

Smetacek, Victor; de Baar, Hein JW; Bathmann, Ulrich; Lochte, Karin; Rutgers van der Loeff, Michiel M (1997): Ecology and biogeochemistry of the Antarctic circumpolar current during austral spring: Southern Ocean JGOFS Cruise ANT X/6 of R.V. Polarstern. *Deep-Sea Research Part II-Topical Studies in Oceanography*, **44(1-2)**, 1-21, doi:10.1016/S0967-0645(96)00100-2

Documentation of file BARIUM.XLS

28. Biogeochemistry of Barium

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{diss.Ba, Part.Ba.Part.Ba, Part.Ba.Part.Ca, Part.Ba.Part.Al, Part.Ba.Part.Si, Part.Ba.Part.Sr}

Particulate Barium

During the north-south transects along 6° W total suspended matter samples were taken at every 2 degrees of latitude for particulate Ba-barite determination. The upper 600m of water column were sampled to document on the mesopelagic accumulation of Ba-barite.

Sampling

Depths were -10, -50, -100, -150, -200, -250, -300, -350, -425, -500 and -600m. Between 10 and 20 l seawater were filtered under pressure on Nuclepore membranes of 0.4 µm porosity. After filtration filters were rinsed with about 10 ml of Milli-Q type water and dried at 50 °C. They were then stored in plastic petri dishes at room temperature for further analysis in the home laboratory.

Determination of Barium

Filter samples are transferred to platinum crucibles. After careful combustion of the Nuclepore substrate and of the organic matter at ~ 400 °C, the remaining particulate matter is fused for 1 hour at 1100 °C with LiBO₂ as the flux. The fused pearl is redissolved in 4% hot nitric acid. This solution is brought to 10 ml volume. The analysis is carried out by inductively coupled plasma optical emission spectrometry (ICP-OES). Other elements such as Ca, Sr, Si and Al are analysed simultaneously.