Alterações climáticas nas cidades: “Adaptar, mitigar ou sofrer”

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CNADS

CONFERÊNCIA

SESSÃO 4
TEMA: Implementação da Mitigação e da Adaptação às Alterações Climáticas

IGOT Instituto de Geografia e Ordenamento do Território
UNIVERSIDADE DE LISBOA

Centro de Estudos Geográficos
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ZEPHYRUS
Climate Change and Environmental Systems

1. Que escolhas devemos fazer para fazer frente às AC?

John Holdren, President of the American Association for the Advancement of Science

- *'We basically have three choices – mitigation, adaptation, and suffering.*
- *We're going to do some of each. The question is what the mix is going to be.*
- *The more mitigation we do, the less adaptation will be required, and the less suffering there will be.'*

John Holdren, Science and Technology advisor to Barack Obama

2. Quais são os custos de inação?

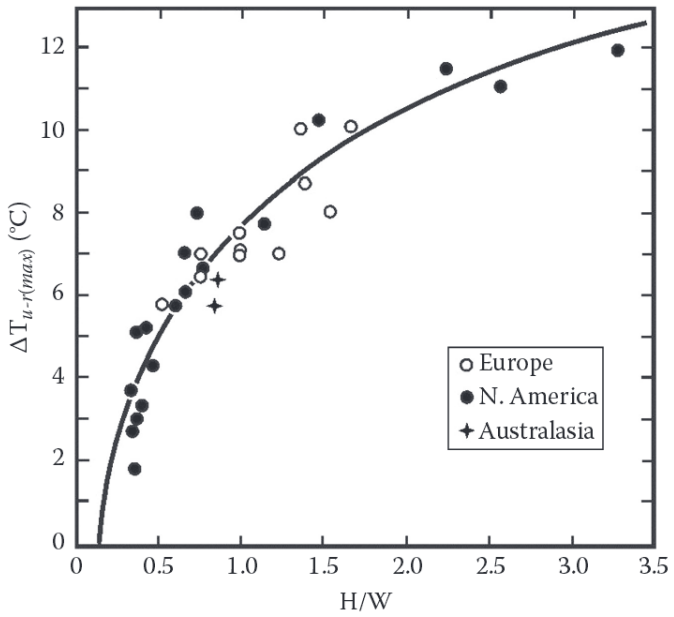
- Mais incertezas que certezas
- Estudos económicos revelam que os custos da inação superam os custos da adaptação prévia

…the cost between 2010 and 2050 of adapting to approximately 2ºC warmer world by 2050 is in the range of ***<u>$70 billion to $100 billion</u>*** *a year*.

http://www.worldbank.org/en/news/feature/2011/06/06/economics-adaptation-climate-change

Oke (1987)

Intensidade da Ilha de Calor Urbana

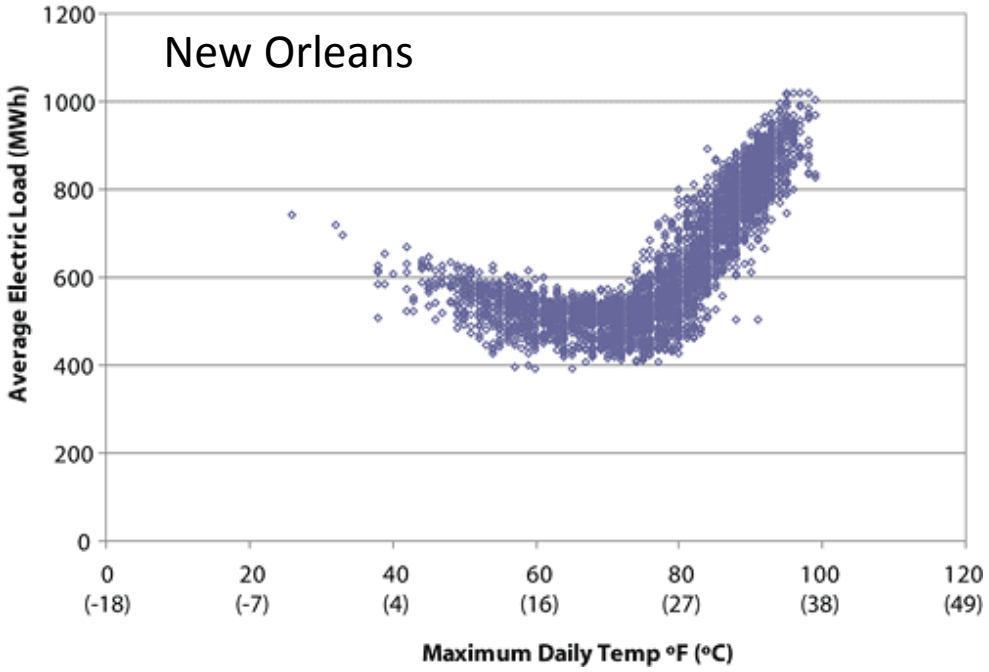


Height of the buildings width of the streets (*H*/*W*)

