

# Lessons learned from the 2003 heat wave in France

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# The 2003 heat wave - an overview

- Heat waves
- Importance of the 2003 heat wave - 70,000 additional deaths
- Ambiguous catastrophe
  - **Social attenuation**
  - **Social amplification**
- Risk factors: poverty, isolation, age and illness
- What could be done: some cues from France, Australia and UK

# Climate change and natural hazards

- 95% of the human casualties in natural hazards are due to extreme temperatures (CRED)
- Heat wave → predominant cause of death resulting from natural hazards
- Human activities more than doubled the risk of heat waves (Stott et al., 2004).
- CC will be accompanied by an increase in frequency and intensity of heat waves (IPCC, 2007).

Stott, P. A., Stone, D. A., & Allen, M. R. (2004). Human contribution to the European heat wave of 2003. *Nature* 432, 610–614.

IPCC (2007). *Climate change 2007 : a synthesis report*. Report of the 17th IPCC Plenary. Valencia, Spain, 12-17 Novembre.



# A Heat wave definition

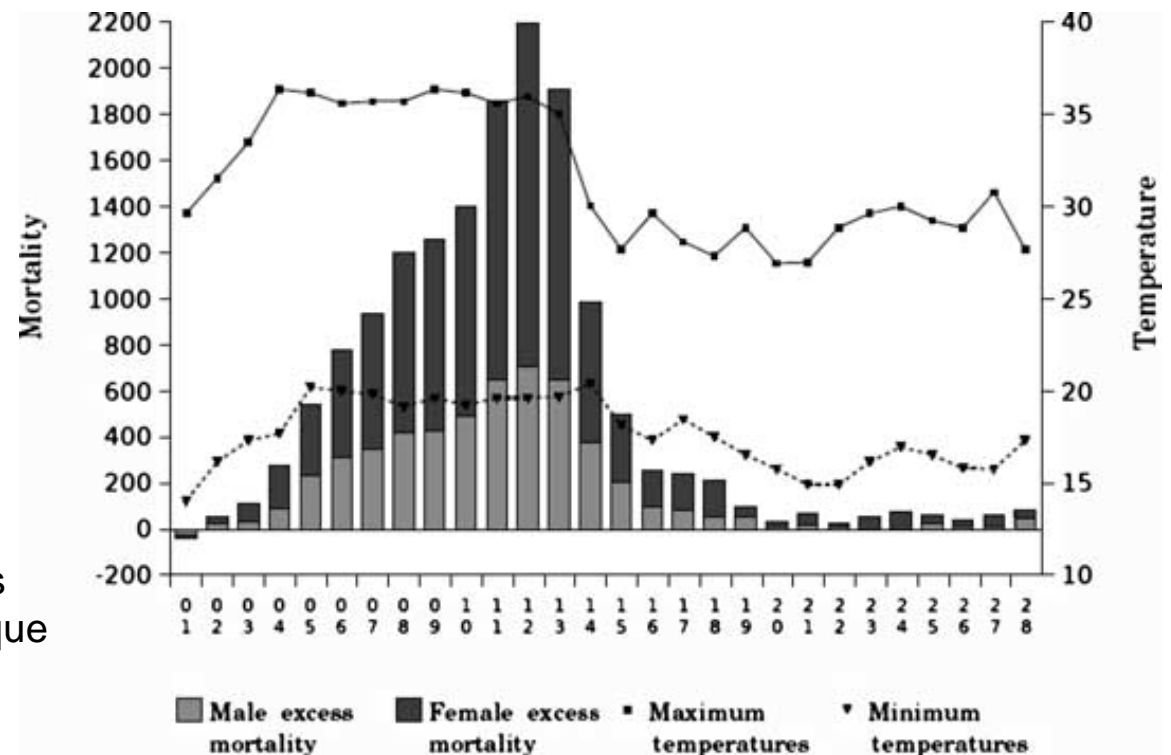
- A 4° C increase in 30-year average temperature for the same place and month (UK meteorologists).
- Murcia example

# Heat wave in France

- 2003 Summer → Record of maximum and minimum daily temperatures for the period of **1<sup>st</sup> Jun - 11<sup>th</sup> Aug.**
- Heat wave → from 4<sup>th</sup> - 18<sup>th</sup> August
  - 1-5 Aug: ↑ to an average of 37° C (normal is 24° C).
  - 5-11 Aug: excessively high temperatures (between 36° and 37°)
  - 11-12 Aug: situation is worsen by ↓winds and ventilation and ↑ air pollution

- Deaths were proportional to the number of consecutive days of heat superior to 35° C
- 82,5% of fatalities correspond to the age group above 75 years
- Increase in mortality directly attributable to heat: dehydration, and hyperthermia or heat stroke.

