Tuesday, October 9
Poster Session 2
10:30–12:30

Poster 90

EVALUATION OF OPTICAL BACKSCATTER PROXIES FOR PARTICLE CONCENTRATION AND SIZE

Marine particles affect the cycling of carbon and nutrients, they transport contaminants, and they influence the attenuation of light in the water column. The magnitude of the effects of particles on these processes are determined by particle concentration and size, which can change rapidly due to particle production and consumption, flocculation and deflocculation, and deposition and erosion. Optical backscatter has been used successfully for decades to measure changes in particle concentration, despite theoretically based concern over the effect of variable particle size on the correlation between the backscattering coefficient and suspended particulate mass (SPM) concentration. More recently, the slope exponent of the backscatter spectrum has been shown to be a useful proxy for particle size. These results suggest that the relatively simply measurement of backscatter at two wavelengths can provide information on particle concentration and size, but they also raise a paradox: the backscattering coefficient is relatively insensitive to particle size, yet the spectrum of the backscattering coefficient is correlated with size. We use observations of particle size, SPM and multi-wavelength backscattering coefficients from several different environments to investigate the correlation between particle size and 1) the backscatter spectral slope and 2) the mass specific backscattering coefficient. Results show that the spectral slope is correlated with size and that the mass-specific backscattering coefficient is not. The results also show that in some environments, the backscattering coefficient and its spectral slope are better proxies for particle concentration and size than the particulate attenuation coefficient and its spectral slope.

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