

Ohio River at Dam 53 near Grand Chain, Illinois

Flow-Normalized Nitrate Concentration and Flux

FN nitrate concentration and flux have changed little during 1980–2010 at Ohio River at Dam 53, near Grand Chain, Illinois (OHIO-GRCH) (–2 and –5 percent, respectively). FN nitrate concentration is stable over much of the period of record, though a slight decrease may have occurred since the late 2000s (fig. 14). FN nitrate concentration was low in 1980 (approximately 1 mg/L) and remained low during the following three decades.

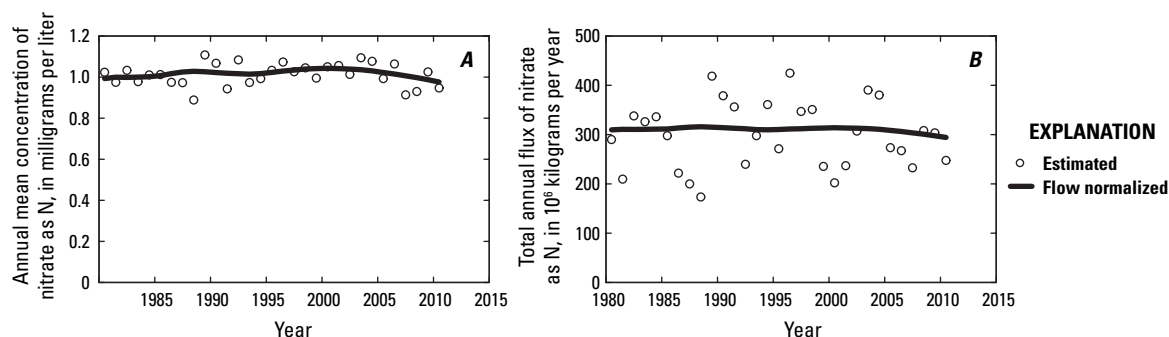


Figure 14. (A) Annual mean estimated concentration (circles) and flow-normalized concentration (solid line) and (B) total annual estimated flux (circles) and flow-normalized flux (solid line) from 1980 through 2010 for the Ohio River at Dam 53 near Grand Chain, Illinois (OHIO-GRCH).

Comparison of Nitrate Concentrations over Time and with Streamflow

At Ohio River at Dam 53 near Grand Chain, Illinois (OHIO-GRCH), nitrate concentrations were the lowest observed at any site (fig. 15). Slight decreases of less than 0.25 mg/L generally occurred from 2000 through 2010, across all streamflows. The highest nitrate concentrations (less than 2 mg/L) were primarily at moderate streamflows during one of two concentration pulses, centered around the months of January and May, and over time appear to have lessened in intensity. However, because nitrate concentrations at OHIO-GRCH were initially low, changes over time at particular streamflows are difficult to discern.

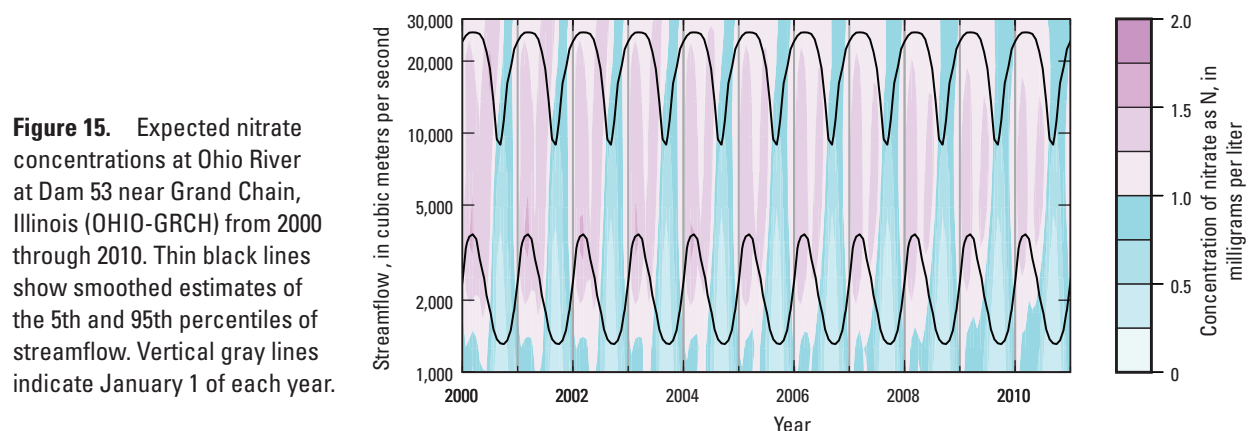


Figure 15. Expected nitrate concentrations at Ohio River at Dam 53 near Grand Chain, Illinois (OHIO-GRCH) from 2000 through 2010. Thin black lines show smoothed estimates of the 5th and 95th percentiles of streamflow. Vertical gray lines indicate January 1 of each year.