

Temperature and Mortality: Climate Change, Mitigation and Adaptation

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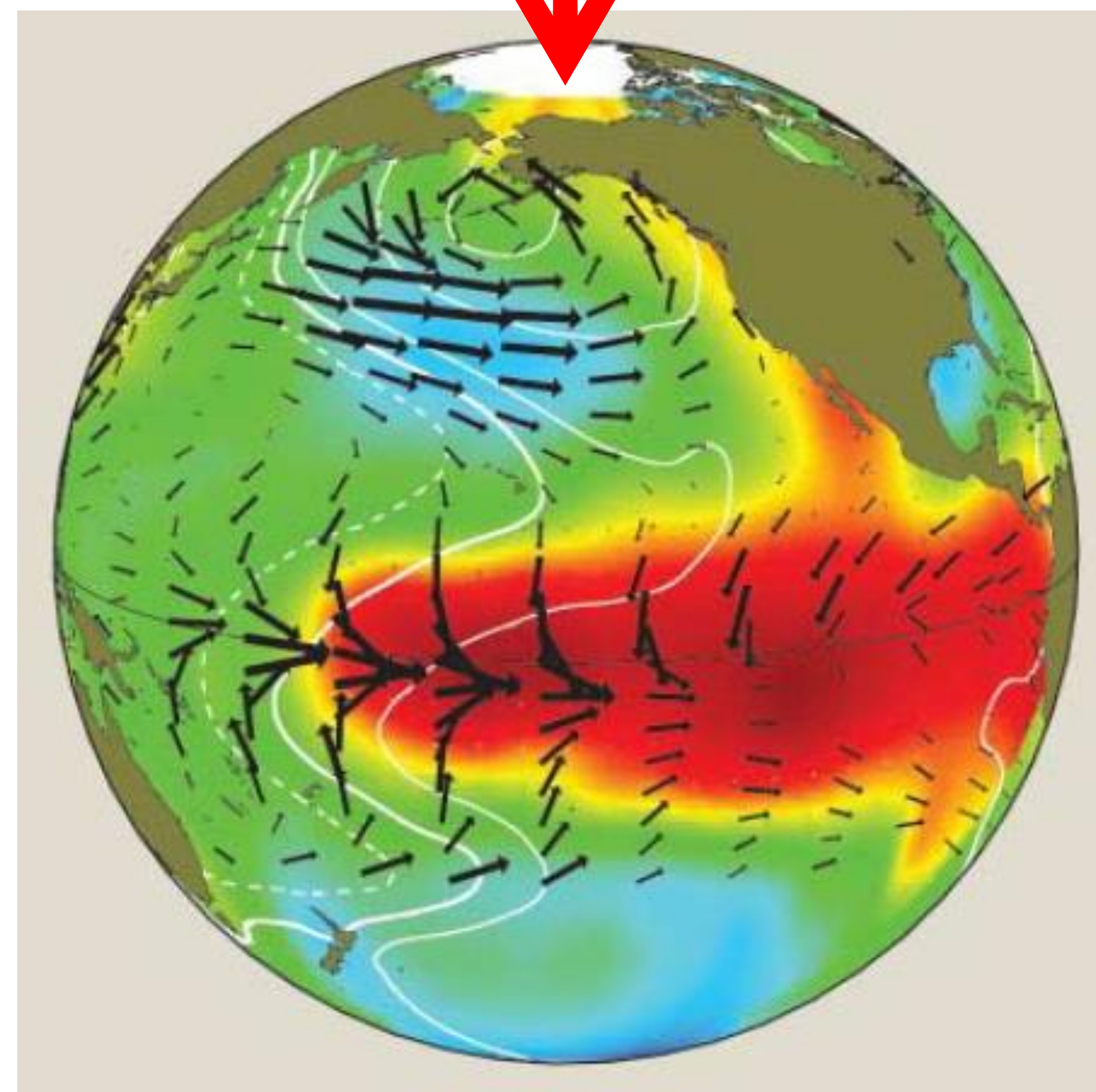
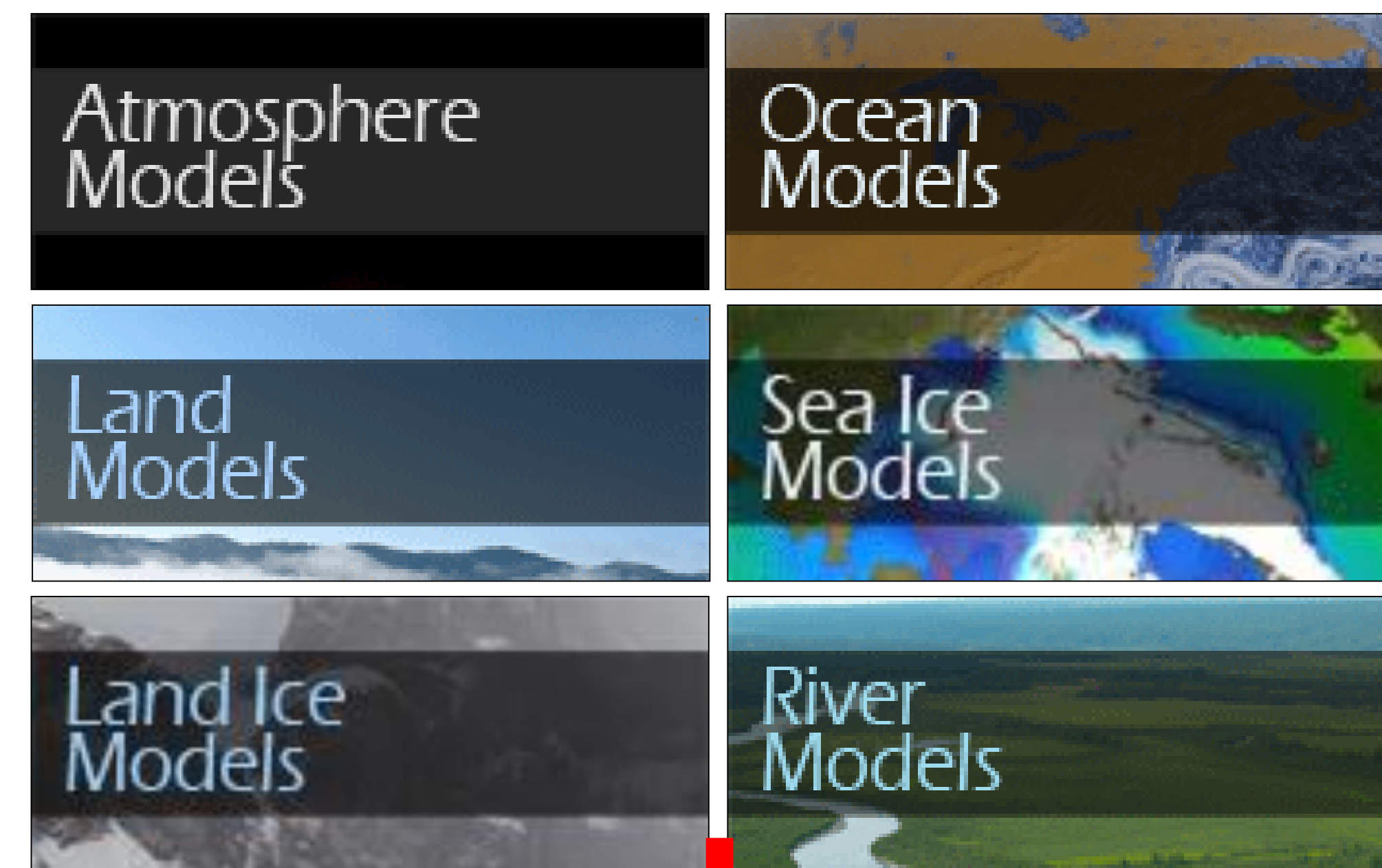
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Emergència climàtica. La ciència respon. Debats científics
Taula rodona: salut i clima
May 31st 2021, Barcelona



