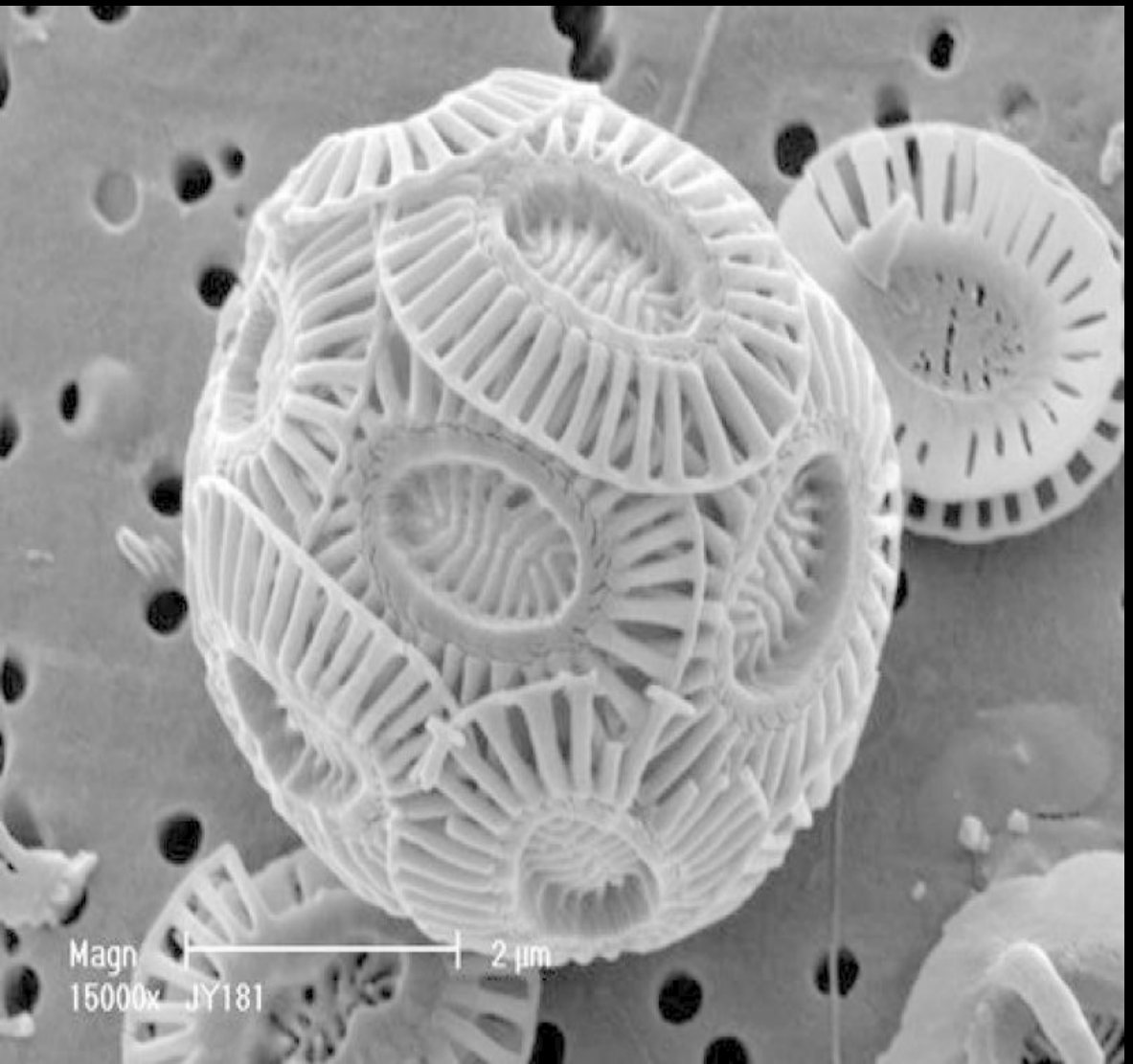
Representative Concentration Pathways (RCPs) 8.5 combines assumptions about high population and relatively slow income growth with modest rates of technological change and energy intensity improvements

At a pH of 7.9
there will be a trophic cascade collapse of
the entire marine ecosystem
and we lose.....

