

WG2

Expectations from AR5

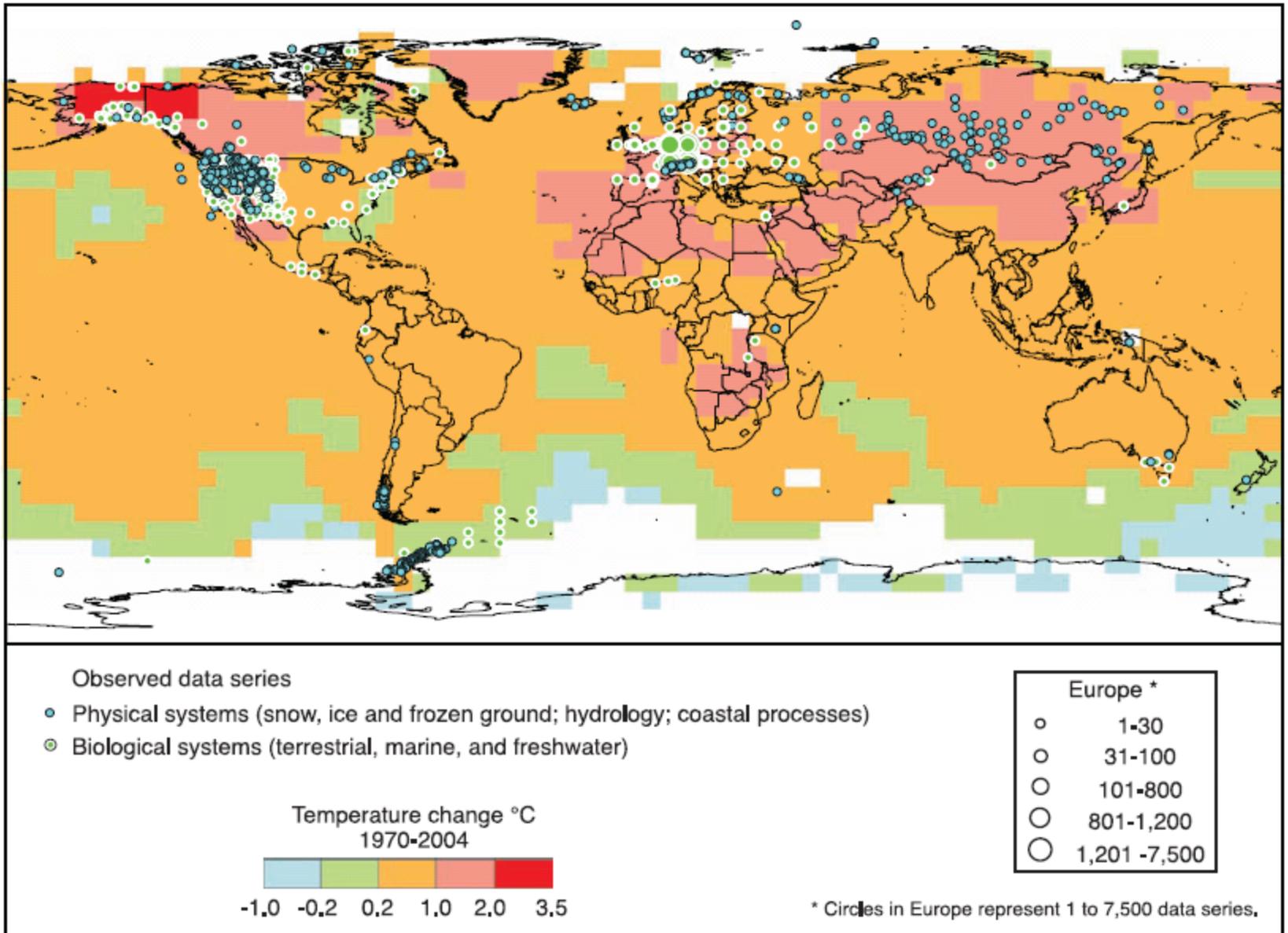
Chris Field

31 July 2009

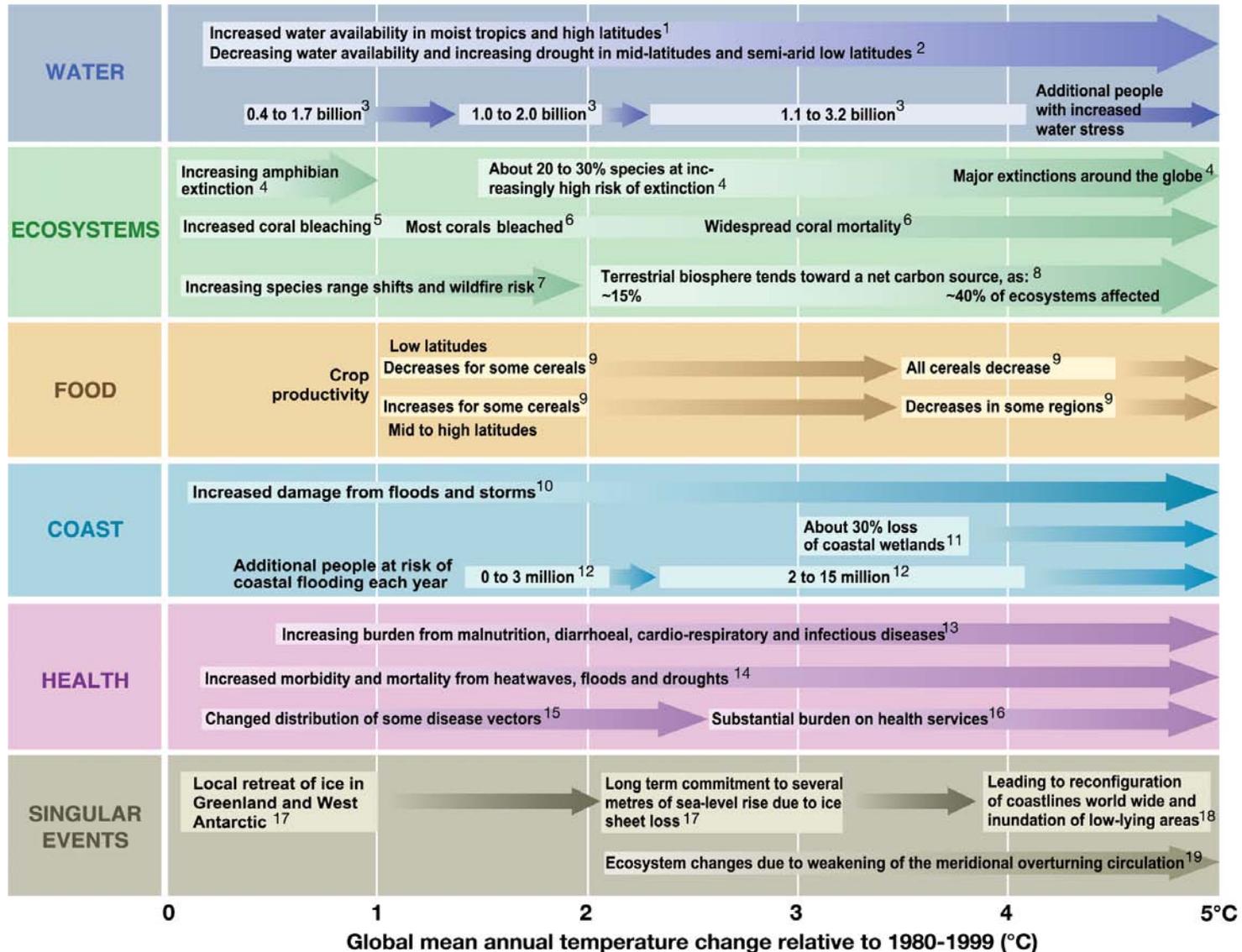
WG2 TSU

- Kris Ebi- Executive Director
- Dave Dokken- Deputy Director for Operations
- Mike Mastrandrea - Project Scientist

