

Early diagenesis in a reducing fjord, Saanich Inlet, British Columbia. I. Chemical and isotopic changes in major components of interstitial water.

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### Abstract

Water and interstitial water from the reducing fjord of Saanich Inlet, British Columbia were analyzed for their major element composition, ammonia, phosphate and silica contents, and for stable isotope composition of sulfur and carbon species. Ca was the only major element to show a significant change with depth (a 75 per cent decrease in some cases). Ammonia and phosphate are highly enriched in the interstitial water (I.W.), concentrations reaching 250 ppm and 39 ppm, respectively. Total dissolved CO<sub>2</sub> in I.W. increases strongly with depth (20 to 30 times that in overlying sea-water) and it becomes enriched in C<sup>13</sup> ( $\delta^{13}C_{PDB} \text{‰} + 17.8\%$ ). Both sulfate and dissolved sulfide

decrease with depth to a complete disappearance of all sulfur species from the interstitial water. The dissolved sulfide is highly enriched in  $S^{34}$  ( $\delta^{34}S$  + 18%). All these changes are attributed to strong biological activity in the sediments.



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