

DFG-Forschergruppe 1736 "Urban Climate and Heat Stress in mid-latitude cities in view of climate change (UCaHS)"



Nicole Mahlkow (FU Berlin)

Heat - a risk factor

Table ES1 Overview of the major events in Europe 1998–2009

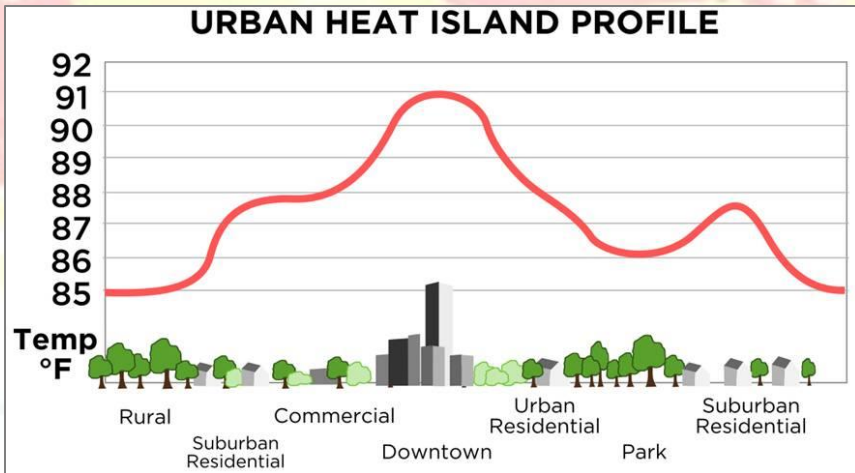
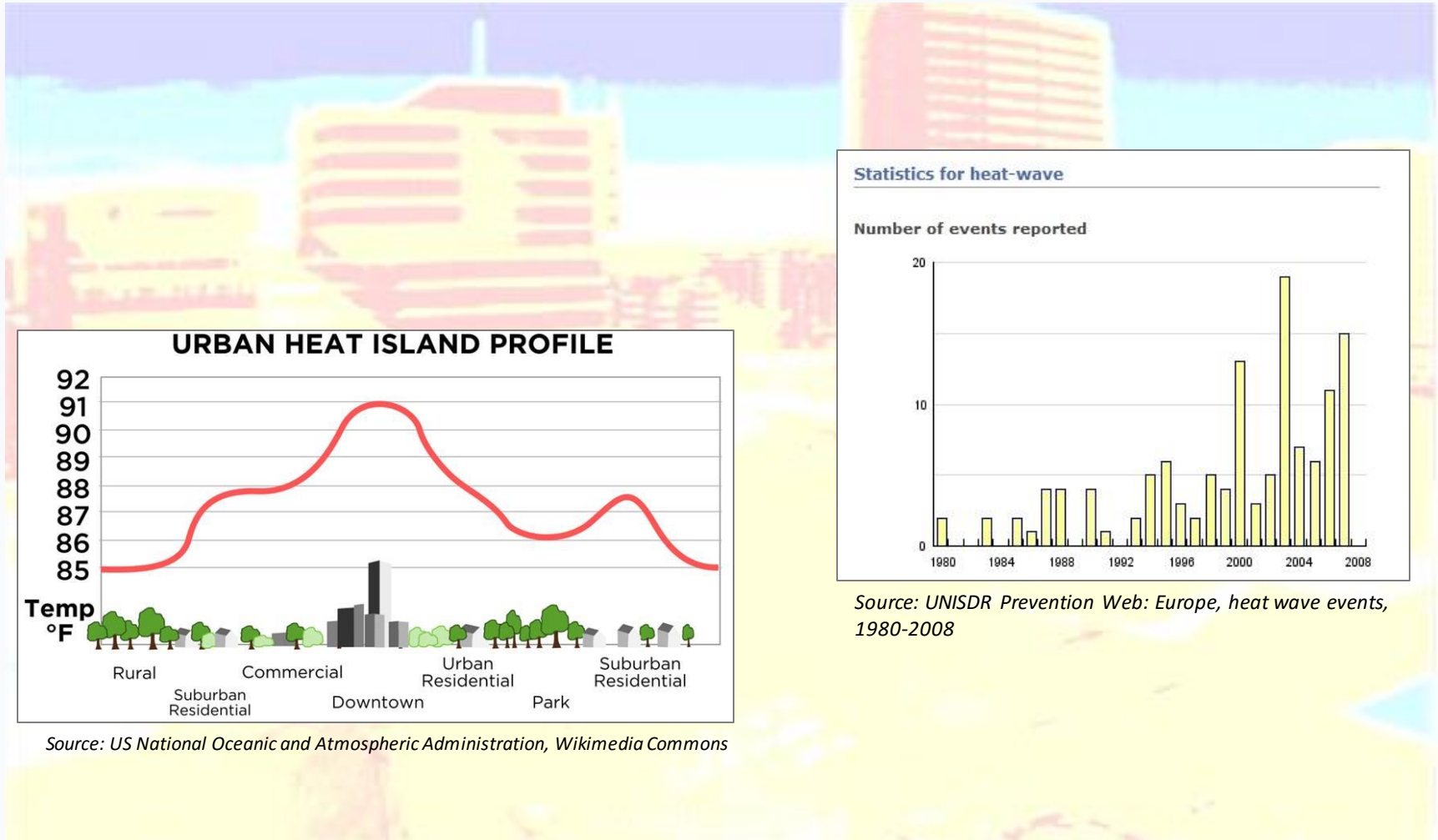
Hazard type	Recorded events	Number of fatalities	Overall losses (EUR billion)
Storm	155	729	44.338
Extreme temperature events	101	77 551	9.962
Forest fires	35	191	6.917
Drought	8	0	4.940
Flood	213	1 126	52.173
Snow avalanche	8	130	0.742
Landslide	9	212	0.551
Earthquake	46	18 864	29.205
Volcano	1	0	0.004
Oil spills	9	n/a	No comprehensive data available ^(*)
Industrial accidents	339	169	No comprehensive data available ^(b)
Toxic spills	4	n/a	No comprehensive data available ^(c)
Total	928	98 972	148.831

