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## Monitoring compound drought-heat events over Brazil's Pantanal wetland

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Brazil's Pantanal wetland is one of the most threatened Brazilian ecosystems from direct anthropogenic pressures and climate change. In this study, the overarching research question is to explore whether compound drought-heat events (CDHEs) have become more recurrent, intense, and widespread over Brazil's Pantanal wetland in recent decades. For this, two different approaches were proposed and tested using validated long-term time series of monthly precipitation, temperature, and the satellite-based Vegetation Health Index (VHI) to characterize the spatiotemporal pattern of CDHEs over Pantanal. The Standardized Precipitation Index (SPI), Standardized Temperature Index (STI), and Standardized Precipitation Evapotranspiration Index (SPEI) from 1981 to 2021 were calculated. The results showed that using both approaches, the frequency of events is higher in the moderate category, which is expected since the criteria are less restrictive. In addition, the highest frequency of CDHE events occurs at the end of the dry season. The results also indicated that CDHE events have been more recurrent and widespread since 2000 in Pantanal. Besides, considering all methods for identifying the CDHEs, the probability density function indicates a shift pattern to warmer and drier conditions in the last 40 years. The Mann-Kendall tests also confirmed the assumption that there is a significantly increasing trend in the compound drought-heat events in the Pantanal. Developing methodologies for monitoring compound climate events is crucial for assessing climate risks in a warming climate. Besides, it is expected that the results contribute to convincing the urgent need for environmental protection strategies and disaster risk reduction plans for the Pantanal.