MedECC

Mediterranean Experts on Climate and environmental Change

Presentation of MedECC

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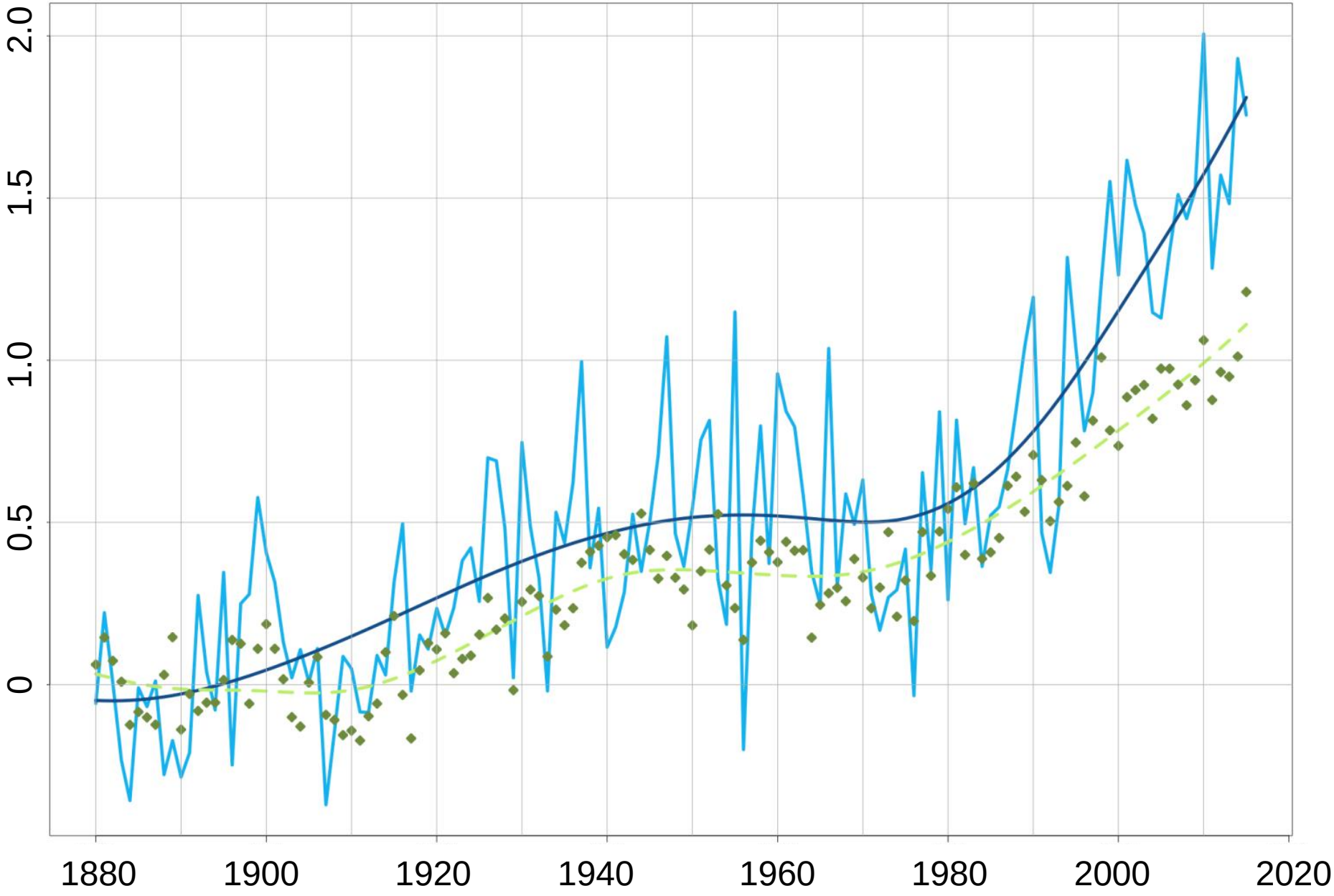
MedECC

- Pan-Mediterranean network of environmental scientists (360+ experts)
- Covers most Mediterranean countries and disciplines
- Develops a synthesis of environmental change risks for policy makers
- Aims for a formalized science-policy interface for the Mediterranean

