

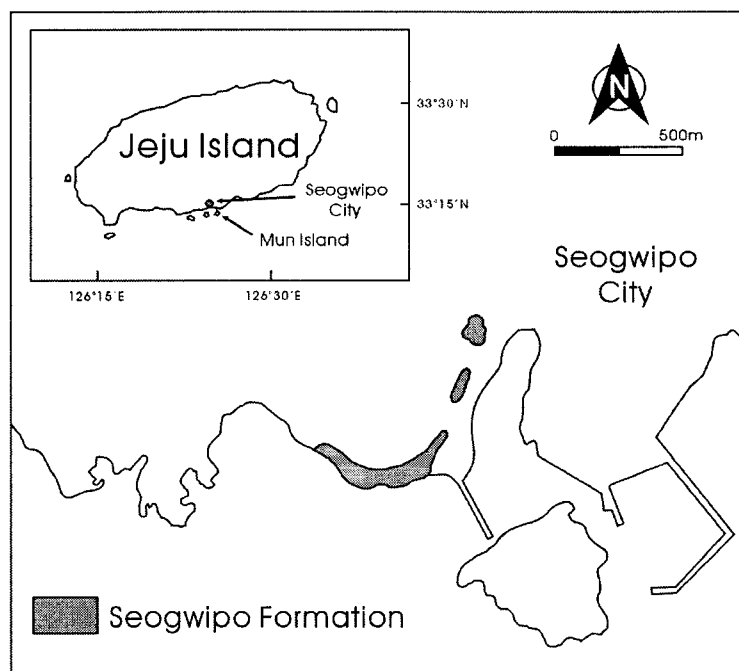
Paleoceanographic implications from the stable isotopic and trace elemental compositions of the calcareous fossils in the Seogwipo Formation, Jeju Island, Korea

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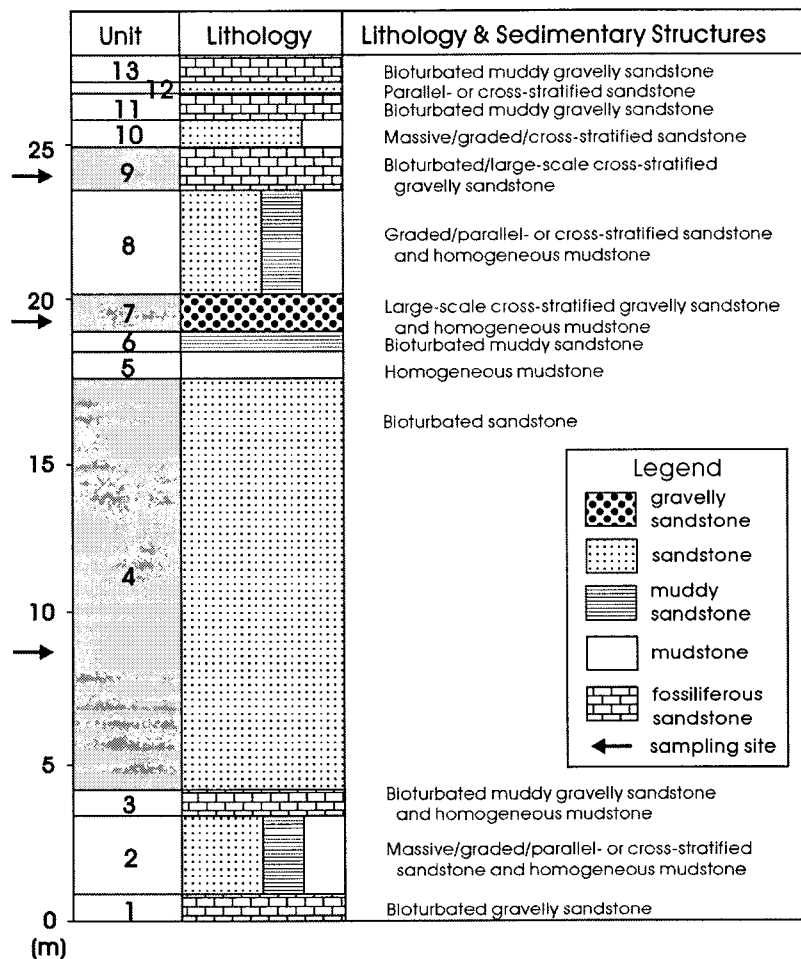
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The Seogwipo Formation located along the coast of the Seogwipo City in Jeju Island is a shallow marine deposit and contains numerous early Pleistocene fossils.

