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Peroxy radical measurements in the UK summer heat wave of 2003

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The sum of organic peroxy radicals and HO_2 was measured with a peroxy radical chemical amplifier (PERCA) during the Tropospheric ORganic CHemistry experiment (TORCH) in August 2003 on a ground-based platform at a site 40km northeast of London. Measurements of peroxy radicals, which act as intermediates and chain carriers in the gas phase radical chain oxidation of volatile organic compounds, can be used to determine the *in-situ* production rate of ozone. Record temperatures (up to 39 degrees Celsius) were experienced in the UK during the second week of August and this work focuses on the significance of peroxy radical levels to ozone production during this period. Maximum total peroxy radical mixing ratios over the week of the heat wave were up to five times the levels recorded in the periods before and after the hot weather while ozone mixing ratios reached 152ppb – well above the European safety threshold of 90ppb. A zero-dimensional photochemical box model utilising the MCM (v3.1) was used to simulate concentrations of OH, HO_2 and ΣRO_2. This work will compare modelled and measured mixing ratios of peroxy radicals for the period of the heat wave as well as for cooler periods of the measurement campaign.