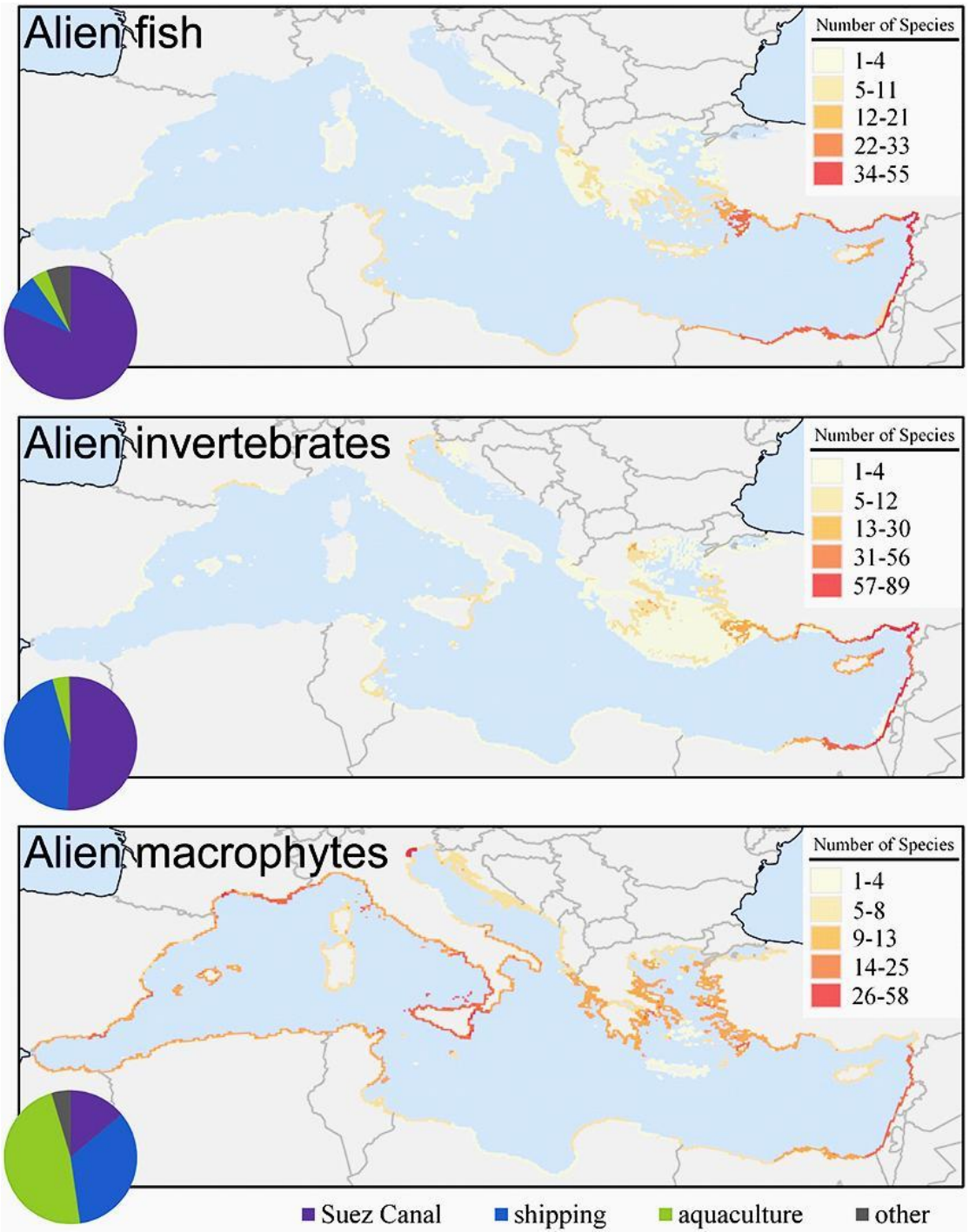
Mediterranean and global warming since 1880



Lorraine, France, August 2003, Photo. Wolfgang Cramer

Cannes La Bocca, 3 Oct 2015, Photo: Philippe Farjon/VISUAL

Alien organisms in the Mediterranean Sea



Katsanevakis et al 2014

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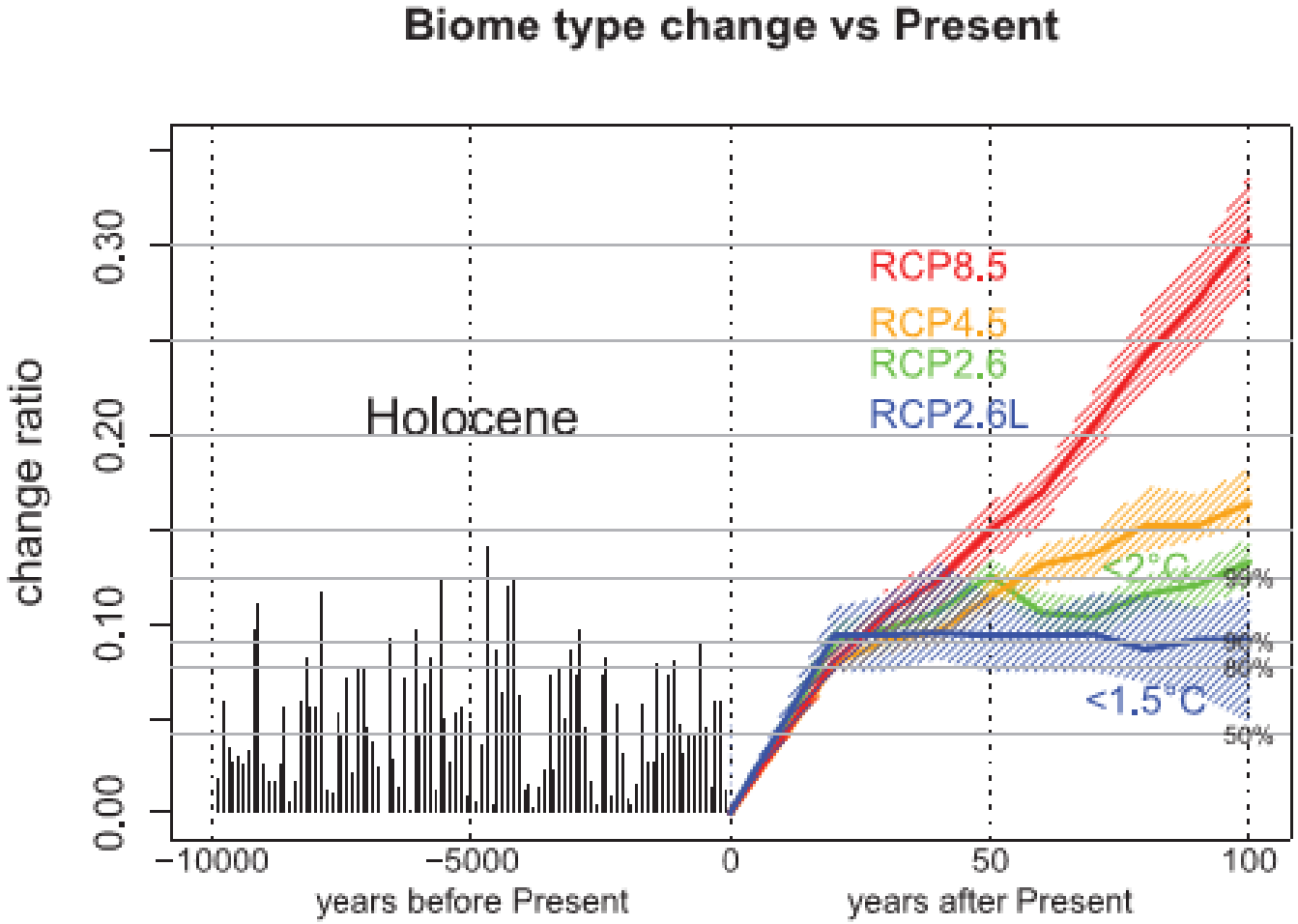


