Geophysical Research Abstracts
Vol. 14, EGU2012-8487-1, 2012
EGU General Assembly 2012

Characteristics of Short-Range Probabilistic Flood Prediction in Korea

T.-H. Kang, K.-T. Lee, and Y.-O. Kim
Department of Civil and Environmental Engineering, Seoul National University, Republic Of Korea (kangth@snu.ac.kr)

In this study, the focus is how the uncertainty in weather input data can be conveyed to the runoff simulation in the case of short-range prediction in Korea. MAPLE (McGill Algorithm for Precipitation nowcasting by Lagrangian Extrapolation) and KLAPS (Korea Local Analysis and Prediction System) deterministic forecasts of KMA (Korea Meteorological administration) were adapted as the input data but converted to ensembles with two statistical techniques such as the time-lagged and the multi-model ensemble techniques. Since MAPLE and KLAPS both showed unignorable bias, an additional bias correction method was applied to be able to expect reliable probabilistic prediction. In both models, the rainfall prediction smaller than 10 mm generally underestimates the observation, while the rainfall larger than 10 mm overestimates significantly. Since the MAPLE and KLAPS forecast errors are strongly auto-correlated, AR (Auto-Regressive) model was employed to reduce the existing bias. Using the generated rainfall ensemble from MAPLE and KLAPS as the input of the Storage Function hydrologic model, the runoff ensemble for the Jeong-Seon basin in Korea was simulated. The results showed that the ensemble could simulate the peak amount of runoff well with the AR model but there was still peak-timing error in some cases. The uncertainty of rainfall input became dominate in the streamflow simulation after 3∼6 hours delays from the time when rainfall was predicted and the length of the delaying time showed correlation with the amount of simulated runoff.