Seminar on the Working Group II contribution to the IPCC Fifth Assessment Report,
Stockholm, Sweden, 31 March 2014

Climate Change 2014: Impacts, Adaptation and Vulnerability

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INTERGOVERNMENTAL PANEL ON climate change

WORKING GROUP II – TENTH SESSION
Yokohama, Japan, 25-29 March 2014

WG II 10th/Doc. 2a, Rev.2
(30.III.2014)
Agenda Item 4
ENGLISH ONLY

WORKING GROUP II CONTRIBUTION TO THE IPCC FIFTH ASSESSMENT REPORT (AR5), CLIMATE CHANGE 2014: IMPACTS, ADAPTATION AND VULNERABILITY

Revised Final Draft Summary for Policymakers

(Submitted by the Co-Chairs of Working Group II)

NOTE:
The Final Draft Summary for Policymakers is submitted to the Tenth Session of Working Group II for approval. The approved Summary for Policymakers will be forwarded to the Thirty-eighth Session of IPCC for acceptance.

The designations employed and the presentation of material on maps do not imply the expression of any opinion whatsoever on the part of the Intergovernmental Panel on Climate Change concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

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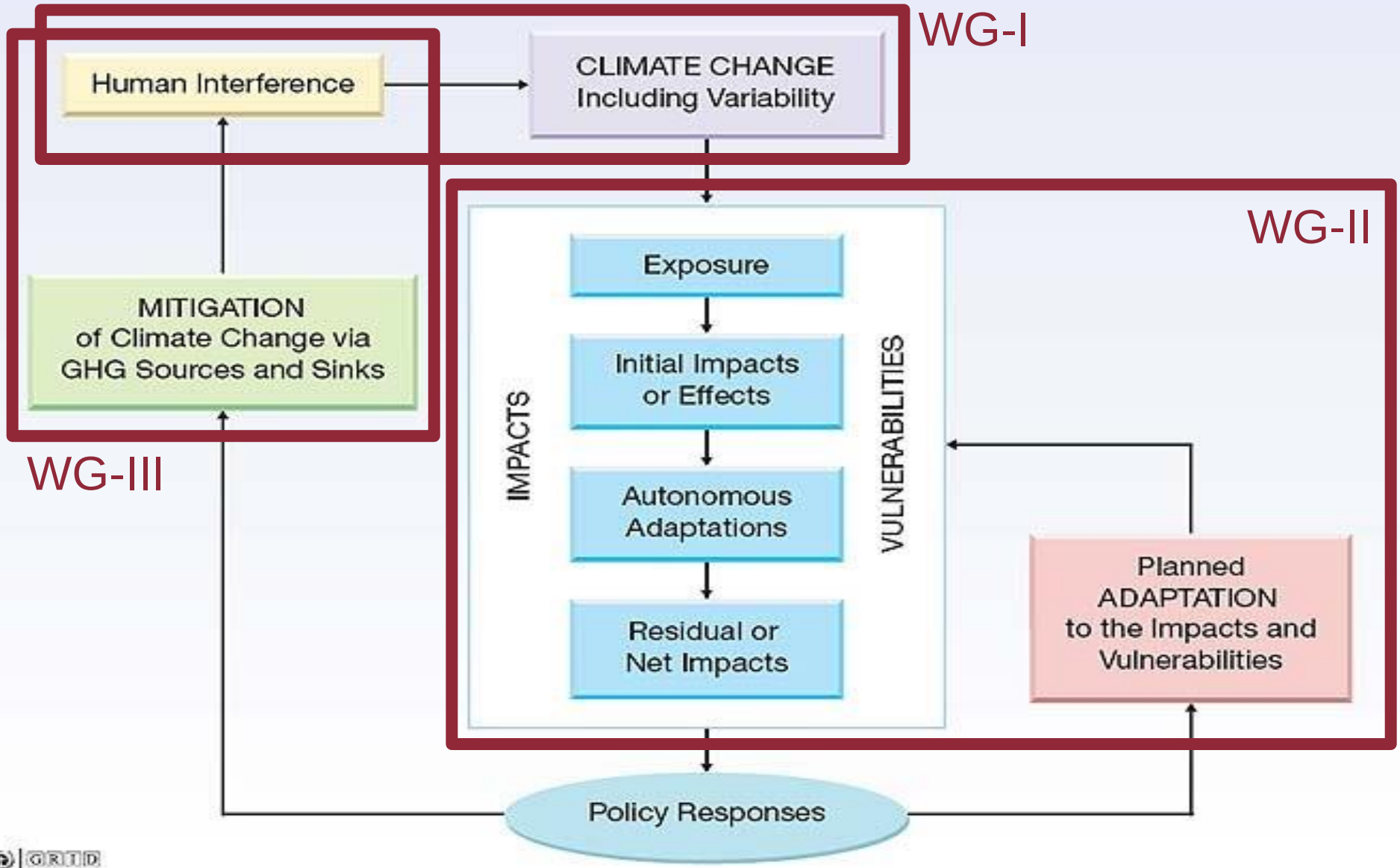
WMO UNEP

IPCC: Three working groups



Impacts, adaptation, vulnerability

- Working Group II used to assess only the impacts of climate change.
- Adaptation was included as a single chapter in the Third and Fourth Assessment Reports.
- The Fifth Assessment Report includes four chapters on adaptation, and adaptation is a key part of the sectoral and regional chapters.
- A focus on vulnerability means a focus on people; greater involvement of social scientists.