Guiot & Cramer 2016

Fig. 2. Proportion of grid cells with a biome change relative to the preindustrial period for the Mediterranean area (10°W to 45°E, 28°N to 48°N). The horizontal axis represents the time scale, in years before the present (20th century) for the past (negative numbers) and in years after the present (CE 2000–2010) for the future (positive numbers). Holocene biomes (in black) are based on reconstructions from pollen data (4). Colored lines are given by the BIOME4 model as applied to the RCP projections (see text). Horizontal lines represent the 50th, 80th, 90th, and 99th percentiles of the Holocene values. The colored areas illustrate the interquartile interval provided by the intermodel variability.

Environmental change in the Mediterranean Region

- Environmental change accelerates: warming, rainfall changes, extreme events, sea-level rise, acidification, invasive species, soil degradation, air and water pollution
- Damages have already occurred, lives have been lost, risks for people are becoming more and more evident
- Approaching the sustainable development goals requires balanced scientific assessment

A brief history 1/2

- Policy initiatives to preserve the Mediterranean environment exist since several decades (MAP, Barcelona Convention etc.)
- Numerous scientific research projects about the Mediterranean environment (mostly in EU countries) – but there is no synthesis
- July 2015: Paris conference “Our Common Future under Climate Change” – ~45 scientists create MedECC as a network for environmental risk assessment in the Mediterranean

A brief history 2/2

- Dec 2015 / Nov 2016: MedECC UNFCCC side events at Paris COP21 and Marrakech COP22
- April 2016: First MedECC Steering Group meeting hosted by UfM and Catalonian Government
- July 2016: MedECC Presentation at MedCOP CLIMAT, Tangiers
- October 2016, May 2017, June 2017, July 2017: MedECC Scoping Workshops Aix-en-Provence, Rabat, Palermo, Marseille

Scoping for MedECC

- WG1 (Rabat, May 2017): Water resources, energy, food security
- WG3 (Palermo, June 2017): Development, health, human security
- WG2 (Marseille, July 2017): Marine and terrestrial ecosystems and their services
- Report outlines from all WGs have been harmonized will be discussed with policy makers for review
- Scientists contribute independently and on voluntary basis (like IPCC/IPBES)

