

N° 1 - OCEAN AWARENESS CONTEST

SOS CLIMATE CHANGE

THE ODYSSEY OF OUR PLANET



HELP ME!

TEMPERATURES
ARE RISING!

THERE IS
TOO
MUCH
CO₂

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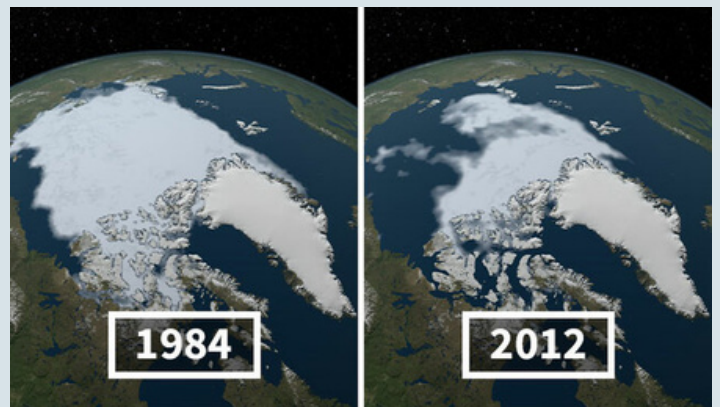


What is climate change?

Climate change is the change in the usual weather of a place. This could be the change in the amount of rain a place gets in a year or the change of the temperature. It can also be a change in the Earth's climate. For example, the rise of the temperature.

Climate takes hundreds or even millions of years to change, while the weather can change in just a few hours, but now the climate is changing very fast. The last time the climate of the Earth changed was at the end of the last ice age (10 000 years ago).

Scientists are sure that Climate change is real, because of the trends that they see in the instrumented climate record and also, we can observe changes in physical and biological systems. NASA studies Earth with satellites observing the land, water, ice and air.



Photos from NASA

What is climate change?

Quotes

"Climate change is the greatest threat to our existence in our short history on this planet. Nobody's going to buy their way out of its effects."

-Mark Ruffalo



"We are the first generation to feel the effect of climate change and the last generation who can do something about it."

-Barack Obama

"What you do makes a difference, and you have to decide what kind of difference you want to make."

-Dr Jane Goodall



"One can see from space how the human race has changed the Earth. Nearly all of the available land has been cleared of forest and is now used for agriculture or urban development. The polar icecaps are shrinking and the desert areas are increasing. At night, the Earth is no longer dark, but large areas are lit up. All of this is evidence that human exploitation of the planet is reaching a critical limit. But human demands and expectations are ever-increasing. We cannot continue to pollute the atmosphere, poison the ocean and exhaust the land. There isn't any more available."

-Stephen Hawking

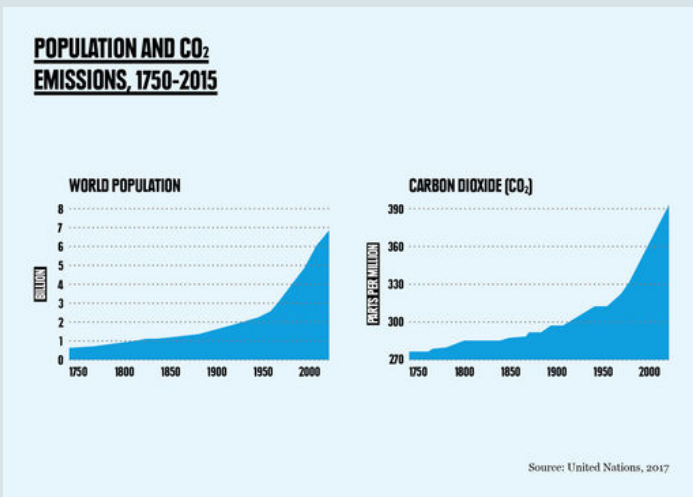


Causes of climate change

Burning fossil fuels

The population is increasing, we are, 7700 million persons in the world! And we need more energy.

Most of the energy we use is made burning fossil fuels, which are oil, coal and natural gas. After being burned they emit greenhouse gases to the atmosphere, such as methane and carbon dioxide, these gases capture and retain the heat, making the Earth warmer.



Deforestation

Trees absorb carbon dioxide from the atmosphere and release oxygen by the photosynthesis. Living trees store tons of carbon dioxide in biomass, such as the trunk, roots, and soil. This process is called sequestration. Deforestation and forest degradation cause climate change. In fact, cutting down trees release the stored carbon into the atmosphere. Moreover, deforestation also affects the atmosphere, because less carbon dioxide is replaced with oxygen.



