Seaweek 2019

#4 Climate Change

Level 3/4 Teacher Information

Key Message – there is Evidence that climate change is happening and the oceans are a big influence

By the end of this lesson the students will be able to-

1. Differentiate between climate and weather
2. Use evidence to see what is happening to our climate
3. Use critical thinking to discuss how oceans effect the climate

NZ Curriculum-

Science- Living World - Ecology

Explain how living things are suited to their particular habitat and how they respond to environmental changes, both natural and human induced.

Nature of Science- Understanding about science-

Identify ways in which scientists work together and provide evidence to support their ideas.

https://www.niwa.co.nz/our-science/climate/information-and-resources/clivar/climate_change

Direct climate change effects

- Sea-level rise
- Changing wind & rainfall patterns
- Ocean acidification
- Changing ocean current patterns
- Ocean warming

Indirect climate change effects

- Changing primary production
- Algal blooms

- Vulnerability to invasive species
- Vulnerability to diseases and parasites
- https://www.niwa.co.nz/our-science/climate/information-and-resources/clivar/climate_change

Oceans are a global force of nature that form the foundation of the blue planet on which we live. They cover 71% of our planet's surface and make up 95% of all the space available to life. They are a life-support system for Earth and a global commons that provide us with free goods and services, from the food we eat to the oxygen we breathe.

The oceans also regulate the global climate; they mediate temperature and drive the weather, determining rainfall, droughts, and floods. They are also the world's largest store of carbon, where an estimated 83% of the global carbon cycle is circulated through marine waters.

But the interaction between these two natural forces is altering, and the exchange is intensifying. We're seeing the consequences of this around the world. In the last 200 years, the oceans have absorbed a third of the CO2 produced by human activities and 90% of the extra heat trapped by the rising concentration of greenhouse gases.

As the climate responds to decades of increasing carbon emissions, the store of energy and heat from the atmosphere builds up in the ocean. If we reach a tipping point, we will likely see more extreme weather events, changing ocean currents, rising sea levels and temperatures, and melting of sea ice and ice sheets—all of which aggravate the negative impacts of overfishing, illegal fishing, pollution, and habitat degradation.

https://www.worldwildlife.org/stories/how-climate-change-relates-to-oceans

Higher temperatures are bad for fish — and for us.

Warmer waters cause coral bleaching, which in turn impacts coral reef ecosystems that are home to most of the ocean's biodiversity — and provide crucial sources of food for people.
Warmer waters threaten to cause mass migration of marine species in search of the right conditions for feeding and spawning.
Change in water temperatures can directly affect the development and growth of most fish and cephalopods (such as octopus and squid).
For the 3 billion people worldwide who rely on fish as their chief source of protein, the prospect of fewer and smaller fish in the sea is bad news.

https://www.starwalkkids.com/toys/educational/teach-kids-climate-change/