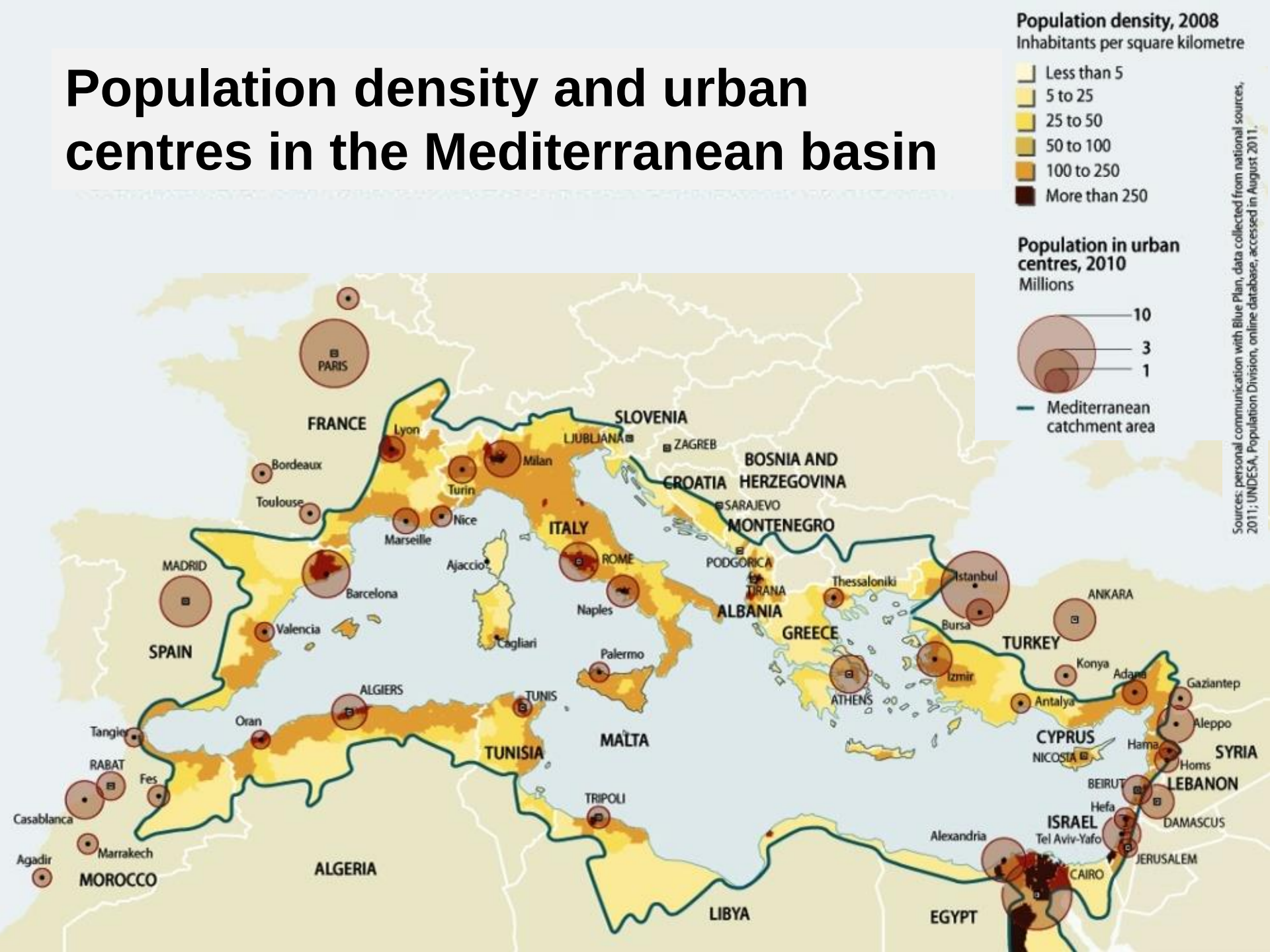
Proposed overall report outline

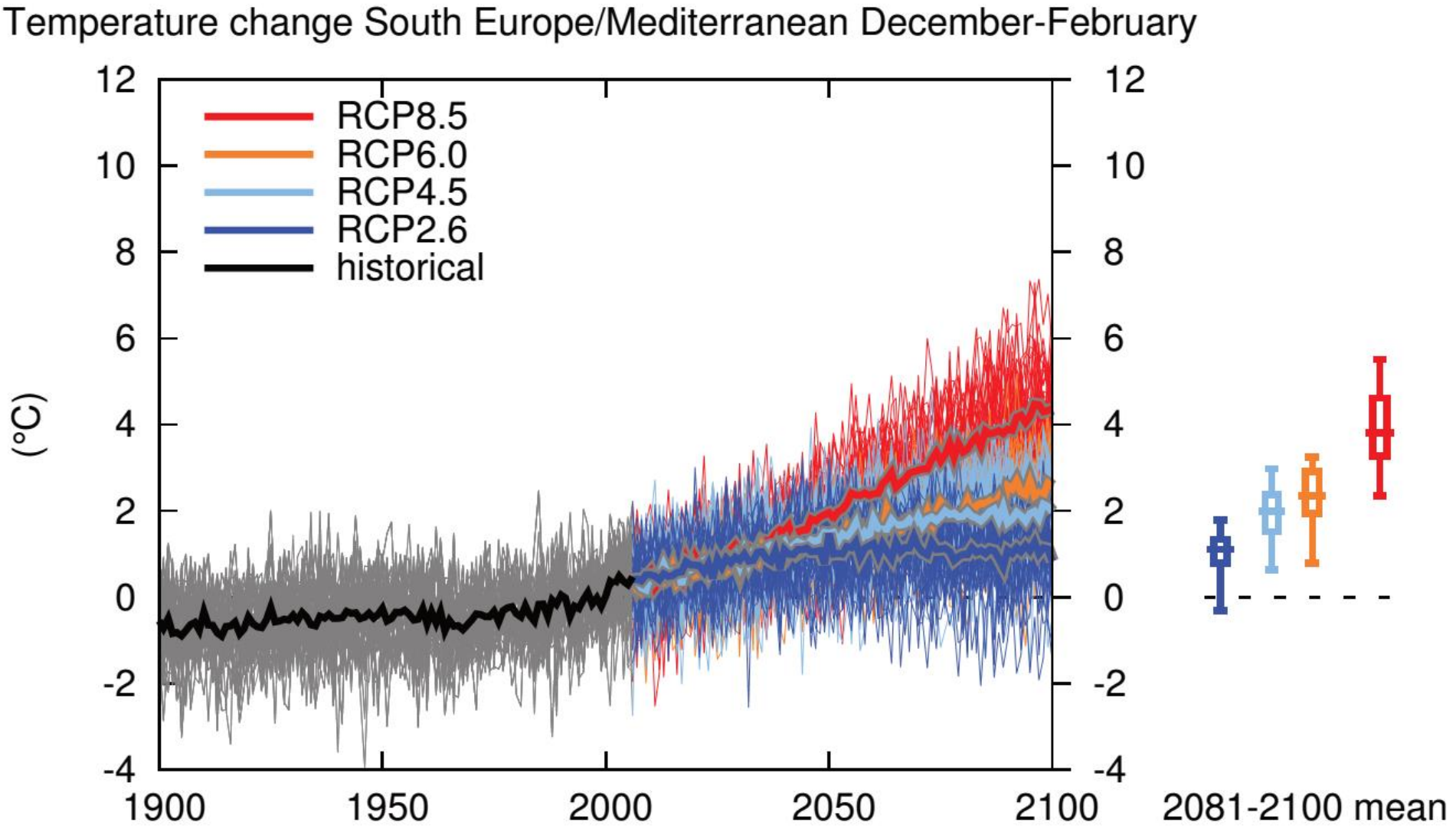
Summary for Policymakers

1. Introduction and concepts
2. Physical and human drivers of environmental change
