Assessing differences in land productivity trends to climatic data in arid and semi-arid zones: a study case in northern Mozambique

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**Abstract.** In recent years many efforts have been made to locate and measure land degradation worldwide to reach the target to reduce its progress, reduce poverty and increase food security and nutrition, following the United Nation Convention to combat desertification (UNCCD) and the Land degradation neutrality (LDN) initiative of the Sustainable Development Goals (SDG) of Agenda 2030. Several international reports provide different guidance on the most suitable land degradation indicators, and methodological approach in measuring and monitoring them. Among all, land productivity indicator raised interest because it can be easily quantified and spatialized using remote sensing data and techniques, and influence that the various limiting factors have on its performance can be verified.

Focusing on the land productivity trajectories, the objective of this study is to analyze how different climatic datasets and trend calculation methods may affect productivity analysis. Analysis was tested and validated in the northern part of Mozambique, as it is a climatically vulnerable zone whose natural resources are rapidly depleting in recent years due to deforestation actions and reduction of soil fertility.

Long-term normalized difference vegetation index (NDVI) time series were used as a proxy of land potential productivity from 2000 to 2015. Results were tested for trend significance using different calculation methods and climatic dataset to analyze the effect of data to trend responses. Rainfall dataset was used for climatic signal as the rain is the main limiting factor in arid and semi-arid zones.