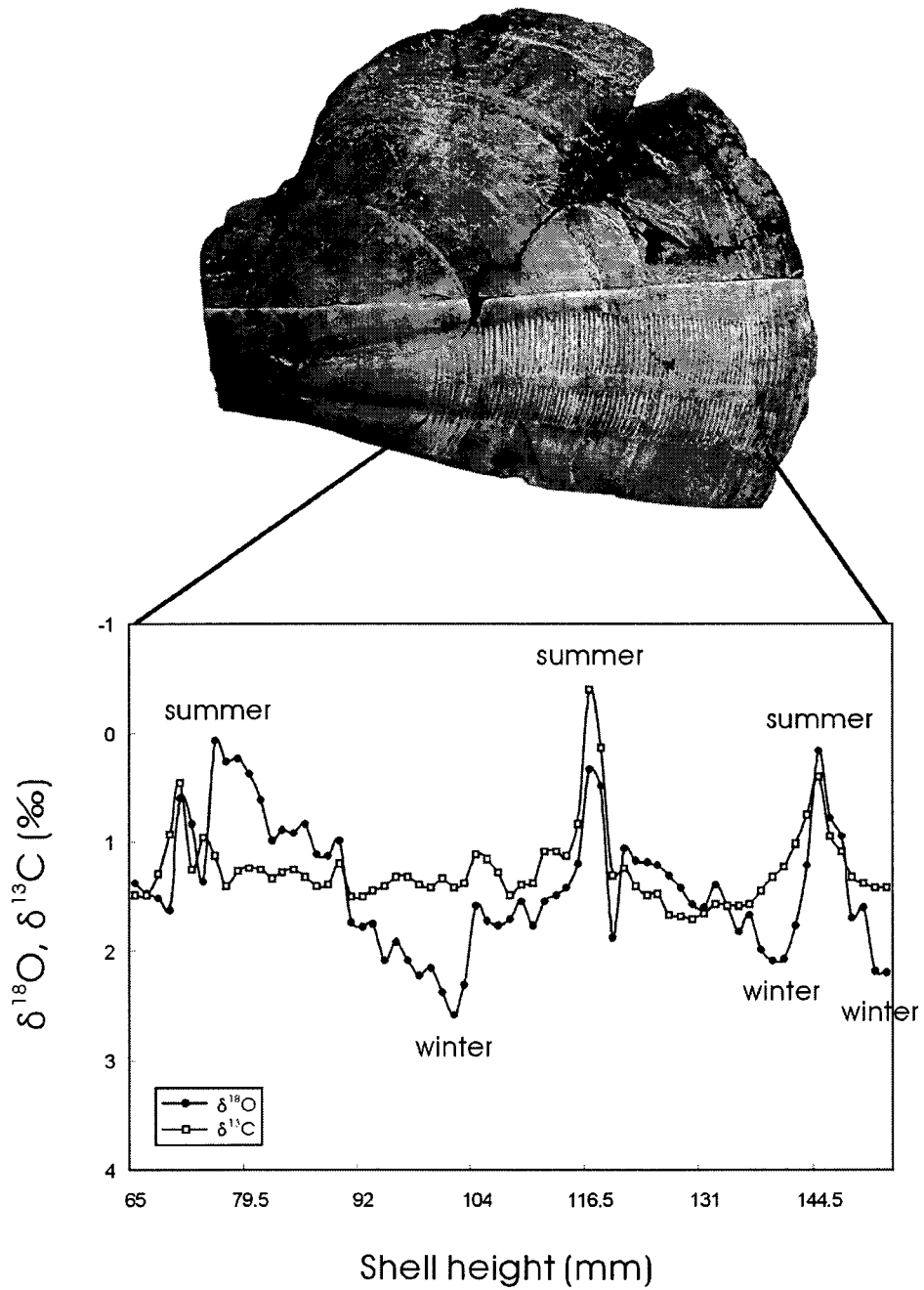


Location of the Seogwipo Formation.