Note: ^(*) Estimation is between EUR 500 and EUR 500 000 per tonne of oil spilled.
^(b) Costs for major events reported in Table 12.1 aggregately amount to more than EUR 3.7 billion.
^(c) Costs for one particular toxic spill amount to EUR 377 million, see Chapter 13.

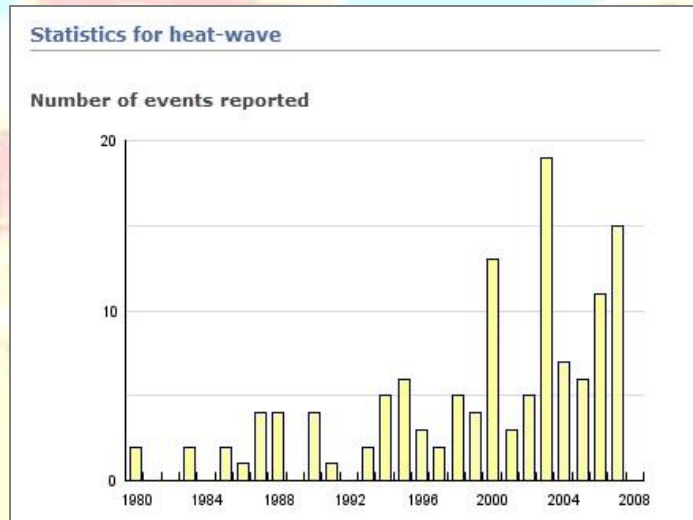
Source: EM-DAT, 2010; EMSA, 2010; MARS, 2010.

Foto: PatrickPleul / DPA

Challenges for cities




Source: US National Oceanic and Atmospheric Administration, Wikimedia Commons



Source: UNISDR Prevention Web: Europe, heat wave events, 1980-2008

Research gap



Creating the heat-proof city in mid-latitudes with moderate climate:
Urban development instruments, discourses and practices

Research question:

How is knowledge on the hazard of heat translated into policy and what does that mean for policy action?

