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Assessing water pollution level and gray water footprint of anthropogenic nitrogen in agricultural system

Guorui Huang, Han Chen, and Chaoqing Yu
Tsinghua University, Department of Earth System Science, Beijing, China (hguor@foxmail.com)

Water pollution has become a global problem which is one of the most critical issues of today's water treatment. At a spatial resolution of 10km, we use the DeNitrification–DeComposition (DNDC) model to simulate the biogeochemical processes for major cropping systems from 1955 to 2014, estimate the anthropogenic nitrogen loads to fresh, and calculate the resultant grey water footprints and N-related water pollution level in China. The accumulated annual Nitrogen loads to fresh from agricultural system is 0.38Tg in 1955 and 4.42Tg in 2014, while the grey water footprints vary from 1.53 billion m3 to 17.67 billion m3, respectively. N loads in north of China contributes much more on the N leaching because of the high fertilizer but in south of China, it is mainly focused on the N runoff because of the heavy rain. There are more than 25% of grids with WPL>1 (exceed the water capacity of assimilation), which is mainly located on the North China Plain.