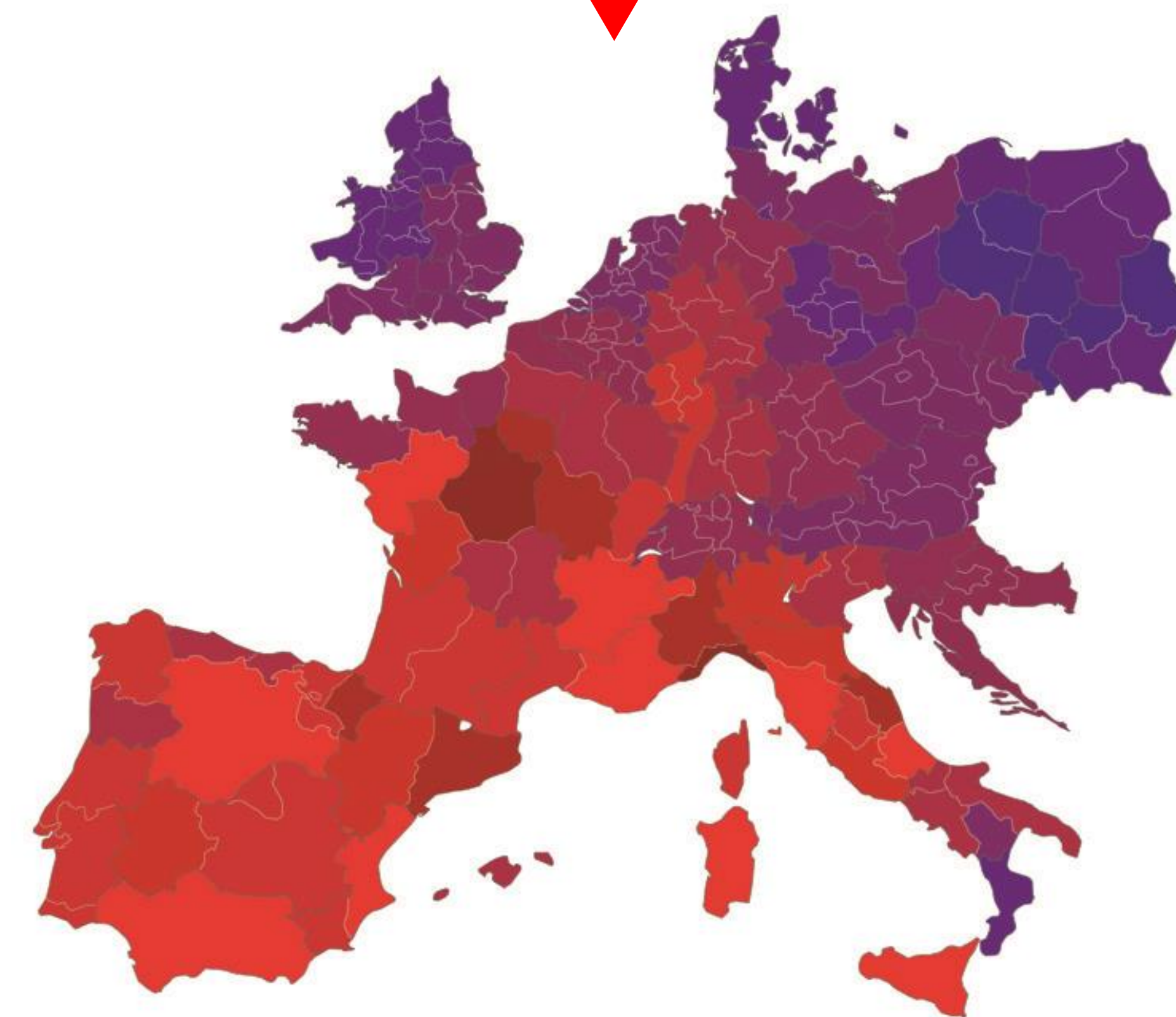
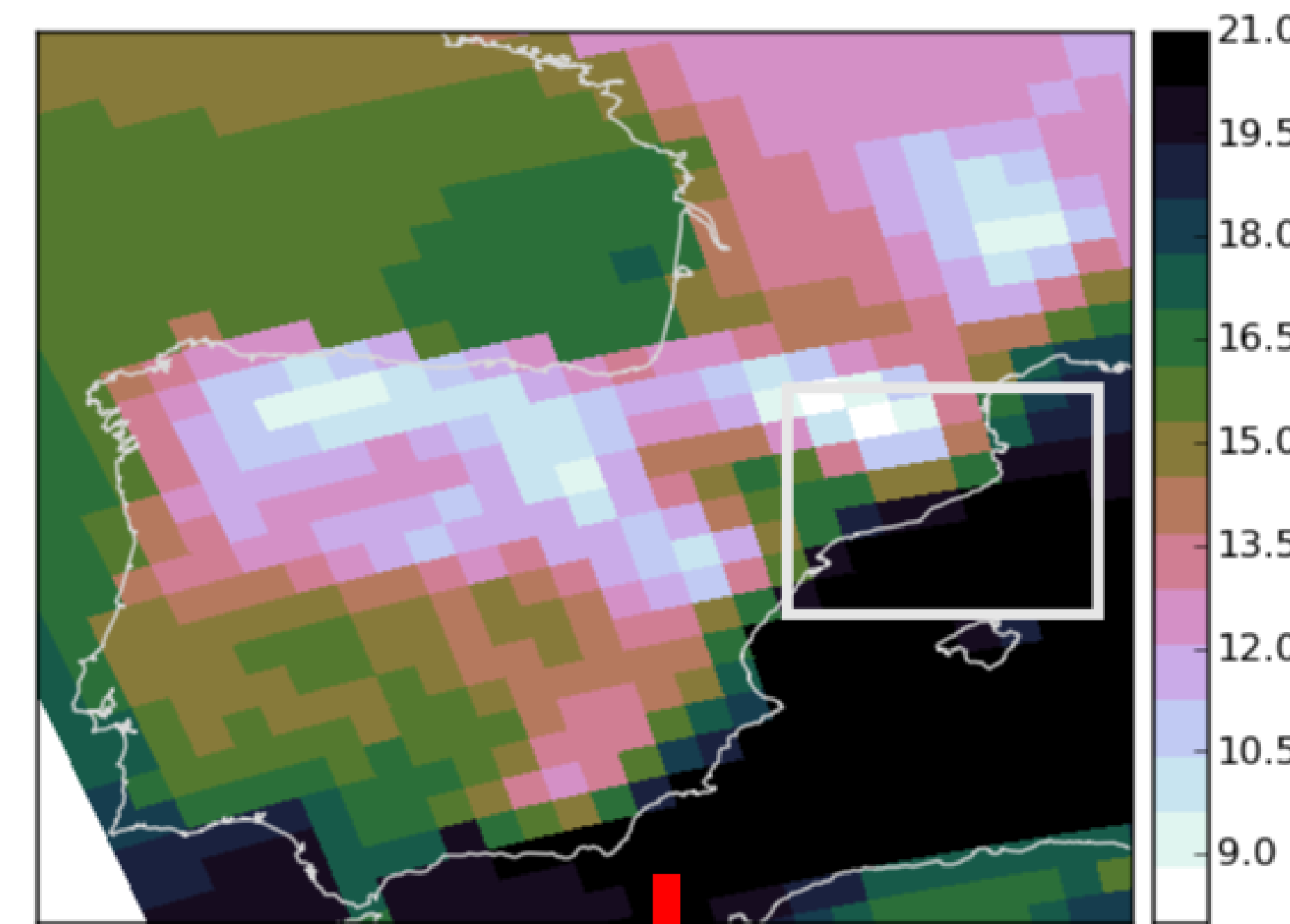
Climate Models: from Global to Local

