

# ***Interactive comment on “Real-time forecasting of typhoon inundation extent in a partially-gauged area through the integration of ARX-based models and a geographic information system” by Huei-Tau Ouyang and Yi-Chun Chen***

## **Anonymous Referee #1**

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The authors adopted the IPDB to establish the relationship between the rainfall and water-level. Then apply the relationship to forecasting flooding, which was generated by a totally different model. The IPDB is mainly developed to evaluate the flooding due to intense rainfall. The "flat-water model" the authors are using is basically driven by fluvial flooding. I am not sure if this would be an appropriate approach? First of all, the rainfall patterns used in IPDB for different return period are basically the same pattern with different intensity. Also, it did not consider the spatial variability of rainfall distribution. Would the relationship derived from such data be able to reflect the real time rainfall situation for forecasting flooding?

Are there only one additional river gauge and one rain gauge used for predicting the water level at a selected location? Which are used for each location? The authors mentioned that rainfall forecast QPESUMS data from CWS are also used. So in this case, there should be two Rs in the equations. One for the observation and one for the QPESUMS forecast. However, neither the single rain gauge data nor the QPESUMS was used in the IPDB. Therefore, how can the relationship derived from IPDB be used for completely different inputs? It is surprising that the authors can get good fitting.

What is the temporal resolution on modelling? unit of t? Can the authors mark the name for each river gauge in Figure 5? In Figure 6(a), according to the modelling assumption, how can flood occur in sparse areas that are not connected to other parts?

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Discussion paper

