



Hydrologic Forecasting at the US National Weather Service in the 21st Century: Transition from the NWS River Forecast System (NWSRFS) to the Community Hydrologic Prediction System (CHPS)

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The US National Weather Service developed the River Forecast System (NWSRFS) since the 1970s as the platform for performing hydrologic forecasts. The system, originally developed for the computers of that era, was optimized for speed of execution and compact and fast data storage and retrieval. However, with modern computers those features became less of a driver, and, instead, the ability to maintain and transition of new developments in data and modeling research into operations have become the top system priorities for hydrologic forecasting software applications. To address those two new priorities, and to allow the hydrologic research community at large to be able to contribute models and forecasting techniques, the National Weather Service proposed the development of the Community Hydrologic Prediction System (CHPS). CHPS must be sufficiently flexible not only to ensure current operational models and data remain available, but also to integrate readily modeling approaches and data from the wider community of practitioners and scientists involved in hydro-meteorological forecasting. Portability considerations require the computational infrastructure to be programmed in a language such as Java, and data formats conform to open standards such as XML. After examining a number of potential candidates, the NWS settled on the Delft Flood Early Warning System (Delft FEWS) from Deltares as the basis for CHPS, since it shares the basic design characteristics, the underlying community philosophy and was being successfully used in operations in several countries. This paper describes the characteristics of CHPS and the transition path to make it operational and available to the community.