**Hydrology and
Earth System
Sciences
Discussions**

Interactive comment on "Technical note on probabilistic assessment of one-step-ahead rainfall variation by Split Markov Process" *by* R. Maity and D. Prasad

Anonymous Referee #1

The paper presents a markov-based daily rainfall model, with the transition probabilities from a state to a sub-state. The 9 states are defined by ranges of daily rainfall amounts and the sub-states by differences in daily rainfall amounts. However, the paper does not make any contribution to hydrologic science due to deficiencies in the modelling effort.

1) The main issue is that the sub-states are essentially the states with unnecessary increase in the number of model parameters. For example, if R=70mm in state 8 and moves to sub-state f with new R=70+20=90mm, it is the same as moving from state 8 to state 8. 2) The paper does not show an advantage of the spilt markov model over

the original markov model. The models in the references cited (eg. Stern & Coe) can produce better results. 3) You need to use all data available and not only the monsoon periods. 4) How were the states' range rainfall amounts determined? Do they reflect quantiles? 5) The paper is poorly written and ideas not clearly explained. 6) There are better tools to model uncertainty than as presented in the paper.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 189, 2011.