All the whales, seals, birds
and most of the fish
as well as the food supply for 1 billion people

Carbonate plankton

Coccolithophores & Foraminifera



Land formed by carbonate marine plankton, CO_2 bank

Oxygen levels are dropping 4 times faster than CO_2 is increasing

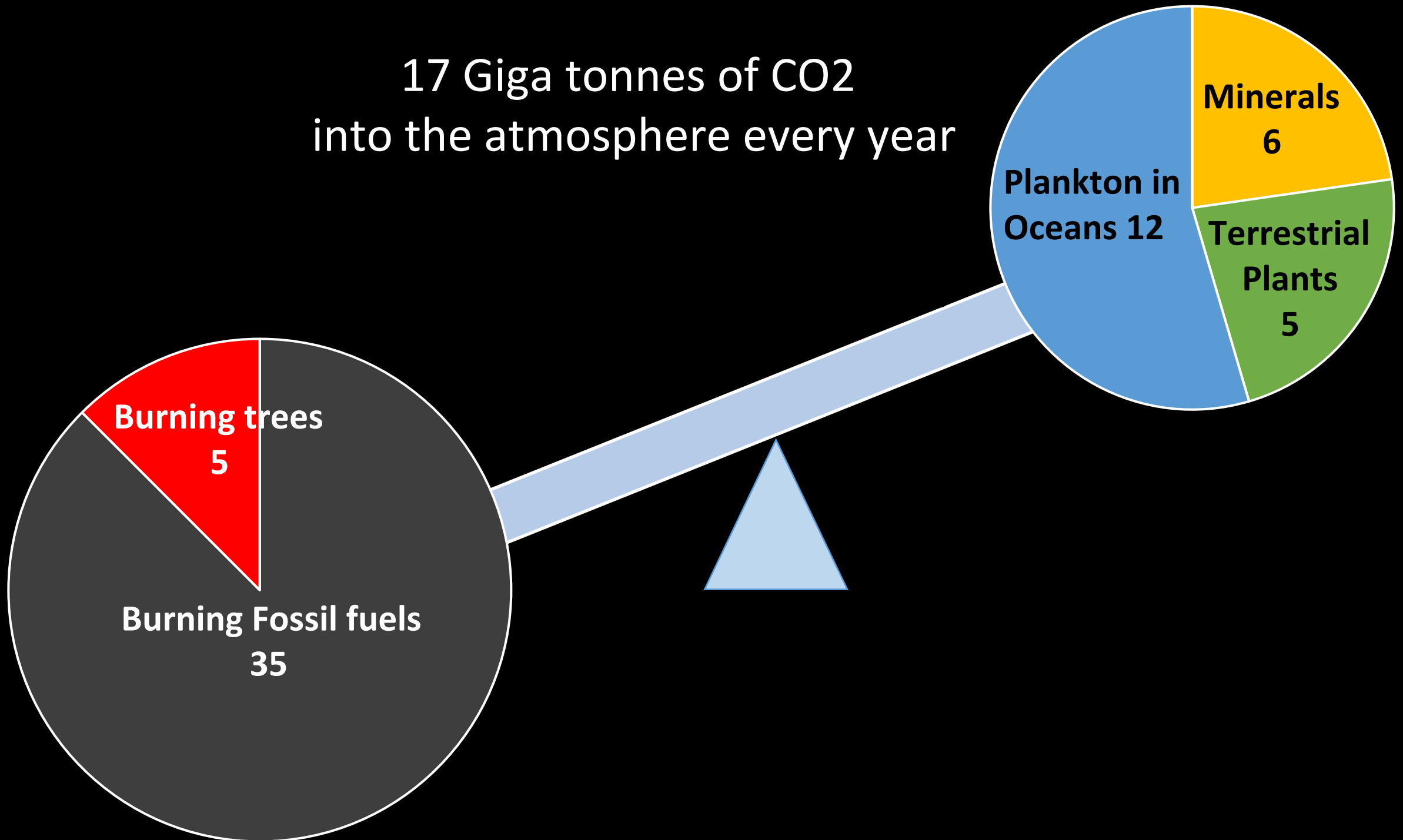
This is not climate change.....it is ecosystem destruction

We have lost 50% of all marine plant growth over the last 50 years.