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From agriculture to food security

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Structure of Working Group II report

Part A: Global and sectoral aspects

- Context for the AR5 (2 chapters)
- Natural and managed resources and systems, and their uses (5 chapters)
- Human settlements, industry and infrastructure (3 chapters)
- Human health, well-being and security (3 chapters)
- Adaptation (4 chapters)
- Multi-sector impacts, risks, vulnerabilities and opportunities (3 chapters)

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Structure of Working Group II report

Part B: Regional aspects (10 chapters)

- Regional context
- Africa
- Europe
- Asia
- Australasia
- North America
- Central and South America
- Polar Regions
- Small Islands
- Open Oceans

30 chapters in total!

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Working Group II author statistics

- Number of authors: 309
- Number of countries represented: 70
- Number of Swedish authors: 6 (2 CLAs, 4 LAs)
- Number of authors from developing countries and countries with economies in transition: 127 (41%)
- Number of female authors: 83 (27%)
- Number of authors new to IPCC: 187 (60%)

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Swedish lead authors

- Rainer Sauerborn, LA ch 11: Human health
- Lennart Olsson, CLA ch 13: Livelihoods and poverty
- Richard Klein, CLA ch 16: Adaptation opportunities, constraints and limits
- Ulf Molau, LA ch 18: Detection and attribution of observed impacts
- Lisa Schipper, LA ch 21: Regional context
- Elisabet Lindgren, LA ch 24: Asia

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WMO UNEP

Compared to past WGII reports, the WGII AR5 assesses a **substantially larger knowledge base** of relevant scientific, technical, and socioeconomic literature. Increased literature has facilitated comprehensive assessment across a broader set of topics and sectors, with expanded coverage of human systems, adaptation, and the ocean.

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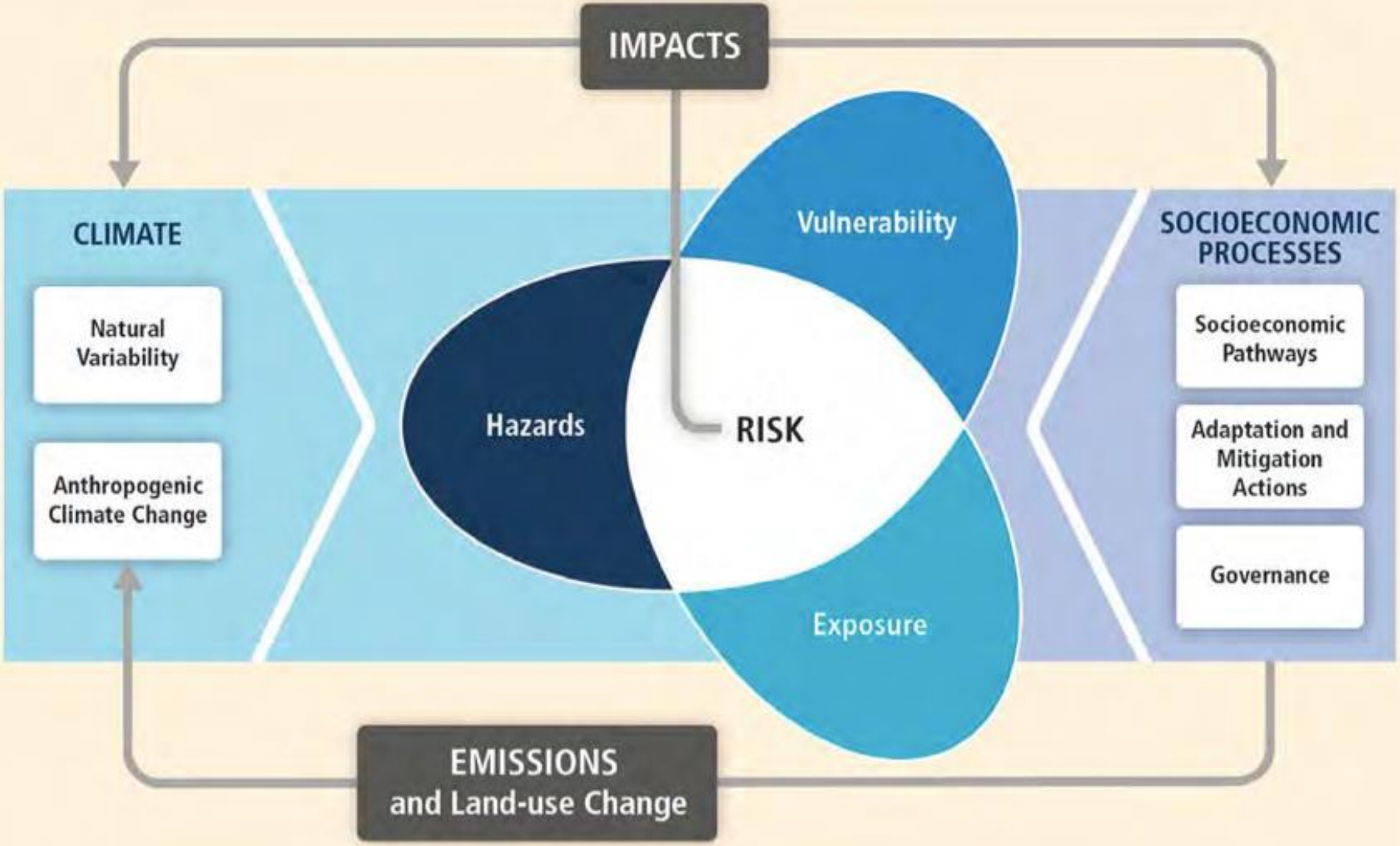