Earth System Model



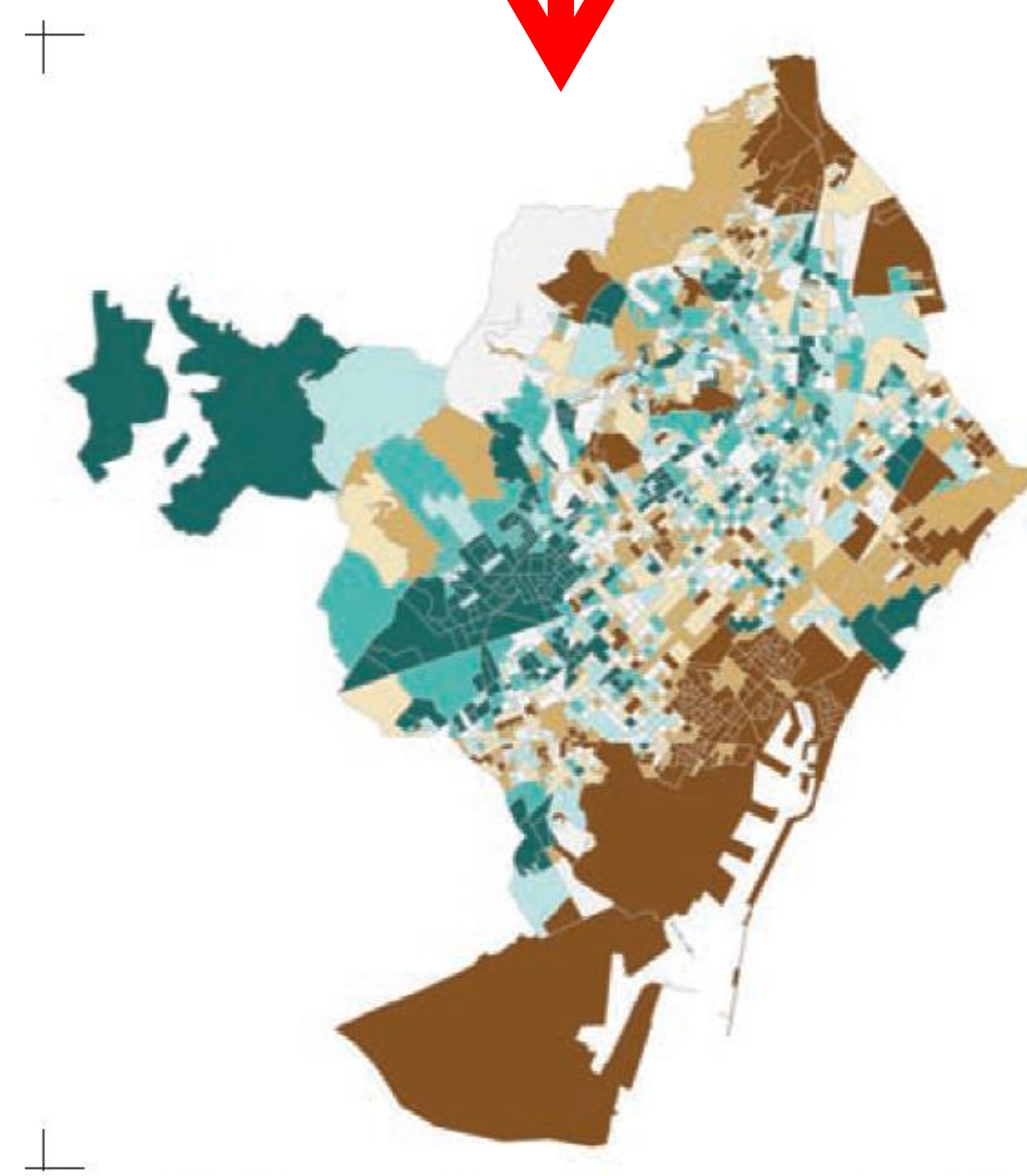
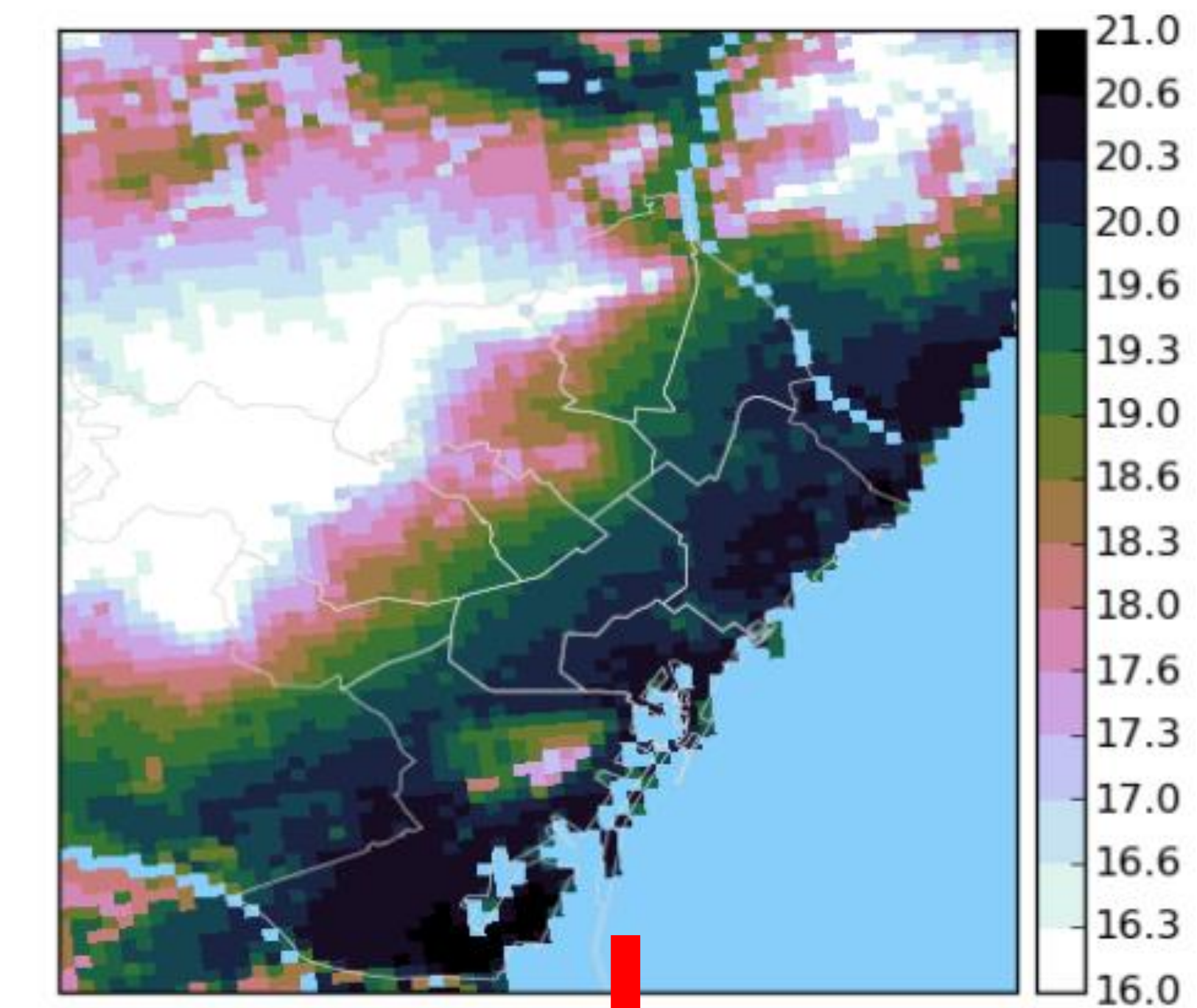
El Niño, Climate Dynamics,
Tropical Infectious Diseases, ...