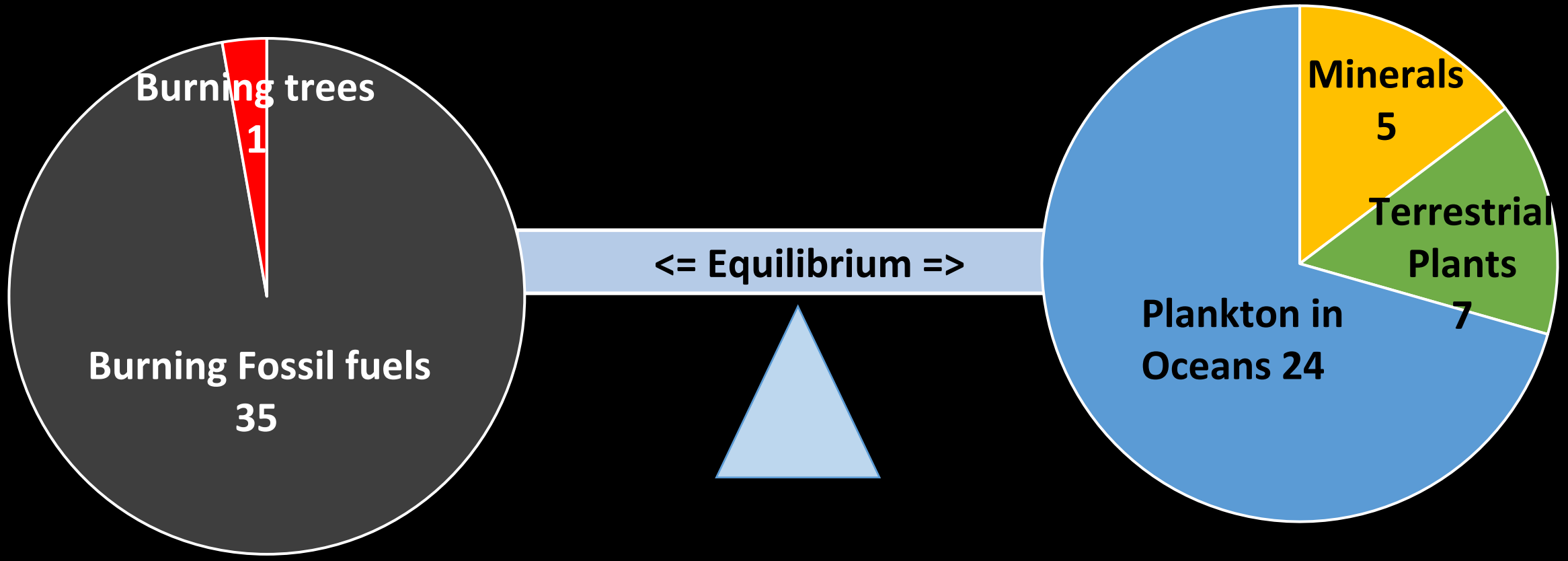
NASA satellite imagery reports a 1% reduction, year on year, since 1997

Dalhousie University Nova Scotia, report published in Nature, claim a 40% reduction in plankton productivity since 1950s

17 Giga tonnes of CO_2
into the atmosphere every year



If we can restore productivity in the Oceans
Climate change can be stopped



36 Giga tonnes /year CO_2
from burning fossil fuels and trees

36 Giga tonnes /year CO_2
Removed by Nature


The Oceans are amazing,
all life on earth depends upon healthy ocean ecosystems

Why have we lost 50% of Plankton productivity since the 1950’s?

Its not climate change


Our explanation is pollution from human sources

Toxic for ever chemicals

The toxic chemical revolution starting in the 1940’s with chemicals such as DDT


Billions of tonnes of Industrial waste enter rivers every year

from many different sources

National Geographic

Barrow, Alaska


Haina, Dominican Republic. Photo Source: Eduardo Munoz

Air pollution from domestic and industrial sources

China textile town

Freshwater pollution……Unsustainable Economies

Economies of countries including India, China are unsustainable unless they prevent aquatic environmental pollution

- 90% of surface water is polluted with priority chemicals
- 75% of all aquifer water is grossly contaminated
- All freshwater pollution eventually ends up in the oceans

Pollution all eventually ends up in the oceans

Mass of garbage is 6 times the mass of plankton in garbage patches

46,000 pieces of plastic per square kilometer, killing >1,000,000 seabirds and 100,000 marine mammals, whales and seals every year

Plastic is important, but It is what you don't see that is really dangerous

Oops!..... it may not be climate change that is killing the coral

- 25% of all fish in the oceans depend upon coral as breeding ground
- 50% of all coral is now dead and will not recover
- 50% of coral is under stress and subject to coral bleaching and will probably be dead in 10 years!

And the reason could be a personal care product
Oxybenzone, a common sun-block , toxic at
62 parts per trillion

Archives of Environmental Contamination and Toxicology
Editor-in-Chief: Peter S. **Ross**
ISSN: 0090-4341 (print version)
ISSN: 1432-0703 (electronic version)
Journal no. 244