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IPCC WGII SPM outline

- Section A: Observed impacts, vulnerability, and adaptation in a complex and changing world
- Section B: Future risks and opportunities for adaptation
- Section C: Managing future risks and building resilience

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Key messages: observed impacts

- In recent decades, changes in climate have caused impacts on natural and human systems on all continents and across the oceans.
- Many terrestrial, freshwater, and marine species have shifted their geographic ranges, seasonal activities, migration patterns, abundances, and species interactions in response to ongoing climate change (high confidence).

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Key messages: observed impacts

- Based on many studies covering a wide range of regions and crops, negative impacts of climate change on crop yields have been more common than positive impacts (high confidence).
- Differences in vulnerability and exposure arise from non-climatic factors and from multidimensional inequalities often produced by uneven development processes (very high confidence).

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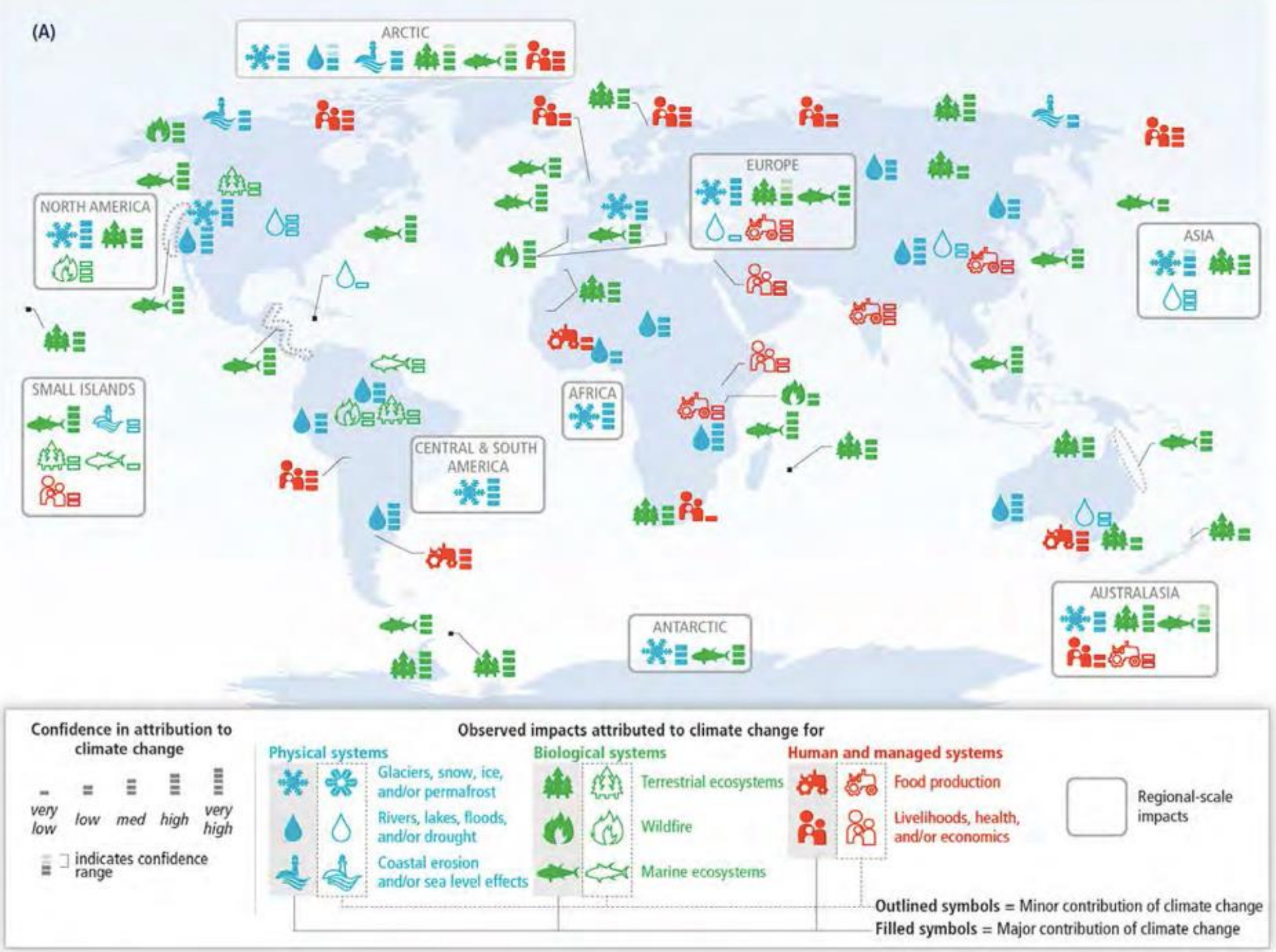
(A)
ARCTIC
NORTH AMERICA
EUROPE
ASIA
SMALL ISLANDS
AFRICA
CENTRAL & SOUTH AMERICA
AUSTRALASIA
ANTARCTIC
Confidence in attribution to climate change
very low
low
med
high
very high
indicates confidence range
Observed impacts attributed to climate change for
Physical systems
Glaciers, snow, ice, and/or permafrost
Rivers, lakes, floods, and/or drought
Coastal erosion and/or sea level effects
Biological systems
Terrestrial ecosystems
Wildfire
Marine ecosystems
Human and managed systems
Food production
Livelihoods, health, and/or economics
Regional-scale impacts
Outlined symbols = Minor contribution of climate change
Filled symbols = Major contribution of climate change

