Australia's National Science Agency

National Science Week Challenge

Challenge yourself to explore your own vital connections to the ocean.

Wherever we live, we all have important connections to the ocean. The ocean provides much of the oxygen we breathe, powers the weather and climate, and provides some of the food we eat. Our individual choices, from how we harness energy to how we dispose of waste, all play a role in the health of the ocean. The sustainable future of the ocean depends on all of us. We need innovative solutions to meet the global demand for food and energy, while protecting marine life and ecosystems.

Watch the video of Dr Beth Fulton to discover how we are all connected to the oceans and how researchers like Beth are working to understand our oceans, coasts, climate and atmosphere.

Take the plunge

Now you've heard from Beth, take up the challenge to find out what connects you to the ocean, wherever you are.

Use the ideas and links below to inspire you or come up with your own deep dive – your idea or project can be as simple or complex as you like, everyone's connections to the ocean are different.

Share what you've learnt on social media and check out other ideas and projects using **#STEMChallenge**.

Stay tuned throughout National Science Week for a showcase of some of your inspiring work.

Thought starters

Use these prompts to develop your project, or come up with your own project idea:

OBSERVE

What do you notice around you? Can you form an idea about how something near you might have ties to the ocean?

Your observations may include using your senses (sight, sound, touch, smell or taste), taking photographs or drawing pictures. Here are some thought starters:

- If you live near a body of water, take a picture at different times of day and see if you can notice any changes. What might be causing these changes?
- Draw a picture of some of the plants or animals you find living in or near some water. What features might help them live in this kind of habitat?
- Look in your pantry or fridge and see how many foods contain something derived from the ocean.

COLLECT

What data can you collect to explore your idea or question about your connection to the ocean?

Look around your house, garden, neighbourhood or school for something that inspires your curiosity and ask a question that you could answer by gathering information. Here are some thought starters:

- Conduct a biodiversity audit of a water system near you. It could be a creek, river, dam, lake, billabong, beach, etc.
- Do a plastic waste or energy audit around your home or school.
- Explore differences in buoyancy of objects in fresh water compared to salty water.

EXPLORE

How can you explore your ocean connections further?

Look beyond what you have found near your home to expand upon your ideas or explore a deeper connection. Here are some thought starters:

- Explore the environmental impact of your food. How far has it travelled or how is it sourced?
- Track a river system and investigate the journey the water makes from land to sea.
- Investigate the energy that powers your home. How are scientists and engineers harnessing the power of the oceans to produce electricity?

EXTEND

What can you investigate, design, create or change based your ties with the ocean?

Come up with your own scientific inquiry, design project, or behaviour change. Here are some thought starters:

- Scientific inquiry – Think of something you'd like to know more about and form a question that you can answer through your own investigation.
- A design project – Identify a problem you'd like to solve, then design and/or build a prototype to address the problem, e.g. a water filter to trap pollutants, or energy capture for transport using sail/wind technology.
- Behaviour change – Design a strategy design a strategy for changing a behaviour or habit and test how well it works, e.g. reduce the amount of single use plastic in your home by testing alternatives.

Resources

Use the resources below to help launch your own project. You can use the links below or check out the videos, links and activities on the Challenge website at **csiro.au/scienceweekchallenge**

DISCOVER

Dive into more detail about ocean currents **csiro.au/en/Research/Environment/Oceans-and-coasts/Australasian-ocean-currents**, collaborative research that uses novel ways of measuring the oceans **imos.org.au/facilities/** and CSIRO's work on the Great Barrier Reef from inland to outer reef **csiro.au/en/Showcase/Great-Barrier-Reef**

See which rivers near you deliver plastic into the ocean with The Ocean Cleanup's interactive map **theoceancleanup.com/sources**

WATCH

Find out more about the impacts of plastic on marine life with the short film *Plastic Ocean* **youtube.com/watch?v=ju_2NuK5O-E**, and simple things you can do to help **youtube.com/watch?v=B5ijPk5_8pM**

See what wave and tidal energy might be coming to an ocean near you **https://arena.gov.au/knowledge-bank/ocean-energy-video-playlist**

Check out how your seafood can be tracked from boat to plate **https://research.csiro.au/mvt/home/supply-chain-management**

BE INSPIRED

Get to know some of CSIRO's seafaring superstars **blog.csiro.au/seafaring-superstars-six-women-shining-on-our-national-science-ship**

Learn about the ocean-inspired research of some of the 2020 BHP Science and Engineering Award student winners:

Phoebe
vimeo.com/386863273

Tom, Mitchell and Mason
vimeo.com/386863438

Willow
vimeo.com/386871897

GET INVOLVED

Contribute to scientific research via the Atlas of Living Australia **ala.org.au**, joining the take 3 for the sea **take3.org** campaign or by logging the litter near your home **litterati.org**

Join a citizen science event online **biocollect.ala.org.au/acsa** or in your local area **oceanwatch.org.au/community/help-it/getinvolved-in-citizen-science**

EXPLORE

Take a look at the global effort to protect the health of our oceans.

In 2021, the UN will kick off the Decade for Sustainable Ocean Science **oceandecade.org** and the UN Sustainable Development Goals include a focus on 'life below the water' **sustainabledevelopment.un.org/sdg14**

PARTICIPATE

Join the online National Science Week (August 15 – 23) events for your state or territory **scienceweek.net.au**

Then check out the Deep Blue schools' resource book **scienceweek.net.au/wp-content/uploads/2020/03/2020ASTA-DeepBlue_ResourceBook_FINAL.pdf**

EXPAND

Talk to your teacher about getting recognised for your own inquiry or design project through CSIRO's programs including the CREST non-competitive awards program **csiro.au/en/Education/Programs/CREST/About-CREST**

ANALYSE

Analyse data to identify patterns and trends, draw conclusions, or ask questions using CSIRO's Educational datasets **csiro.au/en/Education/Programs/Datasets/Chemical/Logans-Dam-Water-Quality**

csiro.au/en/Education/Programs/Datasets/Chemical/GBR-Carbon-Study

Or Bureau of Meteorology's datasets **bom.gov.au/climate/data-services/education.shtml**

SEE FOR YOURSELF

Come aboard the RV Investigator **mnf.csiro.au/Investigator/rv_investigator.html?html5=prefer**

Or take a look at a live underwater reef camera **natureaustralia.org.au/what-we-do/our-priorities/oceans/ocean-stories/reef-cam-underwater/**

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