



Projected changes in daily precipitation in West Africa with implications for crop production around 2050 in CORDEX simulations

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With irrigation occupying less than 1% of all croplands, agricultural production in West Africa can potentially severely impacted by changes in precipitation.

We identified a number of precipitation characteristics that impact crop yields and analyze mid 21st century changes in these characteristics over croplands in West Africa using a multi model ensemble of 16 RCM/GCM combinations providing data for the CORDEX Africa domain.

Besides long term mean values, we analyze interannual variability of these precipitation characteristics.

Despite a moderate increase ($\sim 3\%$) in total rainy season precipitation in the ensemble mean prediction, we find other characteristics that could potentially have detrimental effects on crop yields. A robust and consistent delay in the onset of the rainy season (1 to 4 days from South to North), with no apparent change in the cessation of the rainy season, leads to a general shortening of the rainy season. Rainfall intensity generally increases with a slight decrease in the number of rainy days ($> 5\text{mm}$) during the rainy season. No noticeable change was found in the dry spell frequency (5-15 days).

These changes do not only impact agricultural production but can have wide ranging effects on other sectors. The spatial consistency of these changes highlight the need for regional prioritization of adaptation measures such as an expansion of irrigated areas.