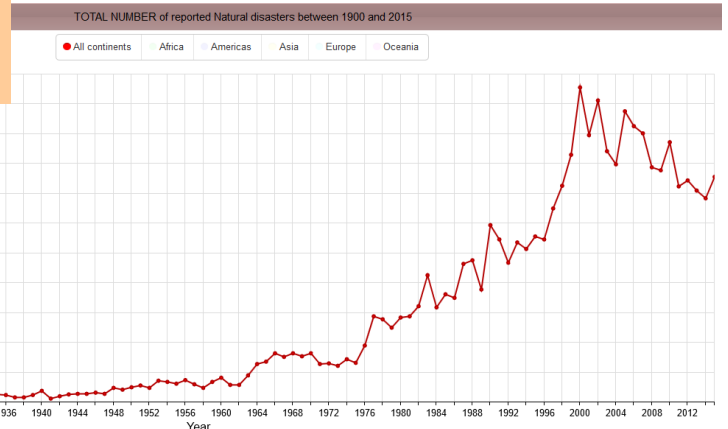
- Aumento da temperatura do ar e do efeito Ilha de calor (Urban Heat island).
- É necessária mais energia para arrefecimento dos espaços interiores.
- Aumento da mortalidade e morbilidades durante a ocorrência de ondas de calor.
- Segundo a EMDAT, desde 1900 quase 30 000 000 de mortes devido a fenómenos climáticos e meteorológicos extremos

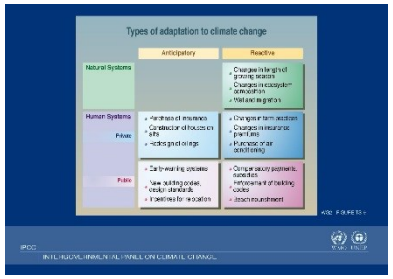
theguardian

The number of annual deaths in the UK that occur as a result of the heat will rise by 257% by 2050



Sailor (2002)





3. Quais as melhores estratégias de adaptação às AC?

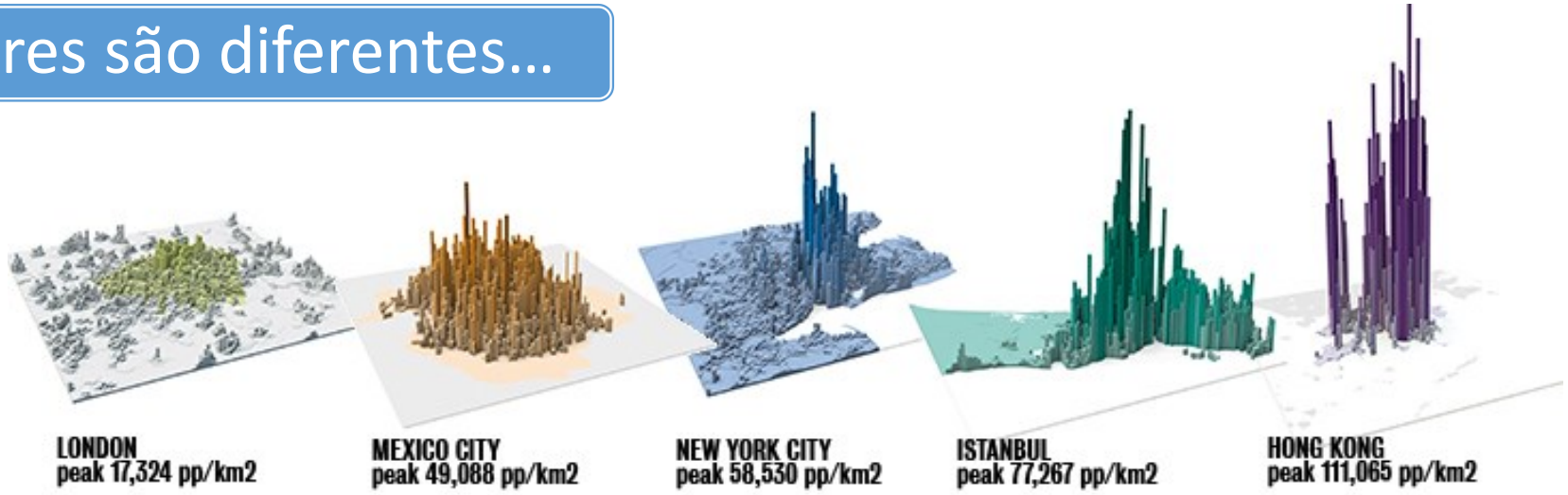
Várias tipologias de tipologias de adaptação das sociedades às AC

The IPCC distinguishes several types of adaptation (IPCC TAR, 2001):

