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Linkage among different compound drought-hot events at a global scale

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Droughts manifest in different forms, such as meteorological droughts, agricultural droughts, and hydrological droughts. Due to common forcing factors or land-atmosphere interactions, droughts may co-occur with high-temperature extremes over global land areas. The concurrence of droughts and hot extremes (or CDHEs) has received increased attention in the past decade, owing to their amplified impacts on society and ecosystems. Changes in different forms of CDHEs under global warming have been evaluated at different regional scales. However, the investigation of linkages among different CDHEs is rather rare. In this study, we assessed the variation and connection among different CDHEs during the warm period at the global scale based on the Global Land Data Assimilation System (GLDAS). We found an increased frequency of different CDHEs in the past half-century over most regions. In addition, we also investigated their connection in the variability at different climate regimes. Results on the linkage among different compound events can provide valuable information for water resources management under global warming.