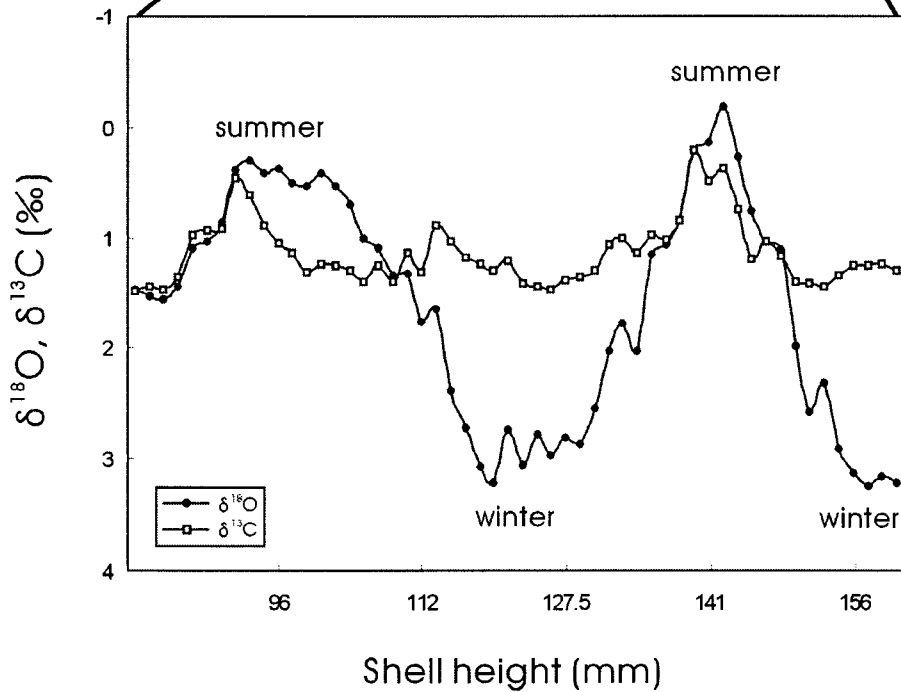
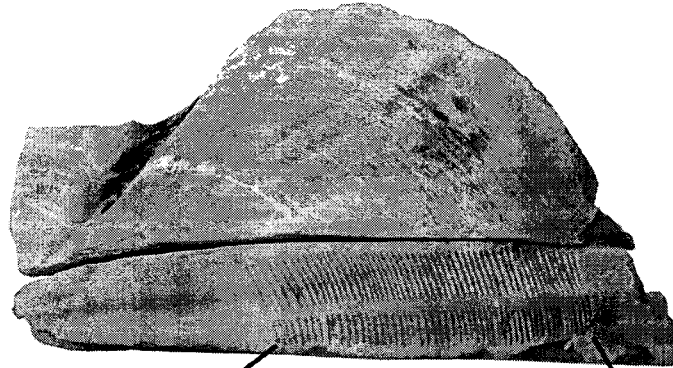


Simplified column section and sedimentary features of the Seogwipo Formation. Sampling sites for geochemical analyses are indicated by arrows.

