

Lake Superior Water Levels: Up or Down?

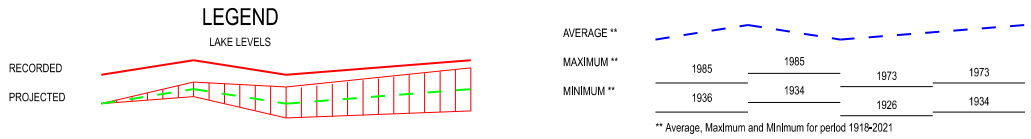
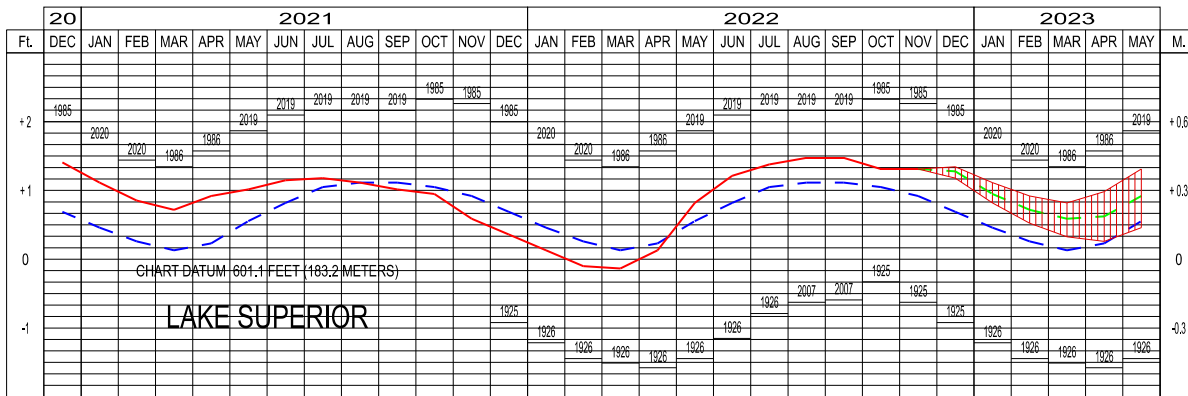
by Guy A. Meadows, PhD., Founding Director, Great Lakes Research Center at Michigan Tech

Have you noticed it's been a bit windy this past year? We have experienced several storms this past summer and fall that approached the magnitude of the "hundred-year storm" in wave heights on the Big Lake. The most recent two such storms, occurred October 17th – 19th and November 30 – December 1, 2022. Both storms produced "significant wave heights" (the average of the 1/3 highest waves) of 19 to 22 feet! Both of these storms were focused on the Lake Superior shoreline around Munising. However, a slight shift in storm tracks and they could have been directly aimed at our South Shore.

So, what do big wind and wave events have to do with Lake Superior water levels? Leading up to the high water in all of the Great Lakes of 1986, we published a scientific paper that showed that storm winds and waves began to increase 18 months before water levels started to rise. Furthermore, the peak in shoreline damage corresponded to the peak in wave energy and not the time of highest water levels. Last year, we repeated these analyses for our most recent 40 years leading up to Lake Superior's high water of 2019 and found that history did repeat itself. Based on this, we believe that prior to our next episode of Lake Superior high-water levels we will begin to see more frequent and more intense storms over the Lake which in turn, result in stronger winds and waves and eventually (a year later) higher Lake levels.

Following is the most recent (December, 2022) U.S Army Corps of Engineers, Monthly Bulletin of Lake Levels for Lake Superior. Lake Superior water levels peaked in 2019 and have decreased

LAKE SUPERIOR WATER LEVELS - DECEMBER 2022



though spring of this year, 2022 (red line on the graph). Note that water levels during our past summer (2022) have begun to rise again. With the strong winds and waves we have recently been experiencing, we may be in for another rise in Lake Superior levels.