3. Challenges
4. Managing future risks and building resilience
5. Annexes (glossary, list of acronyms, contributors, reviewers)

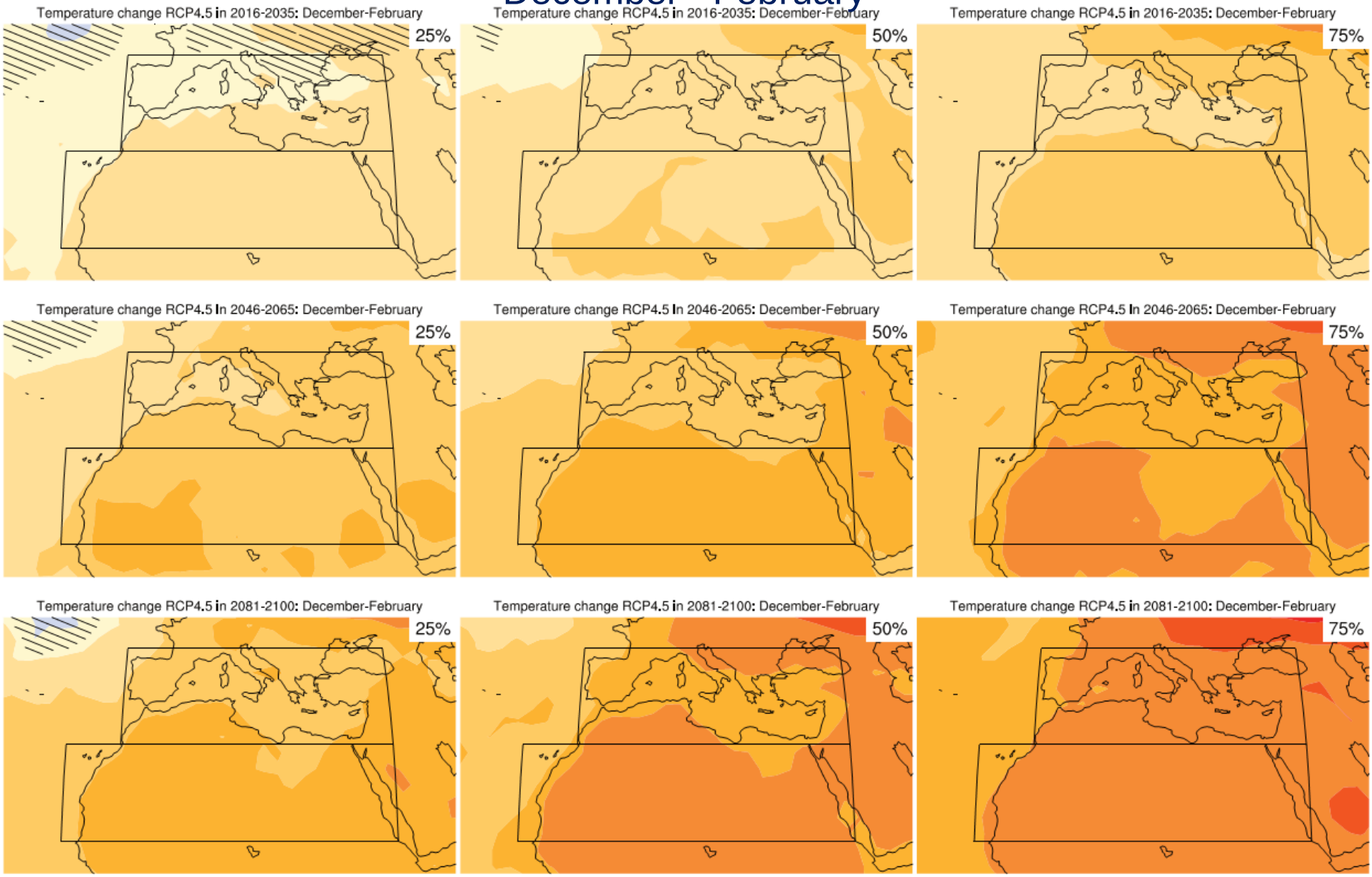
2. Physical and human drivers of environmental change