Observations: a canvas part full

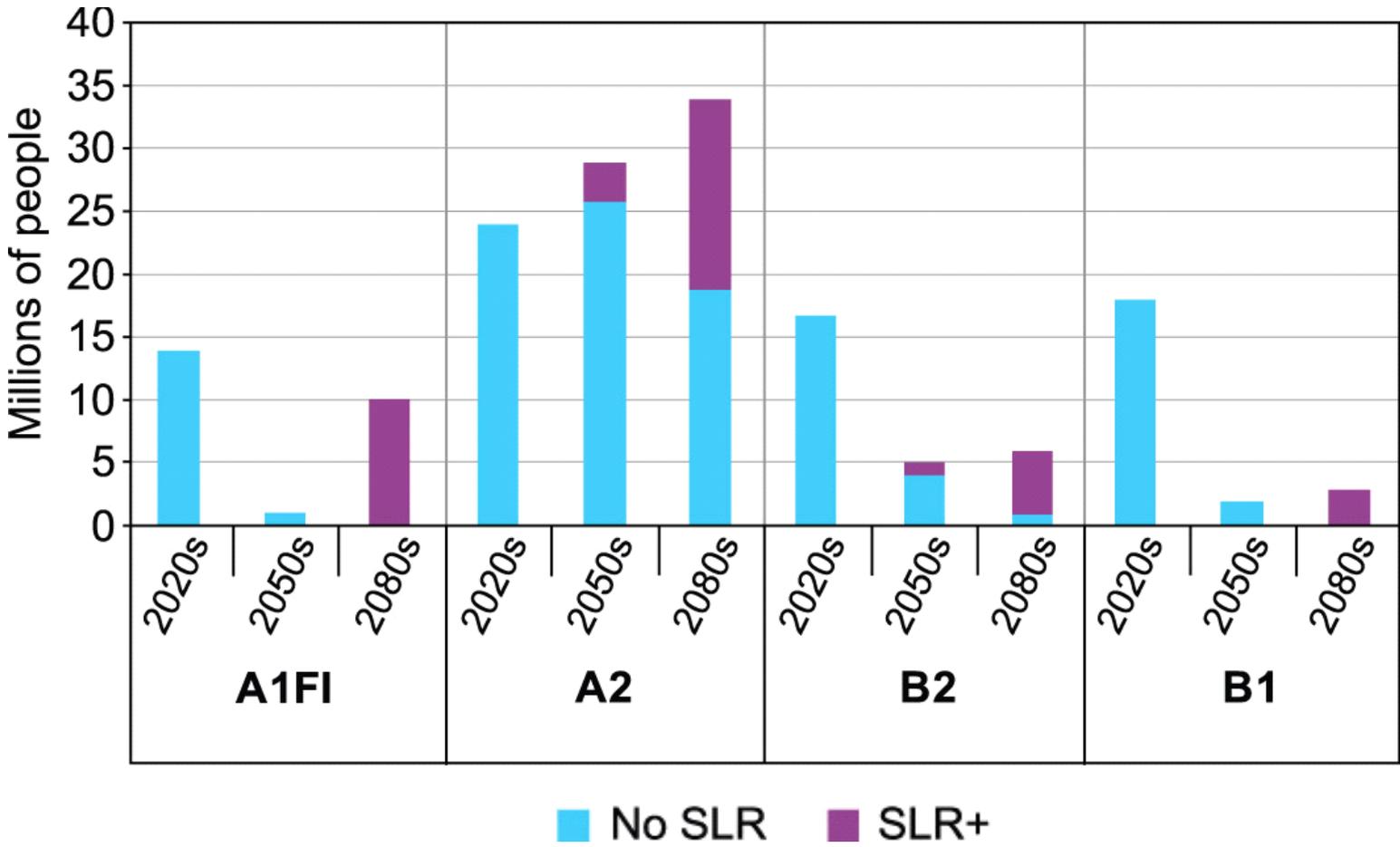


Impacts: links to specific levels of climate change



Vulnerability: Interactions with socioeconomic setting

Figure TS.18. Estimated millions of people per annum at risk globally from coastal flooding



