

# Lake Superior Pre-Regulation Scenarios

**Primary Investigator:** Frank H. Quinn

## Overview

There is a major interest of both riparian groups and the COE in examining alternative regulation plans for Lake Superior under the auspices of the International Joint Commission. For this to be successfully accomplished, Lake Superior water level scenarios need to be developed with which to compare proposed regulation outcomes with levels derived from past water supplies under specified conditions, natural St. Marys River and St. Marys River conditions at the time of the 1914 IJC Orders of Approval. This project will address this need.

There has been more press and public interest in the causes of the record drop in lake levels than any other phenomenon addressed by GLERL over the past year. This analysis will examine the hydro-climatological causes of the lake level reductions in a format useful to both the press and the scientific community.

## 2000 Plans

GLERL will develop 1900-present lake level time series for Lakes Superior and Michigan-Huron based upon state-of-nature conditions and 1914 conditions for testing regulation scenarios to be used in evaluating proposed changes to the current Lake Superior regulation Plan 77, which balances water levels between Lakes Superior and Michigan-Huron. A journal article will be written describing the scenarios and how the actual levels compare with the various scenarios for both Lakes Superior and Michigan-Huron.

A retrospective analysis of the causes of the recent, 1998-present, record setting drop in lake levels throughout the Great Lakes will be conducted and published in a refereed article.

## 1999 Accomplishments

With project funding from the Detroit District of the COE, GLERL developed the hydrologic scenarios for the Lake Michigan Potential Damage Study. Hydrologic scenarios were extracted from five 10,000 year stochastic time series that GLERL and others developed for a funded Hydro Quebec study several years ago. These time series were assessed and 50 year high and low water supply/lake level events extracted, assessed, and provided for the impact analysis. GLERL also provided a paleo perspective to the water level scenarios through organizing a very successful Paleo Lake Levels Workshop, bringing in the experts in Great Lakes paleo lake level analysis from the U.S. and Canada. The workshop proceedings were published and are available on the web for the Great lakes research community. This is another example of productive collaboration between GLERL and the COE.