Safe sun block

STREAM2SEA

Reef-Friendly • Biodegradable

OxyBenzone BP3 is in 3500 different cosmetics

Lipstick (292)
Lip Gloss (246)
Spray-on Sunscreen SPF 15 and Above (216)
Lip Balm (179)
Foundation (178)
Lip Balm with SPF (174)
Moisturizer with SPF (155)
Fragrance For Women (103)
Facial Moisturizer/Treatment (102)
Lipstick with SPF (84)
Nail Polish (82)
Lip Gloss with SPF (80)
Anti-Aging (77)
Baby Sunscreen (77)
Moisturizer (75)
Sunscreen Below SPF 15 (30)
Styling Gel/Lotion (28)
Body Wash & Cleanser (24)
Nail Strengthener (24)
Hair Color and Bleaching (23)
Body Spray (21)
Bubble Bath (20)
Lip Treatment (17)
Lip Plumper (17)
Hand Cream (16)
Facial Powder (14)
Shampoo (14)
Spray-on Remover (10)
Skin Fading/Lightener (10)
Fragrance (General) (10)
Body and Foot Scrub (9)
Polish Bronzer (6)
Insect Repellents (6)
Nail Care Kits (6)
Body Oil (5)
Liquid Hand Soap (5)
Styling Mousse/Foam (5)
Skin Care Kits (5)
Brow Makeup (4)
Scar Treatment (3)
Men's Grooming (General) (3)
After Sun Product (2)
Baby Bubble Bath (2)
Cuticle Treatment (2)
Redness/Rosacea Treatment (2)
Shaving Cream (2)
Varicose/Spider Vein Treatment (2)
Hand Dishwashing (2)
Scalp Treatment (2)
Acne Treatment (1)
Face & Bodywash (1)
Shampoo Plus Conditioner (1)
Peels (1)
Massage Oils and Lotions (1)
Baby Conditioner (1)
Spray-on Baby Sunscreen (33)
Tanning Oil (32)
Body Mist (31)
Eye Cream & Treatment (7)
Facial Cleanser (7)
Makeup (General) (7)
Hair Care (General) (7)
Leave-In Conditioner (7)
After Shave (6)
Bath Oil/Salts/Soak (6)
Sunscreen Below SPF 15 (14)
Automatic Dishwasher (8)
Anti Frizz (8)
Bar Soap (1)
Detangler (1)
Eye Liner (1)
Foot Cleansing (1)
Glitter (1)
Hair Relaxer (1)
Hair Loss Treatment (1)
Mask (1)
Oral Pain Relief (1)
Shaving Cream (Men's) (1)
Air Fresheners (1)
Nail Care (General) (1)
Hair Spray (68)
Foundation with SPF (63)
Conditioner (47)
Fragrance For Men (35)
Eye Shadow (13)
Sunless Tanning (12)
Concealer (10)
Nail Treatment (8)

Also found in UV stabilized plastic, many colour fast detergents and cloths. It is an endocrine disruptor and carcinogenic.

>10,000 tonnes produced annually, from The Science of the total environment. 635. 926-935. 10.1016/j.scitoten v.2018.04.217 and US National Library of Medicine https://pubchem.ncbi.nlm.nih.gov/compound/oxybenzone#section=EC-Number, Un-official reports give Oxybenzone Global production figure of 300 million tonnes

Example of a safe sun-block

Every fish, shrimp and living organism in the oceans contain priority chemicals and……1 in 15 contain micro-plastic

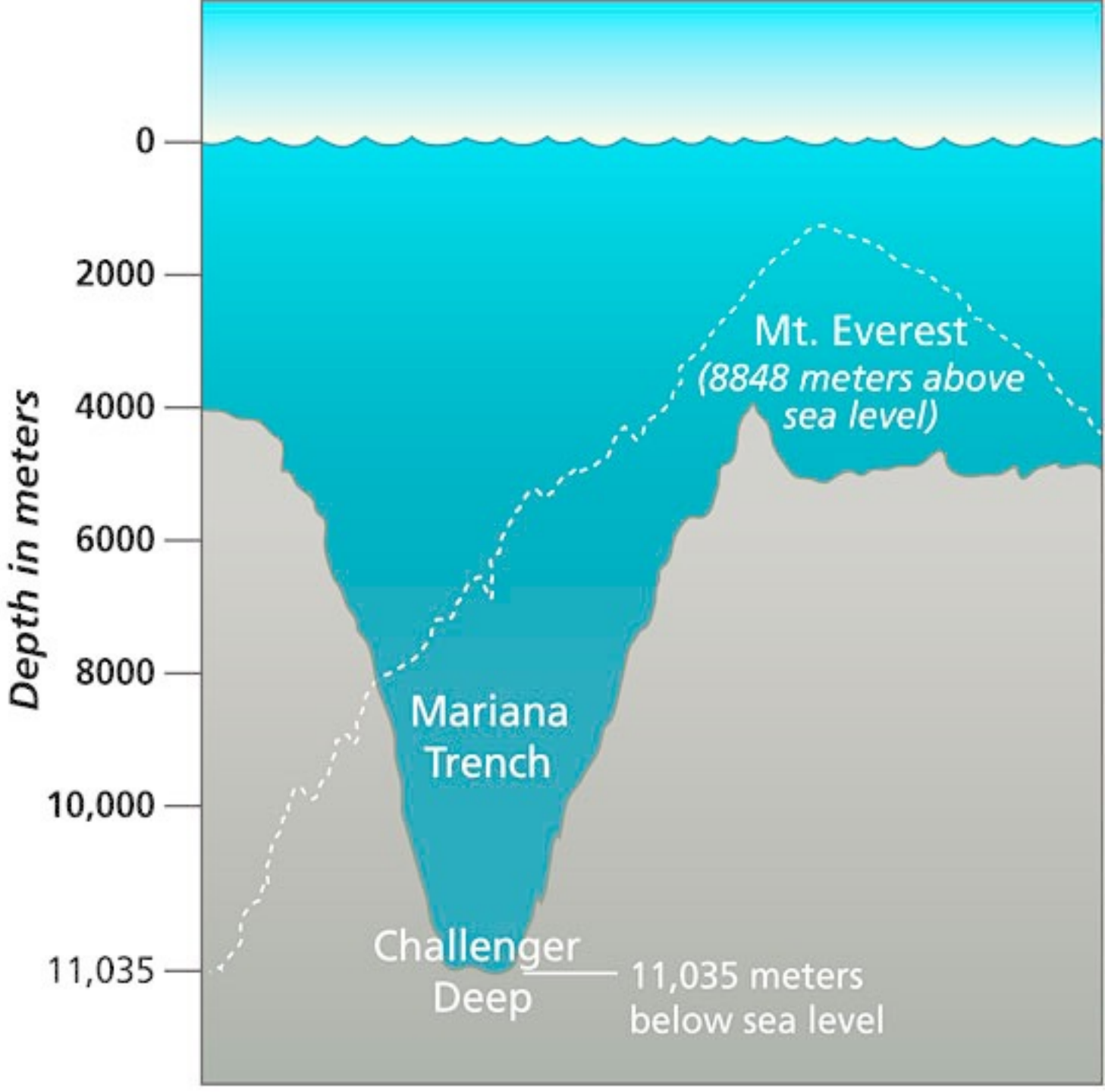
Microplastics adsorb many of the chemicals and concentrate them x 1,000’s. This is why the plankton are dying at a rate of 1% year