Adaptation: Combining theory and practice

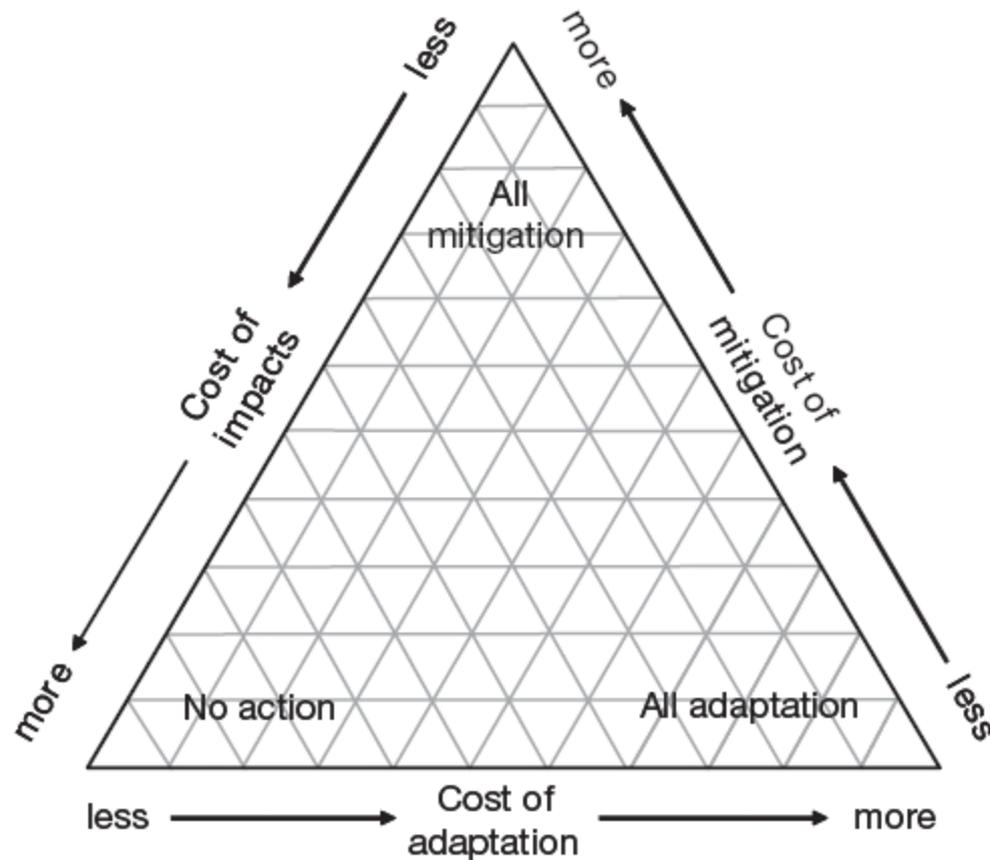
