Study on different forms of nitrogen at the sediment-water interface of Chenhu Lake,China

KUN LEI[1], TENG MA[1*], ZHENXING LI[1]

[1]School of Environmental Studies, China University of Geosciences, Wuhan, 430074, China (rainylk@163.com, *correspondence:mateng@cug.edu.cn, zhenxinglee1@163.com)

Introduction and Methods

As an important part of the international wetland,Chenhu Lake plays an significant role supporting local development by providing water and fishing resources, controlling flooding and regulating the regional climate. Knowledge of water and sediment nitrogen (N) contamination in Chenhu is of great importance for understanding human influences on water and sediment geochemistry. The research use a portable spectrophotometer (DR1900, Hach, USA) to measure NH_4^+-N and NO_X^--N concentrations in water sample on field and a continuous flow injection analyzer(AMS Alliance Integral Futura, Frepillon, French) to measure NH_4^+-N and NO_3^--N concentrations in sediment sample in labortory.

Discussion of Results

There were relatively high values in western Chenhu Lake and a decreasing trend in N concentrations from north to south. The concentrations of NH_4^+–N and NO_3^-–N in bottom water were higher than those in surface water, but opposite feature on NO_2^-–N. A positive correlations between NH_4^+–N and NO_3^-–N in surface sediment (0-2cm), surface water, and bottom water. The results indicated that there was a dynamic equilibrium between sediment and overlying water as a whole system, with migration and exchange between sediment and overlying water governing N distribution.

The content of NH_4^+–N in sediment cores increased until about 14-20cm and then decreased with depth (except CHE1). The minimum values of NH_4^+–N were found in the bottom sections (48-50cm). In general, the vertical variation in NO_3^-–N concentrations increased with depth in the shallow layer, reached a maximum at 2-8cm, and then decreased below 8cm with greater depth. The content and vertical variation in NH_4^+–N was more significant in NO_3^-–N in sediment cores.

[1] Zhiping Yang *et al*. (2015) *Environ Earth Sci* **74**, 771-778. [2] Lingqing Wang *et al*. (2014) *Aquat Geochem* **20***, 501-51.*