

TRANSFORMATION OF BIOELEMENTS LOADED IN RIVER WATER AND GROUNDWATER BY MIXING WITH SEA WATER

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Objectives: Rain falling on a watershed area enter into a river loading organic materials, soil particles and bioelements. At the mouth of the river, a portion of them precipitate and are transformed according to their properties, which is mainly due to the decrease of river flow and the increase of salt concentration. Thus "metabolized", remaining bioelements in water body finally reach to the sea and may influence the ecosystem at the site.

In this research, we conducted model experiments simulating the fate of bioelements at the mouth of a river by mixing supernatants of suspensions of a paddy soil and a manure compost with several concentrations of sea water.

Results: Bioelements adsorbed on large particles and suspended organic materials precipitate first near the mouth of a river due to the decrease of river flow. Then, those adsorbed on fine particles, fine suspended organic materials, and soluble organic materials (e.g. P, B, Al, Fe, Cu, Mn, Zn) precipitate at the mouth of a river by mixing with sea water. In addition, a portion of bioelements once precipitated is resolubilized by the salty water with high concentration, and is stabilized complexing with soluble organic materials (e.g. P, Mo, Zn, Ti).

Thus, it was known that soluble organic materials and sea water play important roles in the fate of bioelements in the ecosystem of the mouth of a river and the coastal area.