



## Climate Change

### Introduction

Human activities are changing Earth's climate. When humans burn fossil fuels like coal, oil, and methane for energy, it changes the Earth's climate by releasing excess carbon into the atmosphere. This is called rampant carbon dioxide. When rampant carbon dioxide builds up in our atmosphere, it creates a heat-trapping blanket that warms our planet, putting people and places in danger. Check out [a video about the carbon cycle](#) to learn more about the connection between carbon and our climate. It is our job to protect people and places from harm caused by a warming planet. Before we can take action to limit the impacts of rampant carbon dioxide, we have to understand what causes it and how it impacts our environment. Start by watching a [3-minute video introducing climate change](#).



Photo: Wendy Cover/NOAA

This warming can impact both the weather and climate of a given region. Learn more about the difference between [weather and climate](#). If you'd like to become a climate change expert, check out [NASA Climate Kids](#) for more information, as well as games and activities! Now that you've completed this introduction, take a look at the videos, VR experiences, and hands-on activities below!

### Make a Connection between Climate Change and National Marine Sanctuaries

Watch this [2-minute video on coral bleaching](#) in American Samoa. While you watch, pay attention to the guiding questions below:

- Can you describe the connection between climate change and coral bleaching?
- Is bleached coral dead? What's the difference between bleached coral and dead coral?
- How can we stop bleached coral from dying and make it healthy again?

### Explore

Use your mouse to explore three virtual dives in Airport Pool reef in National Marine Sanctuary of American Samoa. As you "dive," fill out [this Venn Diagram](#) to compare and contrast your observations of each time period.

- [The healthy reef prior to 2015](#)
- [The reef during a bleaching event in early 2015](#)
- [The reef after the bleaching event](#)

## Watch

What's being done to combat climate change? Watch this [3-minute video on the International Partnership on Marine Protected Areas, Biodiversity, and Climate Change](#) to find out. While you watch, try and find the answers to these guiding questions:

- What benefits do ocean and coastal ecosystems provide?
- Why are marine protected areas important?

## Hands-on Learning

Play [this fun Nemo game](#) to learn more about how climate change impacts marine life!

Test the effects of ocean acidification yourself with [this marine osteoporosis experiment!](#)

Gather some family and friends for the [Whale Jenga Game](#), a fun twist on the classic block stacking game to learn how small changes in marine food webs may have large-scale effects.

## How Can You Help?

- **Be energy smart!** Use less energy generated by fossil fuels, like coal, oil, and methane. Burning less fossil fuels will reduce carbon dioxide emissions, protecting life in the ocean.
- Find out what your local government, businesses, and schools are doing to **reduce use of fossil fuels**, and transition to **renewable, clean energy**.
  - The more, the merrier! Encourage your community to follow in your eco-friendly footsteps!
- Use what you've learned to **educate others** about how carbon dioxide emissions are impacting ocean life.



Photo: Mark Manuel/NOAA

[Download the ParkPassport App](#) to learn more about national marine sanctuaries. Take virtual tours, view live webcams, earn digital badges, and more!

All information in this document was adapted from NOAA's Office of National Marine Sanctuaries' resources. This collection was developed in partnership with the National Park Trust in support of the 50th anniversary of the National Marine Sanctuary System. *The inclusion of links in this guide does not imply endorsement or support of any of the linked information, services, products, or providers.*

