Remote influence on extreme weather in mid and high latitudes over the Northern Hemisphere driven by deep convection over Sahel

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The Sahel region, which is located between tropical rainforest Africa and Sahara Desert, has large interannual variability of rainfall in association with extremely deep convection. This deep convection with large vapor condensation heating has a possibility of a remote influence on extreme weather in mid and high latitudes as the well-known influences of tropical oceanic convective clouds upon global climate. Remote influence of convective activity over the land is much less progressive than over the ocean although the both should be equally evaluated. We hypothesize that the deep convection over Sahel initiates a semi-circum teleconnection from Sahel to East Eurasia. Statistical analysis and simple numerical experiments indicate the possible existence of the semi-circum teleconnection in the interannual time.

Keywords: Teleconnection, Convective activity, Rossby wave, Wave train pattern, Linear regression