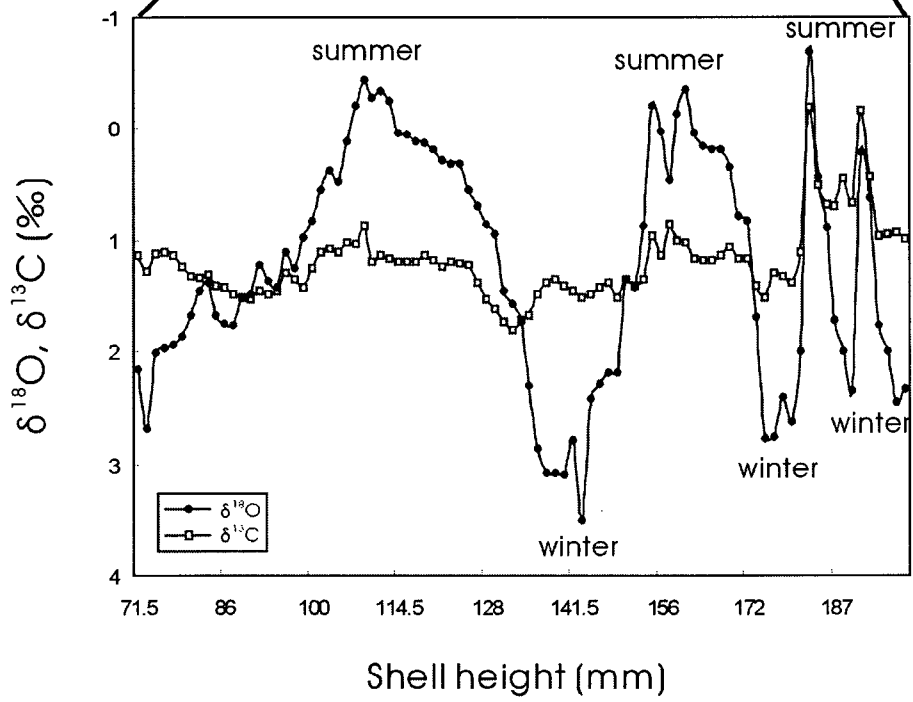
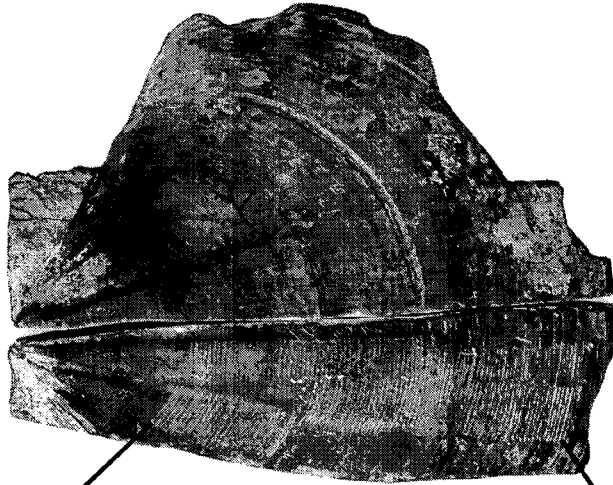
Stable isotopic contents of oxygen and carbon as well as trace elemental compositions of the fossil pectenids taken from three units in the formation and the Recent pectenid from nearby shallow marine environment were investigated to reconstruct the paleoceanographic conditions during the deposition of the Seogwipo Formation.

