

Referenz:

Föllmi, KB, von Breymann, M (1992), Phosphates and glauconites of Sites 798 and 799. In: Pisciotto, KA; Ingle, JC Jr.; von Breymann, MT; Barron, J; et al. (eds.), Proceedings of the Ocean Drilling Program, Scientific Results, College Station, TX (Ocean Drilling Program), 63-74, doi:10.2973/odp.proc.sr.127128-1.116.1992

Tabel:

Table 1. Phosphate bulk chemical analyses of selected Leg 128 samples.

Table 2. Microprobe analyses of selected phosphate particles from Leg 128. Analyses have been performed on single particles (no replicates).

Table 3. Microprobe analyses of selected glauconite particles.

Abstract:

Glauconites and phosphates have been detected in almost all investigated samples at Sites 798 (uppermost Miocene or lower Pliocene to Pleistocene) and 799 (early middle Miocene to Pleistocene). Autochthonous occurrences appear in very minor quantities (generally below 0.2%) throughout the drilled sequences, whereas allochthonous accumulations are limited to the lower Pliocene or uppermost Miocene sequence at Site 798 (glauconites) and to the upper and middle Miocene sequence at Site 799 (upper and middle Miocene: glauconites; middle Miocene: phosphates). X-ray fluorescence, microprobe, and bulk chemical analyses indicate high variabilities in cations and anions and generally low oxide totals. This is probably related to the substitution of phosphate and fluoride anions by hydroxide and carbonate anions in phosphates and to the depletion of iron, aluminum, and potassium cations and the enrichment in hydroxide and crystal water in glauconites. Gradients in pore-water contents of dissolved phosphate and fluoride at Sites 798 and 799 suggest a depth of phosphate precipitation between 30 and 50 mbsf, with fluoride as the limiting element for phosphate precipitation at Site 798. Phosphate and fluoride appear to be balanced at Site 799.

Crude extrapolations indicate that the Japan-Sea sediments may have taken up approximately $7.2 \cdot 10^{10}$ g P total/yr during the Neogene and Pleistocene. This amount corresponds to approximately 0.3% of the estimated present-day global transfer of phosphorus into the sediments and suggests that the Japan Sea constitutes an average sink for this element. The two main carriers of phosphorus into the present Japan Sea are the Tshushima and the Liman currents, importing approximately $6.6 \cdot 10^{10}$ g P and $5.7 \cdot 10^{10}$ g P per year, respectively. Bulk chemical analyses suggest that at least 36% of P total in the sediments is organically bound phosphorus. This rather high value, which corresponds to the measured Japan-Sea deep-water P organic/P total ratios, probably reflects rapid transport of organic phosphorus into the depth of the Japan Sea.