Key messages: adaptation today

- Adaptation is becoming embedded in some planning processes, with more limited implementation of responses (high confidence).
- Governments at various levels are starting to develop adaptation plans and policies and to integrate climate-change considerations into broader development plans.

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Key messages: decision-making

- Responding to climate-related risks involves decision-making in a changing world, with continuing uncertainty about the severity and timing of climate-change impacts and with limits to the effectiveness of adaptation (high confidence).
- Adaptation and mitigation choices in the near-term will affect the risks of climate change throughout the 21st century (high confidence).

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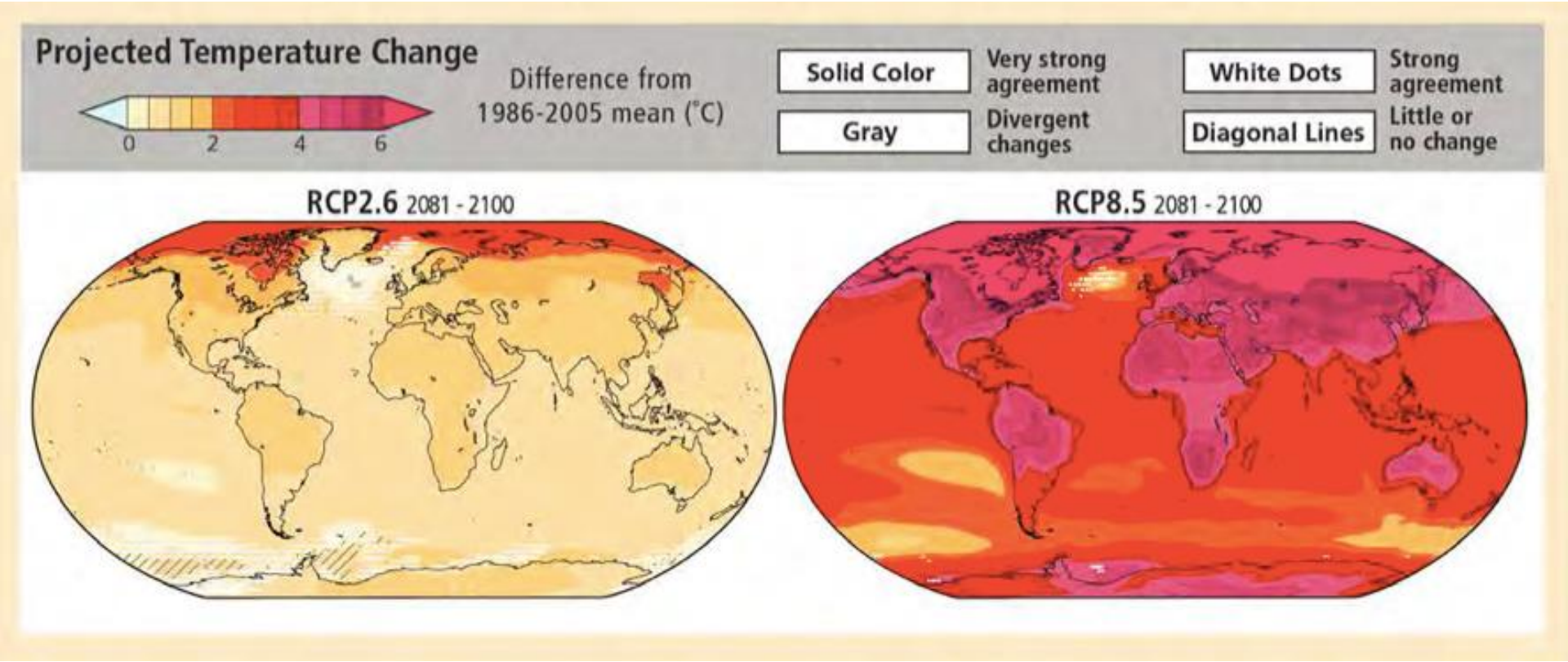
Key messages: future risks



