

The Snow Research Station at Black Rock Forest:
Science plan and long-term budgetary needs

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Abstract:

The Snow Research Station at Black Rock Forest (BRF) is located on a 3785 acre preserve near Cornwall, NY. The forest is managed by the Black Rock Forest Consortium, which includes private and public institutions dedicated to research and education. Measurements of snowfall and other meteorological quantities have been taken at BRF since 1961. Observations show that the Northeastern U.S. climate is changing rapidly while population pressure on open space and water resources is continuing to increase. In the autumn of 2005, the Snow Research Station at BRF was built by Cherry and collaborators to study the role of snow in the regional water supply, as well as basic relationships between climate, snow hydrology, and the environment.

Ongoing Research Projects:

- The changing role of snow in the New York City regional water supply
- Evolution and properties of the regional snowpack
- The cycle of mercury emissions from snow and soil
- The role of snow in the evolution of ground temperatures
- Estimates of wind-blown snow in the Northeastern U.S.

Budgetary Goals:

Our long-term goals include partial support for the staff at BRF, who help maintain our equipment, and enough sensors to operate three separate towers of snow sensors. This staff support is estimated at \$6000 per year. Two of the sensor towers will be located at BRF and the other at Mohonk Preserve, approximately one hour north in Ulster County. Like BRF, the Mohonk Preserve has a long-term record of snow properties and meteorological conditions. Three separate towers will provide a first-order estimate of regional variability in snow hydrology and climate. Currently one tower is operational and costs approximately \$6000 per year to maintain. To this station we want to add an automated snow water equivalent (SWE) sensor for \$5000. The other two towers can be constructed for \$20,000 each, including automated sensors for snow depth, SWE, temperature and conductivity profiles, high accuracy radiation measurements, and cellular phone-based data telemetry. A three year budget is as follows. Top priorities include BRF staff support, one SWE sensor, and ongoing maintenance of Tower 1.

	Year 1	Year 2	Year 3
BRF staff and facility support	\$6,000	\$6,000	\$6,000
Tower 1	\$11,000	\$6,000	\$6,000
Tower 2	\$20,000	\$6,000	\$6,000
Tower 3	\$20,000	\$6,000	\$6,000
total	\$57,000	\$24,000	\$24,000