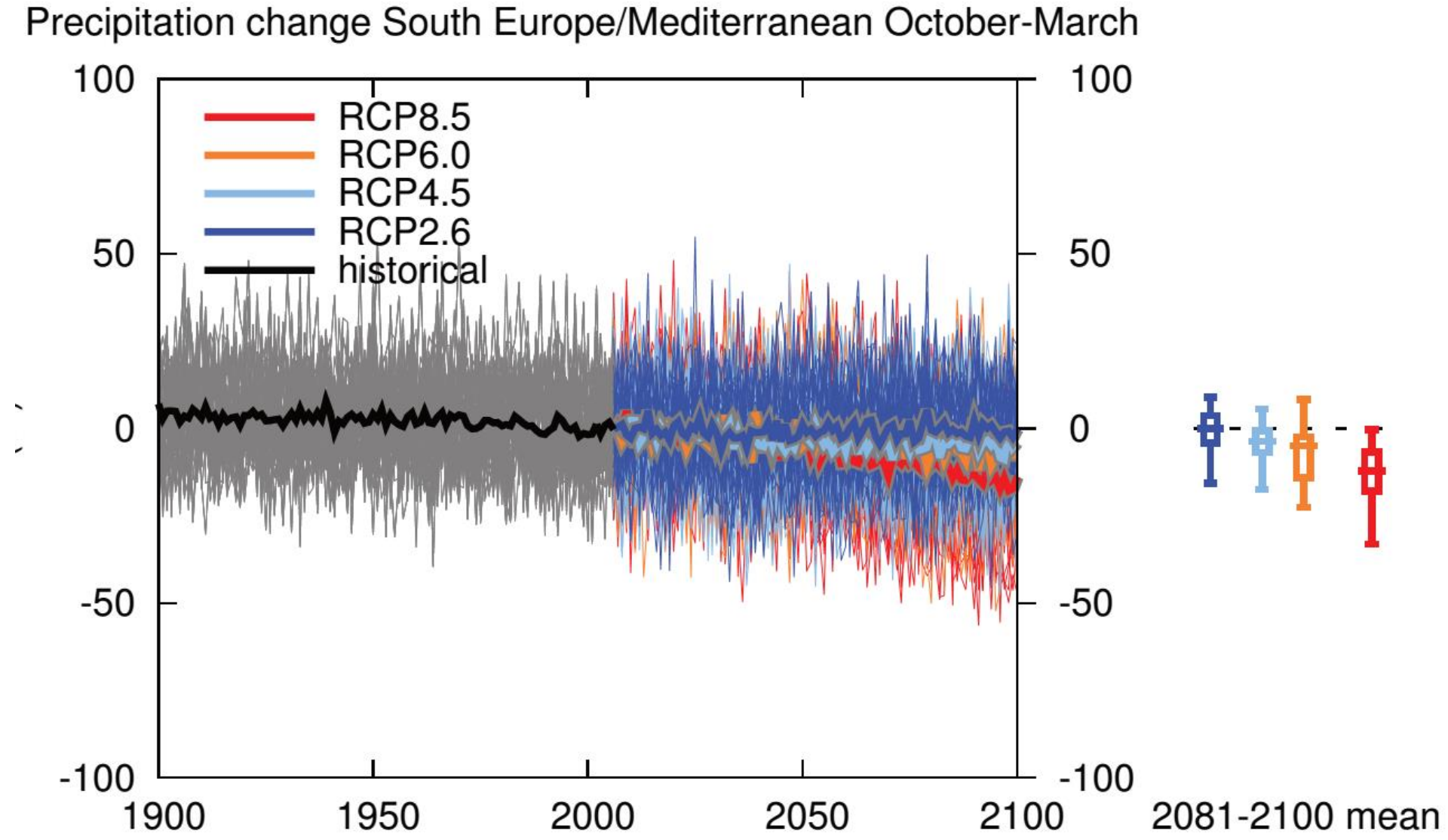
Population density and urban centres in the Mediterranean basin



