SPECTRAL EVOLUTION

Identifying Algal Blooms

Algal blooms can have a detrimental effect on fishing, water supplies, tourism and other water related activities. Blooms are occurring more frequently due to agricultural and urban runoff as well as climate change. These factors introduce more nutrients into the water which leads to accelerated eutrophication. Monitoring and identifying harmful algal blooms can be accomplished using NIR spectroscopy for monitoring Case I (open ocean waters with a high concentration of phytoplankton in comparison with other particles) and Case II (lakes, coastal waters, streams, rivers with high turbid water with an abundant occurrence of dissolved organic matter and suspended solids, etc.) bodies of water.

Key to detecting algal blooms is the ability to identify chlorophyll a and phycocyanin absorption features in NIR reflectance spectra. Chlorophyll a has an absorption feature at 670nm and a peak at 724nm. Phycocyanin has an absorption feature at 620nm. Data captured by an NIR field spectroradiometer can be used with a variety of algorithms and chemometrics methods to identify and measure algal bloom concentrations. The data can also be used to verify satellite measurements made with MODIS, MERIS, Sea-WIFS or similar satellites.

The SR-6500 offers the highest resolution available in a field spectroradiometer.

Spectral Evolution provides a range of spectroradiometers that can be used in algal bloom studies from the PSR-1100^f covering a 320-1100nm spectral range to full range (350-2500nm) spectroradiometers such as the SR-6500, RS-8800, RS-5400, PSR+ and RS-3500. The SR-6500 delivers the highest resolution available in a field instrument:

- 1.5nm @ 700nm
- 3.0nm @ 1500nm
- 3.8nm @ 2100nm

These spectroradiometers are rugged and reliable instruments with no moving optical components for *in situ* measurements. They offer high resolution/high sensitivity for accurate and precise spectra.
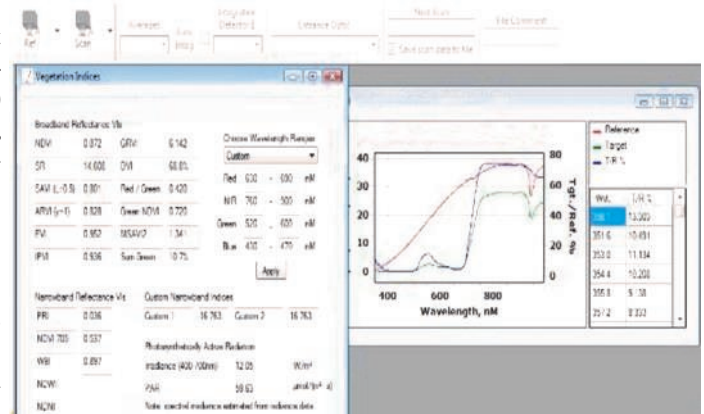
All Spectral Evolution instruments include DARWin SP Data Acquisition software that captures all spectra and metadata and stores it in an ASCII file for use with other analysis software programs. DARWin software also includes pull-down menu access to 19 vegetation indices including NDVI.

DARWin software includes pull-down menu access to 19 vegetation indices.

In addition, optional EZ-ID software allows you to capture spectra from known samples and build your own library to match target samples against.

All instruments are available with a range of accessories including multiple lens sizes, pistol grip, backpack, tripod and other accessories. Contact us today for additional information or to receive a quote.