Flood Management in Climate Change Circumstance in Vietnam

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Over the last three decades, in Vietnam, climate has changed considerably. Annual average temperature and rainfall have increased in almost places, especially the Central Vietnam. More extreme precipitation events that often led to flood disasters have been observed. This trend is expected more seriously in the next decades [1].

In this study, the short-term prediction of inflow based on the coupling of global numerical weather prediction model (NWP) and rainfall runoff model was proposed for the Thach Han reservoir (catchment area of 2,700km^2) in Central Vietnam. The results showed that inflow prediction based on direct rainfall forecast from NWP underestimated the actual inflow. However, the inflow prediction using the rainfall forecast obtained from model output statistic depicted a better agreement with the actual inflow, as illustrated in Table 1 and Figure 1. It demonstrates potential inputs in development of appropriate evacuation plans, through proper reservoir operation.

Keywords: climate change; numerical weather prediction; flood forecast

Table 1. Nash-Sutcliffe Index (NSI) and forecast error of inflow to the reservoir with 24-hrs forecast lead time, for the validated flood event on Dec. 24th-29th, 2008.

Discharge (m^3/s)	NSI	Total volume error (%)	Peak discharge error (%)
Q_dmo		67.76	64.18
Q_mos	0.79	18.67	3.75

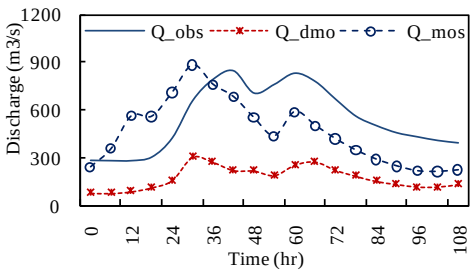

Figure 1. Time series of observed inflow (Q_obs), and predicted inflow based on: (i) direct model output (Q_dmo) and (ii) model output statistic (Q_mos) for the validated flood event on Dec. 24th-29th, 2008.

References

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