

OCEAN OPTICS XXIV

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<https://oceanopticsconference.org>

Thursday, October 11

Poster Session 4

10:30–12:00

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Poster 12

VARIATIONS IN SURFACE PHYTOPLANKTON SIZE STRUCTURE OF A CYCLONIC EDDY IN THE SOUTHWEST INDIAN OCEAN

Phytoplankton size classes were derived from weekly-averaged MODIS Aqua chlorophyll a data over the southwest Indian Ocean in order to assess changes in surface phytoplankton community structure within a cyclonic eddy as it propagated across the Mozambique Basin in 2013. Satellite altimetry was used to identify and track the southwesterly movement of the eddy from its origin off Madagascar in mid-June until mid-October when it eventually merged with the Agulhas Current along the east coast of South Africa. Nano- and picophytoplankton comprised most of the community in the early phase of the eddy development in June, but nanophytoplankton then dominated in austral winter (July and August). Microphytoplankton was entrained into the eddy by horizontal advection from the southern Madagascar shelf, increasing the proportion of microphytoplankton to 23 % when the chlorophyll a levels reached a peak of 0.36 mg m^{-3} in the third week of July. Chlorophyll a levels declined to $< 0.2 \text{ mg m}^{-3}$ in austral spring (September and October) as the eddy propagated further to the southwest. Picophytoplankton dominated the community during this spring period, accounting for $> 50 \%$ of the population. As far as is known, this is the first study to investigate temporal changes in chlorophyll a and community structure in a cyclonic eddy propagating across an ocean basin in the southwest Indian Ocean.

Raymond Barlow, Bayworld Centre for Research & Education, rgb.barlow@gmail.com

Tarron Lamont, Oceans & Coastal Research, Department of Environmental Affairs, tarron.lamont@gmail.com

Robert Brewin, Plymouth Marine Laboratory, robr@pml.ac.uk