**CONCEPT: Ice Shelves Apply 'Force'**

*IcePod* is a packet of instruments collecting highly detailed and accurate images of the polar ice sheets. ‘Bergy Bits’ are simple activities introducing science concepts through student experimentation, tying these concepts to real glacier physics. Named for small pieces of ice found in both the Arctic and Antarctic, ‘bergy bits’ in nature are small pieces of floating ice that break from an iceberg, ice shelf or glacier.

**What is Force?** Force is the push or pull on one object as a result of its interaction with another object. Every interaction between two objects results in a *force* on each object.

1) Position the glacier goo and place ruler beneath it on the ramp and hold for 2 minutes.

2) Observe the glacier goo once the ruler representing the ice shelf is removed.

3) Real world photo of the Pine Island Ice Shelf in West Antarctica. The Pine Island Glacier is being slowed by the *force* of the ice shelf in front of it.

**Ice Shelf and Ice Flow Activity:**

Place the glacier goo at the ‘start line’ of the grid with the ruler just below acting as an ice shelf applying *force*. Hold in place for 2 minutes, remove ruler and observe. In nature if an ice shelf shrinks or collapses through melting, the *force* against it is lost and the glacier speeds up.

**Describe your observations:**

1) What happened when the ruler was held below the glacier goo?

2) What happened when the ruler was removed?

3) When we think of *force* as a *push* it sounds like a shove, but it can be just steady pressure of one object against another. Where is the *force* in this activity?

4) Image (3) is an ice shelf in West Antarctica. If you look behind you can pick out the glacier behind the floating ice shelf. Predict what the effect will be on the glacier if this ice shelf shrinks or collapses?

*IcePod*: [www.ldeo.columbia.edu/icepod](http://www.ldeo.columbia.edu/icepod)  
*More Activities*: [www.ldeo.columbia.edu/polareducation](http://www.ldeo.columbia.edu/polareducation)