

Impact of drought on forest fires in the Sierras of Córdoba, Argentina

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Revista Argentina de Agrometeorología RADA, v. XII (2021): 37–45

Summary

In the Sierras of Córdoba, fire is an important disturbance factor, with areas with a high frequency of fires. Although most ignitions respond to anthropogenic causes, fire activity is determined by a wide range of factors. The impact of drought, both in the short and long term, on fire activity was analysed based on the Standardized Precipitation Index (SPI). For this purpose, a 20-year history of fire occurrence and burned area in the Sierras del Norte and Sierras del Sur regions were reconstructed and the MCD64A1 MODIS burned area product was used. In particular, the years with the greatest fire damage (2009, 2013 and 2020) were analysed, taking into account the moisture conditions at 3, 12 and 24 months. Statistically significant differences were found between drought occurrence and fire and burned area records. The most affected years by fires were preceded by conditions of higher water deficit. This is demonstrated by the strong relationship between extreme fires in 2020 and current and previous drought conditions 24 months ago.

Key words: Burned area; seasonality; fire frequency; Standardized Precipitation Index (SPI)