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Title:	Diel peroxy radicals in a semi-industrial coastal area: nighttime formation of free radicals
Authors:	Sinha, V. (/jspui/browse?type=author&value=Sinha%2C+V.)
Keywords:	Boundary layer Peroxy radicals DOMINO PeRCA
Issue Date:	2013
Publisher:	European Geosciences Union
Citation:	Atmospheric Chemistry and Physics, 13(11), pp.5731-5749.
Abstract:	<p>Peroxy radicals were measured by a (Peroxy Radical Chemical Amplifier) instrument in the boundary layer during the DOMINO (Diel Oxidant Mechanisms In relation to Nitrogen Oxides) campaign at a coastal, forested site influenced by urban-industrial emissions in southern Spain in late autumn. Total peroxy radicals ($RO_2^* = HO_2 + \Sigma RO_2$) generally showed a daylight maximum between 10 and 50 pptv at 13:00 UTC, with an average of 18 pptv over the 15 days of measurements. Emissions from the industrial area of Huelva often impacted the measurement site at night during the campaign. The processing of significant levels of anthropogenic organics leads to an intense nocturnal radical chemistry accompanied by formation of organic peroxy radicals at comparable levels to those of summer photochemical conditions with peak events up to 60–80 pptv. The RO_2 production initiated by reactions of NO_3 with organic trace gases was estimated to be significant, but not sufficient to account for the concentrations of RO_2^* observed in air masses carrying high pollutant loading. The nocturnal production of peroxy radicals in those periods seems therefore to be dominated by ozonolysis of volatile organic compounds, in particular alkenes of industrial petrochemical origin. RO_2^* diurnal variations were consistent with HO_2 measurements available at the site. HO_2/RO_2^* ratios generally varied between 0.3 and 0.6, though on some occasions this ratio was likely to have been affected by instrumental artifacts (overestimated HO_2) associated with high RO_2 loads.</p>
Description:	Only IISERM authors are available in the record.
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