

OCEAN OPTICS XXIV

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<https://oceanopticsconference.org>

Wednesday, October 10

Poster Session 3

16:00–18:00

Poster 163

THE COMPENSATION DEPTH IN THE OPEN OCEAN: A VIEW FROM THE WOCE HYDROGRAPHIC PROGRAM

The depth of the ocean's productive zone is unknown, except by mutual agreement. To address this unknown, I consider optical data from four, north-south, transects from the WOCE Hydrographic Program, two in the Atlantic (A15, A20), and two in the Pacific (P16, P19). The data were collected using a profiling package consisting of a MER2040 (including PAR), a beam transmissometer, and a fluorometer. An attached sampler and bucket sampling allowed two water samples to be collected with each cast. The overall distributions reflect the basin-scale oceanography. For example, in the Pacific, the deep chlorophyll maximum (DCM) (estimated from *in vivo* fluorescence) rises to shallower depths across the equator, and deepens in the north and south subtropical gyres. The base of the DCM ranges from 120-170 m. If it is assumed that the productive zone includes all autotrophic biomass (see Marra et al., 2014, *Deep-Sea Research*, 83:45-50), then the euphotic zone in these data extends much deeper than how it is usually specified, that is, the depth of 1% of surface PAR. The bottom of the deep chlorophyll maximum coincides with the depth of 1% of $E_d(488)$.

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