

Interactions between groundwater, river water and seawater in the Yellow River Delta

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The Yellow River does not reach often to the Bo-Hai Sea since 1970's because of huge amount of water uses for irrigation at midstream. Shortage of river water induces water pollution, decrease in groundwater level, and decrease of nutrient transports to the Bo-Hai Sea. The purposes of this study are; (1) to evaluate groundwater and river water discharges and their dissolved material transports into the Bo-Hai Sea, (2) to evaluate the effect of recent Yellow River cut-off due to changes in land utilization and water management on groundwater and Bo-Hai Sea, and then (3) to evaluate the interactions between Yellow River, groundwater, and Bo-Hai Sea in the delta. Studies on land-ocean interaction in the Yellow River Delta are planed from 2003 to 2006 though; (a) measurements of chemical components of water in the Yellow River, and (b) investigations of the groundwater and coastal water in the Yellow River Delta. River water will be collected at Ritsu for chemical analyses (DIN(NO₃, NO₂, NH₄), DIP, DON, DOP, TN, TP, Si, DO, pH, SPN) to evaluate the transports of dissolved materials to the Bo-Hai Sea through Yellow River. Interactions between groundwater and seawater in the Yellow River Delta will be evaluated using 10 automated seepage meters, CTD in 10 boreholes, resistivity cables, and fiber thermo-radars. Chemical analyses of submarine groundwater seepaged into Bo-Hai Sea will be made for isotope components (O-18, Deutrium, C-14, N-15), and dissolved components. Feasibility study in the Yellow River Delta had been made on August 2002. Groundwater and water of the Yellow River in the delta were analyzed for isotope components and dissolved components. Electric conductivity of the groundwater in the south of the delta was 1.5 times larger than that of the current seawater. The stable isotope components show that the groundwater is the mixture of the meteoric water and seawater, but not current seawater.