



# The Ups and Downs of the Water Cycle

Name \_\_\_\_\_ Date \_\_\_\_\_

## Read, Analyze and Hypothesize

Read the abstract (short summary) from an article in the scientific journal *Water International* and form groups of three or four to analyze and discuss the hydrologic trends described.

### Abstract

The Upper Mississippi River Basin has experienced considerable hydrologic change in the last two centuries as a result of removal of wetland areas, deforestation and subsequent reforestation, changes in agricultural practices, urbanization, navigation projects, and the construction of levees.

It is popularly accepted that the human-induced modifications to the river and its watersheds have increased the amount of flow in the Mississippi River, particularly during flooding events. Long-term stream gage records in the Upper Mississippi River Basin were analyzed to determine trends in stream flows and flooding. Over the 130 years of gaging there have been various periods in which the frequency and

magnitude of floods have fluctuated. Trends in average flow and flooding are strongly correlated to coincident increases in average annual precipitation.

For many portions of the watershed, precipitation and stream flows over the last three decades have been higher than any earlier period on record. Outside of the dominant influence of climate variation, only one major change on Mississippi River flood discharges is observed. Flood control reservoirs in the Missouri River watershed appear to produce a 10 percent reduction in the average flood peak and average flood volume for the Mississippi River at St. Louis, Missouri.

Knapp, H. Vernon. "Hydrologic Trends in the Upper Mississippi River Basin." *Water International* 19, no. 4 (December 1994): 199-206.

**What hydrologic trends does the abstract describe?**

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**What hypotheses (proposed explanations for observable phenomena) can you make based on the information provided?**

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