

SPECTRAL EVOLUTION

Measuring Soil Salinity

Regular measurement of soil salinity is important for efficient soil and water management especially in semi-arid or arid environments. Traditional methods use lab-based electrical conductivity (EC) testing of samples. EC tests can be expensive and time consuming. In addition, to get an accurate picture for a large area requires a large number of samples, as salinity can change rapidly from spot to spot. Hyperspectral and multi-spectral remote sensing can be used along with vegetation indices, however the usual issues with these images such as resolution, vegetation cover and atmospheric effects can leave a researcher without a clear and complete understanding.

Using a field spectroradiometer like the PSR+ to take measurements *in situ*, can provide a more complete and accurate approach. The PSRE+ can also be used in conjunction with satellite or flyover imagery to offer a comprehensive understanding of soil salinity across an area. Spectra collected by a PSR+ spectroradiometer are saved as ASCII files for analysis using third party software, for example, R or a chemometrics package. In addition, the PSR+ is available with Spectral Evolution's EZ-ID sample identification software and Custom Library Builder module so that researchers can create their own soil spectra library to match against unknown samples.

The PSR+ spectroradiometer delivers fast, accurate, and flexible ways to measure salinity and moisture in soil, with:

- ◆ Fast collection of data in minutes with no sample prep or sample destruction
- ◆ Precision, accuracy, and a wealth of information—especially if the spectra are combined with statistical analysis software or chemometrics analysis
- ◆ Affordable measurement technology
- ◆ *In situ* measurement

The PSR+ has a compact design that makes it sleeker for easier handling and use in the field with improved cooling and long-term performance. The case is small and ergonomically designed. Textured grips and handles provide for comfortable single user operation. The optical path has been re-configured for improved resolution, signal-to-noise ratio (SNR), and reliable operation. System cooling is enhanced with a one-piece anodized aluminum chassis with integral heat dispersion channels. Our proprietary Sotex™ filter technology delivers improved order sorting for enhanced stray light performance and smoother transition between detectors. Spectral resolution of our PSR+ is enhanced for high resolution scans for accurate soil spectra:

- ≤3.0nm @ 700nm (FWHM)
- ≤8.0nm @ 1500nm (FWHM)
- ≤6.0nm @ 2100nm (FWHM)

The PSR+ also offers improved electronic control circuitry for best-in-class NER (with 4° lens):

- ≤0.5 x 10⁻⁹ W/cm²/nm/sr@ 400nm
- ≤0.8 x 10⁻⁹ W/cm²/nm/sr@ 1500nm
- ≤1.0 x 10⁻⁹ W/cm²/nm/sr@ 2100nm



The PSR+ can be used to measure the salinity of soil in semi-arid and arid environments.



PSR+ provides the highest resolution available in a field portable spectroradiometer.

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