

Argo Floats!

Grades 3 - 6
Activity



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Main Objective

Learners dive into ocean monitoring with the international Argo project. Discover how scientists observe water properties like temperature to understand and monitor climate change. Explore scientific data collected by this program to become familiar with important oceanic measurements.

Learning Outcomes

(Suggested level grades 3 - 6)

- Explain the importance of ocean monitoring
- Explain what the Argo system is, as well as its role in ocean monitoring
- Interpret ocean data gathered by Argo floats

Length of Activity: 3-4 hours

We recommend planning for each step to take at least one hour-long class.

Step 1+2: Intro to Ocean Monitoring and Argo (1-2 hours)

Step 3: Data Collection Practice (1 hour)

Step 4: Argo Float Design (1 hour)

Materials Required

Internet enabled device(s)

Attached Worksheet as a Google Doc (or printed handout)



Waves of Change

Created by

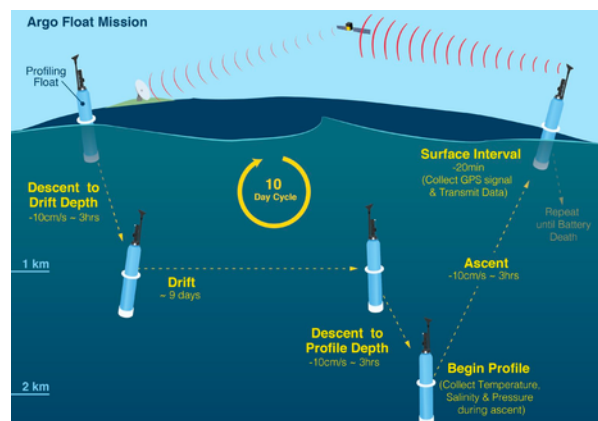
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Background Information

Ocean policy should be developed with accurate and detailed scientific evidence. How can scientists measure changes in the ocean over a long period of time? How can we track ocean conditions in detail with the international community?

In answer to these questions, the Argo International Program was started in 2000 by an international team of scientists to measure ocean water properties around the globe. This program has increased global marine knowledge with the help of over 30 countries that have now contributed to this program!



The Argo International Program is collecting information around the world! Robotic instruments called “floats” are launched into the ocean to help record information. These floats sink down into the ocean and collect data, before floating back to the surface approximately every 10 days to send the information they collect up to satellites. From the satellite, this data is first sent to regional data processing centres.

Once the data goes through strict quality checks, it is then shared with two global data centres that offer the information to the world- for free! All of this data can be used by scientists, governments, and the public to get a better understanding of our oceans, informing ocean policy and international ocean governance. The original Argo floats collected data about temperature - now, many groups are finding ways to add sensors to Argo floats! These new sensors help collect more detailed information!

Are you a fan of Greek mythology?

The name “Argo” came from the myth of Jason and the golden fleece! The array of floats are nicknamed after Jason’s ship, the Argo. And the satellites the floats send info to? They’re called the Jason earth observing satellites! To learn more about the Jason satellites, visit NASA’s page:

<https://sealevel.jpl.nasa.gov/missions/jason-1/summary/>

Activity

Step 1: Ocean Monitoring Video

Watch this video to learn about what ocean monitoring is, and why it is important:



Consider sharing the guided note worksheet (attachment) with students. They can record information in a way that works for them, during or after watching the video.

Step 2: Introduce the Argo International Program

Explore the Argo Story Map as a class, to learn how the international community has collaborated for over two decades to collect and share information about the ocean:



You can read through this resource aloud to the class, or have students rotate reading for each section. While exploring the story map, students can add to the guided note worksheet to record and reflect on their understanding.