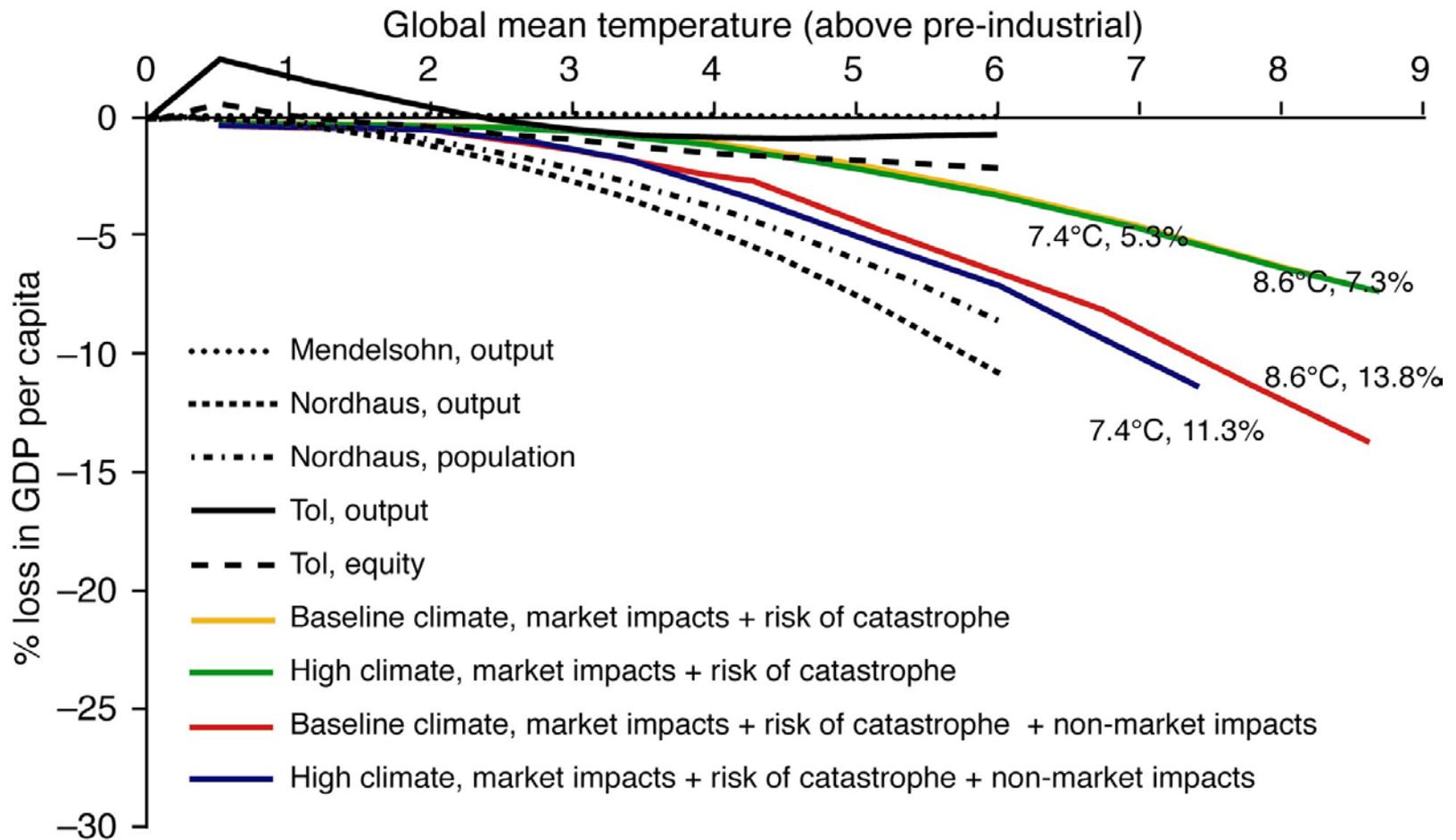


