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Recent climate change in a tropical rainforest in the Congo Basin: local and regional scale

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Our study analyzed the recent climate change in an important Congolese intact forest during the period 1980-2016 in order more to understand their vulnerability and the new research at local scale. The climatic data are constituted of daily rainfall, minimum and maximum temperatures from January 1980 to December 2016. We considered climate indices developed by the Expert Team on Climate Change Detection Monitoring Indices (ETCCDMI). This climate change study in YBR during 1980-2016 period has shown that a no significant rainfall change has been found because a no significant quadratic trend is found almost for all the precipitation indices, for example: (i) the number of rainfall days does not change significantly, while all results show very significant increasing trends for average rainfall for wet days, and for the frequency, intensity and proportion of very wet days. The study found that a strong warming is remarked by: (i) a very significant increasing trend for the average annual for minimum, maximum and mean temperature; (ii) a very significant increasing trend for warm night; a significant increasing trend for warm day; (iii) a very significant decreasing trend for extreme cool day and a significant decreasing for cool day. On the both, these results of climate change (temperature and rainfall) are consistent with previous and projected studies on climate change over African rainforest, especially Congo Basin rainforest. The forest response to recent climate change could be remarked for example, by the widespread decline of photosynthetic capacity and moisture, the altering of composition and structure of the rainforests and the impact of biodiversity and carbon storage, the losses in forest productivity and tree cover, tree growth and forest dynamics disturbance. It's necessary to carry out the studies on forest response to climate change on forest, globally based on resistance options, resilience options and response options.

Key words: climate change, forest, Congolese forest, Congo Basin Forest, vulnerability, adaptation and