

Nitrogen distribution in surface sediments under different land use patterns in Jiangnan Plain, central China

KEWEN LUO^{1,2}, TENG MA^{1*}, YAO DU¹

¹School of Environmental Studies, China University of Geosciences, Wuhan, 430074, China

(*correspondence: mateng@cug.edu.cn)

²State Key Lab of Biogeology and Environmental Geology, China University of Geosciences, Wuhan, 430074, China

Introduction and Methods

Land use patterns could have significant influence on nitrogen distribution in surface sediments, which has been poorly known. In order to fill the gap, different forms of nitrogen (ammonia, nitrate, nitrite), TOC, TN, ¹³C and ¹⁵N in different depths of surface sediments under different land use patterns (river, upland, paddy field, forest land, sewage ditch and fish pond) were determined in Jiangnan Plain, an alluvial plain of Yangtze River.

Discussion of Results

The results indicated NO₃⁻-N were the main component of exchangeable nitrogen and the content of NH₃-N was positively correlated with TOC and TN in different land use patterns.

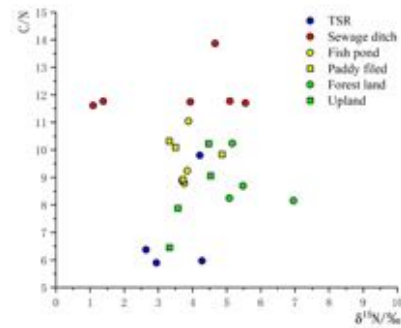


Fig.1 The correlation of $\delta^{15}\text{N-C/N}$

The C/N ratio in sediments of sewage ditch, fish pond and paddy field were higher than others, suggesting more influence from anthropogenic activities in these patterns. The $\delta^{15}\text{N}$ values ranged from 1.09‰ to 6.96‰ in sediments of different land use patterns, suggesting the main nitrogen sources were all sedimentary organic matter. The sediments in forest land and upland were generally characterized by higher $\delta^{15}\text{N}$ values than others, suggesting more nitrogen-containing organic matter mineralization owing to more contact with oxygen, which made remaining organic matter enriched in ¹⁵N.