STEROLS AND THEIR $\delta^{13}C$ SIGNATURE IN SUSPENDED PARTICLES IN THE SOUTHERN OCEAN WATER COLUMN

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Improving our understanding about the functioning of the biological carbon pump is necessary for a proper assessment of the ocean's CO_2 sequestration capacity. The biological pump efficiency depends on the phytoplankton community structure and its activity in the upper mixed layer as well as on the composition and activity of zooplankton and prokaryotes consuming the sinking flux of organic matter. The relative importance of different microbial and zooplankton components, as well as the variable composition of the C-export flux in the water column can be resolved by studying the occurrence and spatial variability (depth and latitude) of specific compounds or biomarkers in suspended matter. During the BONUS-GOODHOPE Southern Ocean expedition (Feb.-Mar. 2008; R/V *Marion Dufresne*), particulate organic matter was sampled along the Greenwich Meridian using large volume in-situ filtration systems. Five stations were selected on the basis of their zonal characteristics: S1 (36°S, 13°E) and S2 (42°S, 8°E) in the Subtropical Zone, S3 (47°S, 4°E) in the Subantarctic Zone, S4 (51°S,°E) in the Polar Front Zone and S5 (57°S, 0°E) in the Weddell Gyre (Antarctic Zone). For surface waters, two size fractions were separated ($Ø_1$ > 53 µm and 53 > $Ø_2$ >1 µm), while from the mesopelagic layer to the deep ocean we sampled the 53 > Ø >1 µm particles. Here we present sterols which were extracted following the modified Bligh and Dyer method, separated from glycolipids and polar lipids using silica gel as a function of their polarity and sylilated prior to GC-MS (compound identification) and GC-c-IRMS (carbon isotopic composition and relative quantification) analyses. We discuss the variability of sterol concentrations and their carbon isotopic composition with depth and in the different oceanic regions defined by the major fronts.