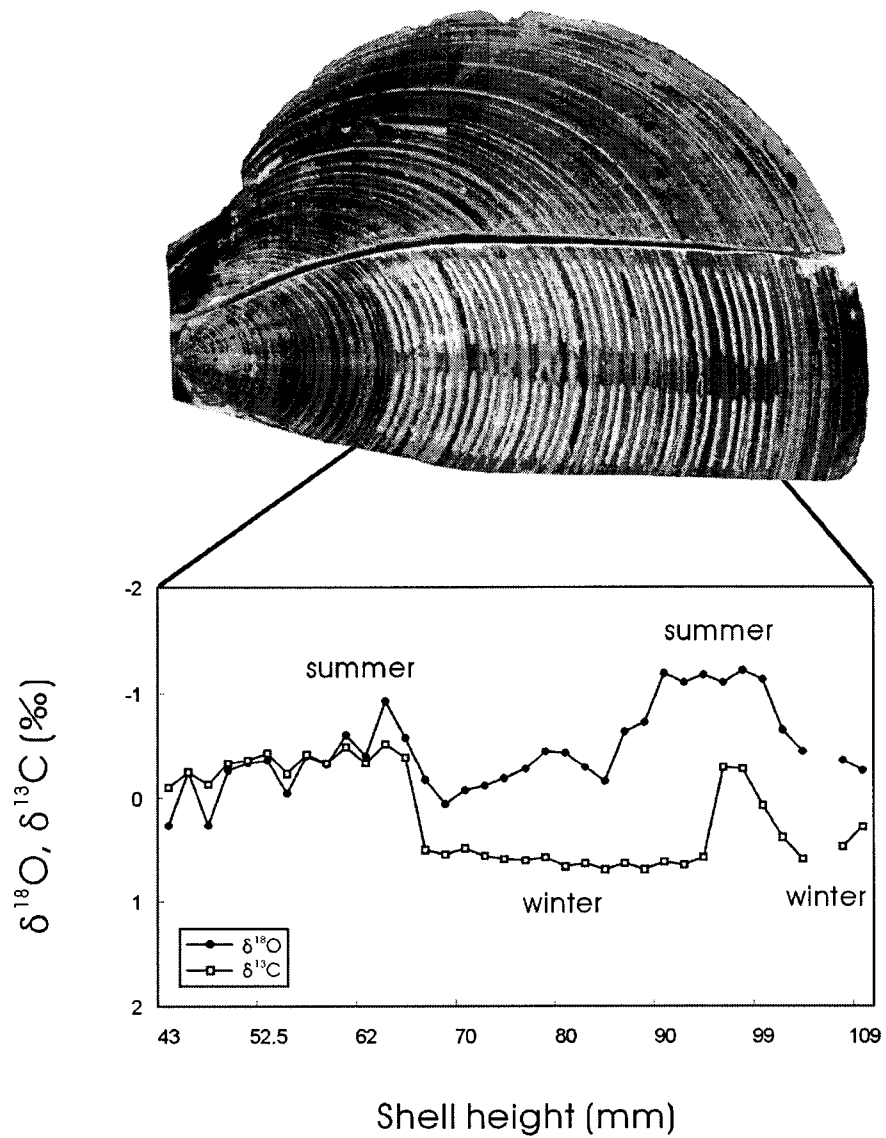


Photograph of the pectenid in the Unit 4 of the Seogwipo Formation and its oxygen and carbon isotopic compositions.

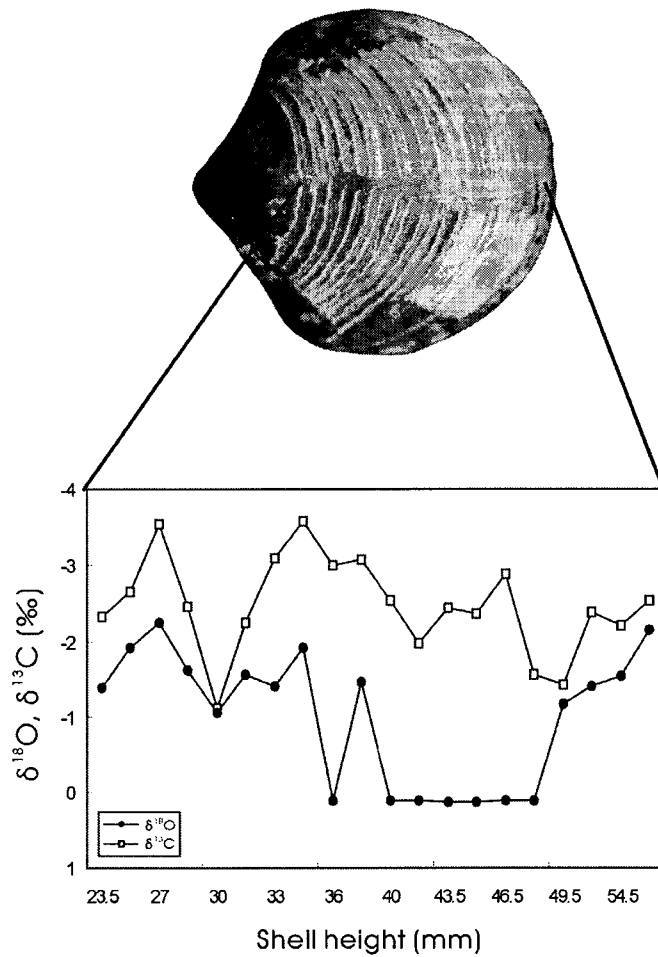


Photograph of the pectenid in the Unit 7 of the Seogwipo Formation and its oxygen and carbon isotopic compositions.



