

## Assessment of water quality changes in reservoirs in Japan affected by global warming

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Reservoirs are important infrastructure in that they occupy a major fraction of water resources in our society. In Japan, more than 50% of domestic and industrial water is covered by reservoirs. However, because of their characteristics of closed water body, influences of water quality deterioration tend to accumulate. Therefore, improvement of water quality is generally takes a long time once a reservoir is polluted. In order to project potential influences from climate change on water quality in water resource reservoirs in Japan, assessment has been tried through structure of water temperature by the use of vertical 1-dimensional numerical simulations.

Thirty-seven multipurpose reservoirs including domestic water supply for their purpose were chosen for the assessment in this study, considering geographical distribution and hydraulic characteristics of the reservoirs. Meteorological conditions of atmospheric temperature and solar radiation for computations in this study were prepared using outputs from a GCM, MIROC 3.2 (hires). Water quality was evaluated in terms of chlorophyll a from water temperature conditions near the water surface, where phytoplankton tends to grow.

The results of chlorophyll a estimation indicated that number of reservoirs classified as eutrophic according to the criteria proposed by OECD in the present period of 1980-1999 was 10. However, number of eutrophic reservoir would increase as many as 21 at the period of the end of the century of 2080-2099.

Keywords: reservoir, climate change, water quality, water resources