- ***Anticipatory Adaptation***—*Adaptation that takes place before impacts of climate change are observed. Also referred to as proactive adaptation.*
- ***Autonomous Adaptation***—*Adaptation that does not constitute a conscious response to climatic stimuli but is triggered by ecological changes in natural systems and by market or welfare changes in human systems. Also referred to as spontaneous adaptation.*
- ***Planned Adaptation***—*Adaptation that is the result of a deliberate policy decision, based on an awareness that conditions have changed or are about to change and that action is required to return to, maintain, or achieve a desired state.*
- ***Private Adaptation***—*Adaptation that is initiated and implemented by individuals, households or private companies. Private adaptation is usually in the actor's rational self-interest.*
- ***Public Adaptation***—*Adaptation that is initiated and implemented by governments at all levels. Public adaptation is usually directed at collective needs.*
- ***Reactive Adaptation***—*Adaptation that takes place after impacts of climate change have been observed.*

Planeada - Resulta de uma deliberada opção política, baseada na percepção que determinadas condições foram modificadas, ou estão prestes a ser, e que existe a necessidade de actuar de forma a regressar, manter ou alcançar o estado desejado.

4. *Act local*? Todos os lugares são diferentes…



The Walkie-Talkie

At 20 Fenchurch Street is a remarkable building by Rafael Violy; clad in glass, its floor space increases with height to maximise the value of office space… **The intensity of the solar energy was sufficient to melt parts of a Jaguar car, to singe carpet in a barbers shop and even to cook eggs**.

5. Cidades inteligentes ou pessoas inteligentes?
Como aplicar efetivamente medidas de adaptação às AC nas escalas locais?

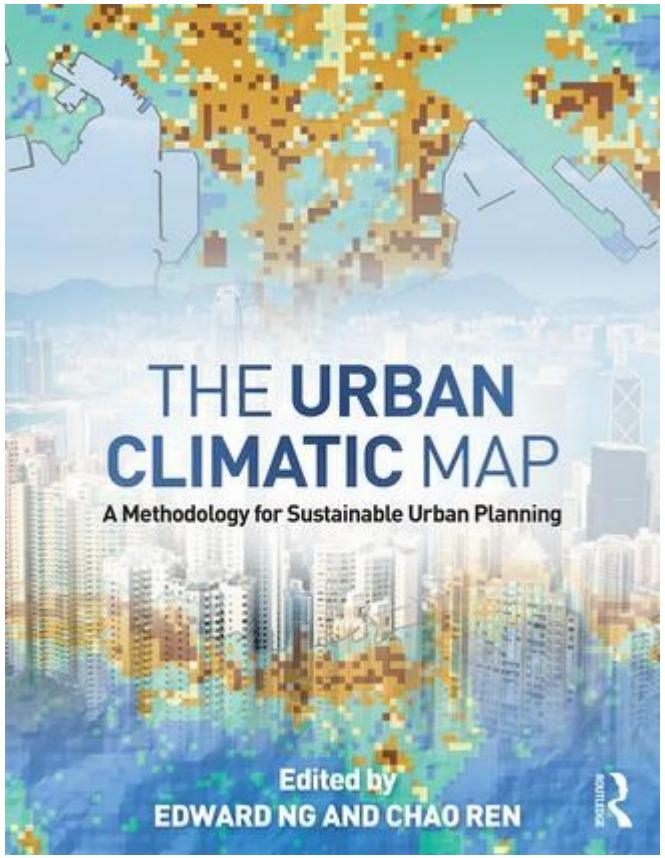
"Cities consume 75 per cent of worldwide energy production and generate 80 per cent of CO2 emissions"

- smart **economy**
- smart **mobility**
- smart **environment**
- smart **people**
- smart **living**
- smart **governance**

http://smartcities.ieee.org/about

Uma nova "escala" de análise: a escala digital

6. A opção “Planeamento e Ordenamento do Território”.



Chapter 16

Urban climatic map studies in Portugal

Lisbon

Maria João Alcoforado, António Saraiva Lopes and Henrique Andrade[1]

