



Oceanography

Students discover how sharks float by making their own floating shark models. Students will also have the opportunity to design fins for their shark, with the goal of getting maximum lift.

Materials

- Device with internet connectivity

Safety Considerations

- Age appropriate internet supervision required

Background Information

Remote Operating Vehicles, ROVs, are empty, highly maneuverable underwater robots that can be used to explore ocean depths while being operated by someone at the water surface. They are used for a variety of reasons and by a variety of marine professionals.

According to **Ocean Networks Canada**, the dozens of video cameras that have been set up in diverse regions, from the coast to the abyss to the Arctic, record hundreds of hours of video every week.

- Researchers browsing the database can visit each video clip and get a small thumbnail of recording before fully downloading it. Some researchers are looking for organisms, others are analyzing the water conditions, and others are collecting data and specimens
- Biologists are usually interested in the organisms, whether moving or still, in the video. Analysis of underwater video has shown us that there are many challenges of the existing techniques in computer vision, including **turbidity**, limited and uneven lighting, moving particles in the water and inaccessibility of the environment.
 - **Turbidity** is the quality of the water; whether it is cloudy, opaque, thick with matter, or clear.
 - A lot of locations that the ROV moves is inaccessible to humans, which is why there are many different mechanisms and robotic arms. This is why ROV's are so important for collecting and exploring the ocean floor!

Procedure

With remotely operated underwater cameras and vehicles, SeaTube has collected hundreds of videos of the underwater world, which includes all sorts of underwater plants and animals.

- 1) Using the link: <https://data.oceannetworks.ca/SeaTube>
- 2) On the left side, there is a drop-down menu of the locations, the year, the month, the date, and then the length of the video.
- 3) Using seatube's database, can you find the following?

In the ROV data, what can you find under....

- Zeus II - 2015-June-05-16:31:37
 - What organisms can you see here?
 - What is happening at 12:38?
- Zeus II - 2015-June-05-16:57:47
 - What structures are able to find here?
- Zeus II - 2015-June-05-18:17:02
 - What is happening at the end of the previous videos, including this video?
- Jason 2 - Pilot Camera - 2016 - June - 14
 - 2:51:00
 - 6:45:01
 - What are they doing here? Can you hear what the people are talking about? What do you think they are doing?

What can you find in Vancouver Island > China Creek > 2019?

- November > 27 > 18:00:07
 - What kind of organism is this likely?
 - What about in December > 20 > 19:00:07?
- Where is China Creek? Can you find this on the map?

Vancouver Island > Douglas Channel > Kitamaat Village Underwater > 2016

- June > 05 > 17:00:15
 - What animals can you spot?
- August > 08 > 7:00:21

SeaTube Search



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3) Using seatube's database, can you find the following?

Vancouver Island > Douglas Channel > Kitamaat Village Underwater > 2016

- June > 05 > 17:00:15
 - What animals can you spot?
- August > 08 > 7:00:21
 - What animals can you find?
- December > 10 > 2:00:18
 - What can you find in this murky water?
 - Why do you think the water is like this?
 - What factors may influence this? (Hint: Time of year/weather...?)

What can you find under 'Pacific'?

- British Columbia North Coast > Chatham Sound > Digby Island Underwater > 2017 > November > 13 > 22:00:13
 - What species of fish is this?
- Northeast Pacific Ocean > Barkley Canyon > Barkley Canyon Mid-East > 2019 > June > 07 > 22:00:12
 - What are the green lasers? What do you think they are for?
 - What does the ROV zoom up on? What organisms are there?

How to find coordinates:

- 1) Open google maps
- 2) Drop a pin in the location from the website given (on the right side of the video)
- 3) Copy the coordinates of latitude and longitude

SeaTube Search



Marine Biologist Worksheet

Location	Date	Organisms Observed	Notes	ROV Mission
Where in BC was the information gathered? What are the coordinates?	What date was this video taken?	What organisms can you see?	What do you notice about the video, anything different or interesting?	What was the mission of that ROV placement? Or if it wasn't an ROV, why do you think they were investigating that area?

#SVatHome

Want to share your
project or results with us?

Email or tag us
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Have a question?

Reach us at
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