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Key messages: future risks

Risk of death, injury, ill-health, or disrupted livelihoods in low-lying coastal zones and small island developing states and other small islands, due to storm surges, coastal flooding, and sea-level rise.

Risk of severe ill-health and disrupted livelihoods for large urban populations due to inland flooding in some regions.

Systemic risks due to extreme weather events leading to breakdown of infrastructure networks and critical services such as electricity, water supply, and health and emergency services.

Risk of mortality and morbidity during periods of extreme heat, particularly for vulnerable urban populations and those working outdoors in urban or rural areas.

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Key messages: future risks

Risk of food insecurity and the breakdown of food systems linked to warming, drought, flooding, and precipitation variability and extremes, particularly for poorer populations in urban and rural settings.

Risk of loss of rural livelihoods and income due to insufficient access to drinking and irrigation water and reduced agricultural productivity, particularly for farmers and pastoralists with minimal capital in semi-arid regions.

Risk of loss of marine and coastal ecosystems, biodiversity, and the ecosystem goods, functions, and services they provide for coastal livelihoods, especially for fishing communities in the tropics and the Arctic.

Risk of loss of terrestrial and inland water ecosystems, biodiversity, and the ecosystem goods, functions, and services they provide for livelihoods.

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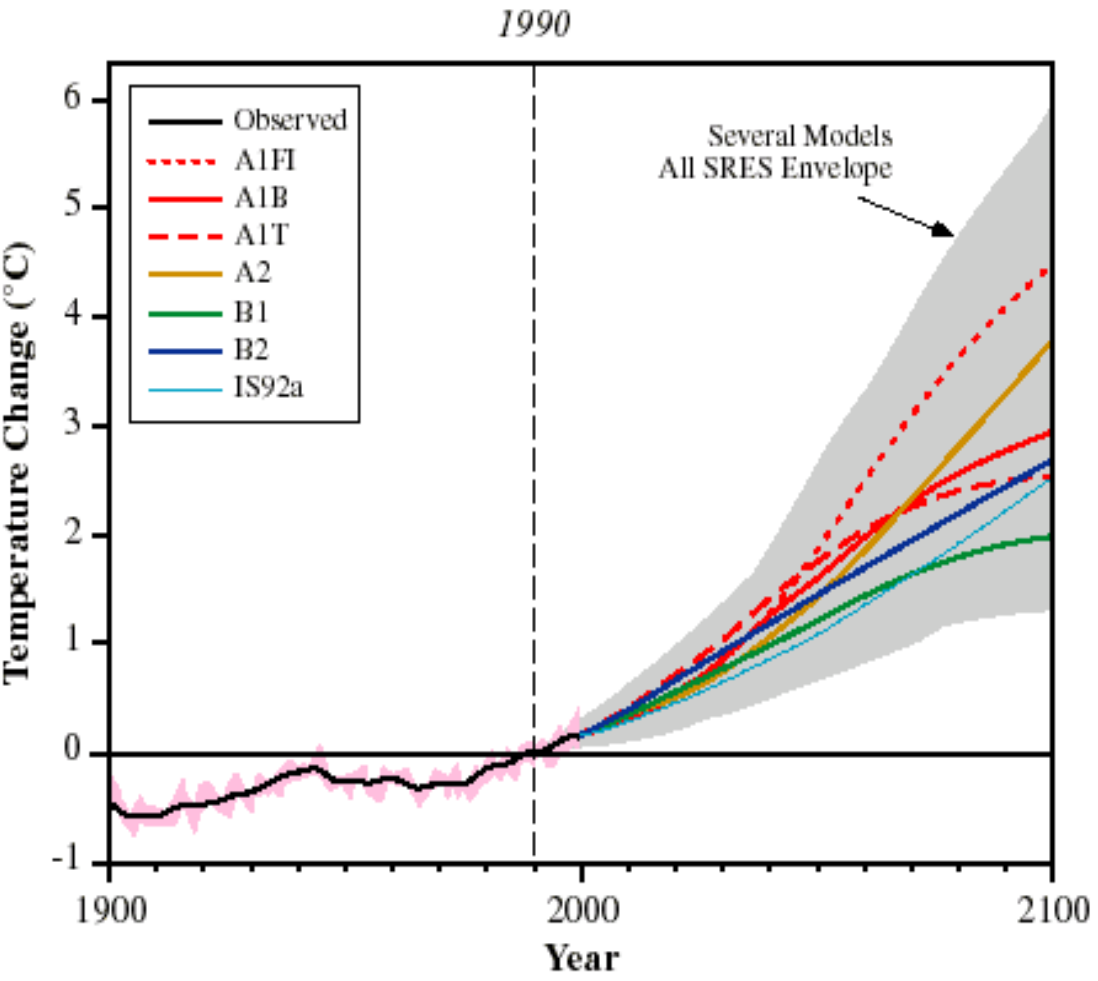
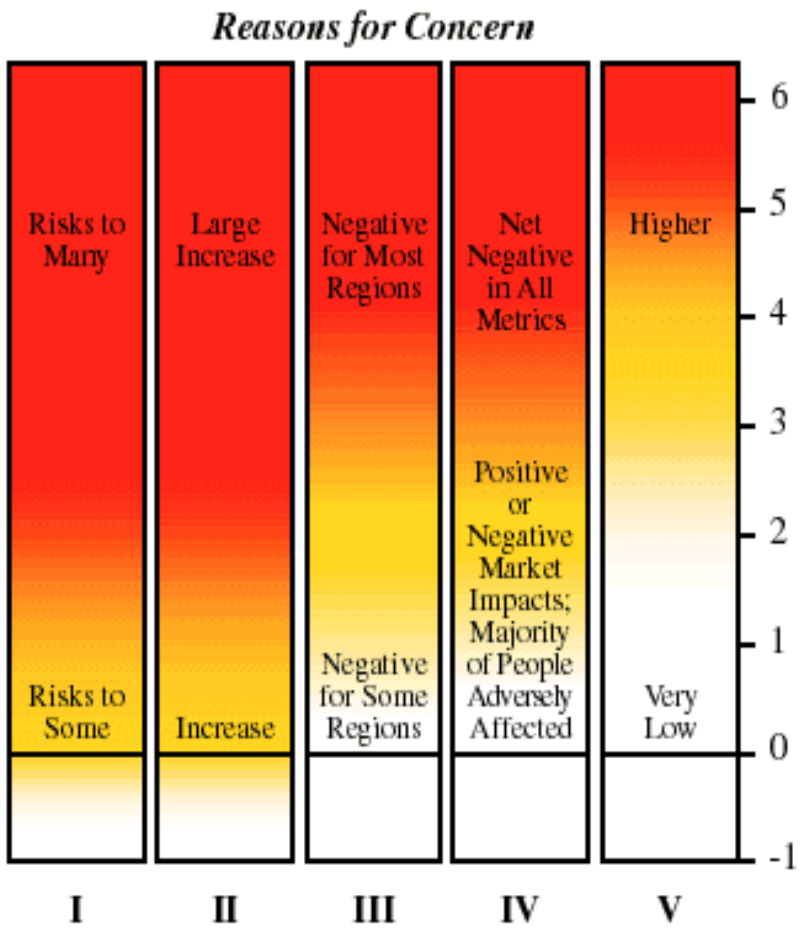
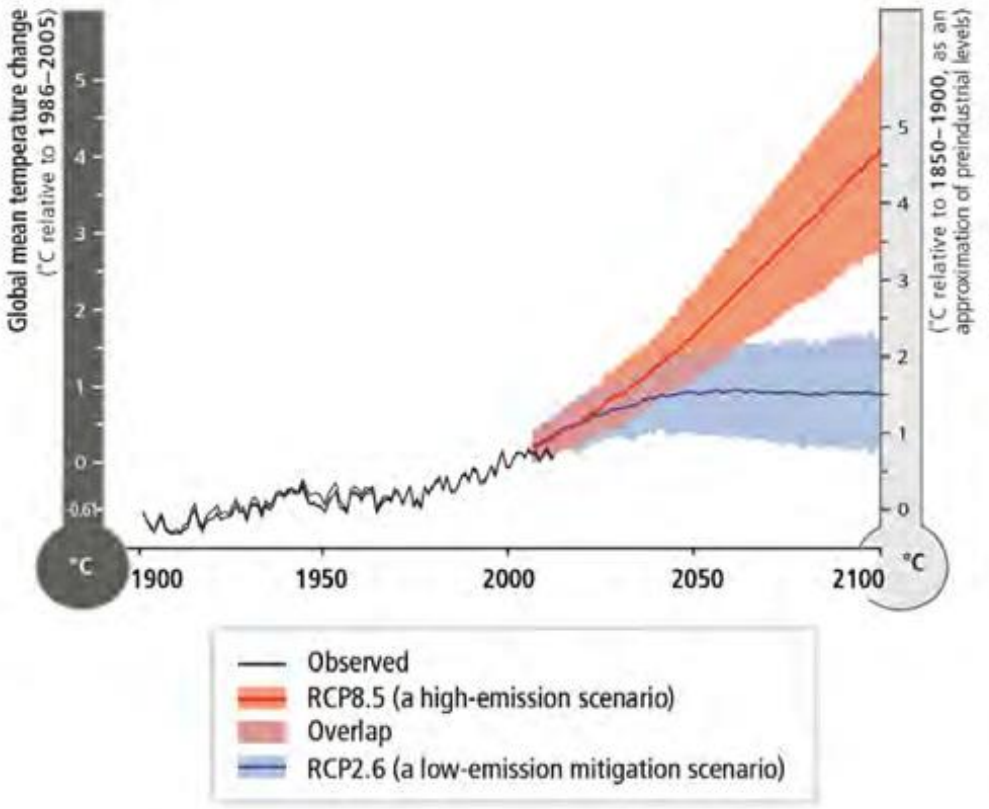
Reasons for concern (2001)

