



## **Fate and transformation through tidal estuaries of biogenic materials originating from continental waters : comparison of three estuaries of the Arcachon bay, France.**

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The Arcachon lagoon is a preserved site, but eutrophication may develop as a consequence of low buffer capacity and slow turnover of waters inside the lagoon.. The aim of this study was to determine the fate and transformation of N, P, and C compounds between river mouths and the lagoon, in order to better describe their dynamics. Macrotidal estuaries of three small rivers were compared. The largest river is a source of nitrate and forms a delta. The second is also a source of nitrate but it is a small stream well open to lagoon waters. The third is a source of ammonia. It is small and protected by dams.

We have measured the distribution of nitrate, ammonia, dissolved inorganic phosphorus, dissolved organic nitrogen and phosphorus, particulate organic carbon, nitrogen and phosphorus, loosely bound phosphorus (LBP), <sup>13</sup>C and <sup>15</sup>N.

We observed that oxidation of ammonia to nitrate occurs within the estuaries rather than upstream, because of the longer residence time of estuaries waters River nitrate is conservative. Organic P and LBP are the main forms of easily bioavailable phosphorus.