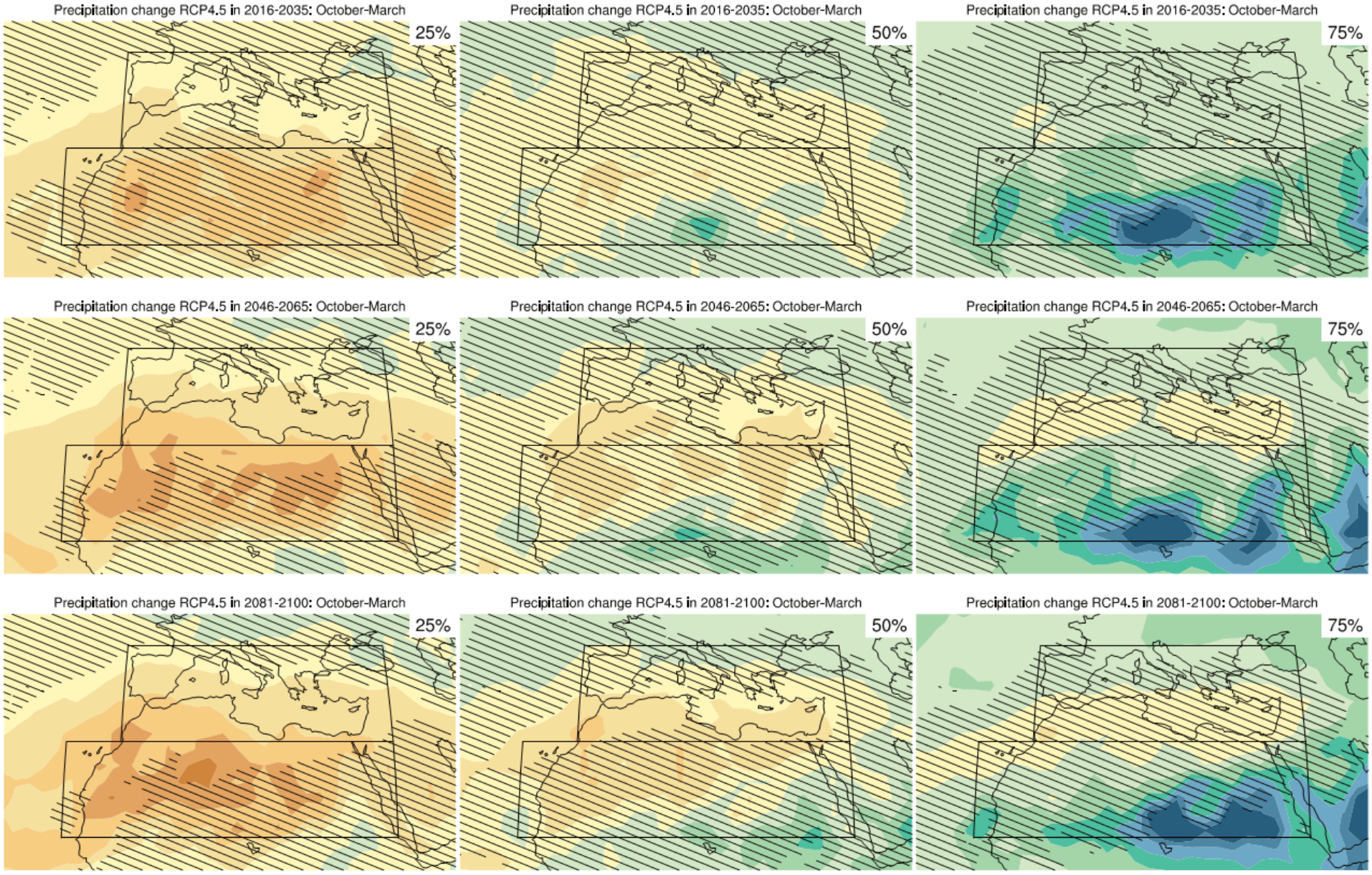

Temperature change South Europe/Mediterranean December-February
RCP8.5
RCP6.0
RCP4.5
RCP2.6
historical
(°C)
12
10
8
6
4
2
0
-2
-4
1900
1950
2000
2050
2100
2081-2100 mean

