



The Interaction between Vegetation and Dust Emissions over West Africa

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Two thirty-year simulations of RegCM3 coupled to a desert dust emission/aerosol tracer model and a dynamic vegetation model are performed over West Africa. To discern the interaction between vegetation and dust emissions over West Africa and its monsoon and climate, one simulation includes radiatively active dust emissions with plant functional types that can compete, while the another allows for the a change in vegetation across some of the Sahel. It is found that RegCM3-IBIS does well in capturing the spatial and temporal distribution of dust suspension when compared to MISR observations. Overall, dust emissions over the Sahara and Sahel cause a reduction in the incoming shortwave radiation of 20-40 W/m² which results in a reduction in the net radiation at the surface and surface cooling of 1-1.5C over the summer months of JJA. The two way interactions between dust and vegetation perturbations, and their impacts on the water and energy cycles will be discussed.