

OCEAN OPTICS XXIV

Valamar Lacroma Dubrovnik Hotel | Dubrovnik, Croatia | October 7–12, 2018

<https://oceanopticsconference.org>

Wednesday, October 10

Poster Session 3

16:00–18:00

Poster 83

DECADAL COMPARISONS OF PARTICULATE MATTER IN REPEAT TRANSECTS IN THE ATLANTIC, PACIFIC AND SOUTHERN INDIAN OCEANS

Basin-wide sections of beam c_p (proxy for particulate matter concentration - PM) collected during numerous oceanographic programs over the last four decades (WOCE, SAVE, JGOFS, CLIVAR, GO-SHIP, etc.) record seasonally variable concentrations in euphotic surface waters, very low concentrations through most of the water column, and very low to very high concentrations near the seafloor. Sections re-sampled at decadal intervals show that sub-surface particle distributions are very similar over these time spans: areas of high eddy kinetic energy (EKE) are more likely to have high bottom PM concentrations, whereas areas of low EKE (most of the ocean) are very likely to have low PM concentrations. Quantifying the temporal and spatial distribution of particles in the ocean helps in identifying and understanding mechanisms affecting the sources and sinks of particles. We added O_2 contours to sections to track relationships between PM and oxygen concentration, which sometimes seem correlated and sometimes not. The general O_2 distribution in these sections is very similar, even though decades apart in time. Mapping the intensity of PM in benthic nepheloid layers aids in understanding deep ocean sediment dynamics, linkage with upper ocean dynamics, and in assessing the potential for scavenging of adsorption-prone elements near the deep ocean seafloor, as investigated in the GEOTRACES program. Temperature sections across the Antarctic Circumpolar current show evidence of large eddies that affect particle distribution in both surface and bottom 500 m of water.

Wilford Gardner, Texas A&M University, wgardner@ocean.tamu.edu,

Mary Jo Richardson, Texas A&M University, mrichardson@ocean.tamu.edu

Alexey Mishonov, CICS-MD/University of Maryland, NOAA/NCEI, alexey.mishonov@noaa.gov