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Recent trends in the variability and extremes of daily rainfall events over Sahelian countries (western Africa), and the 1961-2000 period

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An analysis of trends and characterization of the variability and extremes of daily rainfall over the period 1961-2000 is made over the Sahel. The work was carried out in the framework of a collaborative and multidisciplinary project which has been initiated to strengthen adaptive capacity to climate changes in African Sahel countries that participate in the CILSS organization (Comité permanent Inter-États de Lutte contre la Sécheresse au Sahel), as well as to help to manage the risk associated to climate variability and change. It has involved the AGRHYMET research centre (AGRIculture HYdrology METeorology located in Niamey, Niger), Environment Canada and the University of Quebec at Montreal (Canada), with financial support from the Canadian International Development Agency.

From observed daily precipitation, of the analysis used climate indices to characterize daily rainfall in terms of intensity, duration and frequency, such as total precipitation, the standard deviation of daily rainfall, the frequency of wet days, intensity per wet days, maximum length of drought events (i.e. maximum of consecutive dry days) and extremes as 90th percentile of precipitation and maximum over three days.

Time series trends for each index over April-October and for each month of this inter-

val are computed using Kendall τ test and slope evaluation method of Sen. The most statistically significant results established for 1961-1990, and 1961-2000 periods are analysed and discussed according to the established rainfall variability in Sahel and West African monsoon characteristics. A significant decrease trend in total precipitation linked to the frequency of wet days is reported for the region.