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Global warming imperils shipping on Great Lakes

Study predicts water levels will drop substantially over next 30 years and the industry is worried

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The Standard

Part one of two

Time, scientists say, is no longer a luxury the Great Lakes shipping industry can afford. According to a recently released report, the industry comes closer to running aground with each passing day because of global warming.

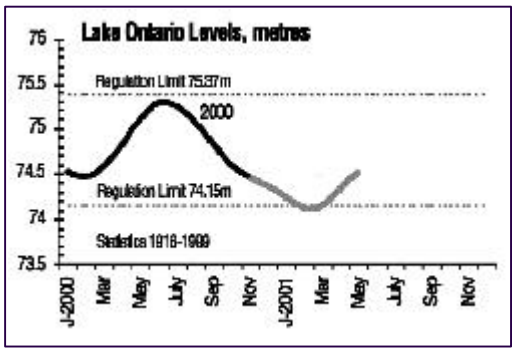
The climate change study, released last week by the U.S. Global Change Research Program, projects a three-foot drop in water levels on the Great Lakes within the next 30 years.

That could sink an industry already playing an expensive game of inches.

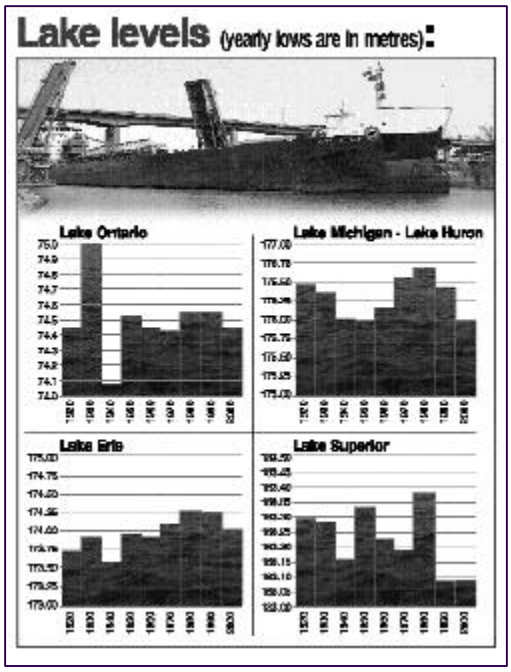
"To put it in perspective, an average-sized ship carries 120 tonnes of cargo per inch (of lake water). If the water level drops that low, the effect would be devastating," said Wayne Smith, vice-president and general manager of Seaway Marine Transport. "Climate change is a quite definitely an issue for us."

Smith says the industry is already struggling to keep profits up because of five years of declining lake levels. Recent news from Environment Canada holds out little hope for increased profit margins in the short run. The federal agency is predicting a dry winter with Lake Ontario water levels dropping below the regulated minimum depth needed for shipping by March.

Water levels on the "feeder lakes" of Michigan,



(Lake Ontario levels, metres)



(LAKE LEVELS: yearly lows are in

metres)

Huron and Superior are at their lowest in more than 20 years, meaning less water flowing to lakes Erie and Ontario.

"We could get more precipitation this year -- Mother Nature does not always do what we predict -- but we are predicting the low end," said Peter Yee of Environment Canada.

Smith and his peers can do little but watch the water levels drop in frustration. While global warming threatens their livelihood, more transport trucks, pumping out the gases that contribute to global warming, are hitting the highways and international talks aimed at reducing those gases continually fail to produce results.

"Shipping is an environmentally friendly way to move goods in this respect," Smith said. "We really need to see leadership from the federal government."

Much of this threat to the shipping industry is beyond the control of ship captains and port operators.

Climate change is the end result of global warming, the relatively rapid increase in the planet's average temperature due to the greenhouse effect.

Scientists say greenhouse gases -- mainly carbon dioxide released into the air by combustion processes -- have been building up in the atmosphere for decades. These gases trap heat that would otherwise seep into space.

A three- to five-degree increase in the average global temperature is predicted by the end of the century.

While a few extra degrees of heat doesn't sound like such a bad thing, especially as winter begins, a few degrees is all the difference between a livable environment and disaster.

For example, the average global temperature today is around 15ºC. During the last Ice Age, that average was only a short trip down the thermometer at 10ºC.

If the temperature increase comes to pass, the effects predicted by experts sound apocalyptic. The interiors of the continents of North America, Africa and Asia will experience more heat waves and droughts. New farmlands will spring up where none existed, while others will dry out. Some coastal areas will suffer powerful floods as ocean levels rise due to melting of the polar ice caps.

Great Lakes communities such as Niagara will endure their own unique problems affecting everything from health care to farming and fishing.

The report, called Preparing for a Changing Climate: the Potential Consequences of Climate Variability and Change, paints a grim picture of Niagara in 2030. Peter Sousounis, a University of Michigan professor and co-author of the report, said the study aims to help Great Lakes communities prepare for the future.

"We are saying these are the predicted effects and here is what you can do to prepare for them," Sousounis said in a telephone interview.

How will Niagara be affected?

- Higher temperatures will mean an increase in the number of severe air pollution days, particularly in the region's hot, humid summers.

- The region is likely to see less overall precipitation, though there will be an increase in violent storms.

- Niagara's lucrative agricultural industry could be hit hard, though Sousounis said the modelling used to predict weather patterns makes the future of fruit crops uncertain.

Nevertheless, Adrian Huisman of the Ontario Tender Fruit Producers Marketing Board said the real worry is if temperatures rise, fruit plants will bloom earlier, leaving them susceptible to devastating spring frosts.

"The later in the season the fruit blooms, the better it is because then the spring frost is behind you," Huisman said.

- Changes in algae and oxygen levels could damage the sports fishing industry as the lakes warm up. "Loss of cold, deep-water habitat and stresses caused by low oxygen could contribute to degrading the health of the food web, the fishery it supports and the balance of the entire ecosystem," the report says.

Of all the Niagara industries hurt by climate change, shipping will suffer the most.

Warmer temperatures leading to greater evaporation, combined with less rain and snowfall, will lower overall water levels in the lakes by from 1 1/2 to three feet in the next 30 years. This means cargo ships cannot carry as much because they have less draft (the distance between the bottom of the ship and the water line) to work with.

"Clearly, in an environment where other modes of transportation (rail and truck) are extremely price-competitive with Great Lakes shipping, the loss of even one inch of draft can seriously disadvantage Great Lakes carriers and ports," the study says.

TOMORROW: What can be done to protect the shipping industry from climate change?

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