Development of Global Lakes & Reservoirs Repository (GLR) and their application for predicting estimating water quality changes in lakes and estuaries induced by global climate changes.

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Global Lakes & Reservoirs Repository (GLR) was developed in order to promote better comprehension of the status of lakes & reservoirs on a global scale. Basic information for each lake is stored, together with the whole surface shape of each lake & reservoir. For some lakes, bathymetry data is stored, which enables three-dimensional numerical simulations using Biwa-3D. Using this, data three lakes (Lake Biwa, Lake Tahoe and Lake Toba) are calculated by their vertical mixing structure. The whole database is used to apply basic parameters; it is also used with simpler ecological models in order to discuss potential impacts on lakes & reservoirs of global-scale climate change. Fluxes like continental hydrological fluxes from international rivers, associated with large-scale successive reservoirs, such as the La Plata river basin, are being estimated by combining GRL with continental-scale hydrological models.

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