



On assimilating meteorological and hydrological data to improve hydrological forecasts generated using meteorological predictions

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The coupling of ensemble meteorological forecasts to hydrological models can give an increase in forecast lead times. In some situations, such as the forecasting of flash floods in the example given, this improvement in lead time may be critical in operational settings. It is often the case that the meteorological forecast are not issued as often as the observed data become available. For example COSMO-LEPS forecasts are issued daily while hydrological and meteorological data are often available more frequently (e.g. hourly). This indicates that observed data may be assimilated not only into the hydrological model but also to calibrate the meteorological predictions. This work demonstrates a method of calibrating the meteorological predictions of catchment average rainfall to that computed from observed rainfall. Methods of allowing for errors in the prediction of both the magnitude and timing of rainfall events are demonstrated. The effect of this upon the hydrological predictions derived from the forecast precipitation are presented.