Figure 18.1. A schematic overview of inter-relationships between adaptation, mitigation and impacts, based on Holdridge's life-zone classification scheme (Holdridge, 1947, 1967; M.L. Parry, personal communication).

Costs of climate change: common framework & more inclusive currencies





IPCC AR5

- Move from “it’s real” to “here is the information you need to make good decisions for your stakeholders”
 - Risk management framing
 - Multiple stresses framing
 - Full partnership for adaptation

WG2 in the AR5

- Common frameworks & currencies for impacts, adaptation, and mitigation
- Broadening the range of assessed impacts
- The interaction of climate change & development
- Integrating climate science with climate impacts
- Assessing new impact studies based on AR5 climate
- Improving the treatment of regional aspects of climate change

Links with WG1

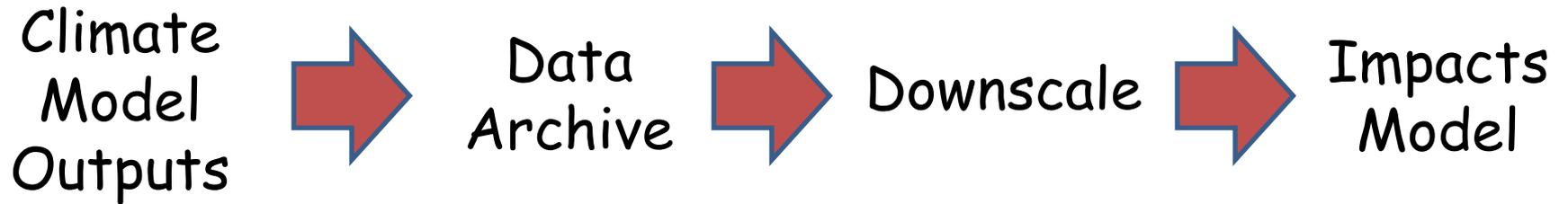
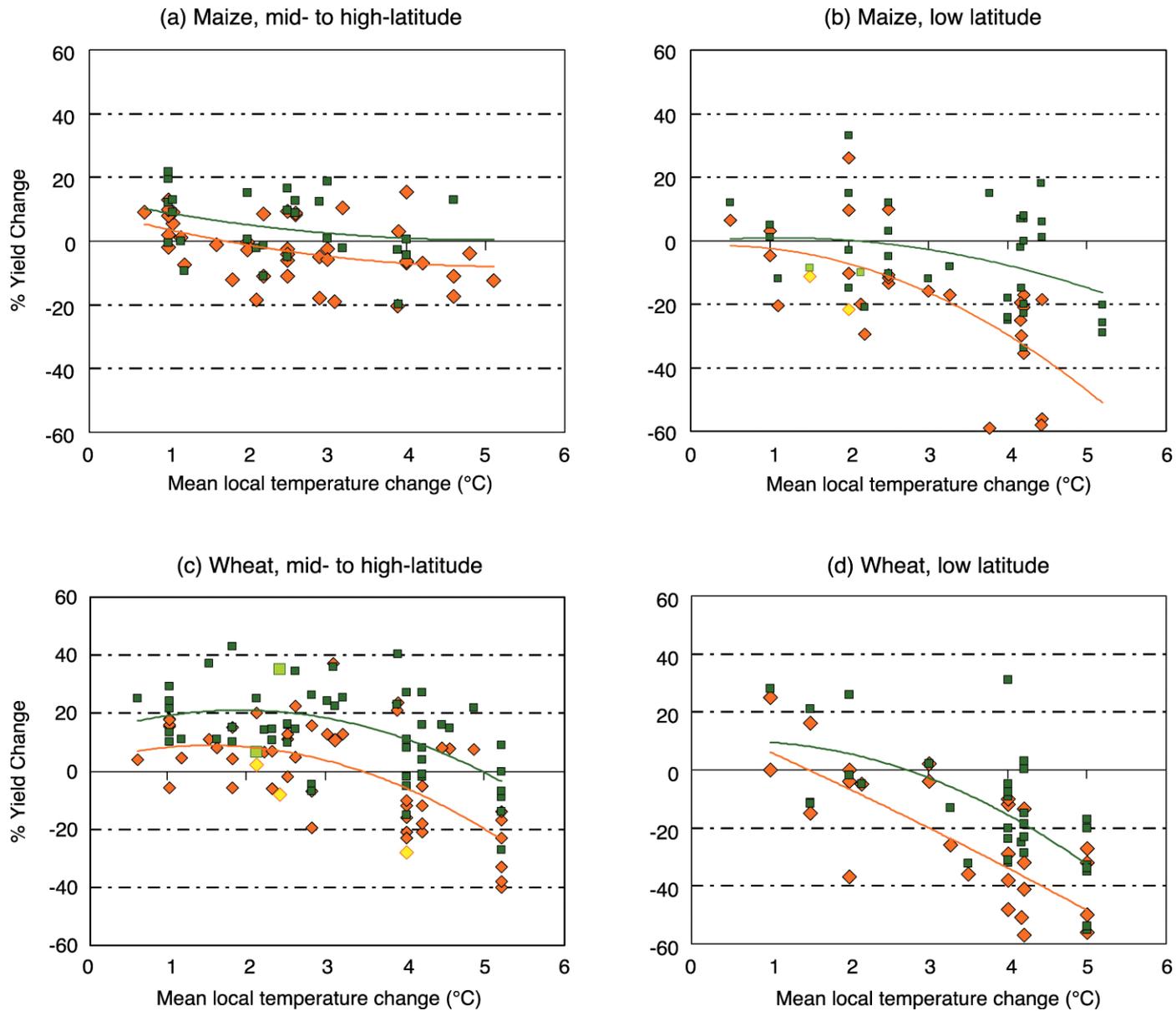


