

# EARLY FLOOD WARNING FOR LINYI WATERSHED BY GRAPES/XXT MODEL USING TIGGE DATA

*Jingwen Xu<sup>1,2,3</sup> Wanchang Zhang<sup>1\*</sup>*

<sup>1</sup>Key Laboratory of Regional Climate-Environment Research for Temperature East Asia, Institute of Atmospheric Physics,  
Chinese Academy of Sciences, Beijing 100029, P.R. China

<sup>2</sup> College of Resources and Environment, Sichuan Agricultural University, Yaan 625014, P.R. China

<sup>3</sup> Graduate School of the Chinese Academy of Sciences, Beijing 100039, P.R. China )

**Abstract:** Early and effective flood warning is essential to reduce loss of life and economic damage. Three global ensemble weather prediction systems, namely babj(CMA), ecmf(ECMWF) and kwbc(NCEP) , through the “THORPEX Interactive Grand Global Ensemble” (TIGGE) archive are used in this research to drive GRAPES-MESO model and the output in turn drive the hydrological model XXT, the hybrid model of TOPMODEL and Xinanjiang model, for a case study of a flood event in Linyi watershed in July 2007. Results show that rainfall forecasts by GRAPES using TIGGE data from the three forecast centre are all underestimate high rainfalls; and that rainfall forecasts by GRAPES using the data from NCEP forecast centre is closest to observations and that from CMA perform worst. Moreover, the Grand-Ensemble is not better than all single Ensemble Prediction Systems (EPS) for rainfall forecasts. In contrast to rainfall forecasts, runoff forecasts are much better for all three forecast centre, especially for the NCEP, which suggest that early flood event warning by GRAPES/XXT model using TIGGE data is feasible and provides a new approach to raise preparedness and thus to reduce the socio-economic impact of floods.

**Keywords:** TIGGE; GRAPES; XXT; Flood warning; Rainfall; Runoff