Case study Berlin

Humid continental mid-latitude climate,
warm summers and cold winters

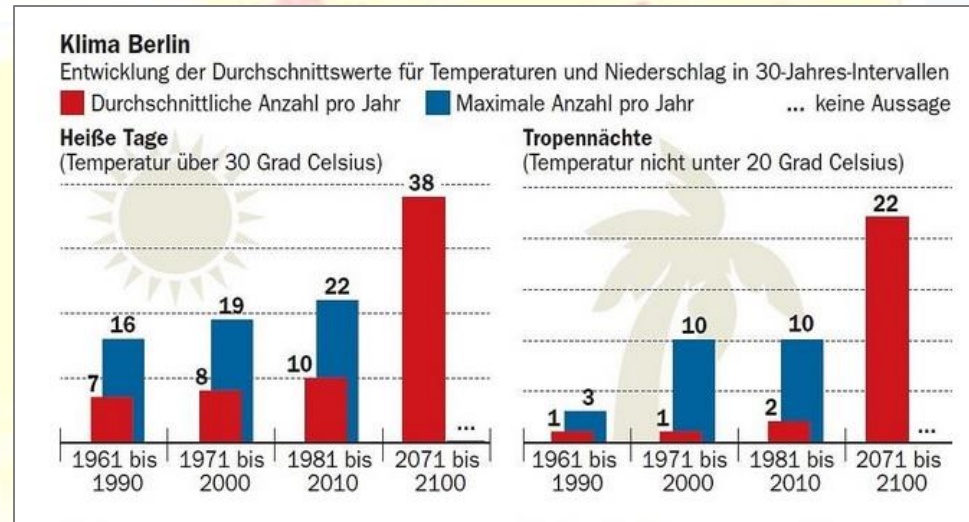
1,600 excess deaths (app. 5% of annual deaths)
due to urban heat

Climate change projections

- 2.5°C rise by 2050
- more extreme weather events



Map of Berlin



Berlin climate: Increases in hot days and tropical nights (TU Berlin)

Frontrunner in climate change adaptation planning?

- Berlin is considered a frontrunner in developing policy instruments for climate adaptation
- Innovative approaches with scientifically informed policy-making



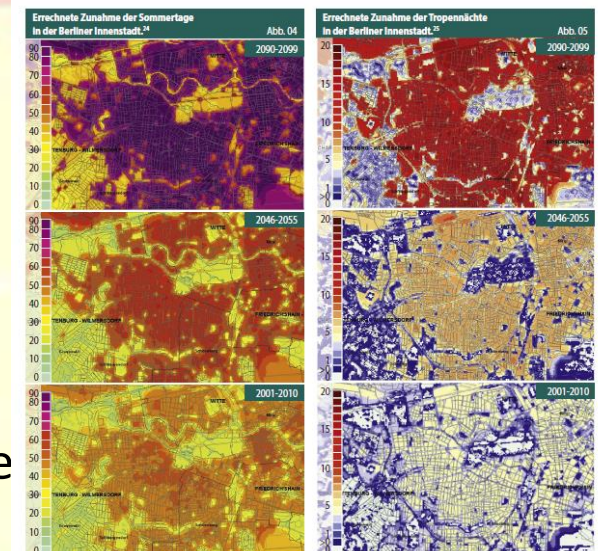
Berlin's adaptation strategy

Climate Change Adaptation Plan 2011 (StEP Klima)

- Urban development plan
- Urban heat as an urban development task
- Spatial and temporal differentiation of adverse climatic impacts
- Governance and planning instruments, model projects
- Corresponding instrument: Urban Landscape Strategy with focus on urban green
- 2016 Planning advisory map for Urban Climate



Klima im Wandel
Berlin passt sich an



StEP Klima: Rise in hot summer days and nights

Research approach

Point of departure:

Instruments have hardly had an impact on planning and policy.

Hypothesis:

Local political discourses on the adaptation to heat have a structural conservative tendency impeding action instead of incentivizing it.

Critical-constructivist approach:

Urban climate change adaptation is constructed discursively and materially.

