



ENVIRONMENT BULLETIN

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Evaporation

During the summer, we report every two weeks to the lake community the condition of White Lake. An integral part of these White Lake Checkups is our reading of the depth of White Lake at the dam.

Although the dam at White Lake Village is the main control for lake levels, another factor also impacts lake depth: evaporation.

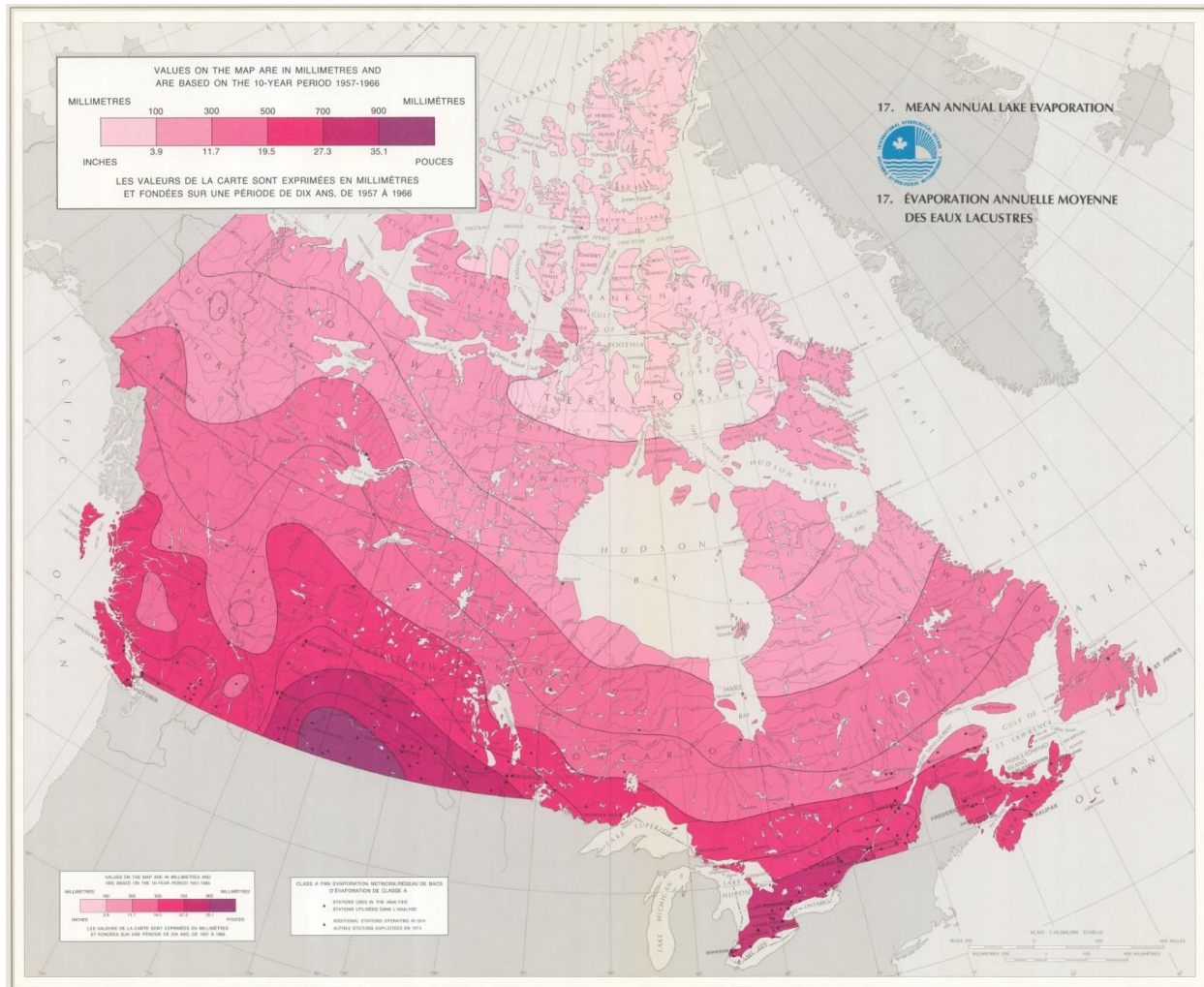
Evaporation in lakes is a key process in the water cycle that plays a significant role in regulating water levels and the climate of surrounding areas.

The rate of evaporation in lakes is influenced by several factors, including temperature, humidity, wind speed, and the surface area of the lake. Warmer temperatures typically increase evaporation rates, as does low humidity and high wind speeds. In short, geographical location, climate, and environmental conditions determine the rate of evaporation.

The map below illustrates the 'evaporation zones' in Canada. Clearly, evaporation is higher in the south of Canada as compared to the north.

Scientists have devised several methods for calculating evaporation rates. In lakes, evaporation rates can be several millimeters per day, translating to significant annual losses. For example, a small lake with an area of 100 hectares (1 km²) could lose between 500,000 and 1 million cubic meters of water annually due to evaporation, depending on the

climate. A recent study¹ concluded that for lakes in our climatic zone, evaporation is equivalent to about 20% of the water entering the lake (rain, streams, springs, etc.) annually.



What about White Lake?

We know from Ministry of the Environment reports that the annual flushing rate for White Lake is about one volume per year or 75 million cubic metres of water. This is the amount of water entering the lake annually. This means that the annual volume of water evaporated from the surface of White Lake is about 15 million cubic metres.

How much water is 15 million cubic meters? That much water is enough fill **6000** Olympic-sized swimming pools!

¹ *Stable Isotope in global lakes integrate catchment and climatic controls on evaporation*, Y. Vystayna et al, Nature Communications v. 12, Article number 7224 (2021).