•Increased air pollution (ozone concentrations) played a role as well (InVS, 2004)



InVS (Institut de veille sanitaire) (2004).  
 Vague de chaleur de l'été 2003: Relations  
 entre températures, pollution atmosphérique  
 et Mortalité dans neuf villes françaises.  
 September 7, 2004. Paris: InVS.

# Socio-psychological risk factors

- Social attenuation
  - Heat waves can be perceived as a normal part of the summer
  - Social characteristics of the most vulnerable groups (elderly, isolated, sick, poor) and tendency to rejection
  - Reluctance of French administration to share quantified information
  - French people high levels of trust and fatalism towards health risks (Slovic et al., 2000)
  - Before 2003, it was rare to attribute the primary cause of death as heat wave effects

Slovic, P. (2000). Perception of Risk. London: Earthscan.



# First, attenuation

- Limiting the dissemination of death numbers
- Result: Official counts of fatalities soon lagged behind alarming reports from undertakers





## Then, amplification

- When the catastrophe became evident, blame was placed upon ‘others’: summer absence of medical personnel, French societal values regarding elders, government reduction of working week...
- Shift in media coverage of usual summer events
- Public perception of heat wave and consequent government response

# The worst hit

- Excess deaths particularly heavy in urban centers (Ex.: Paris↑ 150%)
- Poor living conditions
  - 41% in a one room apartment
  - Half lived in the 2 highest floors of Parisian buildings
- Social isolation:
  - 92% of the victims lived alone
  - 25% had no family, friendly or social link.



# Heat wave and isolation

- Chicago heat wave in 1995: different impacts according to either
  - high social contact (Little Village)
  - low social contact (North Lawndale)

Klinenberg, E. (2002) Heat Wave: A Social Autopsy of Disaster in Chicago. Chicago, IL: University of Chicago Press

# Heat wave risk groups

- older people
  - especially those over 75 years old and/or living on their own, or in a retirement home
- people suffering from ill mental health
  - those who rely on help from other people to manage day-to-day activities
- people who are bed bound
- people taking certain types of medication
- babies and young children
  - especially those under four years old.

Heatwave Plan for England: *Protecting Health and Reducing Harm from Extreme Heat and Heatwaves*, Whitehall, London 2008.

# Why didn't anyone notice?

- Inadequate mindset (unready to perceive unfamiliar pattern)
- Noisy context
- Unusual geographical pattern
- Monitoring difficulties (prediction)
- An unusual killer
- Inadequate data monitoring
- Unusual data
- Inadequate focus of attention
- Stealth problems
- Scientific gap

Lagadec, P. (2004). Understanding the French 2003 heat wave experience: Beyond the heat, a multi-layered challenge. *Journal of Contingencies and Crisis management*, 12, 160–169.

# Crisis management - what could be done?

- Sharp and wide open surveillance abilities.
- Swift reports
- Upgraded monitoring capacity, crisis team-work and data-sharing
- Ability to mobilize expertise in crisis
- Sharing of leadership, network-based decision-making
- High-quality communication from start to finish
- Management of the crisis to the very end
- Strategic intelligence
- After the crisis, a careful healing process

Lagadec, P. (2004). Understanding the French 2003 heat wave experience: Beyond the heat, a multi-layered challenge. *Journal of Contingencies and Crisis management*, 12, 160–169.c

# Lessons learned

- Where was the *epicenter* of the disaster?
- What was the central target?
- Which was the most dangerous place?
- When did the National Crisis Centre notice that a disaster was unfolding?
- Where were the best resources to combat the heat?
- What kind of technology was the most appropriate to tackle the emergency?

Lagadec, P. (2004). Understanding the French 2003 heat wave experience: Beyond the heat, a multi-layered challenge. *Journal of Contingencies and Crisis management*, 12, 160–169.

# Road ahead...

- Plan *Canicule* (France)
  - Information
  - Monitoring
- Victoria - Australia (heat wave in January 2009)
  - 12-15° C above normal during 3 days (↑43° C)
  - Casualties were avoided with public information
- UK Heatwave Plan
  - Based upon 4 levels: Awareness, Alert, Heatwave and Emergency

State of Victoria (2009). January 2009 Heatwave in Victoria: an Assessment of Health Impacts. Victorian Government Department of Human Services Melbourne, Victoria.

Heatwave Plan for England: Protecting Health and Reducing Harm from Extreme Heat and heatwaves, Whitehall, London 2008.






# Conclusion

- **Here and now** example of climate change effects (Poumadère et al., 2005)
- Social tissue importance

Poumadère M., Mays C., Le Mer S. & Blong R. (2005). The 2003 HeatWave in France: dangerous Climate Change here and Now. *Risk Analysis*, Vol. 25, 1483-1494.



“Silent and invisible killers of silenced  
and invisible people”

*Klinenberg, 2002*

Klinenberg, E. (2002) *Heat Wave: A Social Autopsy of Disaster in Chicago*. Chicago, IL: University of Chicago Press