Causes of deforestation include...

Cattle: It consists of clearing an area for the cattle. Deforestation causes the destruction of nutrient cycle, so the cattle can only stay for a short period of time, since the pasture's quality declines. Then the cattle has to move to another recently cleared area.

Crops: Cleared areas are used to make large plantations for agriculture. But nutrients in the soil disappear, and the ground becomes infertile. The ground can only sustain crops for a short time, and more deforestation occurs.

Road Building: Roads are used to access rainforests, transport machinery and goods to the market.

Logging: Selecting high-value trees and for this process, other trees are removed for access.

Mineral extraction: Mining causes trees to be cut and topsoil to be removed to access the underground.



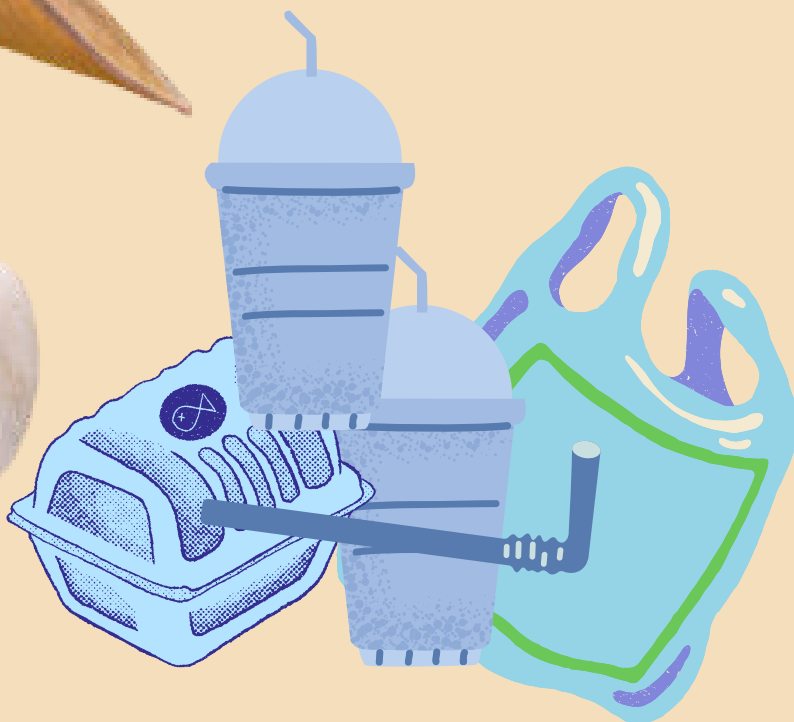
Plastic production

Plastics are made from fossil fuels. Only 9% of plastics are recycled globally, and the rest is placed in the environment. The discarded plastic waste produce greenhouse gas emissions when they are exposed to solar radiation. Marine plastic pollution become microplastics, producing greenhouse gas emissions and damaging ocean organisms. For example, plankton reduce their ability to store carbon dioxide after ingesting microplastics.





Plastics! Plastics!
Plastics! Run... FLY!



Effects of climate change

How can climate change affect natural disasters?

Rising of the sea levels

The sea level has risen about 30.48 centimetres. Earth's climate change is causing the rise of the sea levels in three ways. The warmer air is causing ice and glaciers to melt, ocean water warms and expands and a warmer atmosphere holds more water and heavy rain is regularly. When the sea level rises make floods to be more common. It also affects animals, such as destroying their nests.

Fresh water availability (droughts)

The rising temperatures affect the periods of droughts, making it more common and last for longer. Scientists are sure that increased temperatures will lead to having more precipitation such as rain instead of snow, because it will melt, and evaporation and transpiration will increase, because of the rise of the temperature. And the risk of hydrological and agricultural drought is higher.

Wildfires

For a wildfire, we depend on the temperature, the soil moisture and the number of plants that the area has. The hot and dry climate has led to fires to become more intense and harder to eliminate the fires. The dry and warm climate contributed to the spread of the mountain pine beetle and other insects. These insects weaken trees, they can even kill a tree. These trees are fuel for the fire.





I AM PREPARED FOR A FLOOD!

Photo by Daria Rem

Effects of climate change

How can climate change affect oceans?

The ocean absorbs carbon dioxide from the atmosphere. In addition, the ocean absorbs the energy as heat and distributes it. This changes the environment of plants and animals.