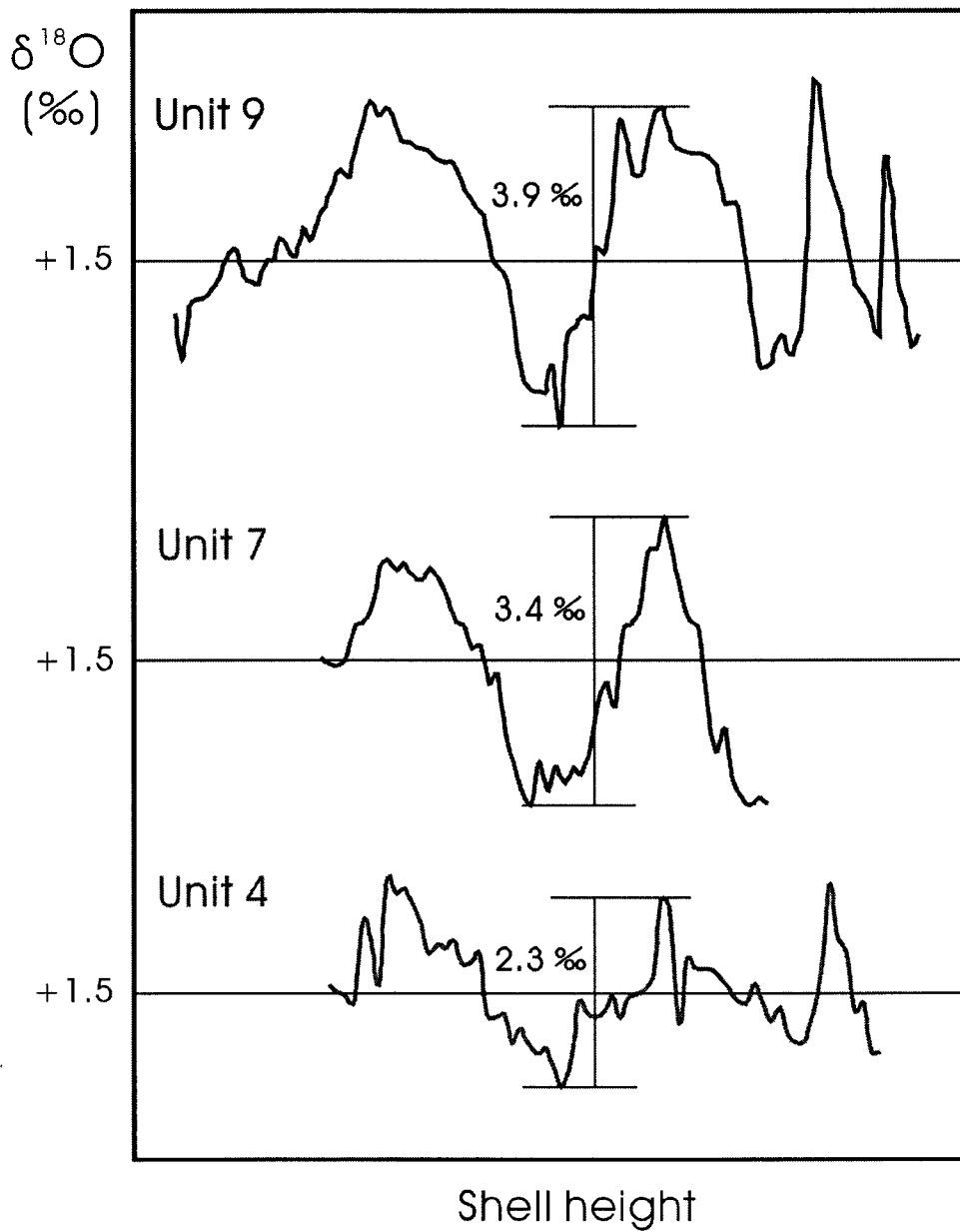


Photograph of the living pectenid and its oxygen and carbon isotopic compositions.