Regional Climate Model



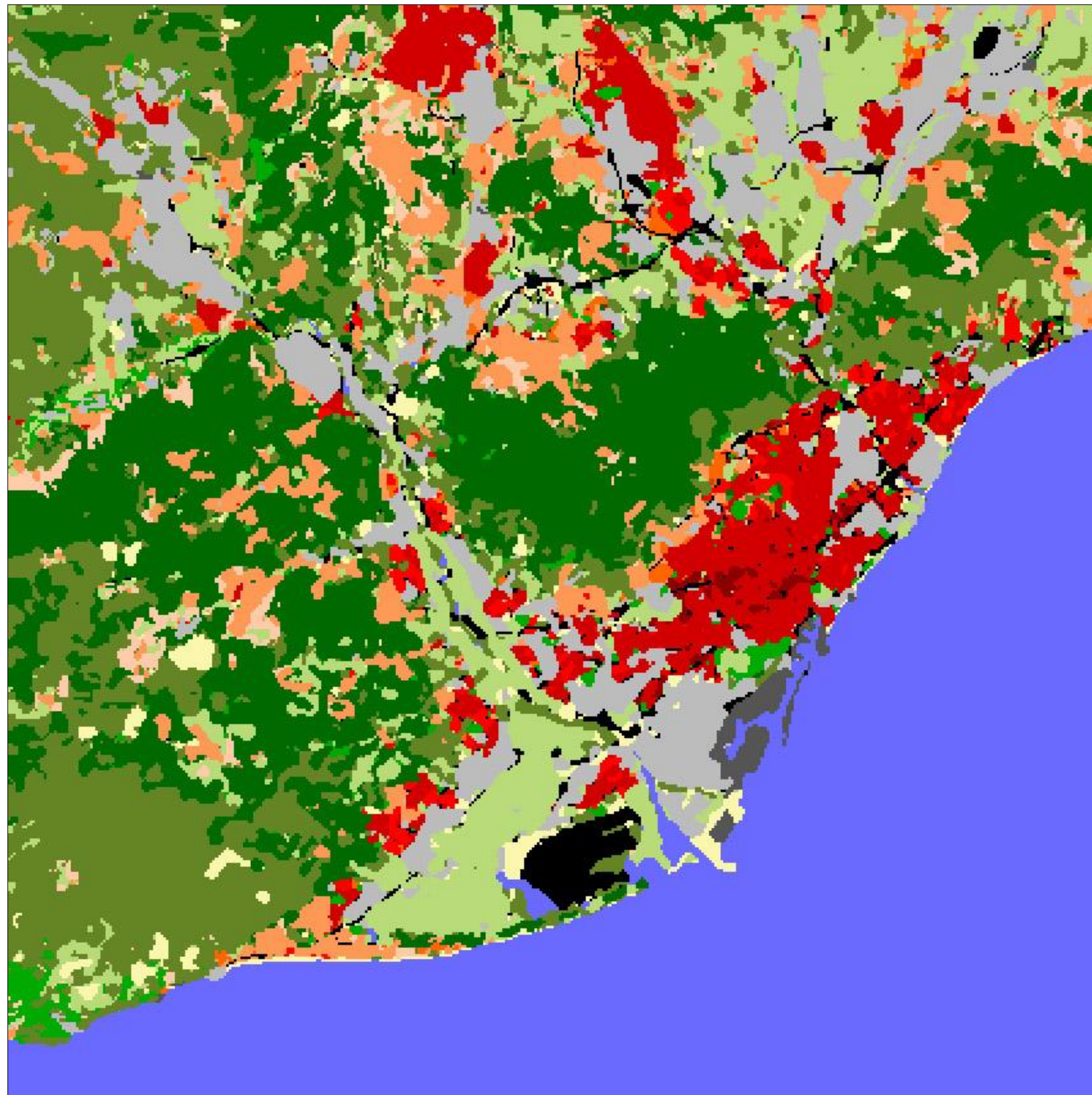
Climate Forecasting,
Early Warning Systems, ...