Ocean acidification

CO₂ is absorbed by the water, which causes chemical reactions (this increases the concentration of hydrogen ions) that result in a more acidic seawater and the concentration of carbonate ions decreases.

Carbonate ions are part of the structure of seashells and coral skeletons. A decrease in carbonate ions difficult building and maintaining calcium carbonate structures for some organisms, including oysters, sea urchins, clams...

Non-calcifying organisms are also at risk. Some organism's ability to detect predators decreases in acidic waters. Therefore, the food web is in danger. Moreover, economies in communities that are dependent on fish are at risk.

Coral bleaching

Warmer temperatures in the water cause corals to remove the algae in the tissues, turning the corals white. Run-off and pollution can bleach corals near the shore. Overexposure to sunlight and extreme low tides can lead to bleaching in shallow corals. Corals become vulnerable, since algae is the major source of food and the coral becomes more likely to develop a disease.



More consequences

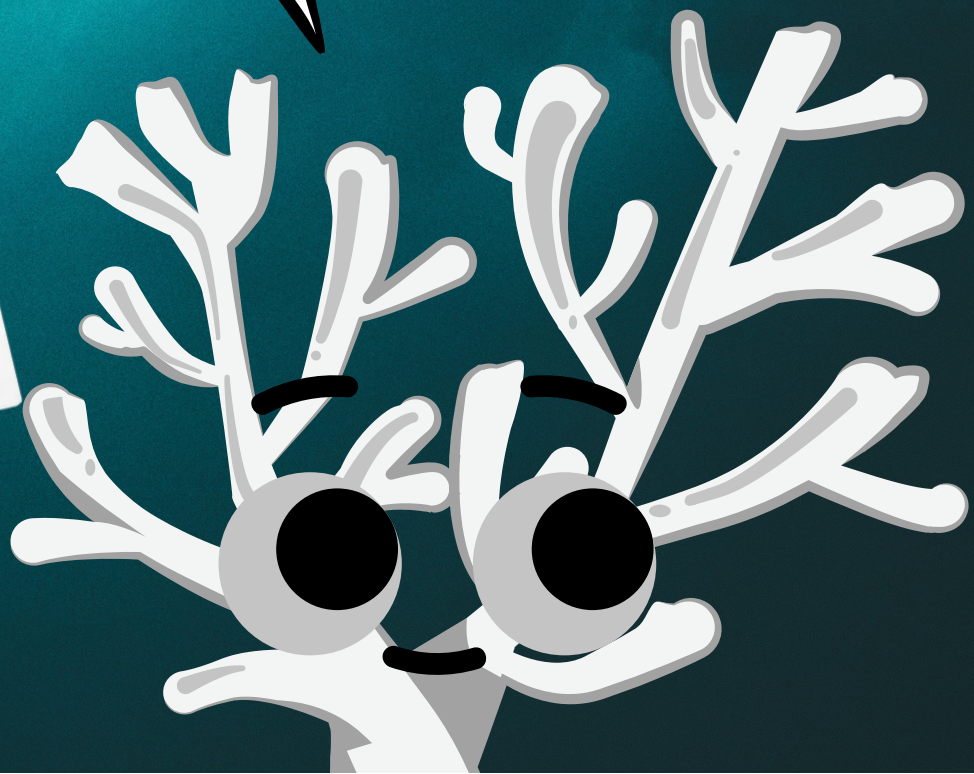
- Warmer waters could cause mass migration of marine species looking for good conditions, and it could alter animal's habits.
- Warm oceans alter currents. Many species depend on current for reproduction and nutrients.
- Warm temperatures affect the development and growth of some fish and cephalopods (octopus, squid).

Arctic sea ice melting

- Algae depend on sea ice. When sea ice decreases by higher temperatures, algae does too, which affects other organisms in the Arctic food web, such as seals or polar bears.
- Disappearance of sea ice reduces habitat for seals, polar bears, walruses, penguins and other animals. Moreover, sea ice is the habitat of Antarctic krill, the main food source for many birds and mammals in the Southern Ocean.

<Sea ice —————>>Population of species that depend on the Antarctic krill —————>>Antarctic krill populations

LOOK AT THE PICTURE I FOUND! IT IS MY MOM AS A TEENAGER AND HER FRIENDS. THEY DRESSED VERY FANCILY AND COLOURFUL.



Hope

How can I fight climate change?



Raise awareness about climate change in your community.



