Nonlinear Processes
in Geophysics
Discussions

Open Access

# Interactive comment on "Logit-normal mixed model for Indian Monsoon rainfall extremes" *by* L. R. Dietz and S. Chatterjee

## Anonymous Referee #2

Received and published: 9 May 2014

The authors illustrate, in this study, the applicability of the GLMM methodology to the study of extremes of rainfall extremes for the Indian sub-continent. Extremes of rainfall over large areas are typically difficult to define and analyze, varying over time and space, n addition to being affected by potentially similar large scale drivers (e.g. ENSO). The difficulty typically lies in meaningfully accounting for the substantial heterogeneity in extremes across space in a (statistically) parsimonious manner. In this context, the analysis, wherein heterogeneity is accounted for by a relatively standard (homogeneous) random effects framework while the transformed conditional mean is linear in the covariates $X$, is potentially of interest to researchers working in the area. Previous research has tended to use simplistic methods when working with station-data or some smoothing over space to identify linkages to large-scale drivers and the current study illustrates a promising alternative method of accommodating heterogene-

ity at the station-level.

Essentially, this study introduces, to the literature on understanding rainfall extremes, a new way of statistical modeling and presents its application to the case of extremes of the Indian summer monsoon rainfall. Overall, the study has many interesting elements, and has the potential to be interesting and informative to researchers working on modeling rainfall extremes.

However, the study suffers from many lacunae, including insufficient clarity regarding the nature of extremes in the Indian sub-continent, the statistical methodology's benefits are not clear or clearly explained, the explanation of the methodology itself requires some improvement, and the writing suffers from far too many errors. In my opinion, the overall quality of the analysis is insufficient to merit publication as it stands. I believe that revisions are necessary before it can be accepted for publication. More details, including specific suggestions, may be found in the attached document.

Please also note the supplement to this comment:
http://www.nonlin-processes-geophys-discuss.net/1/C124/2014/npgd-1-C124-2014-supplement.pdf

Interactive comment on Nonlin. Processes Geophys. Discuss., 1, 193, 2014.