



## **TOPIC: EXPLORING OCEAN WATERS BENEATH AN ICE SHELF**

### **PROJECT PERSONNEL:**

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### **GENERAL BACKGROUND INFORMATION ON THE SUBJECT:**

There are two major ice sheets on Earth, one over Greenland and a much larger one over Antarctica. The ice from these sheets is forced by gravity to flow off the land and into the ocean, forming vast floating extensions known as ice shelves. In the cavity beneath the floating ice ocean waters circulate. If the ocean waters in the cavity change from cold to warm (for whatever the reason), the ice shelf would rapidly melt away. In this exhibit we provide an idealized, clear-plastic scale-model of an ice shelf and its ocean cavity. Methods to explore the cavity are demonstrated.

### **TERMS YOU SHOULD KNOW (VOCABULARY):**

*Ice Sheet:* An ice sheet is a mass of glacier ice that covers surrounding terrain and is greater than 50,000 km<sup>2</sup> (19,305 mile<sup>2</sup>).

*Ice Shelf:* An ice shelf is a thick, floating platform of ice that forms where a glacier or ice sheet flows down to a coastline and onto the ocean surface.

*Sub Ice Shelf Cavity:* The space below the ice shelf base and above the ocean floor, where ocean waters circulate.

*Grounding Line:* The location where the ice sheet begins to float.

### **WHY ARE WE STUDYING THIS IN THE POLAR REGIONS?**

Ice shelves are thought to be the “bottlenecks” that prevent the ice sheets from sliding off the land and into the ocean, and thus raising global sea level. Of special interest is West Antarctica where the ice shelves are holding back land ice which rests on land *already below* sea level, possibly making this region particularly sensitive to climate change.

### **HOW DOES THIS AFFECT US HERE IN THE UNITED STATES?**

Increased melting of ice shelves could lead to an accelerated increase of land ice going into the ocean and thus the raising of global sea level. If the ice of West Antarctica were to be melted into the ocean, then global sea would be raised by 5 m (~ 15 feet). This would be a major problem for cities like New Orleans, Miami, and New York.

### **TO LEARN MORE ABOUT THIS TOPIC:**

Go to: [http://efdl.cims.nyu.edu/project\\_oisi/realistic/jakobshavn/](http://efdl.cims.nyu.edu/project_oisi/realistic/jakobshavn/)

### **ACTIVITY YOU CAN TRY:**

Pilot a radio-controlled miniature submersible into a clear-plastic, scale-model ice-shelf cavity, and of course, pilot it back out!