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Forest paired catchment studies of water quality: past, present, and future

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Abstract Forested catchments throughout the world are renowned for producing high quality water for human use. In the 20th century, experimental forest catchment studies played a key role in studying the processes contributing to high water quality. The hydrologic processes investigated on these paired catchments have provided the science base for examining water quality responses to natural disturbances such as wildfire, insect outbreaks, and extreme hydrologic events, and human-induced disturbances such as timber harvesting, site preparation, prescribed fires, fertilizer applications, pesticide usage, rainfall acidification, and mining. This paper examines some key scientific breakthroughs of the past, current research on water quality topics of concern, and the potential for using paired experimental catchments in the future for monitoring the effects of climate change on water quality.

Key words water quality; hydrology; experimental catchments; forest disturbances; climate change