The regional abundance and size distribution of lakes and reservoirs in the United States and implications for estimates of global lake extent

Cory P. McDonald, Jennifer A. Rover, Edward G. Stets and Robert G. Striegl

ABSTRACT: We analyzed complete geospatial data for the 3.5 million lakes and reservoirs larger than 0.001 km², with a combined surface area of 131,000 km², in the contiguous United States (excluding the Laurentian Great Lakes) and identified their regional distribution characteristics. For Alaska, we also analyzed (1) incomplete data that suggest that the state contains 1-2.5 million lakes larger than 0.001 km² covering over 50,000 km² and (2) localized high-resolution (5 m) data that suggest that the number of very small water bodies (< 0.001 km²) may be comparable with the number of lakes > 0.001 km² in some areas. The Pareto distribution cannot accurately describe the lake abundance-size relationship across the entire size spectrum, and extrapolation of this density function to small size classes has likely resulted in the overestimation of the number of small lakes in the world. While small water bodies dominate in terms of numbers, they are not numerous enough to dominate in terms of surface area, as has been previously suggested. Extending our results to the global scale suggests that there are on the order of 64 million water bodies larger than 0.001 km² in the world, with a total surface area of approximately 3.8 million km².

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