

POC export fluxes in the Western Indian Ocean based on ^{234}Th as tracer

JUNHYEONG SEO¹, INTAE KIM¹, SUK HYUN KIM¹, JIN YOUNG CHOI², HYUNMI LEE¹ AND KYOUNGKYU PARK¹

¹Korea Institute of Ocean Science and Technology (KIOST)

²Korea Institute of Ocean Science & Technology

Presenting Author: Junhyeong@kiost.ac.kr

Thorium-234 (^{234}Th ; half life = 24.1 days) has been used as an excellent tracer of element scavenging, particle settling, and the export of particulate organic carbon (POC) in the ocean. We measured the vertical and horizontal distributions of particulate and total phases of ^{234}Th , POC, and other oceanographic parameters during July 5-22, 2017 and April 6-25, 2018 in the Western Indian Ocean along the transects (60°E and 67°E). In the study region, Seychelles-Chagos Thermocline Ridge (SCTR) was observed depending on the latitude (5°S-15°S). Interestingly, ^{234}Th activities in the SCTR were relatively lower than those observed in the other regions. POC fluxes (7.62 ± 6.33 mmol C m⁻² d⁻¹) based on ^{234}Th fluxes in the SCTR also were higher in the other regions. These high POC fluxes were similar to the observed in the North Pacific and Arabian Ocean where the primary production is much higher than in the Western Indian Ocean. We propose that the higher POC fluxes in the SCTR should be due to the upwelling of subsurface water with nutrients.