Methods:

Public documents, additional expert interviews

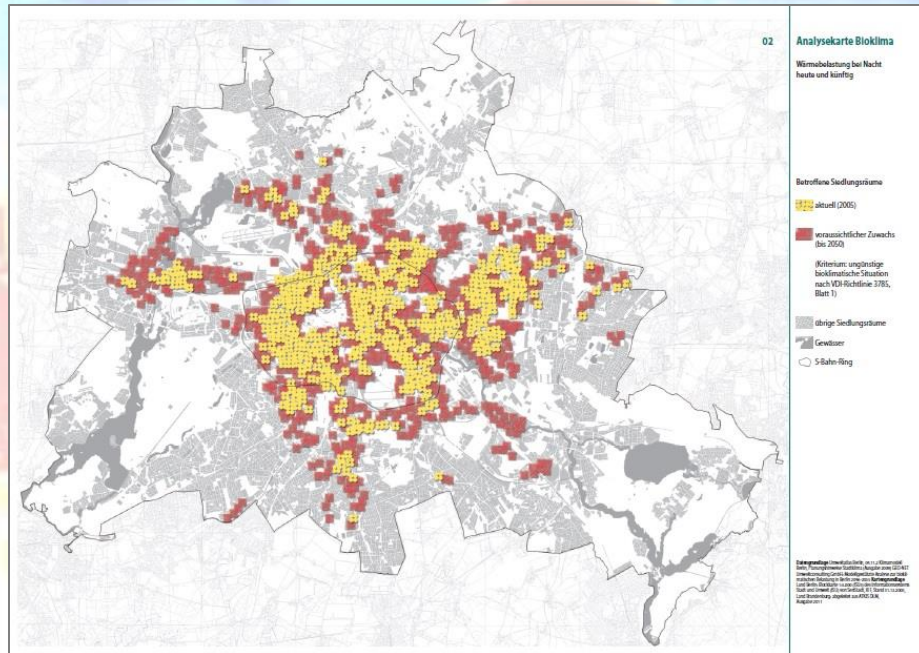
Literature review

Hypotheses derived from political ecology/critical adaptation research:

(e.g. Brunnengräber 2012, Brunnengräber/Dietz 2016, Taylor 2014, Brand 2007)

- Climate deterministic problem definition
- De-politicization and focus on technological solutions
- Top-down approaches
- Participation as consultation
- Eclipse of local relations

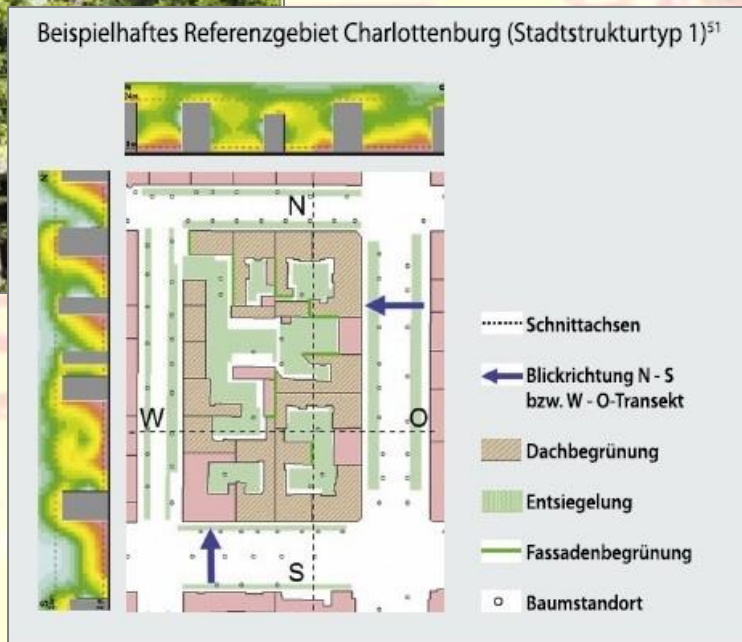
Empirical analysis (I): Constructions of heat risks and vulnerabilities



StEP Klima: Analysis of the bio-climate: heat load at night today and in the future