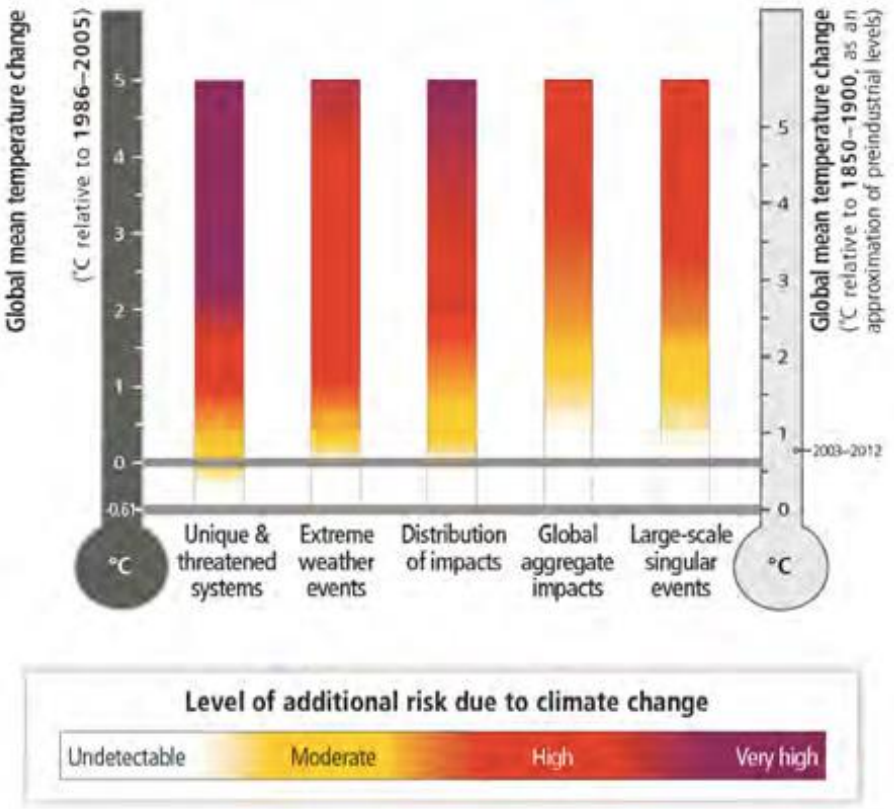




I	Risks to Unique and Threatened Systems
II	Risks from Extreme Climate Events
III	Distribution of Impacts
IV	Aggregate Impacts
V	Risks from Future Large-Scale Discontinuities

Reasons for concern (2014)





