



## **30 years of dust outbreaks over the Canary Islands from astronomical telescopes**

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Telescopes on the North Atlantic Islands of La Palma and Tenerife, in the Canary Islands Archipelago have recorded optical extinction for approximately 30 years whilst making routine astronomical observations. In La Palma, these measurements come from stellar measurements, while in Tenerife, these measurements come from solar observations. We have used these datasets to characterise the statistical properties of Saharan mineral dust outbreak events over the Canary Islands, and also to examine changes in the frequency of Summertime outbreak events. It is likely that only the summertime measurements are reliable. We find considerable year-to-year variability in the summertime SDE frequency, observing a steady reduction between 1984 and 1997, followed by a period of relative mean stability from 1999 to 2012. We have also performed a lagged correlation analysis between the frequency of summertime dust outbreak events and the North Atlantic Oscillation (NAO) and Sahel rainfall index (SRI). We found that  $55\pm 4\%$  of the variations in outbreaks are connected to the NAO conditions during the preceding October–December period, and  $45\pm 4\%$  to the SRI during the preceding February–April period, suggesting that moisture over the Sahel region influences the frequency of dust outbreaks in the Canary Islands.