Urban Climate Model

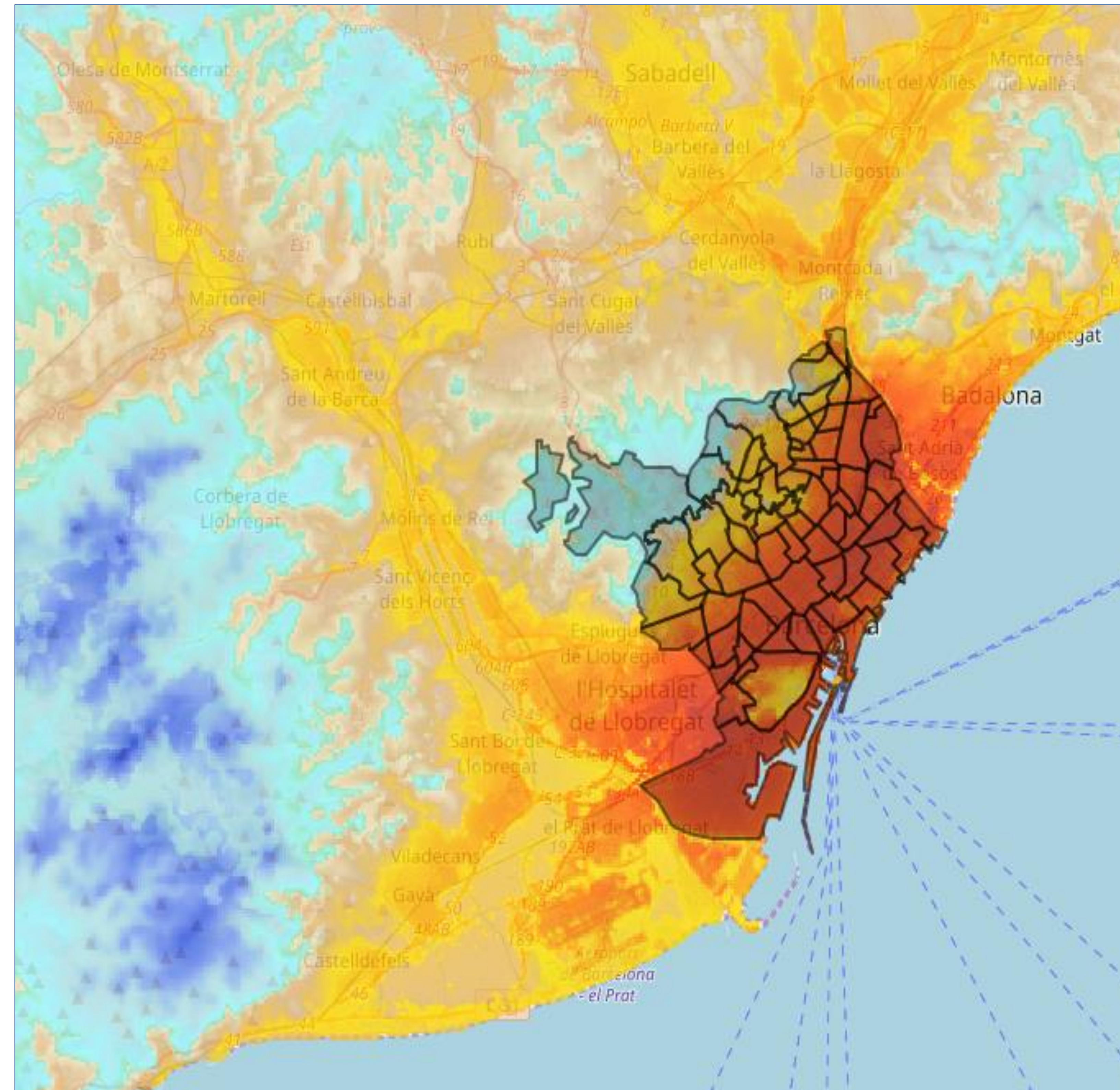


Mortality, Air Pollution,
Social Inequality, ...

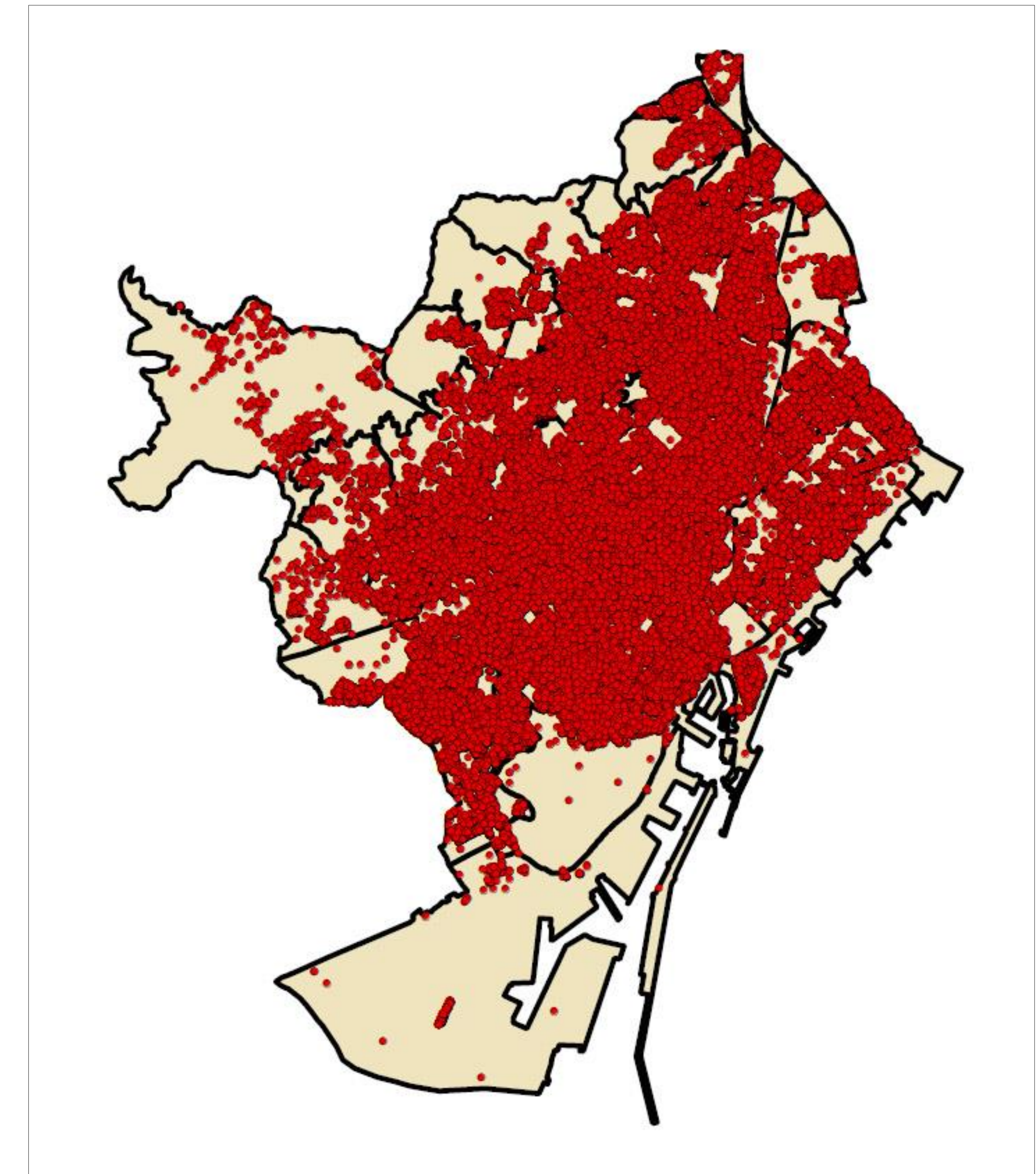
Heat Island Effect: Urban Climate Models



