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Discussions

Interactive comment on "Characterization agricultural vulnerability to drought in the Northeast of Brazil" *by* Bruce K. N. Silva et al.

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brucekellys@hotmail.com

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Dear reviewer,

I tried to apply most of your suggestions in the article. Thank you very much for your evaluation.

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Characterization agricultural vulnerability to drought in the Northeast of Brazil

Bruce K. N. Silva[1], Paulo S. Lucio[1], Cláudio M. S. Silva[1], Maria H. C. Spyrides[1], Madson T. Silva[2], Lara M. B. Andrade[1]

[1]Programa de Pós-graduação em Ciências Climáticas, Universidade Federal do Rio Grande do Norte-UFRN, Campus Lagoa Nova, 59072-970, Natal-RN, Brasil.
[2]Unidade Acadêmica de Ciências Atmosféricas, Universidade Federal de Campina Grande-UFCG, Rua: Aprígio Veloso, 882, 58429-900, Campina Grande-PB, Brasil.

Correspondence to: Bruce K. N. Silva (brucekellys@hotmail.com)

Abstract. The main objective was to create an indicator of agricultural vulnerability to drought in the Northeast of Brazil (NEB). The data used for precipitation belong to ANA (Agência Naciaonal das Águas) considering the climatological norm from 1979-2008. Data on agricultural productivity and demographic characteristics were obtained in the agricultural census of IBGE (Instituto Brasileiro de Geografia e Estatística) in 2006 and, finally, data on natural disasters in the period 1991-2010 with CEPED (Centro de Estudos e Pesquisa em Engenharia e Defesa Civil). The Multivariate Statistical Analysis Factorial technique allowed to reduce the number of variables and to estimate a model of the sensitivity component that reproduced 42% of the original variance, besides the factors trying to represent the productive dynamics of the NEB. The results show that the Southern NEB presented the highest degree of agricultural vulnerability (17,81-121,44) in the 2000 census, when compared to the census of 2010. In the Southwest it is observed that a part of the semi-arid region presented a moderate degree (0,74-1,08) and much higher in extension when compared to the 2000 census, evidencing that exposure to drought does not directly influence the agricultural sensitivity in the most productive areas of the region. The adaptive capacity factor presented significant results for the composition of the indicator of agricultural vulnerability, mainly in the semi-arid region that varied from (0,71-5,42). In this way, it is concluded that, between the census, the southern and central part of the NEB reduced agricultural vulnerability, but the region should benefit from early warning systems as well as the development and adoption of natural resources and technology management, with the objective of educating producers about the potential impacts of extreme events.

1 Introduction

The Brazilian northeast region (NEB) is considered the most vulnerable region, due to climatic variations such as irregularity of rainfall, water deficit and low social and economic indicators (Torres et al., 2012). The high temporal and spatial variability of rainfall in this region encourages some studies to seek for a characterization of extreme precipitation events, for example, the work of Oliveira et al. (2014) affirmed an increase of scale and seasonality of precipitation in the autumn months. On the

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Fig. 1.