

# SPECTRAL EVOLUTION

## Snow & Ice Measurements with a PSR+ Spectroradiometer

Measurement and analysis of snow and ice using NIR spectroscopy can provide important information for environmental, hydrological and climatic research. Using an NIR field spectroradiometer like the high resolution/high sensitivity PSR+ from Spectral evolution, researchers can:

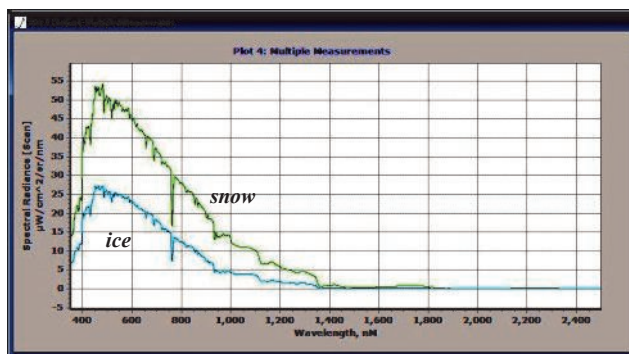
- ◆ Accurately measure albedo (the ratio of incoming to reflected solar radiation)
- ◆ Estimate snow properties including grain size, aging, moisture content, diurnal variation and depth
- ◆ Identify different types of snow, such as fine dendrite snow, medium granular snow, sun crust snow and ice
- ◆ Measure contaminants and their effect
- ◆ Improve snow cover mapping
- ◆ Estimate timing and magnitude of snow melt to predict future water resources
- ◆ Provide glacier characteristics and chart glacial change
- ◆ Differentiate between snow and ice surfaces
- ◆ Measure the effect of different vegetation/land/canopy cover on snow

The scans below were taken in the mountains of Colorado under a cloudless clear blue sky, after a late spring snowstorm with heavy wet snow with white and dark areas of ice. The scans were taken with a PSR+ with a 4° lens covering the 350-2500nm range. A reference scan was taken using a reference panel mounted on a tripod in the field under the same conditions as the target scans. A GETAC handheld microcomputer was used to collect and store the target scan and take digital pictures of the location.

The PSR+ takes fast, accurate and repeatable scans. This unit is built for field work with all photodiode array design and no moving optical parts. The PSR+ features auto-shutter, auto-exposure, and auto-dark correction for easy one-touch operation.

DARWin SP Data Acquisition software is included with all Spectral Evolution spectrometers and spectroradiometers and automatically saves all scans and associated data as ASCII files. Below is a multiple plot measurement showing snow and ice scans.

**For more information contact Spectral Evolution today!**



*The green scan is wet, undisturbed snow, the blue scan is dark ice.*



*Clear blue sky and a late season snowstorm on Caribou Road in Nederland, Colorado where sample snow and ice scans were collected.*



*PSR+ with a 4 degree lens is designed for field use including in situ scans of snow and ice.*

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