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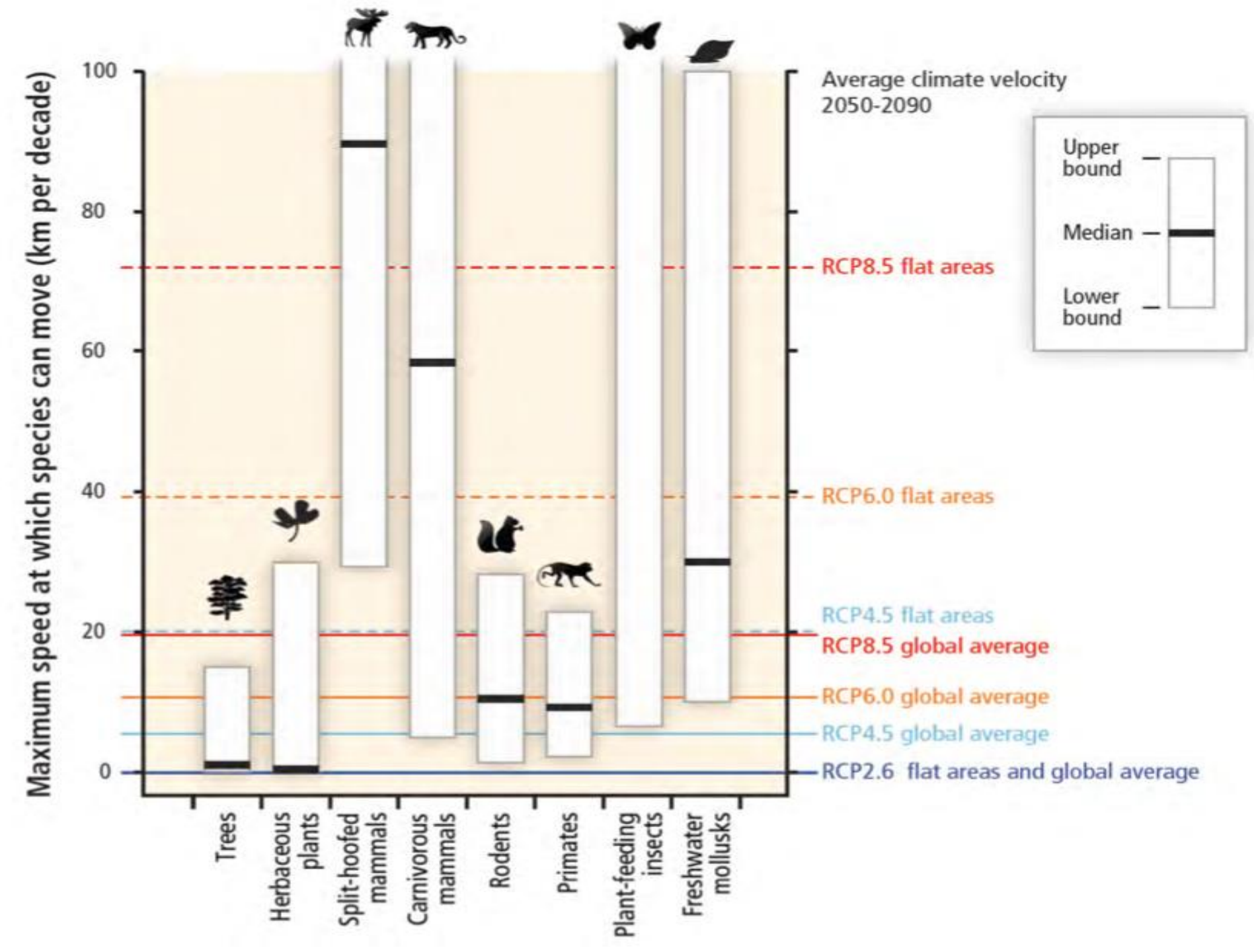
Maximum speed at which species can move (km per decade)
100
80
60
40
20
0
Average climate velocity
2050-2090
Upper bound
Median
Lower bound
RCP8.5 flat areas
RCP6.0 flat areas
RCP4.5 flat areas
RCP8.5 global average
RCP6.0 global average
RCP4.5 global average
RCP2.6 flat areas and global average
Trees
Herbaceous plants
Split-hoofed mammals
Carnivorous mammals
Rodents
Primates
Plant-feeding insects
Freshwater mollusks

Key messages: future risks

- Increasing magnitudes of warming increase the likelihood of severe, pervasive, and irreversible impacts.
- The overall risks of climate change impacts can be reduced by limiting the rate and magnitude of climate change.

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Key messages: future risks

- Climate change over the 21st century is projected to increase displacement of people (medium evidence, high agreement).
- Climate change can indirectly increase risks of violent conflicts in the form of civil war and inter-group violence by amplifying well-documented drivers of these conflicts such as poverty and economic shocks (medium confidence).
- The impacts of climate change on the critical infrastructure and territorial integrity of many states are expected to influence national security policies (medium evidence, medium agreement).

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Key messages: future risks

- Throughout the 21st century, climate-change impacts are projected to slow down economic growth, make poverty reduction more difficult, further erode food security, and prolong existing and create new poverty traps, the latter particularly in urban areas and emerging hotspots of hunger (medium confidence).

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Key messages: managing risks

- Adaptation is place and context specific, with no single approach for reducing risks appropriate across all settings (high confidence).
- A first step towards adaptation to future climate change is reducing vulnerability and exposure to present climate variability (high confidence).
- Poor planning, overemphasizing short-term outcomes, or failing to sufficiently anticipate consequences can result in maladaptation (medium evidence, high agreement).

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Key messages: managing risks

- Greater rates and magnitude of climate change increase the likelihood of exceeding adaptation limits (high confidence).

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Thank you very much for your attention.

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