Significance of Wildfires in GB

- Wildfire included in National Risk Register after fires occurred across the UK in the dry Spring of 2011.
- Identified as a key risk in the UK Climate Change Risk Assessment 2012 (KCIW 2013).
- Over 118,000 ‘grassland’ fires of all sizes attended by Fire and Rescue Services (FRS) in Great Britain in financial years 2010/11 & 2011/12 (DCLG 2012).
- Rarely cause loss of human life but significant economic and environmental problem.
- Fire-fighting costly and dangerous; suppression costs estimated at £55 million yr⁻¹ (Moffat and Pearce, 2013).
- Damage to peatland ecosystem services e.g. loss of soil carbon store, wildlife, rural livelihoods (Fig 1).

Data

- MODIS Rapid Response active fires
- Screen out false positives; only use those on CORINE Land Cover Classification (CLC) vegetated classes; 66% ‘vegetation fires’ for the 4 years, 2007-2010

Incident Recording System (IRS)

- Regionally fragmented; collected by >50 regional Fire and Rescue Services (FRS); delay of 6-12 months for national collating and quality checking by DCLG.
- Potential for spatial analysis (McMorrow & Cavan 2011), but published as monthly aggregated, tables.
- Single geo-referenced point per attended fire; can be estimated of point of ignition, vehicle rendezvous, or call-out point. On moorlands, may be up to 3km from centre of fire ground (McMorrow 2011).
- FRS do not operationally record fire perimeter. Visual estimate of area burned results in errors (Fig 2)
- Therefore challenging to relate IRS fire point to MODIS-detected hotspots at fire front.

Method and Results

Seasonal distribution (Fig 4)

- MODIS data shows marked spring fire season; 80% occur in March-April for the 4 calendar years (2007-2010 inclusive).
- Combined effect of: low fuel moisture content after winter-drying and before green-up (Almoustafa et al. 2012); more sources of ignition; fire weather favouring ignition and build up to large fires; but also relatively cloud-free skies for detection.
- Strong year-on-year variability; very weak fire season in 2008.
- Apparent shift in spatial distribution with seasons, mainly on moorland in Spring (Fig 5). Related to cloudiness or timing and location of causes such as land management burns?

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