'Extraordinary' levels of pollutants found in 10km deep Mariana trench

Small crustaceans that live in the pitch-black waters of the trench, captured by a robotic submarine, were contaminated with 50 times more toxic chemicals than heavily polluted rivers in China

PCBs, used in electronic components
PBDE use as fire retardant in textiles

Nature Ecology & Evolution **volume1**,
Article number: 0051 (2017)




THERE IS
HOPE

WE CAN PREVENT CLIMATE CHANGE

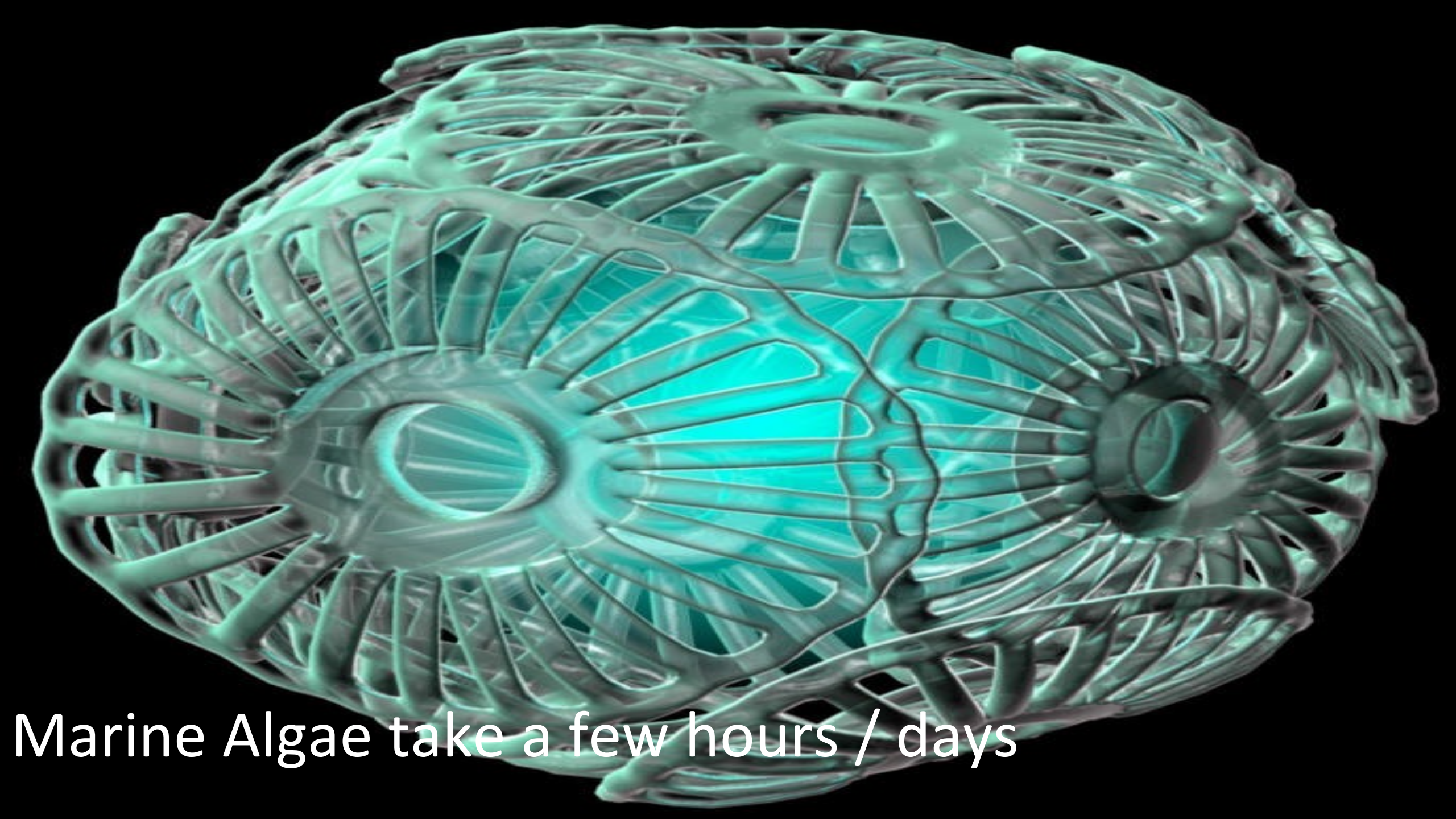
but its not by trying to reduce Carbon Dioxide emissions, this will not work, countries simply can not reduce emissions in time to prevent temperatures exceeding 3 deg C

