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WATER RESOURCES PREDICTION IN WEST AND CENTRAL AFRICA FOR THE 21ST CENTURY

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The aim of this study is to predict the water resources for the 21st century for more than 350 river basins of West and Central Africa, obtained from the FRIEND-AOC database. The GR2M rainfall-runoff conceptual model is calibrated and validated for each runoff series at a monthly time step and for half degree squares. Rainfall are calculated from an IRD monthly gridded database, PE are calculated from the CRU database. Then we simulate future runoff using rainfall and PE data derived from the GCM outputs HadCM3, scenario A2. The results are presented for 3 time horizons : 2020, 2050 et 2080. In 2020 and 2050 one observe an important variability over West Africa, except over three regions : the North-West (Senegal-Guinea-Mauritania) and the North of the Congolese basin, where runoff decrease as soon as the 2020 horizon ; and the Chari basin where runoff increase. In 2080 runoff decrease everywhere in West and Central Africa, except over the Chari basin. The seasonnal runoff dynamic, and particularly the flood peak occurrence, might be also modified by the forthcoming climatic fluctuations predicted by the HadCM3 GCM.

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Convective wind system with aerosols, named "haboob", Hombori in Mali, West Africa.