

## Protocol 10: Collecting samples for and determining the snow water equivalent (SWE)

### Materials:

- Field book or field sheets and pencil or waterproof pen
- Snowboard (A 24"x16" piece of ½ or ¾" plywood painted white)
- Clear PVC pipe (available at aquarium supply stores and clear Schedule 40 PVC is available at some hardware stores)
- Large spatula, flyswatter or something else that is thin, flat, sturdy and can cover the end of the cylinder

### Method (Modified from the GLOBE precipitation protocol):

*Note: Only collect snow from atop the snowboard if you are interested in the SWE of freshly fallen snow, otherwise collect sample from the whole snowpack.*

1. After you have measured the depth of snow (in centimeters), take the clear cylinder and hold it straight up and down over the snowpack, or over the snowboard (choose a place where the snow has not been disturbed). Push the container down until it touches the ground or snowboard.
2. Slide the spatula/flyswatter under the container just above the ground and pull the container out of the snow. Be sure not to lose any snow!
3. Place the snow sample in a zipper bag and seal.
4. Label bag with: "snow water equivalent sample".
5. Store bag until you return to the classroom.
6. Once back in your classroom allow the snow to melt.
7. Measure the volume of water and record.
8. Convert to mm of water. Here's how-

#### **You need two numbers:**

The inner diameter of your cylinder (cm) and,  
The volume (mL) of meltwater

#### **And some math:**

You know that-

ID (inner diameter of the cylinder)/2=radius

Area=  $\pi r^2$

[Volume of meltwater (mL)/Area (cm<sup>2</sup>)] \* 10mm/cm= **Depth of rainwater (mm)**

Remember that 1 mL= 1 cm<sup>3</sup>, so meltwater in cm<sup>3</sup> in the numerator over area in cm<sup>2</sup> in the denominator gives a result in cm. This is converted to mm by multiplying the result by 10 (because there are 10 mm per cm).

And you can now state that your snow sample (of \_\_\_ cm in depth) has a water equivalent of \_\_\_ mm.