Walk, cycle and use public transportation to reduce emissions.



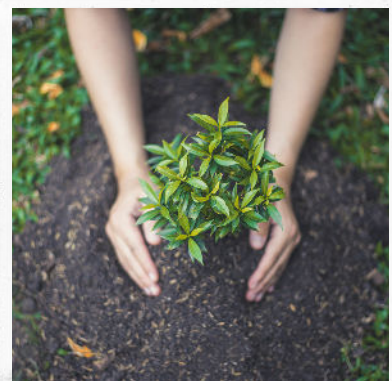
Switch off the lights when you are not using them to save energy.



Eat more plant-based meals.



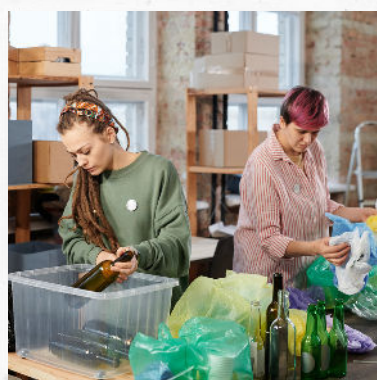
Shop local and buy sustainable products.



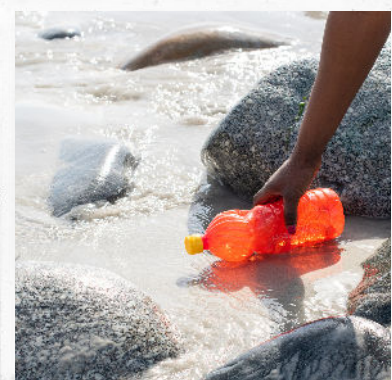
Plant trees.



Avoid using plastics.



Reduce, reuse and recycle.



Volunteer for clean-ups.

Activities

How can I fight climate change? Brainstorm some ideas!



Take a picture or draw

Write your idea

Take a picture or draw

Write your idea

Take a picture or draw

Write your idea

Wordsearch

D	E	F	O	R	E	S	T	A	T	I	O	N	K
R	X	R	E	C	Y	C	L	E	F	B	A	E	C
O	G	P	F	J	O	P	Y	S	Y	Q	G	T	A
U	O	K	O	S	X	L	R	U	E	W	W	P	R
G	D	K	S	E	Y	A	E	S	U	I	D	L	B
H	I	C	S	A	G	N	T	T	M	L	C	A	O
T	F	R	I	L	E	K	U	A	Z	D	L	S	N
S	F	E	L	E	N	T	M	I	G	F	I	T	D
H	E	D	F	V	K	O	G	N	R	I	M	I	I
W	R	U	U	E	Y	N	A	A	E	R	A	C	O
Q	E	C	E	L	D	O	H	B	U	E	T	Z	X
H	N	E	L	J	R	T	W	L	S	S	E	M	I
C	C	D	S	C	N	V	T	E	E	Z	S	H	D
A	E	S	G	B	I	O	M	A	S	S	A	I	E

- | | | |
|----------------|-----------|--------------|
| biomass | plankton | fossil fuels |
| carbon dioxide | plastic | oxygen |
| climate | recycle | sustainable |
| deforestation | reduce | wildfires |
| difference | reuse | |
| droughts | sea level | |

Draw something related to climate change and our oceans



Video: Climate change in 60 seconds- The Royal Society



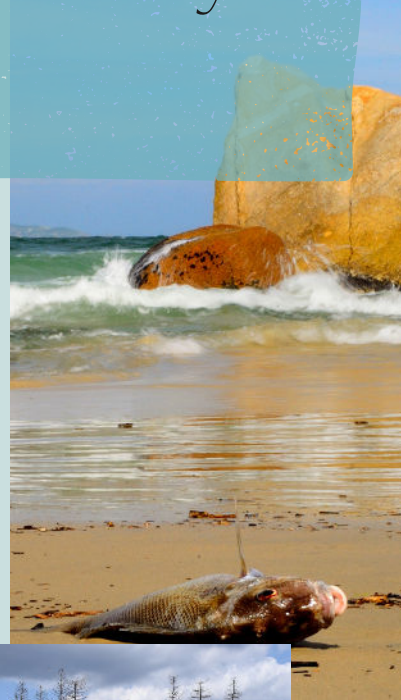


WE CAN DO IT



"Earth provides enough to satisfy every man's need, but not every man's greed."

-Mahatma Gandhi



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W E C A N D O I T