Chapter 17

Urban climatic map studies in Brazil

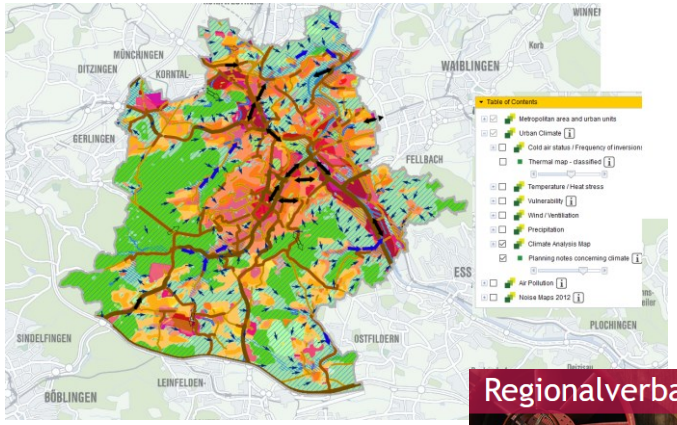
Campinas

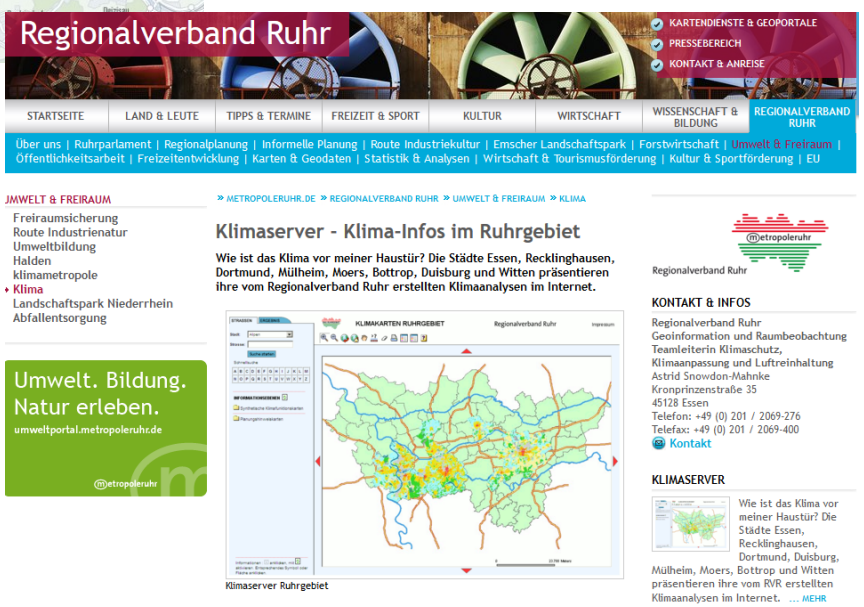
Alessandra R. Prata Shimomura, António Saraiva Lopes and Ezequiel Correia

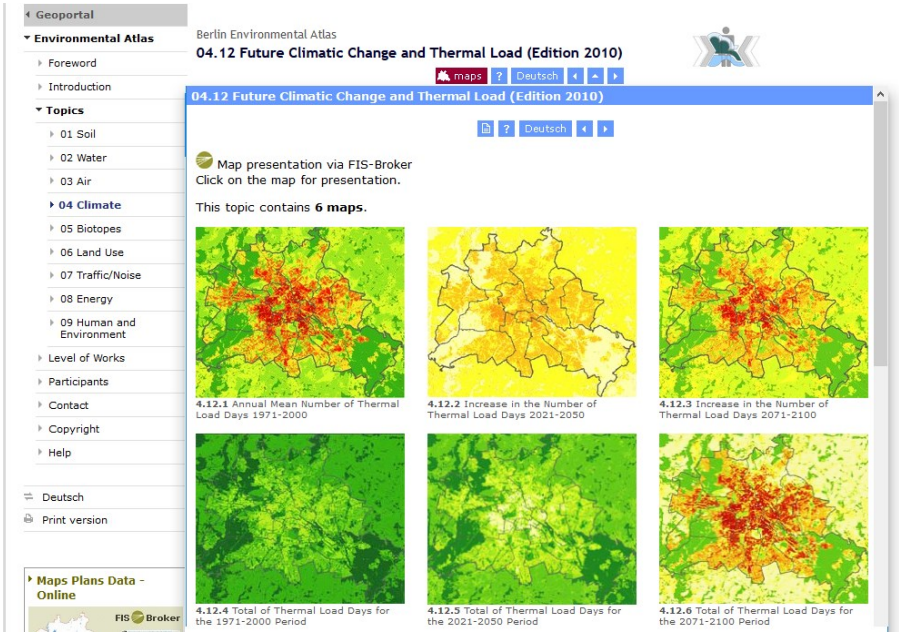
Figure 1. UCMap studies around the world. This figure is available in colour online at wileyonlinelibrary.com/journal/joc

The urban climatic map (UCMap) is an information and evaluation tool to integrate urban climatic factors and town planning considerations by presenting climatic phenomena and problems into two-dimensional spatial maps (Ren et al, 2010).

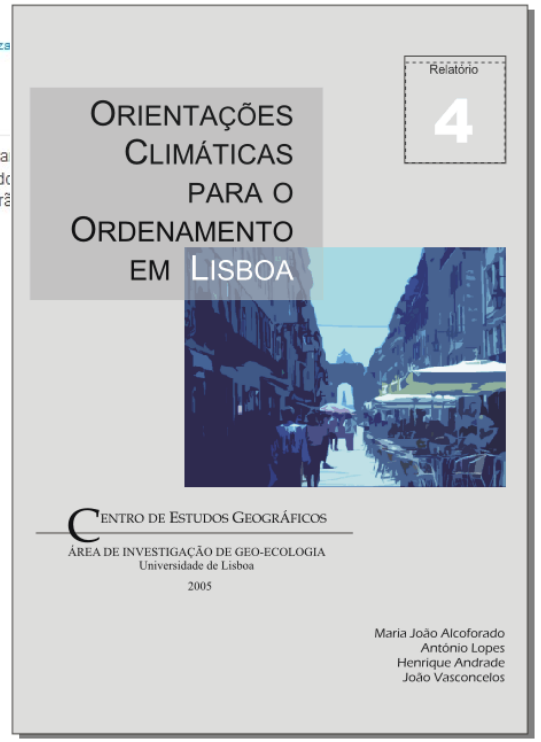
Alguns exemplos de informação climática local na Europa







