Review of manuscript HESS-2012-383, Determining spatial variability of dry spells; Markov based method, applied to the Makanya catchment, Tanzania by J. Bazrafshan

General comments:

The manuscript present a methodology to assess the probability of crop failure due to a critical dry spell duration, which is based on soil properties and crop water requirements, over a catchment in Tanzania. In methodology, most equations are cited by De Groen (2002) and De Groen and Savenije (2006). It seems that the work does not show any new things following before findings. Perhaps, what is new in the article (beyond of both mentioned studies) is the regionalization of Markov properties and rainfall amounts. Markov properties are mapped using a multiple regression and rainfall amounts, by an interpolation technique. The authors should clarify the differences between their study and both studies De Groen (2002) and Savenije (2006).

Specific comments:

Introduction:

1. One published work cited in the manuscript, i.e. Mathugama and Peiris, 2011, did not appear in the reference section.
2. In three cases the publication year does not match with the references (i.e., Savenije, 1999 or 1998? Wilhit and Glantz, 2012 or 1985? Sivakumar, 1991 or 1992?).

Methodology:

1. What is n_{ls} in the equation (9)? Please give a clear definition of it.
2. In the equation (9), what kind of distribution dose $n_{dry,max}$ have? Dose it obtain through an analytical procedure?
3. Please give the units for θ and E_p in the equation (10).
4. Page 11713, line 19- Replace "coefficients" with "parameters", because α is constant, and others, i.e. β and ε, are the regression coefficients.
5. Page 11724, Table 2- Change spelling of "R_2 statistic" with "R^2 statistics".

6. Page 11723, Table 1- R^2 statistic should not be negative, but some values of it, for example in Rain gauge 9437003, did appear negative. Please make clear this point.

7. Page 11725, Table 3, Column 2- It seems that the authors used only one semivariogram model, i.e. Exponential. Despite the different types of semivariogram model like spherical, and Gaussian, the authors did not compare the models to find out the best one among the others. Am I wrong? Please clarify this point.

8. Equation (10) considered daily E_p ratio to be constant during a given time period, while it naturally changes from day to day. It is necessary the authors express this point in a proper place in the article.