

Geochemistry of basalt from the Eastern Woodlark Basin: Its implications for the mantle heterogeneity

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A section of the active spreading center in the eastern Woodlark Basin (EWLB) is subducting beneath the New Georgia Group, a volcanic arc. Basalt from the axis of EWLB were analyzed to investigate the processes in the region where ridge subduction and reversal in subduction polarity occurred in the past. They are similar to N-MORB in their major oxides, but are more depleted in incompatible elements. Incompatible element ratios such as Zr/Y and La/Sm show a large variation, which may be explained by mantle heterogeneity where an N-MORB source became mixed with or coexists with a different, mantle source that was depleted at an earlier time (Fig. 1a). The negative correlation between Ba/La and Zr/Y ratios indicates that the prior depleted end member is more enriched in the subduction component than the N-MORB mantle source and therefore may have originated from a subduction environment (Fig. 1b). The source of the subduction component remains to be explored by further studies.

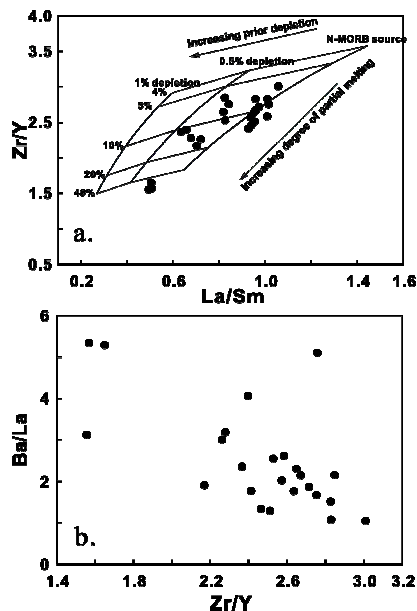


Figure 1 a. Zr/Y versus La/Sm diagram.
b. Ba/La versus Zr/Y diagram.

Assessment of phosphorus and PAHs accumulation in the Suyoung river area in Busan, South Korea

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Method

Sediment samples (0-50 cm in depth) were collected from the Suyoung river and the Hoedong drinking water reservoir area in Busan, South Korea to assess the accumulation of phosphorus and PAHs. Phosphorus was analyzed by an ICP-ES and a Spectrophotometer, and PAHs were analyzed using a GC/MSD. The phosphorus results are shown in the table below.

Table 1. Phosphorus contents in the river- sediments.

Sample No.	Adsorbed	Carbonate	Occluded in Fe-oxide	Residual
-----mg/kg-----				
83-1	731.8	4	1.1	6.4
83-2	503	3.9	0.8	4.1
83-3	351.7	2	0.7	4.5
85-1	531.3	4.8	1.1	6.9
85-2	825.3	3.7	0.8	5.1
85-3	928.7	2.8	1.6	6.3
86-1	689.2	5.4	1.5	5
86-2	749.7	3.5	0.8	5.6
86-3	522	3.4	1.5	5.9
88-1	621.2	1.9	1.3	6.9
88-2	1089.6	2.6	1.7	6.2
88-3	1020.3	2.4	2.1	6.4

Discussion and Results

Most of the inorganic phosphorus was present being adsorbed onto the sediments and its concentration pattern was very similar to that of PAHs indicating the presence of phosphorus and PAHs were influenced by the geological characteristics of the area.

Concerning the source of PAHs, the upper part of Suyoung river may be influenced by pyrolytic inputs, where the middle or down part may be influenced by petroleum inputs, which can be the vehicle emission from fossil fuel combustion.

References

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