

## **Real-time correction on the river stage forecasting with an equivalent stage approach**

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**Abstract** The auto-regressive model (AR model) has been widely used to correct forecasted river stages. However, the nonlinear relationship between the widths of channel and stages in the cross-sections affects its correction performance. An equivalent stage technique is proposed to reduce this effect, in which the observed and forecasted stages are converted into the observed and forecasted equivalent stages. The errors between these two kinds of equivalent stages are employed in the AR model to forecast equivalent stage errors which are reduced to the forecasted stage errors for correcting the forecasted stages. The real-time correction method that combines the technique with the AR model (EAR method) is applied to the tidal reach in the Caoe River, China, for simulations of river stage. The results indicate that the EAR method can provide better accuracy for stage forecasting than the AR model, and especially has the capability of reducing the errors at simulated peak stages.

**Key words** river stage forecasting; equivalent technique; flood

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