

GEOCHEMISTRY OF THE MARINE
SEDIMENTS: ITS PALEOCLIMATOGRAPHIC
SIGNIFICANCE

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***GEOCHEMISTRY OF THE MARINE
SEDIMENTS: ITS PALEOCEANOGRAPHIC
SIGNIFICANCE***

By

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**A Dissertation
Submitted in partial fulfillment
of the requirements for the degree of
Doctor of Science**

**Department of Marine and Atmospheric Geochemistry,
Division of Ocean and Atmospheric Sciences,
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ABSTRACT

A goal of this study is to obtain a clear and systematic description of the sediment which may give a clue of the accumulation history and the paleoproductivity in the ocean. In this study, I have obtained a sediment cores from the northern North Pacific Ocean (station 3) and the Bering Sea (station 4) in order to elucidate the record of the past and present. The sediment cores, which differed in redox conditions, have been studied by measuring several chemical elements (Ba, opal, U, Cd, Mn, Ti and Al), radionuclides (^{232}Th , ^{230}Th) as well as the contents of carbonate and organic carbon. Both cores consists of diatomaceous ooze, with a core at station 4 containing a fairly large amount of biogenic opal although it is dominated with fine-grained terrigenous material. Sedimentation rates were 1.4 cmkyr^{-1} and 0.9 cmkyr^{-1} at station 4 and station 3, respectively. It is noted that the vertical profiles of Ba, opal, U and Cd at station 4 clearly show a clear boundary sedimentation stage at 6 m depth meanwhile the same vertical profiles at station 3 were varied widely and highest at several depth layers. Ba sedimentary which were performed in both cores in order to excess the reliability of the Ba signal as a proxy for paleoproductivity, as a mean dominated about 60% and 65% of the biogenic fraction at station 4 and station 3, respectively. Thus, the variation of Ba in both cores indicating that Ba and opal was much carried by the biological production. The well correlation formed between Ba and opal, shows the applicability of Ba as a proxy for paleoproductivity. Meanwhile, the correlations of Ba with other components were generally not well formed, revealing with other different aspect of the sedimentation process and the paleoclimate.