

MICROSAS



MICRO SURFACE ACQUISITION SYSTEM (MicroSAS)

The MicroSAS remote sensing system is designed for above-water measurements of ocean colour using Satlantic's new digital optical sensors. The system consists of two radiance sensors and one irradiance sensor. One radiance sensor is pointed to the ocean to measure the sea surface signal; the other is pointed to the sky to provide information necessary for surface glint correction of the data collected by the first sensor. The irradiance sensor is used to monitor the downwelling light field and is required for computing remote sensing reflectance.

MicroSAS can be mounted on a variety of vessels to provide continuous monitoring of ocean colour along the ship's track, on towers or other platforms to provide time series observations, or the system can be used for airborne remote sensing of ocean colour. It is small, light and compact, which makes it very easy to deploy.



The spectral water-leaving radiance and remote sensing reflectance data obtained from MicroSAS are used to derive the concentrations of sea-water constituents, such as dissolved organic matter, suspended sediments, and chlorophyll concentration in the surface layer. Since chlorophyll is an indicator of algal biomass, this information is utilized to estimate phytoplankton abundance and marine productivity, to detect phytoplankton blooms, and to monitor organic pollution through its influence on blooms. The MicroSAS also provides valuable surface truth for calibration and validation of satellite ocean colour products. If surface water samples are taken simultaneously with MicroSAS measurements, the combined data-set can be utilized for bio-optical modeling.



MicroSAS Specifications

SPATIAL CHARACTERISTICS

Irradiance field of view:	cosine response (spectrally corrected)
Radiance field of view:	3.3°
Collector area:	86.0 mm ²
Detectors:	custom 17 mm ² silicon photodiodes

SPECTRAL CHARACTERISTICS

Wavelength range:	300-865 nm
Number of channels:	7 water radiance (Lt) 7 irradiance (Es) 7 sky radiance (Li)
Spectral bandwidth:	10 or 20 nm
Filter type:	IAD (ion assisted deposition) Custom low fluorescence

OPTICAL CHARACTERISTICS

Out of band rejection:	10 ⁻⁶
Cosine response:	3% from 0-60°; 10% from 60-85°
Typical saturation:	20 $\mu\text{Wcm}^{-2}\text{nm}^{-1}\text{sr}^{-1}$ (Lt) 300 $\mu\text{Wcm}^{-2}\text{nm}^{-1}$ (Es) 60 $\mu\text{Wcm}^{-2}\text{nm}^{-1}\text{sr}^{-1}$ (Li)
Typical NER:	0.2 x 10 ⁻³ $\mu\text{Wcm}^{-2}\text{nm}^{-1}\text{sr}^{-1}$ (Lt)
Typical NEI:	2.5 x 10 ⁻³ $\mu\text{Wcm}^{-2}\text{nm}^{-1}$ (Es)
Typical NER:	0.5 x 10 ⁻³ $\mu\text{Wcm}^{-2}\text{nm}^{-1}\text{sr}^{-1}$ (Li)

SYSTEM ELECTRONICS

System data rate:	6 Hz
Data acquisition:	24 bit DSP A/D system
Power:	9-18 VDC at 300mA
Telemetry:	RS-422 115 Kbps
Format:	Custom binary
Optional:	Integrated GPS Garmin Integrated IR sensor



The MicroSAS can be mounted on ships of opportunity, small planes and helicopters.



MicroSAS applications also include fixed ocean platforms.