Exemplos de estudos em Portugal
1. Lisboa (2005)



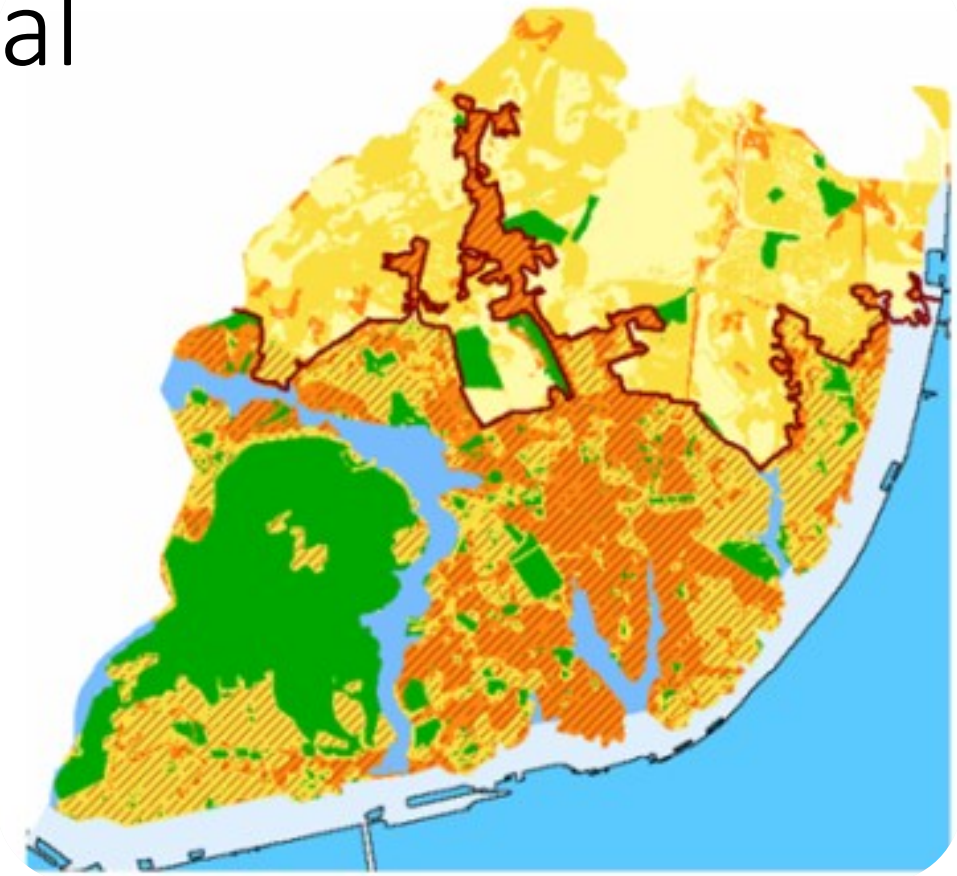


Table III – Summary of spatialized guidelines for planning in Lisbon

Grupos de climatopos	Orientações
A Área de baixa densidade de construção do Norte de Lisboa (4+5+6 na fig.16)	1. Manter corredores de ventilação com orientação N-S (NW-SE a NE-SW) 2. Manter uma razão H/W ≤ 1 nas construções urbanas 3. Criar espaços verdes extensos no interior e entre as áreas edificadas
B Áreas construídas de média densidade a Sul do limite aerodinâmico (2, fig.16)	1. Preservar os fundos dos vales de novas construções e da ocupação com vegetação densa 2. Manter uma razão H/W ≤ 1 nas construções urbanas 3. Criar espaços verdes de média dimensão e preencher os espaços intersticiais com vegetação
C	1. Preservar os fundos dos vales de novas construções e da ocupação com vegetação densa 2. Manter nas construções urbanas uma razão H/W o mais elevada

