

# QUANTITATIVE ESTIMATION OF VARIABILITY IN THE UNDERWATER RADIANCE DISTRIBUTION (RADCAM)

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## ABSTRACT

The complexity of the oceanic optical environment has suggested that a high degree of geometrical resolution will be required to diagnose components of optical variability, and to predict the performance of future sensor systems. For example, a significant source of uncertainty in the prediction of the apparent optical properties of the ocean is the geometrical distribution of the radiance field; this uncertainty directly affects attempts to use measurements of reflectance and attenuation for the diagnosis of ocean constituents. Uncertainties in the time and depth dependent variations in the radiance distribution, and their sources of variation, propagate as well to the prediction of the performance of new imaging systems such as the “virtual periscope”. Here, we propose the development and deployment of novel instrumentation for the quantitative and radiometrically calibrated measurement of the time and depth dependent full radiance distribution fields in the upper ocean, and for subsequent scientific analyses of their sources of variability in a variety of water types.