Land Use Map
based on Local Climate Zones



Temperature at 100 meters
from Urban Climate Model

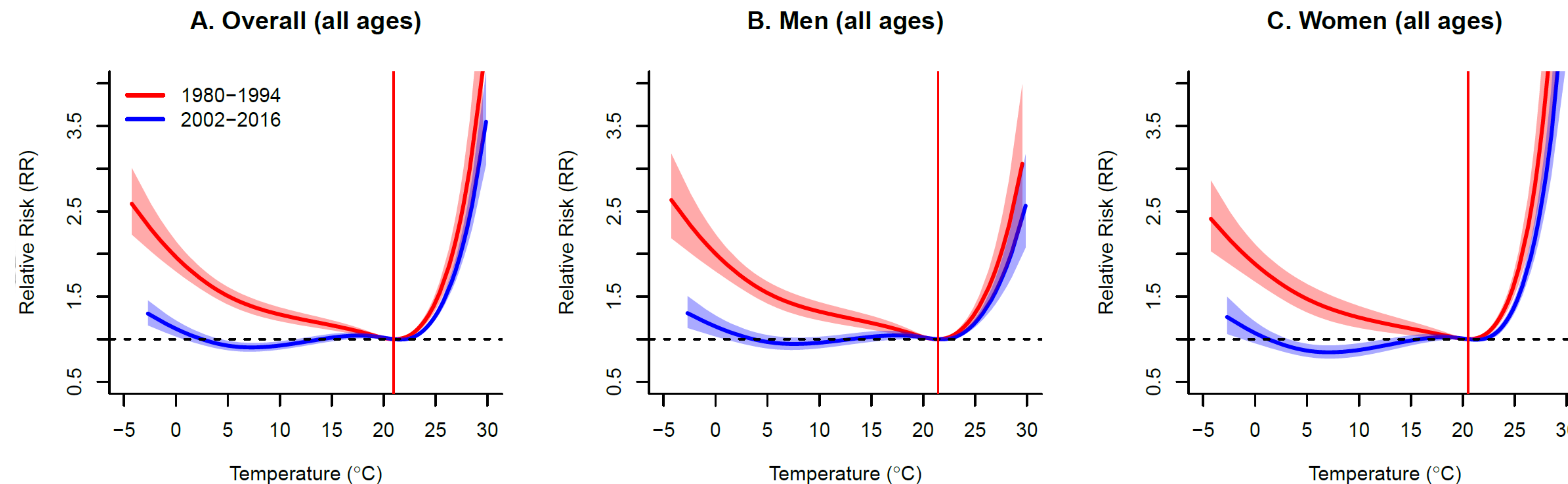
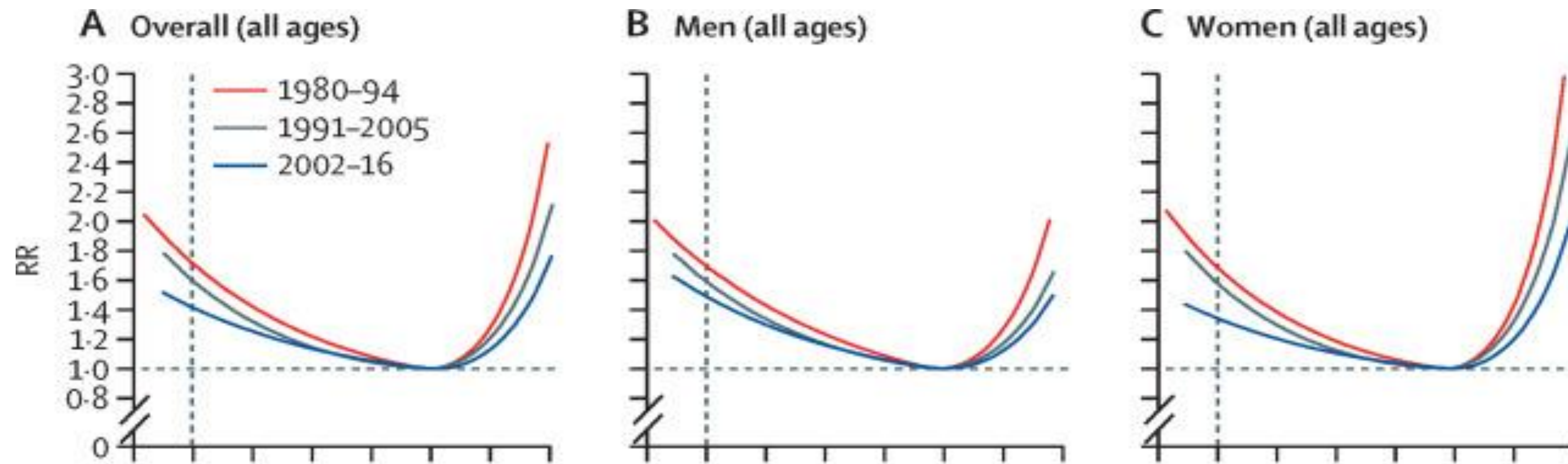


Deaths
from Individual Records

Adaptation by Causes of Death in Spain

Achebak et al. 2019
Cardiovascular deaths

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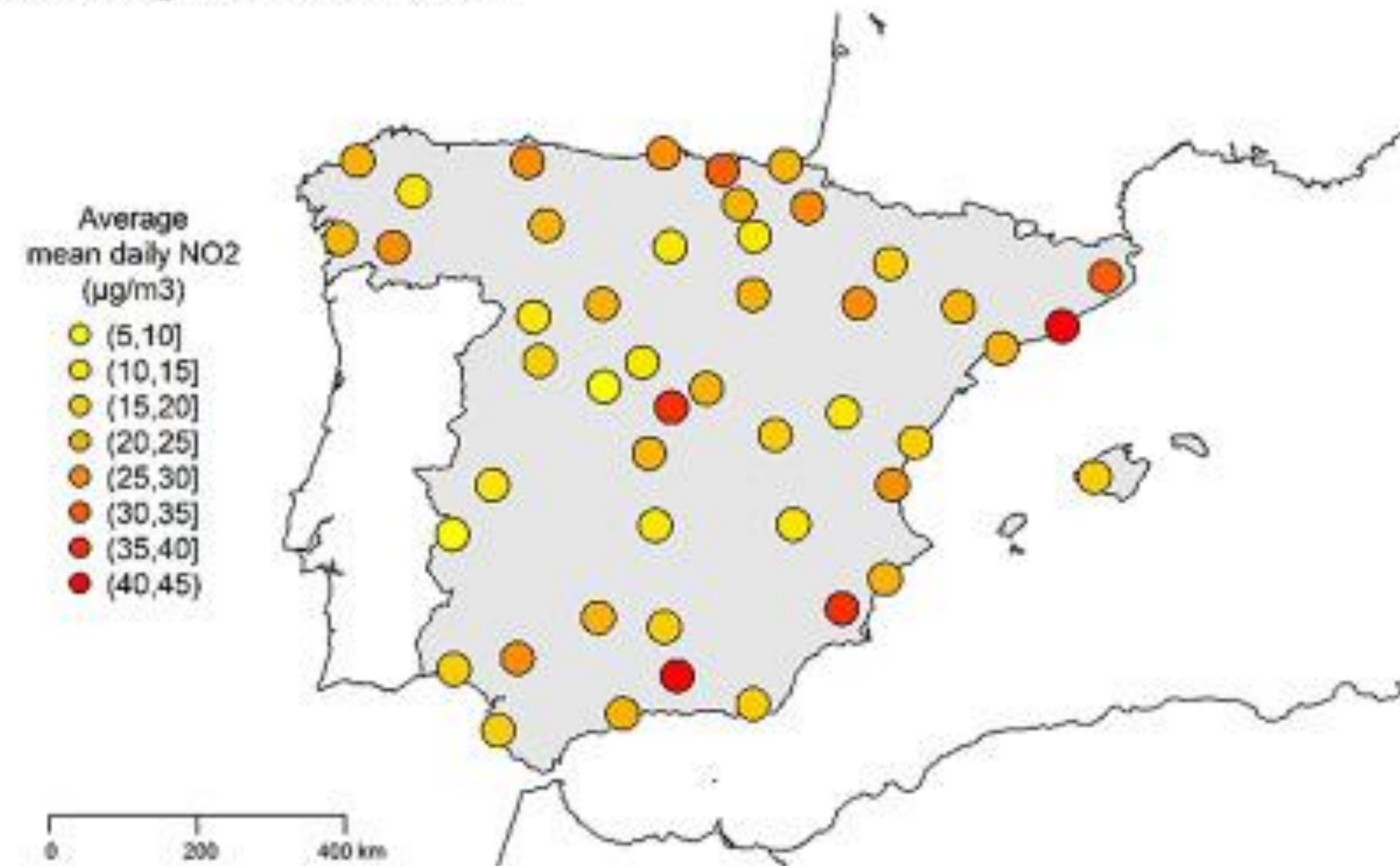


