Fate of terrigenous dissolved organic matter (DOM) in estuaries: Aggregation and bioavailability.

When dissolved organic matter (DOM) from terrestrial and freshwater sources is mixed with estuarine waters at the land-sea interface, the change in salinity has been suggested to cause fast aggregation and an increase in the bioavailability of dissolved organic carbon (DOC) and nitrogen (DON). These processes were investigated in different Danish freshwaters. Aggregation of DOC in short-term (hours) mixing events at increasing salinity was low. In one stream with forest and wetland runoff and in a humic lake, the decrease of DOC over a 0 to 25 ppt salinity gradient was 2 to 5%. Optical analyses by absorption and fluorescence, revealed changes in the composition of the humic components due to salt. The bioavailability of terrestrial DOC was also investigated and found not to change moving from limnic to estuarine conditions. Although the yield of freshwater bacteria cells was about twice the yield of estuarine bacteria, the utilization of DOC was identical and not influenced by the bacterial communities. In addition, optical analyses showed that although utilization of DOC was equal, freshwater and estuarine bacterial communities differed in their preference to the humic fractions.

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