**Earth System
Dynamics
Discussions**

Interactive comment on "Effects of climate variability on Savannah fire regimes in West Africa" *by* E. T. N'Datchoh et al.

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Answer to comment on the manuscript entitled "Effects of climate variability on Savannah fire regimes in West Africa" by E. T. N'Datchoh et al. Referee 3

Great thanks for your comments and suggestions. 1. Method to access the influence of climate indexes We have calculated the standardized monthly burned areas anomalies during dry season months (October, November, December, January, February and March) over 7 years . For each month of dry season, we have computed anomalies base on the whole dry season burned areas mean. Then we have considered each month of dry season during the study period that we correlated with each month indexes during the entire study period. For example, we correlated the burned anomalies of October with SOI indexes from January to December and we retained only where

we found a correlation coefficient greater or equal to 0.8 in absolute value.

2. Time series of climatic oscillations indexes over the study period and burned areas anomalies For each fire region defined in this study, the time series of climatic oscillation indexes is presented on the following figures:

MEI indexes and burned areas anomalies over the study period.

SOI indexes and Burned areas anomalies over the study period.

NAO indexes and burned areas anomalies over the study period.

SSTG indexes and burned areas anomalies over the study period.

3. As climatic anomalies could have an influence on the preceding rainy season, how can the authors assess the influence the 'Atlantic and Pacific basins' on burnt areas anomalies for specific months. I don't understand this well, correlation coefficients are generally calculated over the whole time series; otherwise there is no evidence of a causal link between the variables. The purpose here is to look for some indicator in monthly climate indexes and dry months burned areas extent in term of predictability. Since biomass burning is a seasonal practice (during dry season, almost other 3 regions there were no burned areas during wet season), we cannot calculate correlation coefficient with wet season months.

4. Principal component analysis (PCA) We have also done PCA computation as you advice us in your comment, the results are below and a section has been introduce in the new version of the manuscript. We are aware of the fact that PCA method is more adequate for a large amount of data; we have applied to this short time series, as we said in the manuscript the main purpose of the study is not to establish rigorous relationship but to show how accurate and continuous database on fire practice is necessary for studies of complex practice involving climate, ecology and society in this vulnerable West Africa region.

Please also note the supplement to this comment:
http://www.earth-syst-dynam-discuss.net/3/C659/2012/esdd-3-C659-2012-supplement.pdf

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