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GEMStat-a unique tool for assessing the impact of land-based activities on near-shore marine environments

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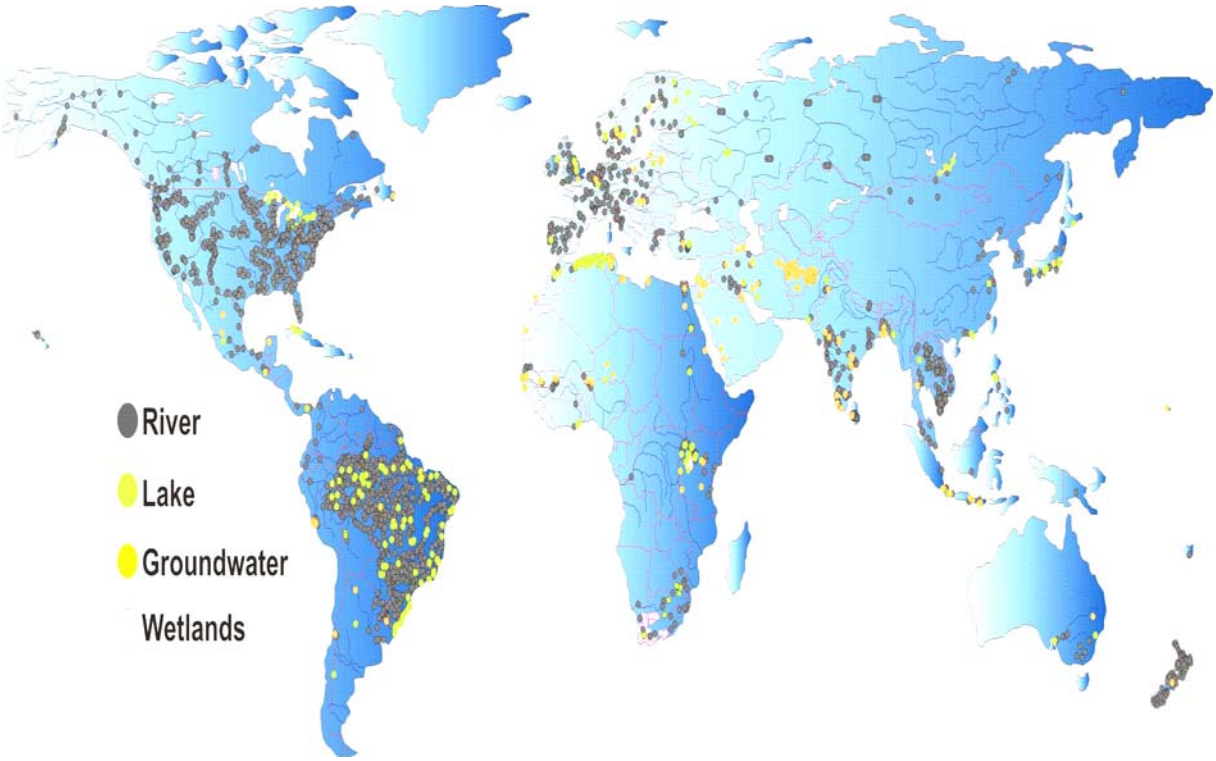

GEMStat is the global water quality database of the UNEP GEMS/Water Programme. Data are compiled from countries and a variety of NGOs from around the world. There are now >4 million entries from over 3200 stations with a temporal range of 1965 to 2009. This is a living database that is constantly being updated. While some instantaneous flow data are kept the main hydrology data come from WMOs Global Runoff Data Centre (GRDC) in Germany. GEMS/Water and GRDC have about 650 joint monitoring stations that allow flux computations of dissolved nutrients and contaminants as well as particular materials to inland waters and near-shore marine waters. Data can be used to assess water quality changes due to land-use activities or climate change, e.g., water temperature changes in lakes and spatial and temporal changes in suspended solids and nitrogen concentrations in rivers. GEMS/Water was the first to develop a suite of global water quality indices, a simple to interpret tool for water managers and policy makers. One pertaining to the quality of raw drinking water sources has been applied in a number of countries, including Japan, where we have used it to assess the rivers flowing into Tokyo Bay and bay waters themselves. We show the changes in quality under present conditions and different modelled scenarios. GEMStat on the web will be greatly enhanced in April 2010, allowing for data uploads and the formation of on-line working groups that form using passwords. These will have access to advanced on-line statistical, graphing and modelling capabilities making GEMStat even a more

powerful tool for researches interested in land-ocean interactions.

Keywords: GEMStat, GEMS/Water, Global database, Water quality, fluxes from Land, Global Water Quality Indices