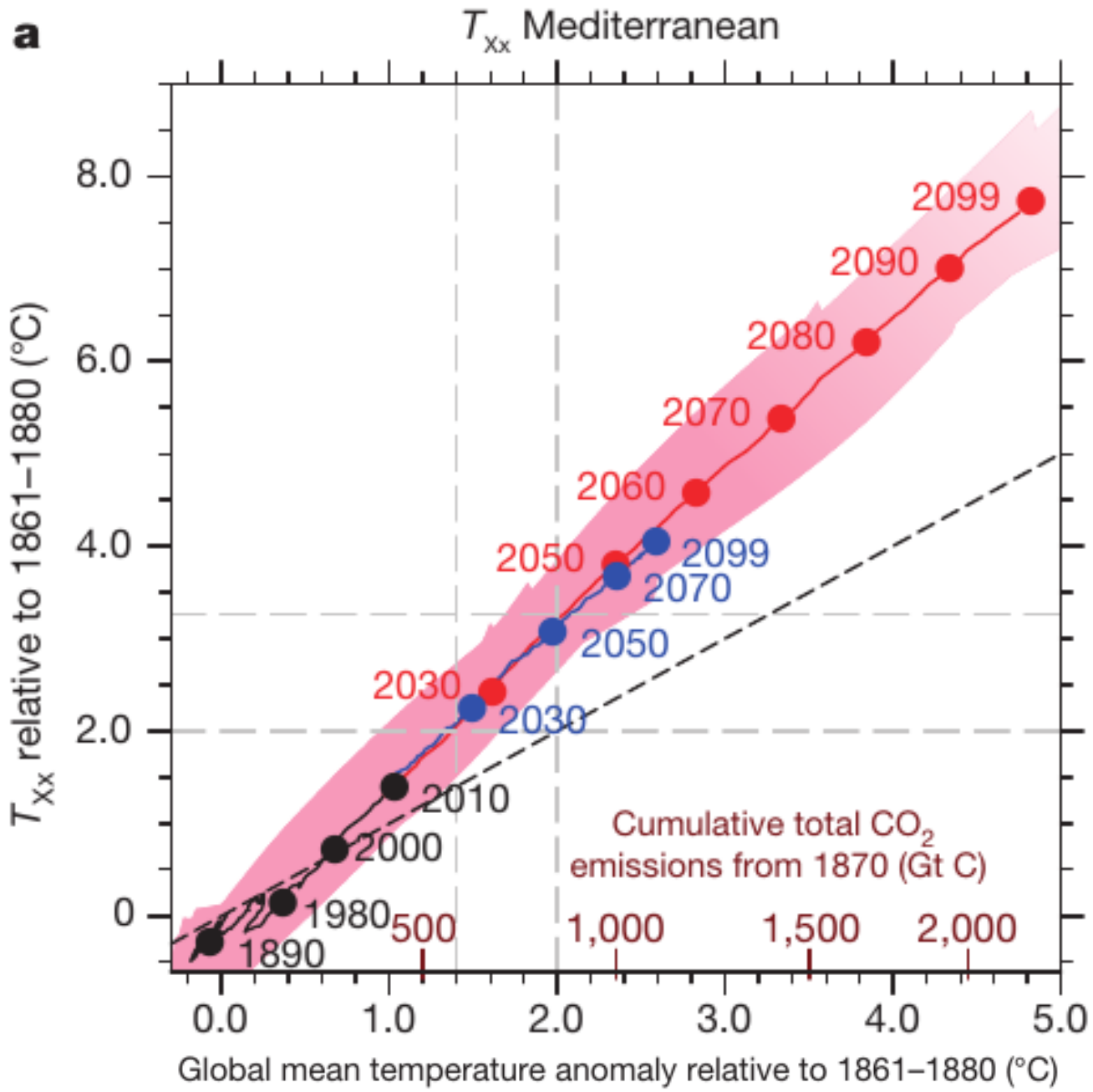
December - February




Precipitation change South Europe/Mediterranean October-March
100
50
0
-50
-100
RCP8.5
RCP6.0
RCP4.5
RCP2.6
historical
1900
1950
2000
2050
2100
2081-2100 mean

October - March





Seneviratne et al 2016

T_{Xx}: temperature of the hottest day of the year, **red: RCP8.5**, **blue: RCP4.5**

3. Challenges

3.1 Water

3.2 Food

3.3 Energy

3.4 Marine ecosystems

3.5 Coastal ecosystems

3.6 Terrestrial ecosystems

3.7 Development

3.8 Health

3.9 Human security

4. Managing future risks and building resilience

4.1 Best practices and policy responses for adaptation, mitigation and sustainable development

4.2 Knowledge gaps and needs for research and observations

4.3 Mediterranean cooperation and networking for building resilience

4.4 Education and capacity building

A Science-Policy Interface for the Mediterranean?

Expert report vs. Science-Policy Interface – the IPCC/IPBES example:

- Voluntary contributions by large expert panel, ensuring balance North-South, gender and scientific disciplines
- Transparent scoping and reviewing process
- Debate and approval of summary with policy makers
- High reputation in overall public
- Costs limited to technical support (small secretariat, travel)

MedECC

- is **not** a research project
- assembles **all** available scientific information (incl grey and non-English) literature
- uses a transparent peer review process
- exchanges with policy makers about thematic scoping and policy-relevant conclusions
- applies scientific criteria for assessment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MedECC is currently supported by a number of institutions, including

- Barcelona Convention (Plan Bleu), Union for the Mediterranean, French Ministry for the Environment, Principality of Monaco, CNRS-MISTRALS, Labex OT-Med and others

http://www.medecc.org/

Environmental change represents multiple risks for sustainable development in the Mediterranean Basin

Review Article for submission to Nature Climate Change

Wolfgang Cramer[1], Joël Guiot[2], Joaquim Garrabou[3,4], Jean-Pierre Gattuso[5,6], Ana Iglesias[7], Manfred A. Lange[8], Piero Lionello[9,10], Maria Carmen Llasat[11], Shlomit Paz[12], Josep Peñuelas[13,14], Maria Snoussi[15], Andrea Toreti[16], Michael Tsimplis[17] and Elena Xoplaki[18]

In the Mediterranean Basin, human society and the natural environment have co-evolved over several millennia, experiencing climatic variations and laying the ground for diverse and culturally rich communities. Recent accelerated changes in the environment (climate, land use, pollution, biodiversity loss) have caused loss of life and damages to infrastructure and ecosystems. The future presents greater, unprecedented risks for human well-being, socio-economic development, ecosystems and biodiversity. Policy development for the mitigation of these risks lacks adequate information about the rates of environmental change and the combined risk they present to human society. This lack results not only from insufficient monitoring but could also arise because risks are normally considered in isolation and hence often underestimated. To identify critical limits for different aspects of environmental change at the regional and local scale remains difficult because the knowledge of the drivers, vulnerabilities, adaptation and risks is incomplete. Overall, more observations and better models exist for the Northern Mediterranean shores than for the South. This important bias is exacerbated by the large difference in financial resources available for adaptation and the development of resilience between north and south. A dedicated effort to synthesize existing scientific knowledge from all relevant disciplines would provide better understanding of the risks posed, improve policy making by public bodies and the private sector, focus research efforts in areas of increased vulnerability, and improve the resilience of the region.