Achebak et al. 2020
Respiratory deaths

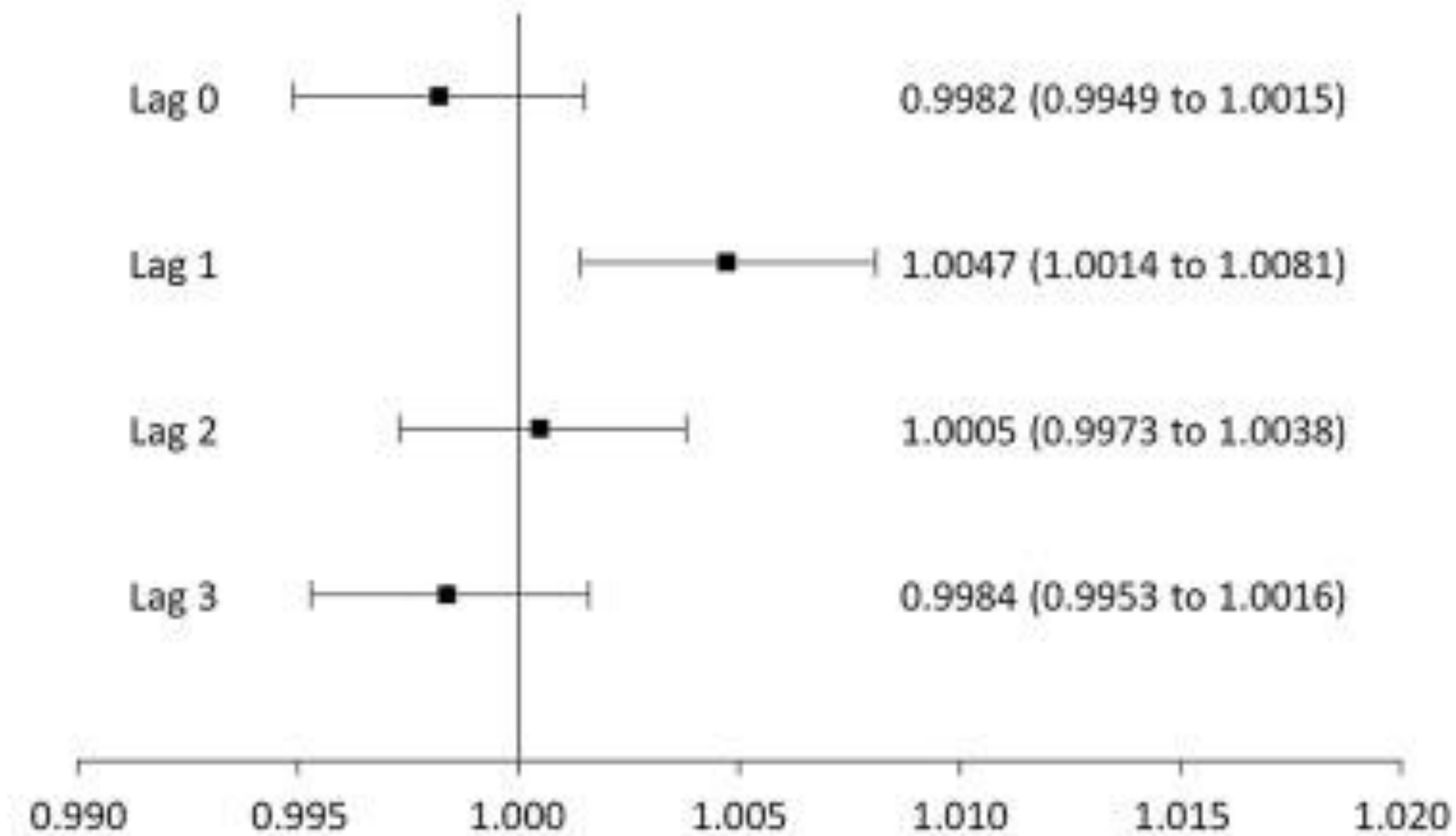
nature
COMMUNICATIONS

Trade-offs NO₂ and O₃ during Covid-19 lockdown

a) Nitrogen dioxide (NO₂)