but we can restore productivity of the Oceans to remove the CO2

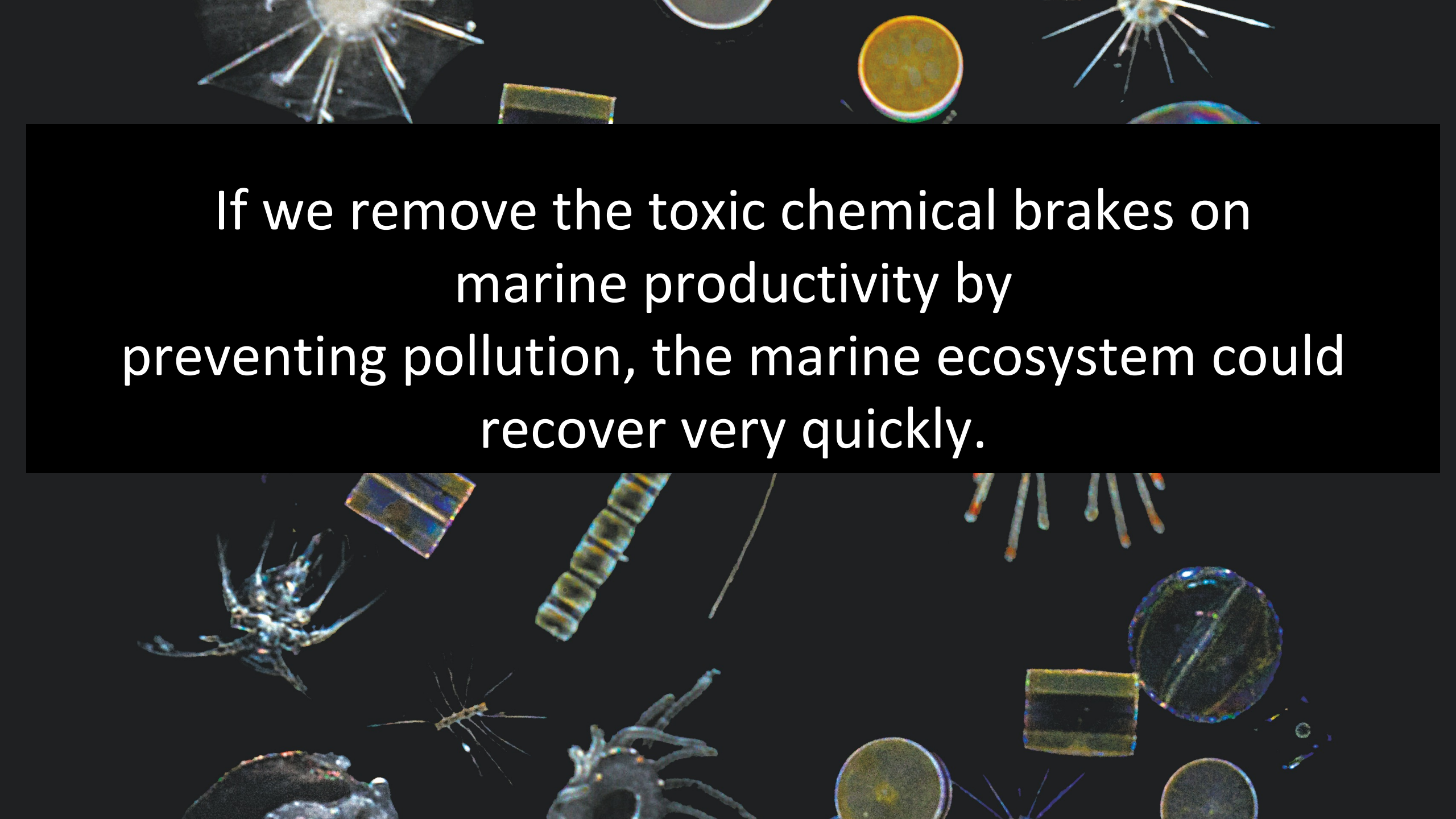
If we eliminate oceanic pollution it would allow the marine ecosystem a chance to recover…

