LIGHT ATTENUATION IN A NEARSHORE CORAL REEF ECOSYSTEM

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ABSTRACT

Coral reef remote sensing is increasing worldwide. The coefficient of vertical light attenuation describes the underwater light field, although the variability of attenuation in coral reef ecosystems is unknown. Understanding the variability helps to describe the system, improve algorithms and establish under what conditions coral reef remote sensing is appropriate and effective. This research demonstrates that attenuation can vary by an order of magnitude in a near-shore coral reef environment, increasing with proximity to land and to the bottom. The variability suggests that the use of a single K_d value in near-shore coral reef ecosystems will generate errors in bottom classification. Development of algorithms that account for local variability in light attenuation is necessary. Light attenuation in the water column plays a notable role in determining to what level of detail and to what depth a remote sensor is able to detect and decipher between various bottom reflectance spectra.