



Exploratory studies into the prospects for seasonal forecasting of lake levels and outflows

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Some of the largest lakes in the world are in Africa and seasonal forecasts of levels and outflows can potentially help with water supply, irrigation and hydropower operations; in particular regarding the risks from floods or droughts. Some factors which increase the prospects for real-time forecasting include the significant time delays between rainfall and outflows resulting from the huge volumes of water stored, and that many studies have shown possible links between regional rainfall and climate indices for the Indian Ocean and elsewhere. On the other hand, on account of the huge areas covered, catchments can span several climate zones and rainfall and flow monitoring networks are often sparse. Exploratory studies into some of these issues are described based on case studies for two large lakes, including some preliminary findings regarding data assimilation and the complexity of models required. The studies were performed using a range of stochastic signal identification tools and are compared with the findings from an ensemble streamflow prediction approach. Preliminary conclusions are then drawn regarding the relevance of these results to the development of operational forecasting models.