

Annonce de conférence

Jeudi 31.10.2013 à 17:15, **GC B 330 (génie civil)**

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River habitat conservation and watershed modelling and management

The eco-environmental impacts of reservoir operation have become the bottleneck of hydropower development. This research is to develop a systematic methodology to quantify the eco-environmental impacts of hydropower production and adapt reservoir operations so as to balance the social-economic interests and the river ecosystem conservation. The research established a method to reveal the adaptation mechanism of target species to the changes of hydro-environmental factors from the angle of species physiology and ethology.

Basing on the relations, the research developed a comprehensive river ecohydraulics modeling system to simulate the eco-environmental effects of reservoir operation and derive a reasonable hydrograph of ecological flow requirement. Finally, it proposed an optimization model to adapt reservoir operations in order to balance social-economic interests and eco-environmental conservation. The methodology has been applied to adapt the operations of two cascaded reservoirs with diversion-type hydropower stations in the Yalong River for fish habitat protection, and to optimize the operation of clustered reservoirs in the Lijiang River for holistic ecosystem conservation.

The conflicts between water quality protection and environmental capacity using are becoming severe. TMDL (Total Maximum Daily Load) approach which is developed in the United States a decade ago has been proved a successful strategy to balance the conflict.



Yalong river near Jiulong

This research took the Beiyunhe river basin as the studied case, and developed a pilot TMDL for management of CODMn and NH₃-N loads. The core of the TMDL system was a model which integrated a semi-distributed hydrological module, a diffusive emission module and a one-dimensional water quality module. Field monitoring data were collected and used for model calibration and verification. Through the simulations of typical hydrological regimes (dry, normal and wet), a preliminary scheme of daily load control was established, which incorporated the local social-economic aspects. Meanwhile, an online hydrological and water quality monitoring network is integrated with the modelling system, so as to achieve daily-based watershed load management

La conférence sera donnée en anglais. Durée env. 45 minutes, suivie d'une discussion.

Prof. Dr Anton SCHLEISS