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## Observation of positive Narrow Bipolar Events in the Mediterranean region

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Narrow Bipolar Events (NBEs) are brief intracloud (IC) discharge processes that generate powerful radiation in the HF and VHF radio bands. NBEs typically occur in isolation, but they have also been identified as initial events in IC lightning flashes. Their incidence is statistically correlated with the strength of convection. NBEs can exhibit both polarities and usually occur in the upper regions of the thundercloud.

We present, for the first time, properties of NBEs detected in the Mediterranean region. The dataset comprises 37 events recorded by broadband magnetic loops located at two sites in France. The events were identified using the list of NBEs from 2022 provided by the Earth Network. The frequency range of our broadband sensors enabled us to obtain detailed shapes of NBE pulses. We calculated rise times, full width at half maximum times, and zero-crossing times of NBE pulses to facilitate comparisons with observations of NBEs in other parts of the world. The majority of NBE pulses observed in the Mediterranean region were isolated events occurring above the land and displaying a simple bipolar waveform with an overshoot peak of the opposite polarity. For two events, we supplemented our observation with the data from the SAETTA (Suivi de l'Activité Electrique Tridimensionnelle Totale de l'Atmosphère) lightning mapping array. Additionally, we estimated the altitude of the NBE events and placed our observations in the meteorological contexts to determine why NBE occurrences in the Mediterranean region have been overlooked until now.