- Risk perception focuses on urban areas exposed to adverse climatic impacts based upon climatological data
- Hazard = gradually rising temperatures
- Urban structure as main risk factor → narrow vulnerability construction

Empirical analysis (II): Constructions of measures and strategies

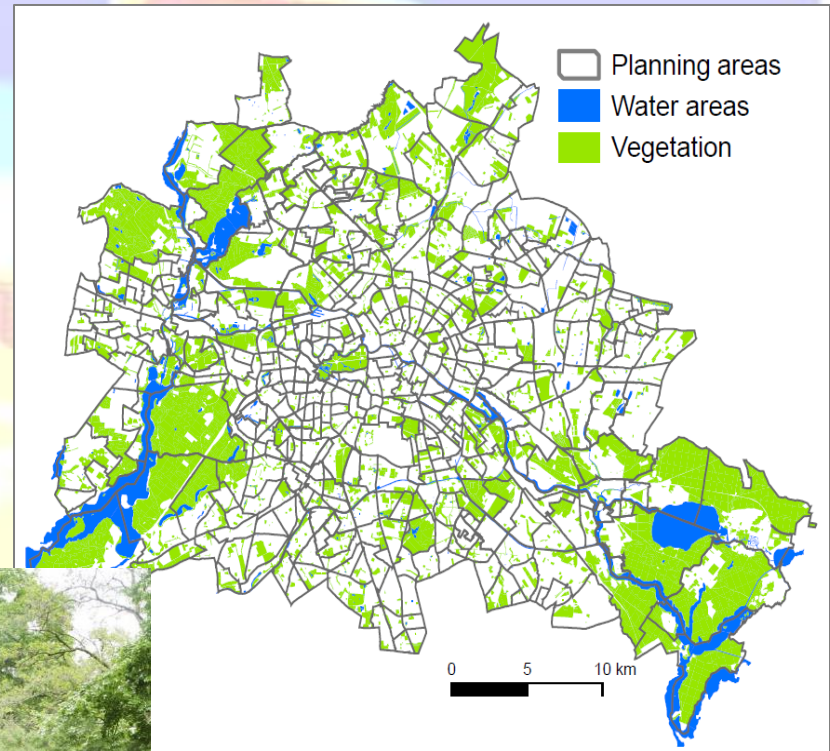


StEP Klima: Example of reference area for heat adaptation

- Catalogue of generic adaptation measures
- Measures have no link to local traditions, norms, narratives?
- Greening strategies for heat mitigation

Empirical analysis (III): Urban green and heat mitigation

- Qualification of green spaces to optimize their delivery of ecosystem services
 - Depolitization → reductionist approach to social conflicts
- No-regret measures:
 - Protecting the vulnerable?



Source: StEP Klima

Empirical analysis (IV): Localizing adaptation discourses



- Urban Landscape Strategy puts the local on center stage → deviation from findings in the literature?
- Linking urban development discourses (e.g. adaptation) with emergent local practices (urban gardening, urban agriculture)
- No mentioning of conflicts between scientific, top-down adaptation and bottom-up developments based on the idea of the commons (“multicoding”, “complexity” of green spaces)



Empirical analysis (V): Localizing as international economic strategy

The “green city” as the new “creative city”

- Foster climate change adaptation through green space based city marketing
- “Green city” = implicitly impeding adaptation action?
- Marketing strategy destroying and countermanding its foundations
→ urban green spaces as niches



Source: *Urban Landscape Strategy*

Conclusion (I)

Berlin's heat adaptation discourse lacks transformative potential:

- vague targets /demands to act
- greening strategies in a “green city”
- localization discourse, but very much outward looking not linking local culture with scientific findings, avoiding conflict potentials

→ confirmation of critical adaptation research findings

Conclusion (II) – Way forward

Broaden scientifically informed political discourses:

- local knowledge on risks and risk perceptions
- local culture needs to be considered and true participation/neogtiation is needed

→ smaller scale political units need to play a more prominent role in the climate change adaptation process of a diverse and large city like Berlin in order to trigger local discourses and action

Thank you!

Nicole Mahlkow

nicole.mahlkow@fu-berlin.de

<http://www.ucahs.org/>