

Effect of human activity on salinization of the Lake Bosten in Xinjiang, China

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Lake Bosten is located in Yanji Basin of Xinjiang in China. It is the biggest freshwater lake inland China now, with 1002 km² in area. Also it provides very important water resource for the extremely arid-zone of the central Asia. However, with the increasing of irrigation lands in the basin and water requirement for the city in the lower reaches, the lake had shrunk sharply, especially during 1980s; moreover, it was reported by Yomiuri (Newspaper in Japan) that more water would be taken out from the lake since 2000. To avoid the misfortune experience such as the Lake Aral and Lop, it have suggested that the water balance of the lake must be take care immediately. Accordingly, we have analyzed the water budgets in the Yanji basin based on the data observed at the hydrological and meteorological stations, and made a numerical model to simulate their changes for the future. The relative results had been reported in some symposiums and academic forum. But as another feedback of the lake corresponding to the people's actions, water salinity had increased, it implies that the lake will become a salty lake soon. Thus, it requires us to study on mechanism of the salt changes, and to predict the possible changes about water salinity in the lake. It will be of much benefit to the development of fisheries, as the lake is the habitat for the 24 species of fish which including the 4 native species (e.g. *Aspiorhynchus Laticeps* etc.). The purpose of this study is to establish the models to predict the changes of water, heat and salt in the lake, in order to using the water resources carefully and effectively in future.

In this fiscal year, we develop a numerical model to forecast an annual variability of water level of the lake. The result shows that the model gives a good prediction of the variation of water depth (h) as shown in the Figure. By using the model, we estimate effects of the project started in fall, 2000. We also investigate the variation of salt concentration in the lake form the historical data. The result shows that the salt concentration becomes high from 0.3 to 1.9 g/l since 1958 to 1982. This is probably due to the human activity such as making canals, irrigation facilities and so on.

