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Hydrology and Earth System Sciences
Discussions

Interactive comment on "A hybrid model to simulate the annual runoff of Kaidu River in northwest China" *by* J. Xu et al.

Anonymous Referee #1

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The ensemble empirical mode decomposition (EEMD) is integrated with a back propagation artificial neural network (BPANN) and a nonlinear regression equation for simulating annual runoff for a watershed. My major comments are: 1) Figure 11 compares simulated and observed annual runoff. My suggestion is to break the time period with observation (1960-2012) into calibration and validation periods (e.g., 1960-1989 for calibration and 1990-2012 for validation). The calibration period is used for parameter estimation for the EEMD, BPANN and nonlinear regression equation. 2) Figure 7: the physical meanings for MF1, MF2, MF3, MF4 and Trend components need to be explained. MF1∼MF4 are corresponding to different frequencies. Which kinds of climatic phenomena are corresponding to each of the components (e.g., El Niño and La Niña)? What's the meaning of the trend and its contributing factors (e.g., land use change etc)? 3) For the BPANN, what are the inputs each of the components (MF1∼MF4)? Does

these inputs vary from MF1 to MF4? This may be related to the second comments.

I think the manuscript needs some general revision of the English language. For examples, a few minor comments are listed below:

Line 15 on page 2: "...contain three types, i.e. stochastic models, dynamics models and distributed models." Please revise this since stochastic VS deterministic, lumped vs distributed, conceptual VS physically-based. Correspondingly, the first paragraph on page 3 may need to be revised.

Lines 20-21 on page 2: "Therefore, stochastic models and dynamics models all focus on climatic- hydrological process." The logic is unclear. Please revise this paragraph.

Line 24 on page 2: "evaporation" is usually an output. "potential evaporation" is an input.

Line 22 on page 3: "physically based land surface..."

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