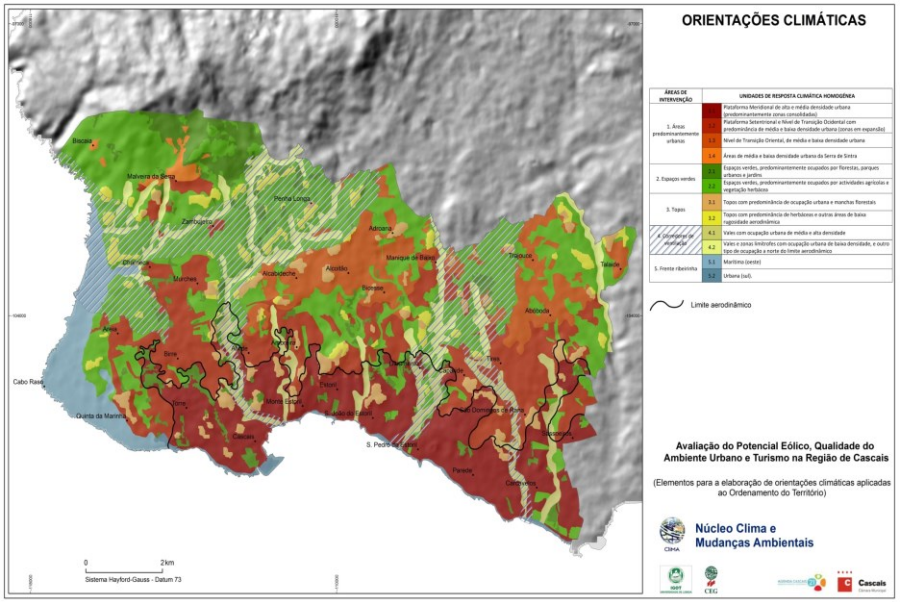
- CEG:
  M.J. Alcoforado;
  H. Andrade;
  A. Lopes;
  J. Vasconcelos;
  Rute Vieira

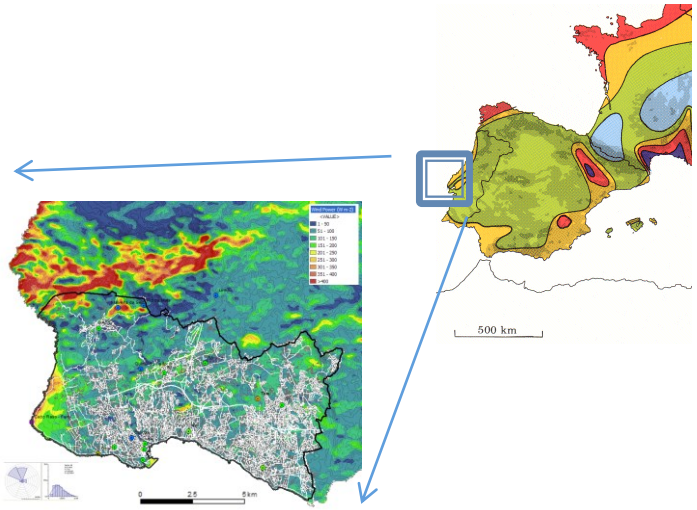
b. Cascais (2013)

CASCAIS

PLANO DIRETOR MUNICIPAL
REVISÃO
DMEI Direção Municipal
Estratégia Inovação e Qualificação

UCM (Urban Climate Maps) – Climatic guidelines for urban planning

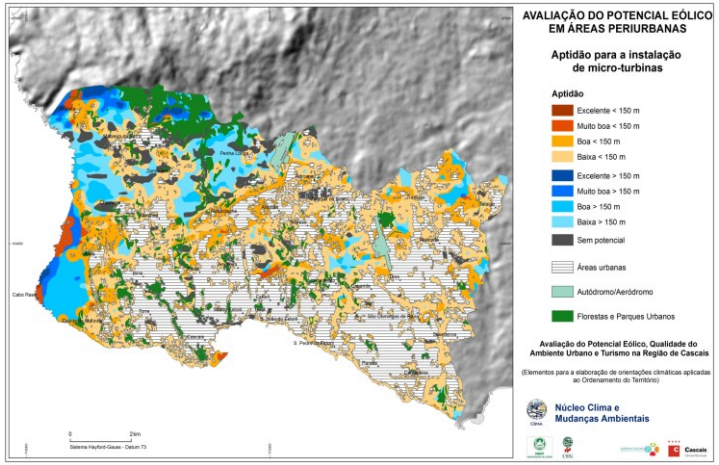




Lopes e Correia (2013)

Potencial eólico

small wind turbines



c. Exemplo da Praia (Santiago de Cabo Verde)