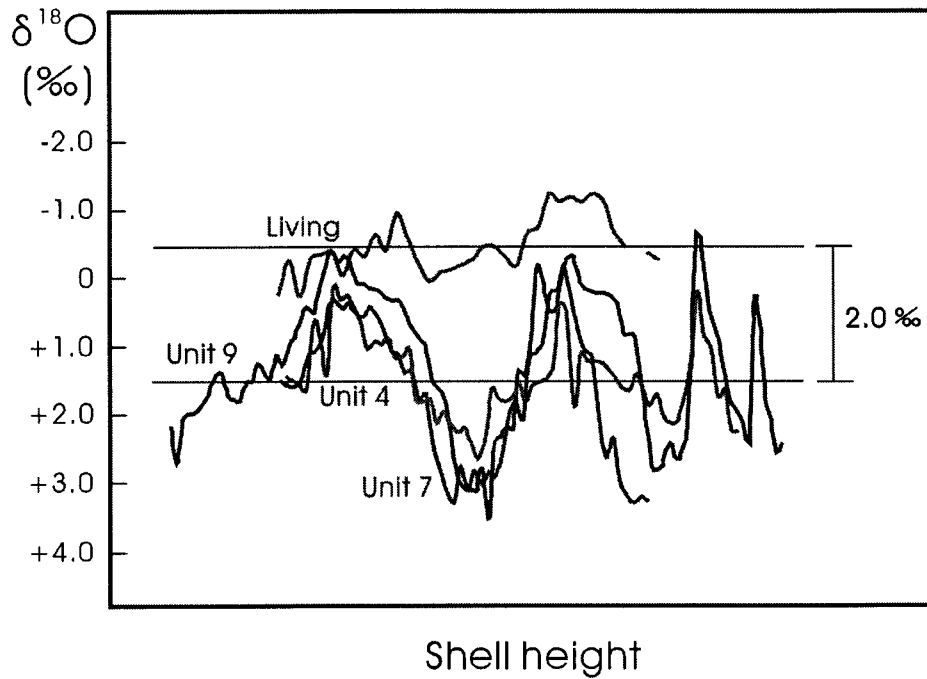


Photograph of the brachiopod in the Unit 9 of the Seogwipo Formation and its oxygen and carbon isotopic compositions.

Oxygen isotopic compositions of all the pectenids in this study show the distinct seasonal variations which are characterized by the lowest ^{18}O values during summer and the highest ^{18}O values during winter.

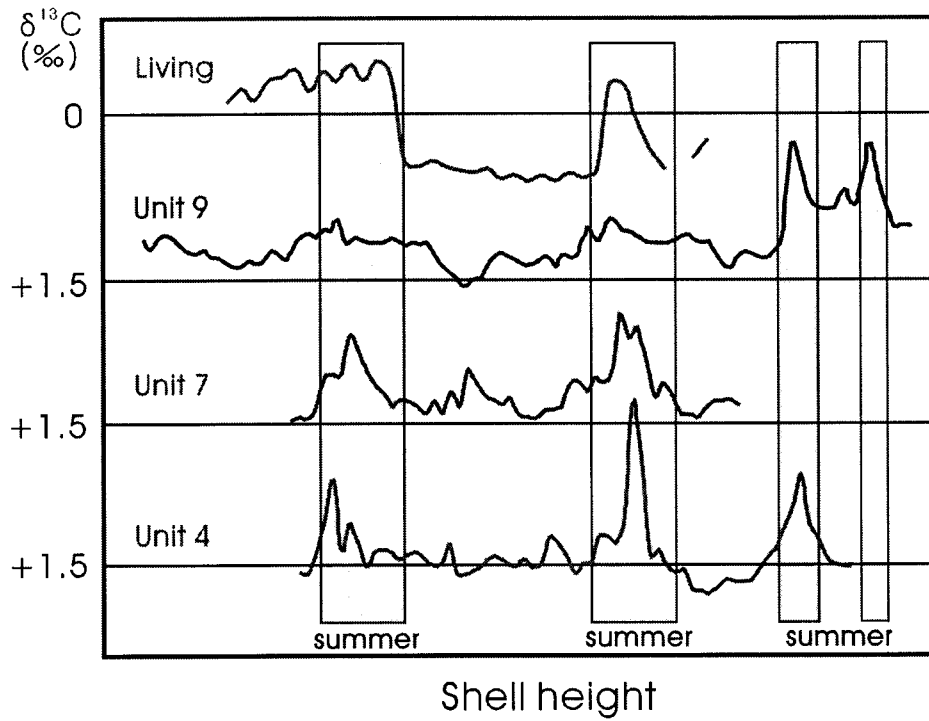


Seasonal variations of the oxygen isotopic values of the pectenids in the Unit 4, Unit 7, and Unit 9.

