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Role of the biomass burning emission on the total peroxy nitrates measured during the BORTAS campaign

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During the BORTAS (BOReal forest fires on Tropospheric oxidants over the Atlantic using Aircraft and Satellites) campaign, carried out in the Eastern Canada during the summer 2011, the total peroxy nitrates ($\sum$PNs) concentrations have been measured using the TD-LIF (Thermal Dissociation – Laser Induced Fluorescence) instrument (Di Carlo et al., 2013) developed at the University of L'Aquila (Italy). In our analysis, we observed a strong correlation between the CO, a well-known BB tracer, and the $\sum$PNs suggesting the possibility to use also the $\sum$PNs as BB tracer for the identification of a BB plume. Moreover, Alvarado et al. (2010) demonstrated that, in the first few hours after the emissions by fires, the 40% of the NO_x emitted is converted into PAN, confirming that the $\sum$PNs are strongly produced by BB. We used different methods for the identification of a BB plume using the $\sum$PNs as a tracer. Moreover, we will show the comparison between our results and the results obtained using other methods available in literature. We will illustrate in detail two case studies in which the $\sum$PNs and the hydrogen cyanide (HCN) measurements help for a more specific identification of a BB plume. Our results have been confirmed using an artificial neural network model (Biancofiore et al., 2015).

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