USGS

WATER RESOURCES RESEARCH GRANT PROPOSAL

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Principal Investigator:
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Abstract

Fields of inactive sand dunes are prominent features of Midwestern landscapes: some of the most important are the Winnibigoshish Dunes near Lake Winnibigoshish in northern Minnesota. These dunes have been shown to have formed during the middle Holocene epoch (about 7000 years before present (BP)), a time characterized by climatic conditions much warmer and drier than today. Most of the other dune fields in Minnesota have been assumed to be of similar age, suggesting that dune formation was common during this dry climate. However, reevaluation of the Winnibigoshish Dunes indicates that they are anomalous, owing their formation to a peculiar set of hydrologic characteristics unique to the Winnibigoshish watershed. The implications of this finding are intriguing. First, the dunes and Winnibigoshish's sediments form a sensitive record of climate change. Second, the responses of Winnibigoshish and adjacent large watersheds can be used to evaluate large-scale spatial variations in landscape and vegetation response to climatic forcing.