

Mission: Protect our oceans

The weather and oceans guide



Mission: Protect our oceans offers a creative approach to learning about the oceans and issues that affect us all: the environment, the impacts of climate change, and our future. Developed with the Natural Sciences and Engineering Research Council of Canada (NSERC) in partnership with the Canadian Commission for the United Nations Educational, Scientific and Cultural Organization (CCUNESCO).

Students will be able to draw and submit their own inventions to appear on nserc.littleinventors.org, where they will be reviewed by the Little Inventors team, NSERC and CCUNESCO! Their idea might even be chosen as team favourite, turned into an animation or even made into a real object by one of our Magnificent Makers. The winners will be invited to take part in a special exhibition in 2021 to celebrate the launch of the **United Nations Decade of Ocean Science for Sustainable Development**.

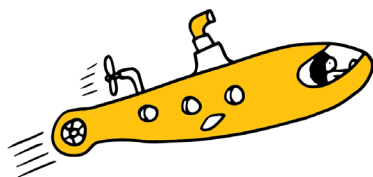
Climate Power is an extension pack to complement our core challenge resource pack **Mission: Protect our oceans**, which offers a fresh way to learn about why the oceans matter, about sea life and habitats, and the threats and challenges to ocean health.

A second extension pack, **A world of pollution**, (ocean pollution, the plastic problem and ocean = carbon eater) is also available.

You can download the resources from nserc.littleinventors.org.

The resources have been designed to support scaffolded learning for students age 5 to 15 years old to stretch their imagination and creativity.

Use the notes in the presentation to deliver your workshop. You can choose the slides that you think are most appropriate to support your lesson, whether for elementary or secondary students. The notes are coded in regular font for content that is more accessible and **in bold for content that is more advanced**.



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Familiarize yourself with the resources available before the workshop

The weather and oceans

- Presentation
- 1x Time for a rain check activity sheet per student

And of course don't forget to give your students invention sheets to capture their ingenious ideas!

Tools or materials needed during the workshop

Make sure you have plenty of black pens and colouring pens available for the workshop!

The weather and oceans presentation



This presentation focuses on the weather and the role of the ocean in the water cycle, and presents slides accessible for elementary students, but also for secondary students. Go through the slides with your class:

- Slide 2 **'Water matters'** looks at the three states of water, liquid, solid and gas.
- Slide 3 **'How does the weather impact the oceans?'** shows the water cycle, and gives an opportunity to explain each stage (evaporation, condensation, precipitation, collection), and offers some extension for secondary students by introducing the phenomena of sublimation and collection.
- Slide 4 **'What is climate change?'** introduces the concept of climate change in simple terms relating to the weather.
- Slide 5 **'A man-made change'** explains that the current climate change is caused by human activity since the industrial revolution, and the production of excess carbon dioxide and greenhouse gases.
- Slide 6 **'Getting extreme'** explains the impact of climate change on the weather.
- Slide 7 **'What a difference a degree makes'** explores how even an apparent small rise in temperature can have devastating effects on the coastline, but also species habitats and coral reefs in hot and cold water.
- Slide 8 **'Cool it down!'** explores current inventions to tackle climate change in everyday life and asks students to reflect on some key points to help them with their own inventions.
- Slide 9 **'Time for a rain check'** supports the activity sheet of the same name, to encourage students to think about ways to prevent the planet from heating up more by reducing pollution and waste.
- Slide 10 **'Coming up with ideas'** offers tips to get ideas flowing!

You can make this PowerPoint as interactive as you wish by asking your students questions throughout, such as:

- Where does drinking water come from?
- What is the water cycle?
- Why does it rain?
- What do they know and understand about climate change?
- How does climate change affect us and the environment?
- What causes climate change?
- Why do we need to look after our oceans?
- What could the future of the oceans look like?
- What would a happy ocean be like?



Then use the activity sheet 'Time for a rain check' to explore how we can tackle climate change by doing things differently every day as people, as a community or even as a country. Think about the energy sources that we all use, what materials, resources and products we use every day to think of ways to reduce or improve their use.

Finish by getting them to think up and draw an invention that tackles the issue of climate change and submit it to the Mission: Protect our oceans challenge on nserc.littleinventors.org for a chance to see their invention being made real!

Customization: Concentrate on the water cycle, and think of inventions to save water.

Extended activity: You could ask students to research specific subjects such as droughts, heat waves or the impact of climate change on animal habitats or coral reefs.

You could also include a hands on activity on understanding the water cycle

<https://letstalkscience.ca/educational-resources/lessons/what-water-cycle>

Round-up!

After running the activity, gather all the student invention drawings in a gallery around the classroom/ workspace.

Get students to discuss their favourite ideas—what do they like and why? Encourage positive feedback throughout.

- What do they think of their invention?
- What are its strengths and weaknesses?
- How do they think their invention would work in real life?
- Can they imagine their invention being used by other people? What would they say?
- What other ideas or challenges can they think of?
- Why are inventions useful?
- How will they approach problems in the future?



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Give students extra invention sheets to come up with more invention ideas at home. They can also download more invention sheets for free on nserc.littleinventors.org.

After the workshop: Make sure you collect all invention sheets during the workshop. Invention drawings should be scanned (rather than photographed) to be uploaded on nserc.littleinventors.org for a chance to get picked as Little Inventors team favourites, turned into animations or even get made into real objects!

With thanks to Let's Talk Science for contributing their expertise in bringing these resources together.

You can find useful learning strategies and further ocean related resources - <https://letstalkscience.ca/educational-resources/learning-strategies>.

<https://letstalkscience.ca/resources/search> (type "ocean" in the search box)

