

Girls On Ice

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Girls on Ice is a wilderness science education program for high school girls. The program offers opportunities for students to explore and learn about mountain glaciers and the alpine landscape through scientific field studies with geologists and glaciologists. Our purpose is to give students a feeling for the natural processes that create the alpine world and provide an environment that fosters the critical thinking necessary to all scientific inquiry. The program is offered free to girls age 15 through 18 through the North Cascades Institute, a non-profit organization offering outdoor education programs for the general public, and is available through the generosity of the North Cascades Institute, the Katherine Olson Foundation, Wings WorldQuest, and the National Science Foundation.

We encourage the girls to think like scientists by making observations and inferences, and to develop their own experiments to test ideas about glacier dynamics and geomorphology. In addition to scientific exploration, we engage the students in discussions about the philosophy of science and its role in our everyday lives. Our program exemplifies the success of hands-on, inquiry-based teaching in small groups for science education in the outdoors. The wilderness setting and single gender field team inspires young women's interest in science and provides a challenging environment that increases their physical and intellectual self confidence. Our aim is to increase interest in science and research, particularly in the earth sciences, by girls in the latter years of high school, a time when the attrition rate of female participation in science is particularly high.

The activities are designed to instill an understanding of the process of scientific inquiry. All the activities begin with assumption-free observations of the natural world. The students are then encouraged to formulate questions and hypotheses, recognize assumptions and consider the implications of the conclusions. Once they have formulated hypotheses, we engage the students in developing experiments to test these hypotheses. Examples of experiments we help

them develop include setting up ablation grids to correlate snow ablation rates and amount of debris cover, developing grids to map crevasse size and growth, and testing a variety of environmental factors to determine which factors are of importance in the development of suncups.

Figure 2. In 2006, UNAVCO loaned GPS equipment to Girls on Ice for measuring glacial position for mass balance calculations. Dr. Erin Pettit (right) and program participant (left) are holding the survey controller and Trimble 5700 receiver.



Figure 1. Students from Girls on Ice working on glacier.