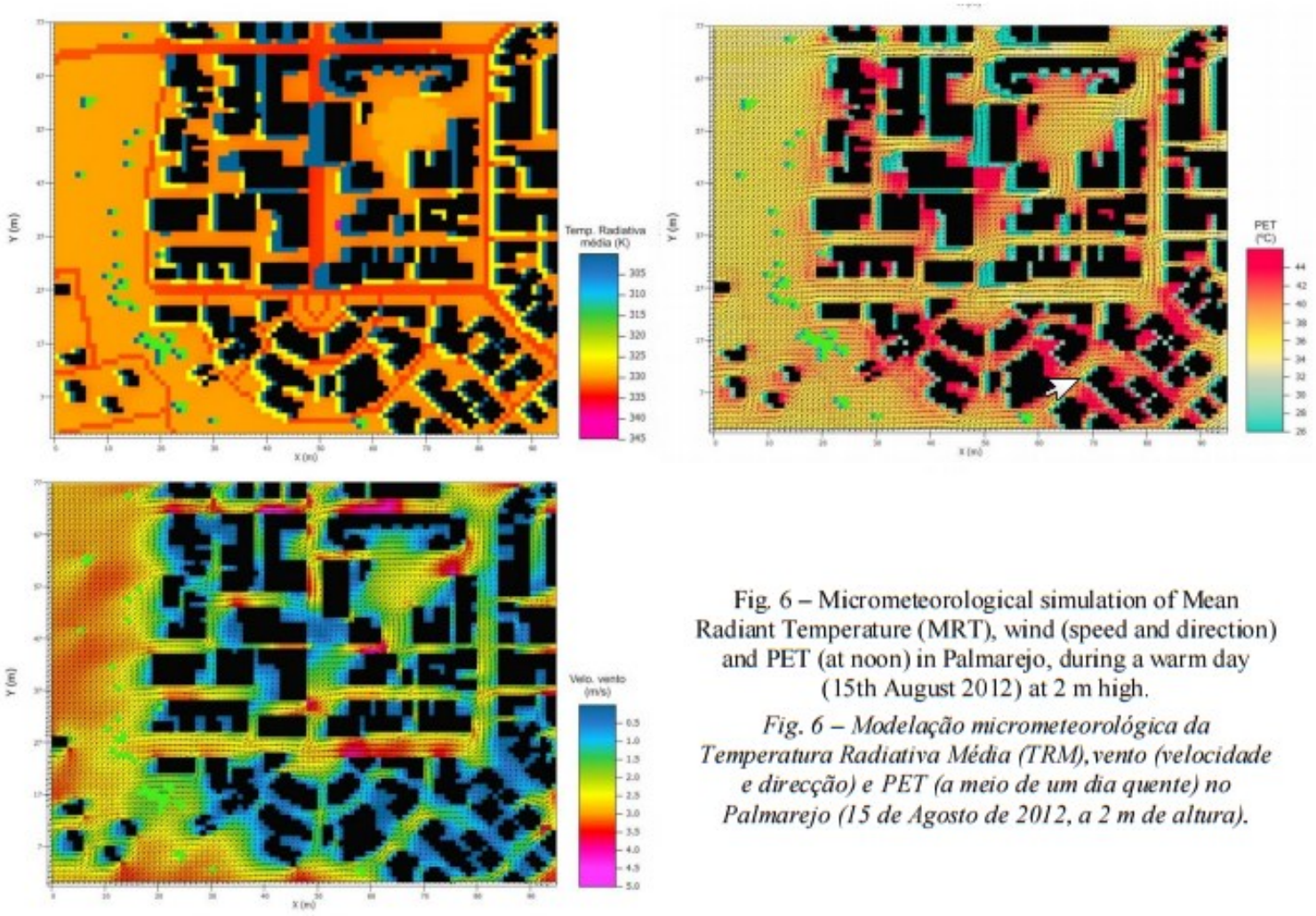


Fig. 6 – Micrometeorological simulation of Mean Radiant Temperature (MRT), wind (speed and direction) and PET (at noon) in Palmarejo, during a warm day (15th August 2012) at 2 m high.

Fig. 6 – Modelação micrometeorológica da Temperatura Radiativa Média (TRM), vento (velocidade e direcção) e PET (a meio de um dia quente) no Palmarejo (15 de Agosto de 2012, a 2 m de altura).

Fonte: Lopes A, Correia E, Nascimento J, Canário P (2014) Urban Bioclimate and comfort assessment in the African city of Praia (Cape Verde). Finisterra - Revista Portuguesa de Geografia, volume XLIX, número 98 (p 44)

C40 is a network of the world's megacities committed to addressing climate change

citiscope

With the Paris climate agreement taking effect, how can we move quickly toward action?

In an interview, C40's Seth Schultz says groups like his are embarking on a long-term commitment to work directly with the research community to support sustainable urbanization.

OCTOBER 6, 2016

Seth Schultz speaks at the COP 21 talks in Paris, December 2015. (C40)

climate change — talks about a new partnership emerging between science and cities. Boundaries between research and

http://citiscope.org/habitatIII/news/2016/10/paris-climate-agreement-taking-effect-how-can-we-move-quickly-toward-action

- **Q: This all sounds very timely and promising, but as we know the academic community works at a different pace from the practitioner community. How to bridge this gap to develop an effective working partnership?**

