

SPECTRAL EVOLUTION

Snow & Ice Measurements with a Field 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, the RS-5400 or the RS-3500, 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



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

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.

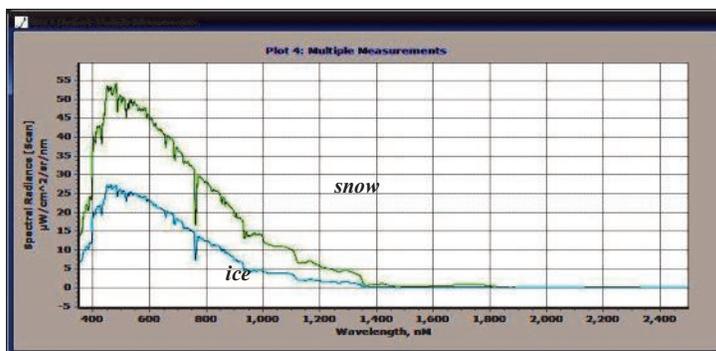


PSR+ , RS-5400 and RS-3500 are designed for field use including in situ scans of snow and ice.

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. The RS-5400 field spectroradiometer provides very high resolution for field measurements. The RS-3500 is a budget-friendly field instrument for snow and ice research.

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. The multiple plot measurement showing snow and ice scans was taken with the PSR+.

For more information contact Spectral Evolution today!



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

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