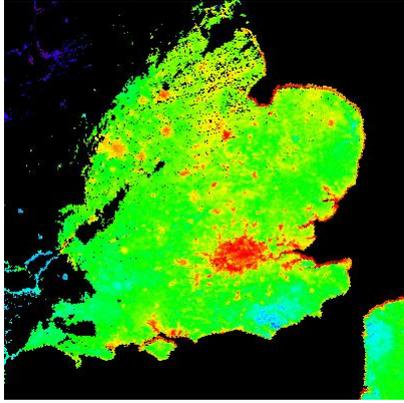
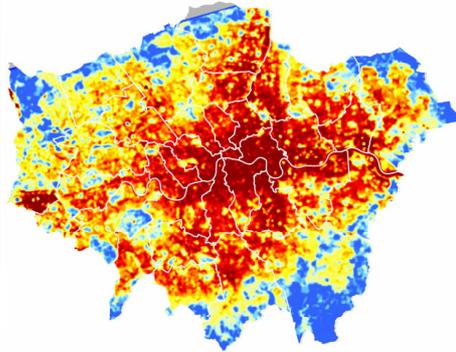


Hot in the City ?



Modis satellite image, NASA



Aster satellite image, NASA

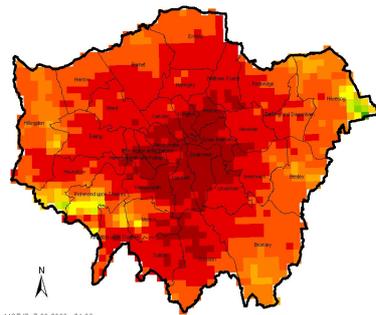
Alex Nickson, Greater London Authority

Session DP UP 2.1: Adapting to urban heat islands

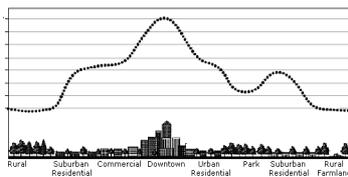
Delta Cities in times of climate change, Rotterdam, Oct 2010

The challenges - overheating

Temperature distribution in London, August 2003

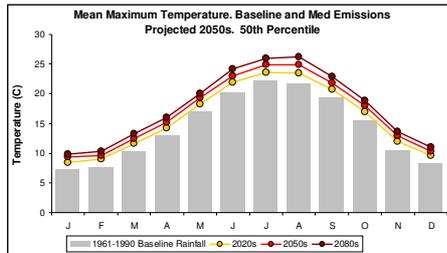


MODIS 7.08.2003 21:30



- Hot weather periods are uncommon in London
- 600 people died in the 2003 heatwave
- London's microclimate amplifies the impact of hot weather (London is up to 10°C warmer than the greenbelt on summer nights)
- Londoners are more resilient to rising temperatures than other UK regions, but suffer most when temperatures exceed 24 °C.

How will climate change increase the risk of overheating ?



- Global-warming induced climate change
- Intensification of the urban heat island
 - More cloud free days
 - Drier summers
 - More anticyclonic weather ?

BUT also :

- Man-made heat contributions in response to hotter temperatures
- Increase in density from London's growth

Beating the heat

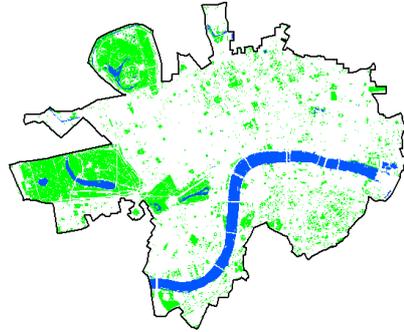
5-fold strategy

- 1) Offset the urban heat island effect using urban greening
- 2) Identify and target the 'hotspots'
- 3) Ensure new development is built for tomorrow
- 4) Identify and promote heatwave refuges
- 5) Create a network of weather stations across London

Urban Greening Programme

Targeted urban greening programme :

- Increase greenery in the centre of London by 5% by 2030 and a further 5% by 2050
- Increase tree cover by 5% by 2025
- 100,000m² of green roofs by 2012
- enhance 280ha of greenspace by 2012 – especially in east



Identify and target the ‘hotspots’

- Identify UHI ‘probability’ hotspots using thermal map and crosscheck against physics model.
- Identify UHI ‘vulnerability’ hotspots using social deprivation indices
- Determine what makes the ‘hotspot’ hot, or the inhabitants vulnerable.
- Assess the options that could manage, e.g.
 - Shading for south facing buildings
 - Improved thermal insulation / exposed thermal mass
 - Enhanced cross ventilation
 - Opportunities for district cooling network

Ensure new development is built for tomorrow

- A) Planning policy requiring developers to consider future overheating – ‘cooling hierarchy’
 - Minimise internal heat gain (energy efficiency)
 - Stop heat getting in (shading, insulation and fenestration)
 - Manage heat within (thermal mass and high ceilings)
 - Optimise ventilation (resist single aspect development)
 - Lowest Carbon cooling (CCHP)
- B) Developing design guidance for developers that takes a risk-based approach to overheating, taking account of :
 - Sensitivity to heat (Low, medium, high)
 - Location in UHI (Centre, inner, outer)

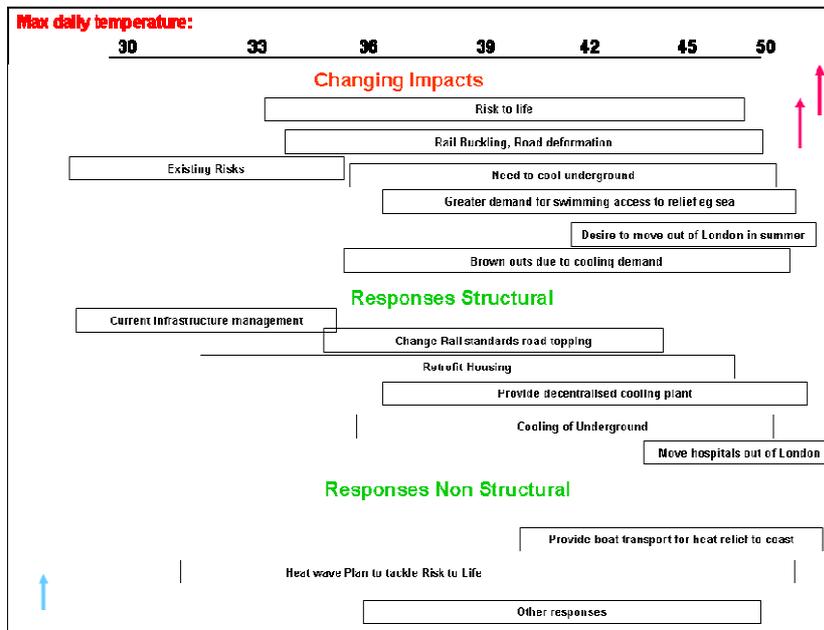
Heatwave refuges

- Identify ‘hotspots’
- Identify possible heatwave refuges (eg churches, a/c publicly accessible buildings etc)
- Work with owners to provide access during heatwave
- Promote access through local community channels
- Help communities develop ‘heatwave plan’
- Mobile phone app ?

Network of weather stations

In order to predict London's future climate and know whether our actions are working, we need a network of weather stations across London.

- London only has 2 WMO recognised weather stations
- Spending millions on climate models but comparatively little on measuring and monitoring
- Critical issue is that the microclimates can be very local
- Workshop to understand what data is already collected and what data we would need.



Credit. Tim Reeder, UK Environment Agency