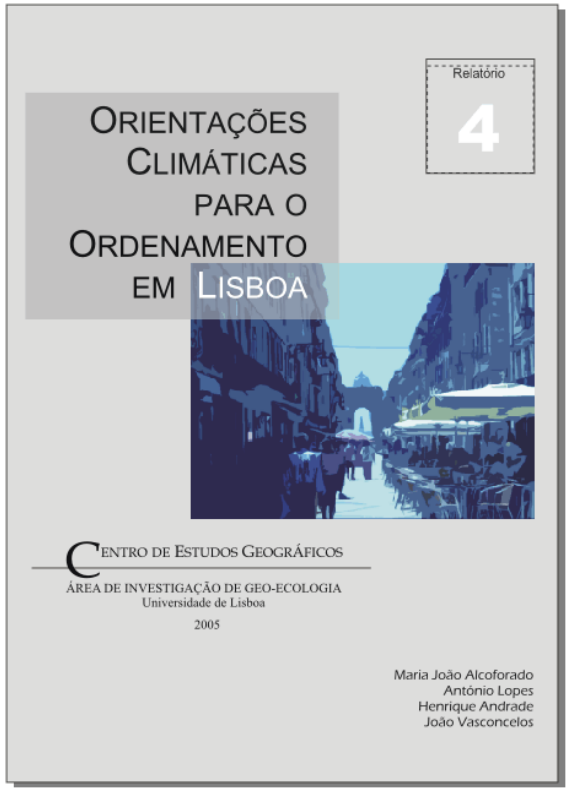
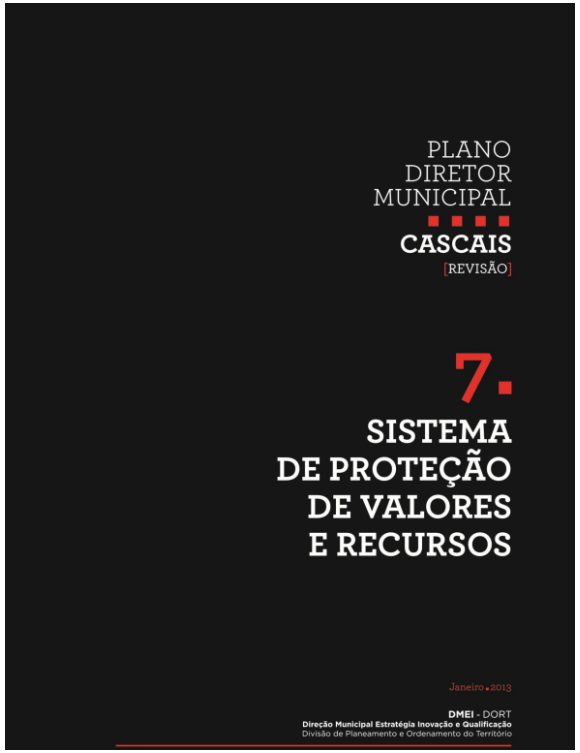
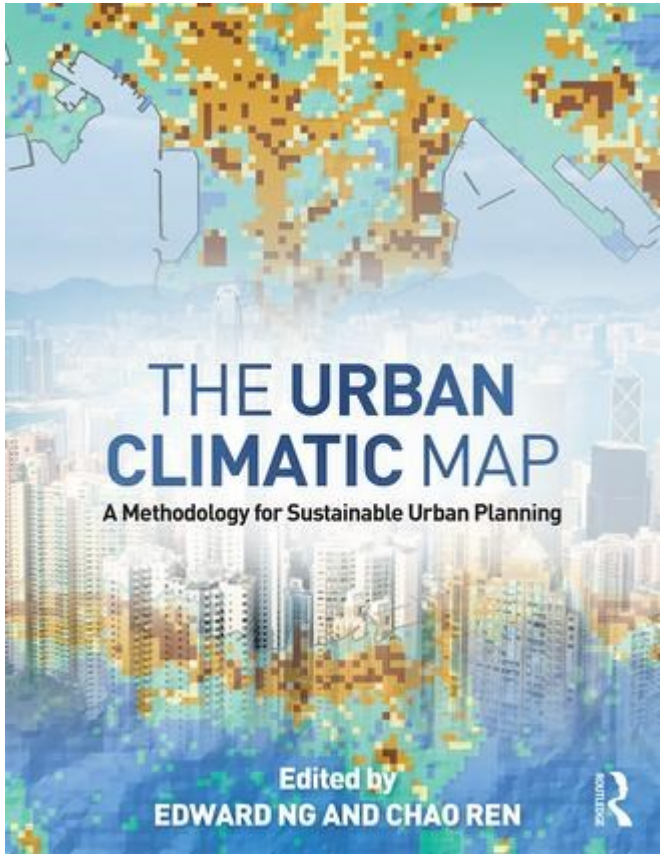
- We are at a turning point. There is no question that more academic research needs to get turned into policy.

- At the same time, policymakers need to be much more aware of the science and data.

- Organizations working on coupling those two things will come into prominence.

Conclusões:

- Necessidade de estudos prévios de clima urbano atual e previsto para o futuro para escolha das medidas de adaptação mais adequadas (redução de consumos energéticos, melhoria do conforto térmico, qualidade do ar, etc).
- Verificação de potencialidades e limitações específicas de cada cidade.
- Investigação conjunta com as Universidades: “policymakers need to be much more aware of the science and data”

- Agir urgentemente com opções inteligentes.
- *Smart cities* ou *smart people*?

Obrigado pela vossa atenção