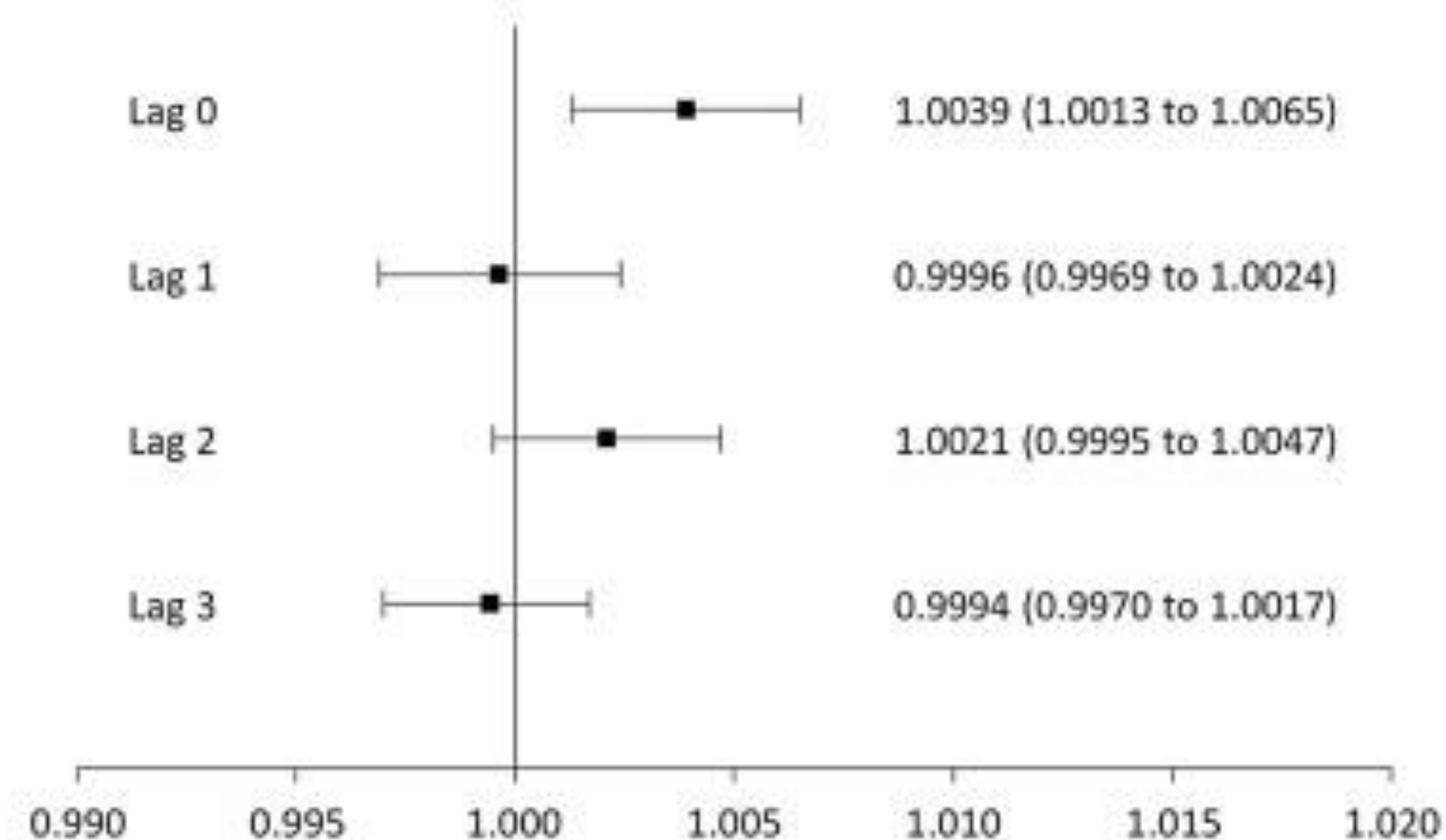
b) Relative risk of death per 10 µg/m³ increase in daily NO₂



c) Ozone (O₃)



d) Relative risk of death per 10 µg/m³ increase in daily O₃

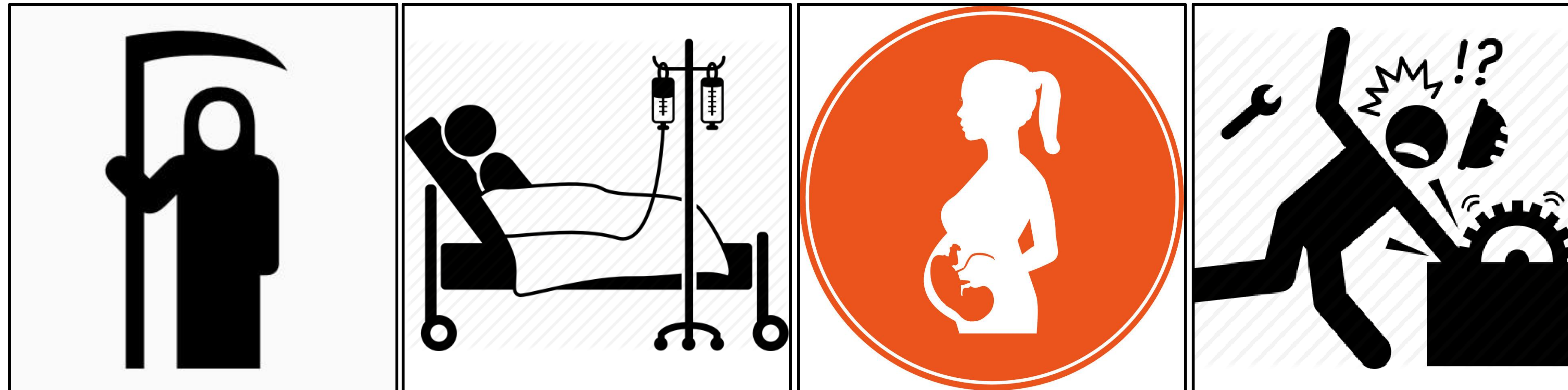


Achebak et al. 2020

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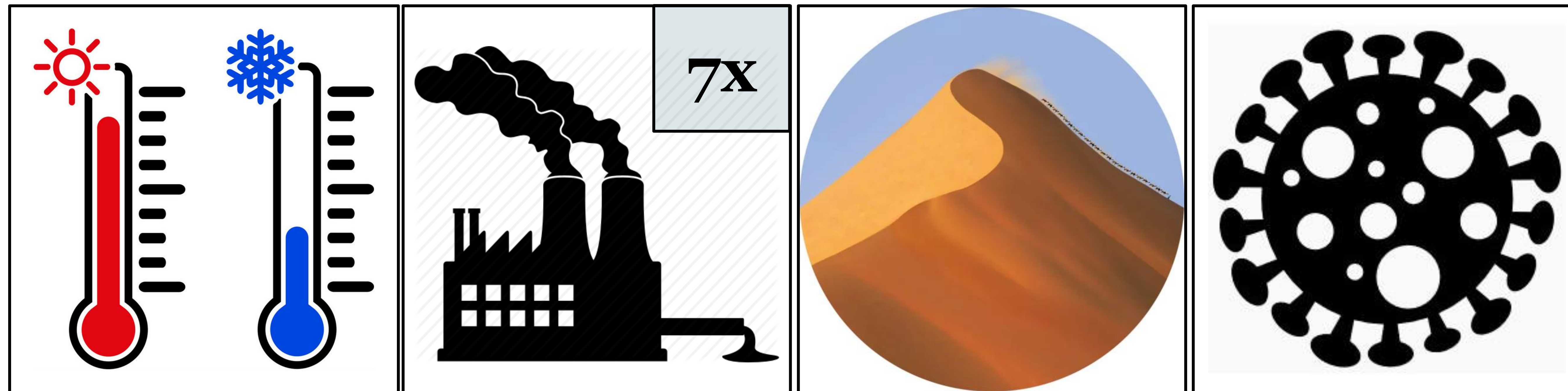
Achebak et al. 2021

ENVIRONMENTAL
POLLUTION



Daily Health Outcomes

- Deaths
- Hospitalizations
- Pregnancy / Births
- Occupational Accidents



Daily Environmental Exposures

- Climate Variables
- 7 Air Pollutants
- Desert Dust
- Influenza-like Illnesses



Societal Data

- Social Structure
- Economy
- Demography
- Inequalities, e.g. Gender Gap

Gràcies!

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EARLY-ADAPT has received funding from
the European Research Council (ERC) under
the European Union's Horizon 2020
research and innovation programme
(Grant agreement No. 865564)



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