

How many lakes are there, and how big are they?

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Because of the important role lakes play in regional and local biogeochemical cycling, including carbon storage and emissions, scientists need to know how many lakes of various sizes exist. However, determining the size distribution of lakes is more difficult than it may seem—the smallest lakes are often not recorded on maps. Some researchers have suggested that the number of small lakes is underestimated and have used size distributions to suggest that small lakes dominate the global lake surface area.

Because small lakes are often not included on maps, some researchers have estimated their abundance and size distribution using the assumption that the size distribution of lakes follows a power law. This assumption is supported by the fact that lake coastlines are fractals—zooming in on the coastline reveals more convolutedness, so that the length of the [coastline](#) depends on the scale at which it is measured—and fractal [geological features](#) typically follow a power law. On the other hand, a recent census of lakes in the United States found that the distribution of small lakes does not actually follow a power law in some regions, suggesting that studies based on assumed power law distributions have significantly overestimated the global number of lakes.

To help resolve the issue Seekell et al. considered lake size distributions in a theoretical [fractal geometry](#) framework, focusing on how elevation might affect the lake area distribution. Their calculations indicate that the lake size distribution should follow a power law in flat regions but

could deviate from a power law in mountainous regions. They confirm this empirically using lake size data sets from the Adirondack Mountains in New York and the flat island of Gotland in Sweden. Their analysis suggests that small lakes probably do not dominate the total global lake surface area.

More information: A fractal-based approach to lake size distributions, *Geophysical Research Letters*, [doi: 10.1002/grl.50139](https://doi.org/10.1002/grl.50139) , 2013.
[onlinelibrary.wiley.com/doi/10 ... 2/grl.50139/abstract](https://onlinelibrary.wiley.com/doi/10.1002/grl.50139/abstract)

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