



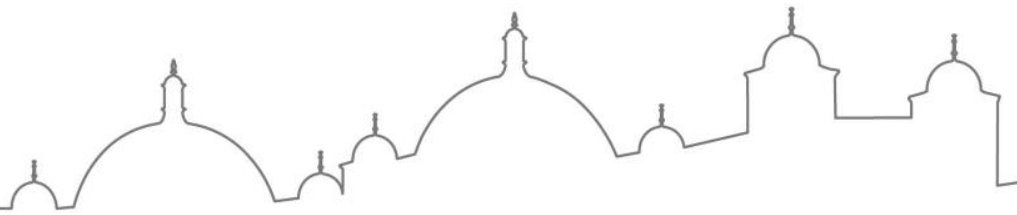
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Urban climate

Dr Emma Ferranti,

Senior Research Fellow in Urban Resilience

e.ferranti@bham.ac.uk

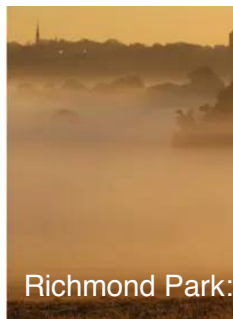


Urban climate & clean air

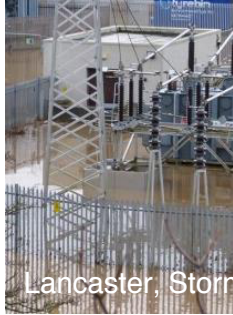
- **Urban Climate**
 - The modification of weather by urban form, many scales
 - Urban heat island, wind flow
- **Climate Change**
 - More extreme weather; heavy rainfall, hotter summers
 - Sea level rise, storm surges, wildfires
- **Weather influences air pollution**
 - Wind and pollution dispersion
 - Heat/sunlight and ozone formation



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Richmond Park:



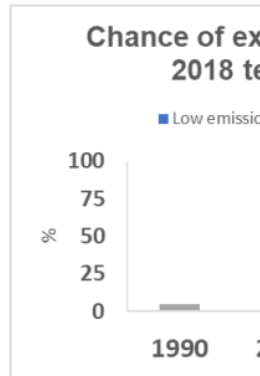
Lancaster, Storm



London: British

Extreme weather & urban areas: heat

- Extreme weather greatly impacts urban areas
 - Concentration of critical infrastructure and people
 - Urban heat island effect
- Higher summer temperatures, hotter heatwaves
 - Infrastructure impact (e.g. London Underground)
 - Heat can exacerbate poor air quality
 - Overheating risk, can you open window or go outside?
 - Energy efficiency & overheating & indoor air quality
 - Air-con demand versus Net Zero commitments



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Multi-hazard events & interdependencies

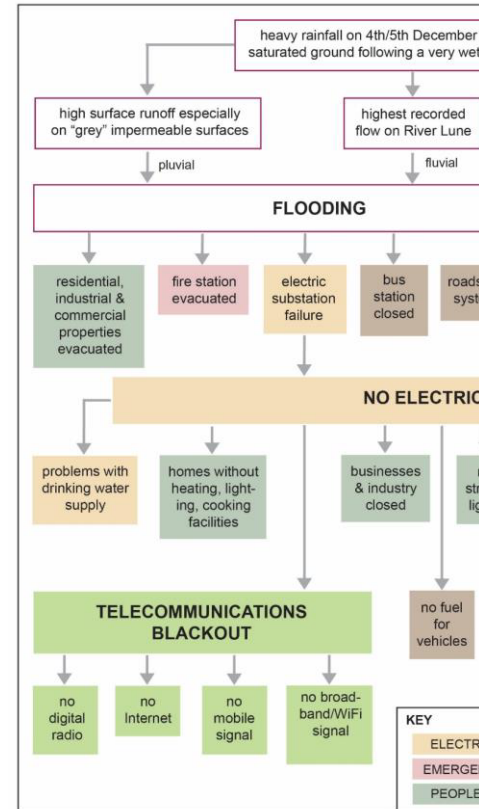
Lancaster, Storm Desmond, Dec 2015

- Rain, heavy rain, incoming tide
- Regional power cut 5th-8th Dec
- All infrastructure networks impacted
- No telecommunications

Multi-hazards & air pollution?



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Urban climate & clean air

- Multi-hazard events
 - For example, overheating, ozone, water shortage?
- Systems interdependencies & interacting risks
 - Will Net Zero ambitions change climate resilience?
 - Energy efficiency, indoor air quality, overheating risk?
- Shared solutions
 - City-wide ventilation for pollution dispersion and urban cooling
 - Green space for cooling and cleaner air (parks have no cars)
- **Is time is on our side?**
 - **Decisions made today determine our future urban areas**



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