Step 3: Practice Collecting and Reading Data

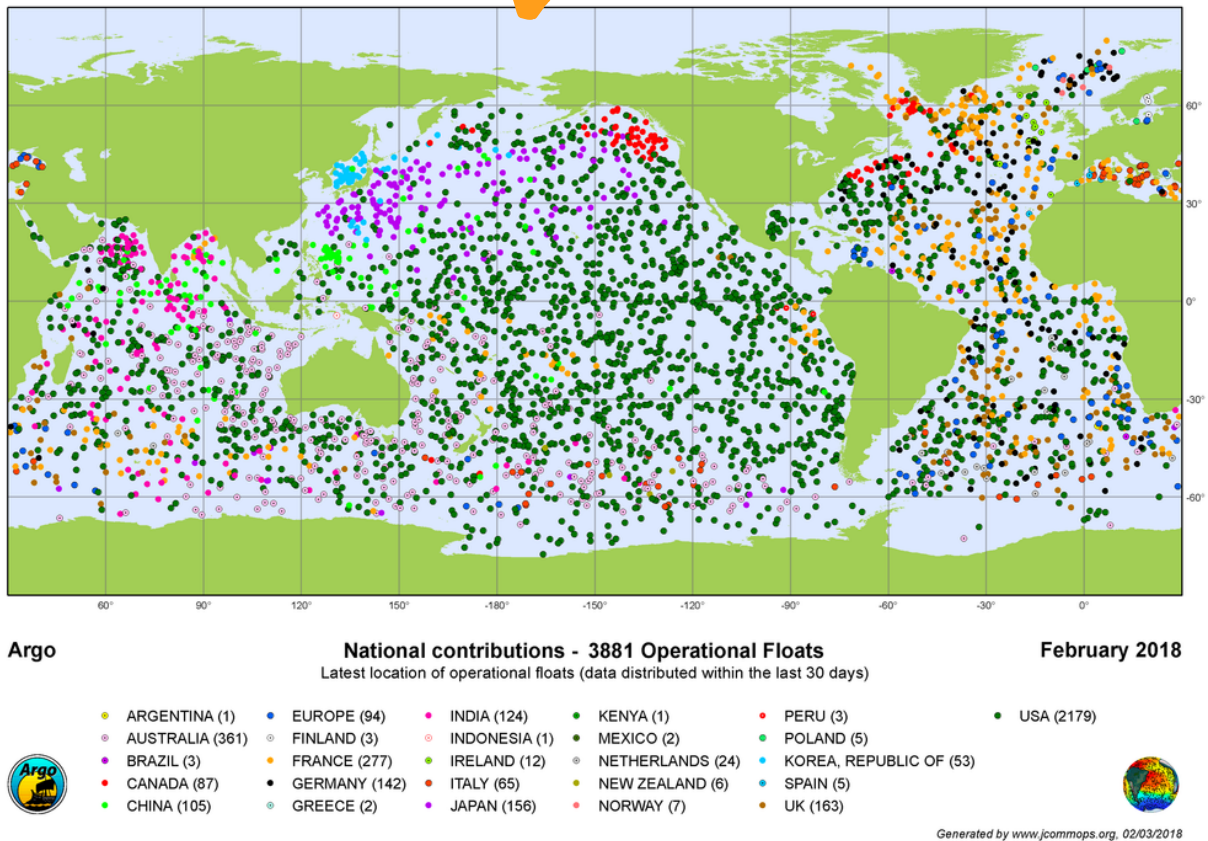
Time to explore some data together, as a class! Using the maps linked below, ideally on a SMART board or projector, choose (or have a student choose) which floats (dots) to record data on. Use the accompanying worksheet to encourage students to practice recording the data gathered from Argo floats.



Table 1: Using the map, choose a float (dot) near the coast of British Columbia. A window will pop up, with some details. For the selected float, write down the information needed in the table below. *Note: You may need to click on “details page”, or “show profile data” for more information. Then, try this again with a different float on the other data site.*

Table 2: Using one of the data websites, select a float in the Mediterranean Sea. Can you find out what the temperature of the water is at sea level on the most recent observation?
Note: after selecting a float, you may need to select “details page” and then “data”, or “show profile data”.

There are many different filters you can apply, and you may wish to show your learners how to navigate the site to answer basic questions; for instance, check out the different national contributions from 2018! How does this information differ from today?



Step 4: Argo Float Design

Now that the students understand what an Argo float is, what kind of data they collect and their role in monitoring oceans, they will design their own float on the final page of the worksheet. They can be creative by including colour or adding labels to explain their model. Once they are happy with their model, students will answer the final consolidation question on their worksheet.

References

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