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Anthropogenic Decline of African Dust inferred from Insights From the Holocene Records and Beyond: are dust purely natural?

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African dust exhibits strong variability on a range of time scales. Here we show that the interhemispheric contrast in Atlantic SST (ICAS) drives African dust variability at decadal to millennial timescales, and the strong anthropogenic increase of the ICAS in the future will decrease African dust loading to a level never seen during the Holocene. We provide a physical framework to understand the relationship between the ICAS and African dust activity: positive ICAS anomalies push the Intertropical Convergence Zone (ITCZ) northward and decrease surface wind speed over African dust source regions, which reduces dust emission and transport. It provides a unified framework for and is consistent with relationships in the literature. We find strong observational and proxy record support for the ICAS-ITCZ-dust relationship during the past 160 and 17,000 years. Model-projected anthropogenic increase of the ICAS will reduce African dust by as much as 60%, which has broad consequences. We posit that dust cannot be thought of as a purely natural phenomenon.