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TITLE: How do nitrogen inputs to the Changjiang basin impact the Changjiang River nitrate: A temporal analysis for 1968?1997

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ABSTRACT:

We present estimates of nitrogen (N) inputs to the Changjiang River basin for the period 1968?1997. The total N input is approximately 7.8 × 10 9 kg in 1997, which is a threefold increase over 1968 levels. N fixation was often a dominant input before 1978, providing about 2.2 × 10 9 kg year ?1 , while N fertilizer dominated N input after 1983, supplying an additional input of some 4.4 × 10 9 kg year ?1 . More than 40% of total N inputs is converted into manure N, and half of total manure N is returned to agricultural soil. We estimate that the river nitrate concentration and flux have increased about tenfold from 1968 to 1997. Our study suggests that the percent of N inputs to the basin that are exported by the river as NO 3 ?N has increased steadily over the 30?year period and that about 30% of total N input is transported through the river. The integrated N input, budget, and storage have been linked to the increasing temporal trends of Changjiang River nitrate. N fertilizer application and human population density, as well as manure N production in the basin, are good predictors of the river's nitrate concentration and flux. Therefore, how N balance is kept (especially for effective application of N fertilizer) is a crucial problem to the sustainable development of the basin.

SOURCE: Global biogeochemical cycles

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