

Transport of Canadian forest fire smoke over the UK as observed by lidar

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Layers of aerosol at heights between 2 and 11 km were observed with Raman lidars in the UK between 23 and 31 May 2016. A network of such lidars, supported by ceilometer observations, is used to map the extent of the aerosol and its optical properties. Spaceborne lidar profiles show that the aerosol originated from forest fires over Western Canada around 17 May, and indeed the aerosol properties – weak depolarisation and a lidar ratio at 355 nm in the range 35–65 sr – were consistent with long-range transport of forest fire smoke. The 5 event was unusual in its persistence – the smoke plume was drawn into an atmospheric block that kept it above North-west Europe for nine days. Lidar observations show how the smoke layers became optically thinner during this period, but the lidar ratio and aerosol depolarisation showed little change.