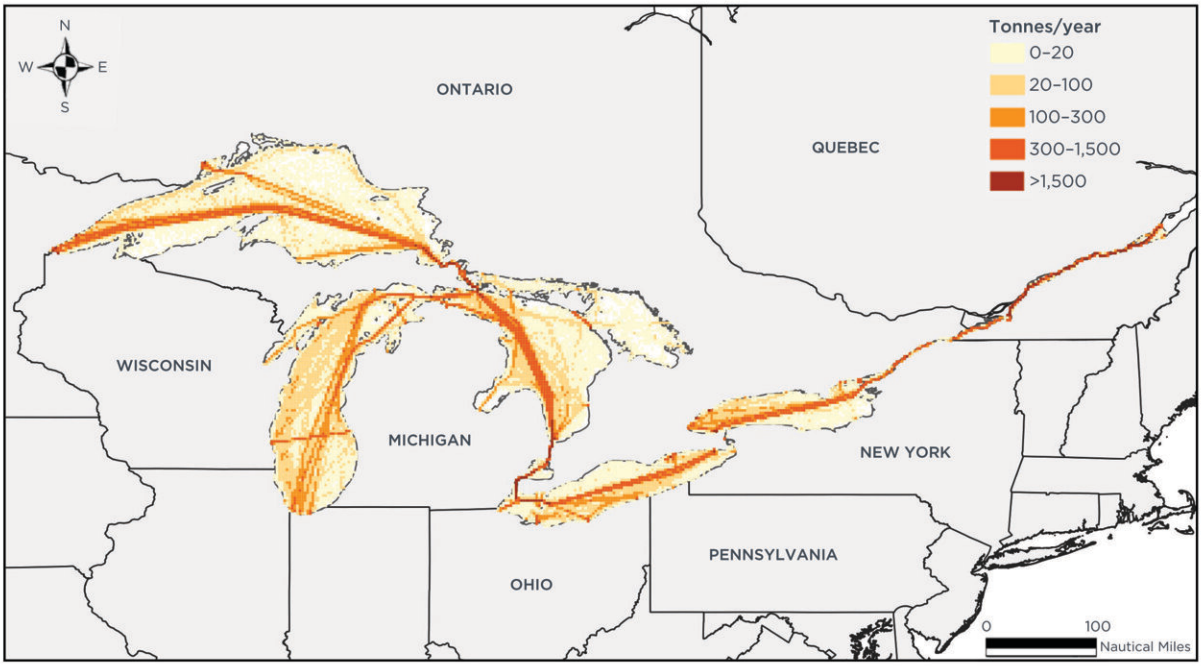
Tracking greenhouse gas emissions from ships in the Great Lakes-St. Lawrence Seaway

March 23 2022



CO_2 emissions from ships in the GL-SLS in 2019. Created with AIS data from exactEarth, ship characteristics data from IHS Markit, and base maps from ArcGIS Online. Credit: ICCT

A new study from the International Council on Clean Transportation (ICCT) estimates that ships in the Great Lakes-St. Lawrence Seaway (GL-SLS) consumed more than 500,000 tons of fuel and emitted more

than 1.6 million tons (Mt) of CO_2 in 2019. The new, wide-ranging emissions inventory for 2019 also shows that ships flagged to the United States and Canada were together responsible for nearly 80% of total CO_2 emissions, each about 40%.

While ships flagged to the Marshall Islands ranked second in terms of number of vessels in the GL-SLS, they emitted less CO_2 than U.S.-flagged ships. "Knowing the number of ships only tells you so much, and this underscores the importance of more granular analyses like this that help us understand ship activity," said Zhihang Meng, ICCT marine program associate researcher and co-author of the briefing paper released today.

Although the St. Lawrence Seaway portion is less than 1% of the geographic area of the whole GL-SLS, it was home to 25% of the CO_2 emissions in 2019 and had an average CO_2 emissions intensity 36-times higher than the Great Lakes. By ship type, the most emissions in the GL-SLS came from bulk carriers, approximately 1 Mt or 62% of the total CO_2, and they were followed by chemical tankers, responsible for about 10% of total emissions, and tugs, which accounted for about 9%.

"This inventory can be a baseline for a variety of stakeholders, including governments, ports, and community groups, in their efforts to reduce air pollution and mitigate the climate impacts of maritime shipping in the region," said Bryan Comer, Ph.D., ICCT marine program lead and study co-author. "Such actions could include promoting the use of shore power, shore-based or barge-based emissions capture bonnets, batteries, fuel cells, low-carbon fuels (as measured on a life-cycle basis), wind-assisted propulsion, and more."

The ICCT intends to periodically update the analysis of this important commercial waterway as more recent data becomes available. Additional data is also published with the study: a statistics file with details of

emissions of non-CO_2 climate and air pollutants including methane (CH_4), black carbon, sulfur oxides (SO_x), particulate matter and more; and an ArcGIS shapefile with the gridded CO_2 emissions inventory for the GL-SLS at a 0.05° x 0.05° resolution. The emission factors used were the same as those used in the International Maritime Organization's Fourth IMO Greenhouse Gas Study, except for ships that use heavy fuel oil with scrubbers. In the case of a ship with a scrubber, emission factors developed by the ICCT were applied.

More information: Paper: theicct.org/publication/ships- … kes-emissions-mar22/

Provided by International Council on Clean Transportation

Citation: Tracking greenhouse gas emissions from ships in the Great Lakes-St. Lawrence Seaway (2022, March 23) retrieved 22 June 2024 from https://phys.org/news/2022-03-tracking-greenhouse-gas-emissions-ships.html