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Even the Ocean is Online: Digital Representation of the Ocean

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Introduction:

This presentation is about #8, the digital representation of the ocean, of the UNESCO Challenge. More research needs to be done on the ocean to preserve marine life and coastal land. We need the help of large corporations in a collaboration on a digital representation of the ocean. This will help us visualize the oceans' past, current, and possible future. A digital map of the ocean will help with us pollution, help slow down climate change, and help us prepare for environmental disasters. We could create a digital map of the ocean floor by using a multibeam or a side scanner from a ship or a towed transmitter. Underwater cameras and submarines can also explore it. The results of these methods could result in a fully interactive visual presentation of the ocean and with the help of environmental scientists we can create a map of the past, present, and future ocean, marine life, and coastal land. With the results from the map, we can implement changes to pollution, slow down climate changes, and help us prepare for environmental disasters.

Methods:

Multibeam and Side Scanner

A Multibeam and a side scanner are both types of sonar that is used to map the oceans floor. The difference between them is that multibeam sonar creates 3D images of the ocean floor while a side scanner creates a 2D image of the ocean floor whenever it detects something.

Towed Transmitter

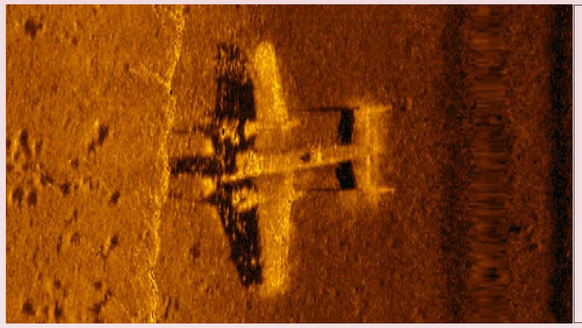
There are multiple different types of transmitters that are towed along the ocean floor or very close to the ocean floor depending on what the research is for.

Underwater Camera

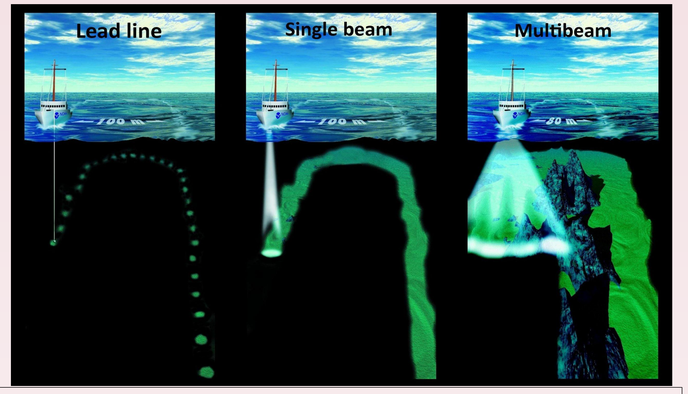
Underwater cameras are mostly used in tangent with other types of equipment that gets sent out to help interrupt what is being found. They are also used when divers are exploring the ocean floor to help map out the insides of any man-made objects in the ocean.

Submarine

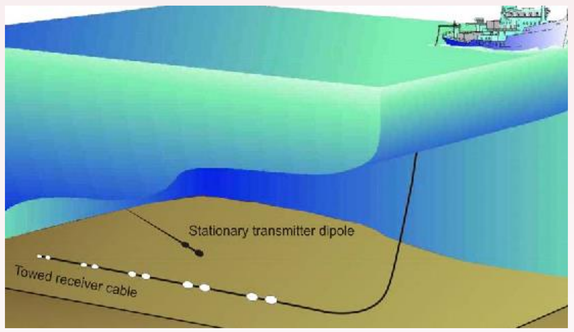
Submarines are very crucial to mapping the ocean floor because they are usually carrying the equipment that is being used to map the ocean floor and are able to bring the equipment to depths farther than what a boat would be able to.



This is a high-resolution side-scan sonar image of a WWII B-25 discovered in 2017 in Papua New Guinea founded by Project recover.



A side scanner is a type of single beam sonar and since it is only one beam transducer it can only replicate and produce a 2D image of return signals that has bounced off objects or the ocean floor. A multibeam sonar system uses multiple transducers, mounted to the ship's hull and pointing at different angles on either side of the ship and uses the return signals to create a 3D bathymetric map of the ocean floor.



This is how a transmitter is towed in the ocean. A stationary transmitter dipole is attached to a receiver cable. The receiver cable is towed while the transmitter picks up signals for what researchers are trying to find.

This is a deep-sea towed transmitter system which is known as DASI. The DASI (Deep-towed Active Source Instrument) is a system used for controlled-source electromagnetic sounding in marine environments.

Ethical Implications:

There is undoubtable and over whelming evidence that that the future economic and ecological prosperity of the planet depends on a healthy ocean. Our ability to measure and monitor the ocean is expanding exponentially, and with a digital representation of the ocean we will be able to turn ocean data into digestible knowledge and action for innovation and sustainability. A digital representation of the ocean will help predict how the ocean will change in the future and can help us as a society identify what need to be changed to have a healthy ocean and a healthy planet to continue to live on.

Conclusion:

In conclusion, a digital map of the ocean would give us data to create a fully digital and interactive visual presentation of the ocean and its floor. With this, and the help of environmental scientists, we can create a map of the past, present, and even the future of the ocean, the marine life that lives there, and the coastal land. Using the map, this would allow us to make major environmental and ecological changes that would help to rid and lessen the overwhelming ocean pollution, slow the progress of climate change, and help us prepare socioeconomically for environmental disasters.

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