and this could happen very quickly…


Trees take over 100 years to remove CO_2
carbon from the atmosphere

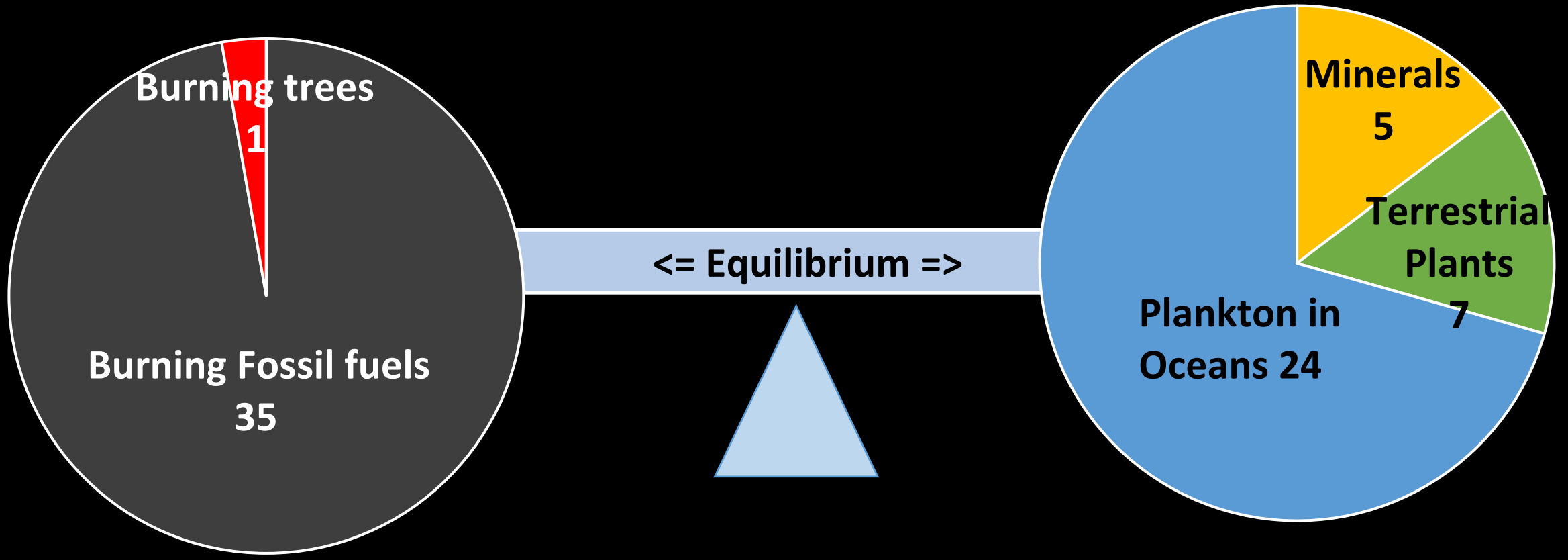

Marine Algae take a few hours / days


Marine Bacteria take a few minutes
or hours and grow 1,000,000 times
quicker than terrestrial plants



If we remove the toxic chemical brakes on marine productivity by preventing pollution, the marine ecosystem could recover very quickly.