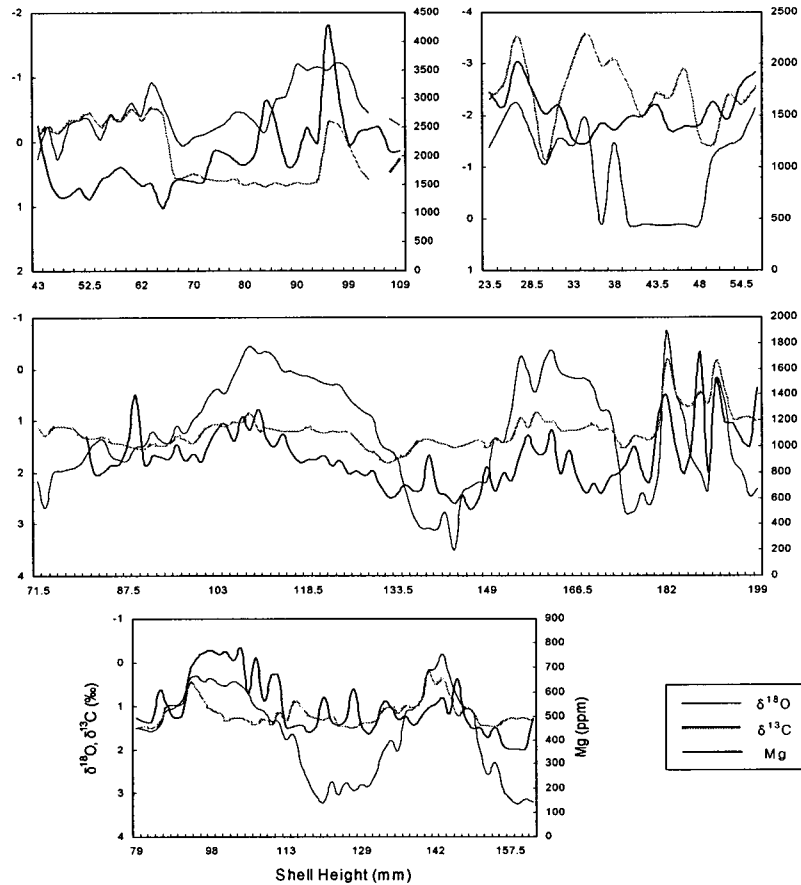


Composition of the oxygen isotopic values of the pectenids in the Unit 4, Unit 7, and Unit 9 with living pectenid.

Seasonal paleotemperature difference became larger towards the stratigraphically higher unit. The mean ^{18}O values of the fossil pectenids are enriched by about 2 than those of Recent pectenids. This enrichment may result from the size of glaciers in polar regions and/or paleotemperature change, and this suggests that the Seogwipo Formation was deposited during glacial periods as suggested by Woo et al. (1995).



Seasonal variations of the carbon isotopic values of the pectenids in the Unit 4, Unit 7, and Unit 9 and the living pectenid.



Oxygen, carbon, and Mg compositions of the brachiopod in the Unit 9, of the pectenids in the Units 7 and 9 of the Seogwipo Formation, and of the living pectenid.

Carbon isotopic compositions of fossil and Recent pectenids also show seasonal variations, and this indicates that the carbon isotopic compositions of DIC may have been controlled by seasonal upwelling.

Mg compositions of all the pectenids also show seasonal variations and are in inverse proportion to the seawater temperature. Mg

compositions of fossil pectenids are lower than Recent one, which may imply lower seawater temperature. Cd, Cu, Fe, Zn, and Ba compositions of the fossil pectenids show higher values during the certain period of winter, however, Sr and Na compositions in the all pectenids do not show any trend. In case of fossil brachiopods, trace elemental compositions in the study do not seem to reflect paleoceanographic conditions.

Woo, K. S., Cheong, D. K., and Park, B. K. (1995) Paleoceanographic Investigation from the Calcareous Skeletons of the Pleistocene Seoguipo Formation, Cheju Island, Korea. *J. Korean Soc. Oceano.* **30**. 216-226.