Eliminate pollution to bring the ecosystem back into balance



36 Giga tonnes /year CO_2
from burning fossil fuels and trees

36 Giga tonnes /year CO_2
Removed by Nature


But….
we need to take action now!
no more that 10 years to stop pollution
in 25 years we lose the Oceans

What you can do…

When possible buy organic food & and wear clothes made from natural fiber

Don't use toxic cosmetics, look for organic and ocean safe products that must not contain; Oxybenzone, BP3, benzonephenone-3, Milestab 9, Eusolex 4360, Escalol 567, Kahscreen BX-3

Plant as many trees as possible, protect wetlands, marshes, peat bogs, mangrove swamps and seagrass

Lobby governments to properly treat municipal wastewater, 50% of the problem could be solved by tertiary treatment with oxidation. Less than 10% of systems in Western countries have tertiary treatment and more than 80% of the worlds wastewater is not treated

Stop atmospheric pollution, from toxic chemicals and particles, such as car tyre dust, change the formulation

Lobby industry to start using Green Chemistry to develop safe non-toxic pharmaceuticals and industrial products

What we are doing…..

Conducting sound scientific investigations into the identification and quantification of the root causes of chemically induced plankton and coral population reductions

Outreach to educate the manufacturing industry, scientific community, and the public about the nature, extent, and outcomes of phytoplankton and coral reef loss as well as potential solutions to this global crisis

Advocating for the reduction in use of plastics, microfibers, nanoplastic beads, and chemicals inherently harmful to ocean and planetary life

Promote the use of green chemical and plastic free consumer products

What can you do to **stop Climate Change?**

	Percentage of climate change solved
Buy organic products food & clothes	5
Don't wear plastic cloths such a fleece, and prevent plastic pollution	5
Don't use toxic cosmetics / chemicals, look for organic and ocean safe products	10
Become carbon neutral, stop burning fossil fuels. Plant as many trees as possible, protect wetlands, marshes, peat bogs, mangrove swamps and seagrass	15
Stop atmospheric pollution, from toxic chemicals and particles, such as car tyre dust	15
Lobby governments to tertiary treat all municipal wastewater	20
Lobby industry to start using Green Chemistry to develop safe non-toxic pharmaceuticals and industrial products	30
Climate change solved...world saved	100%

Save the oceans and we save humanity

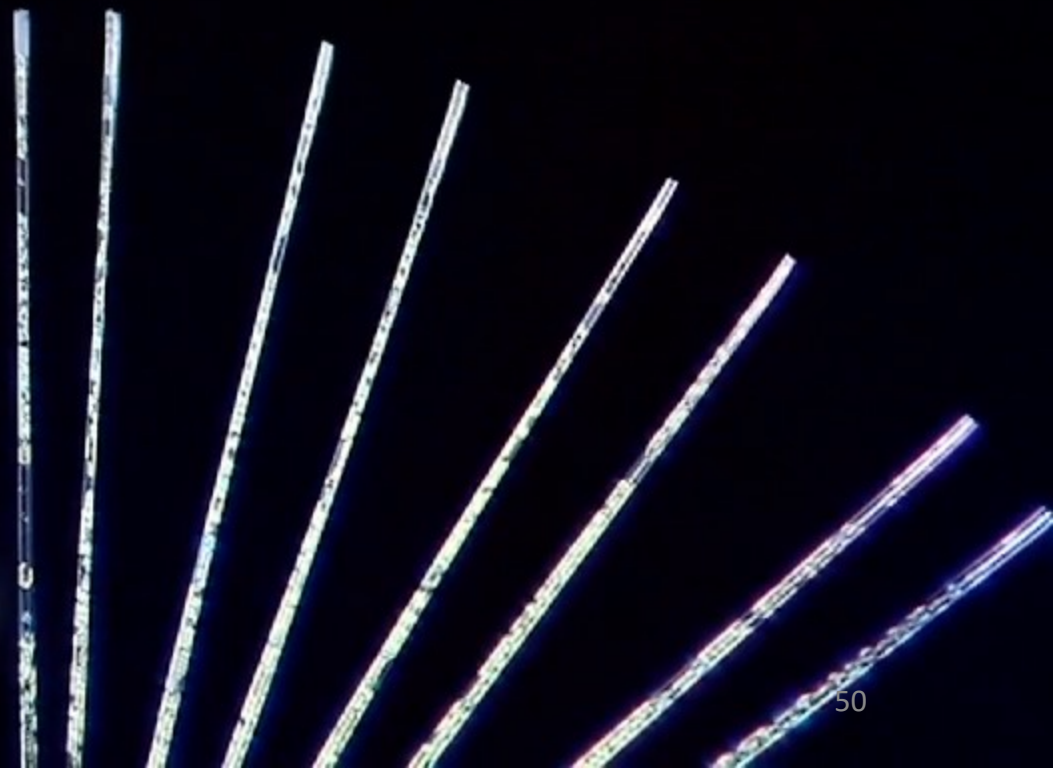
Live responsible sustainable lives
and
Demand a non-toxic environment
we can restore the Earth

GOES

GLOBAL OCEANIC ENVIRONMENTAL SURVEY

Because all pollution eventually ends up in the Oceans

www.GoesFoundation.com



Images from Plankton Chronicles