Figure TS.7. Sensitivity of cereal yield to climate change



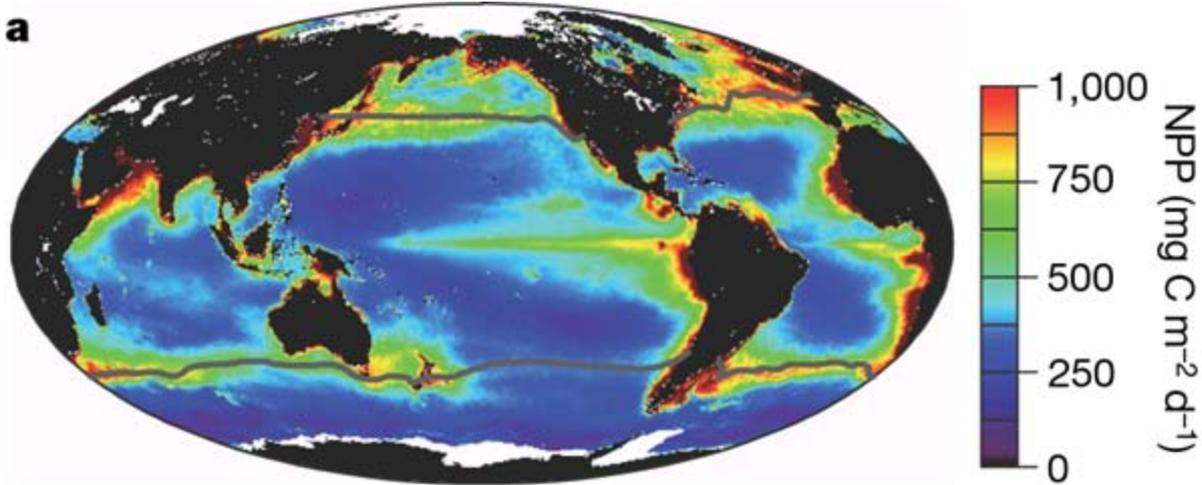
Taking advantage of the information content in the full distribution

- Critical for risk = magnitude \times probability
- Critical for vulnerability = risk/coping capacity
- Mature treatment of low probability/high consequence events
- Extracting value from even small increase in confidence

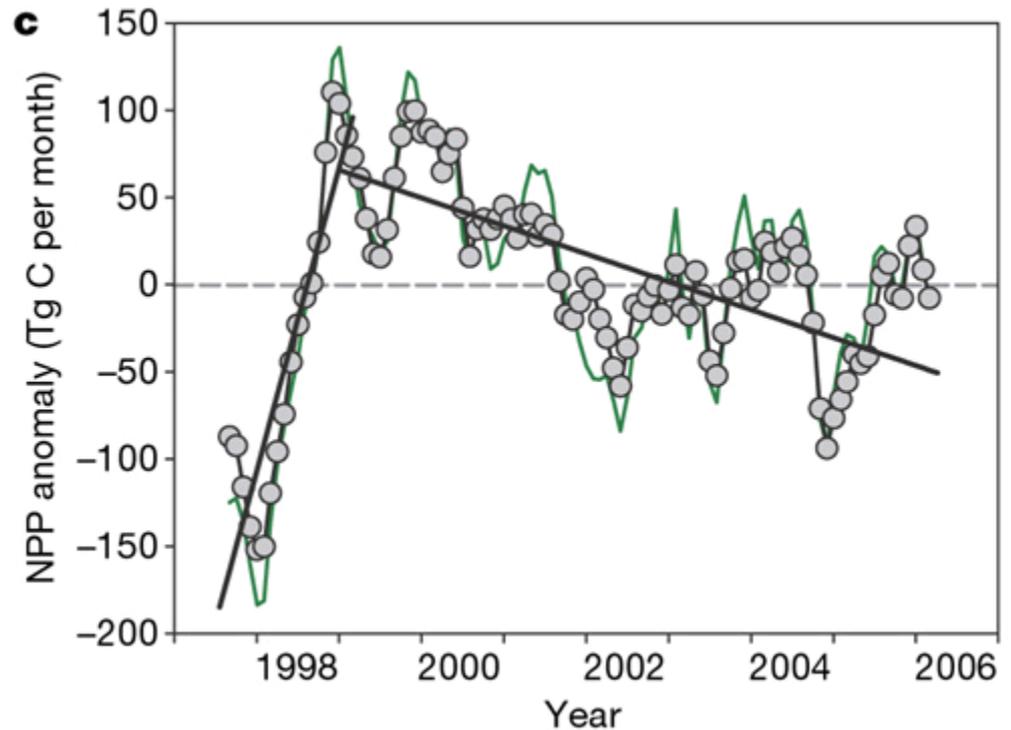
Observed impacts: Increased inclusiveness and analysis

- Satellite records
- Southern Hemisphere
- Novel data sources
 - Citizen science
 - Economic data
- Paleo record
- Attribution

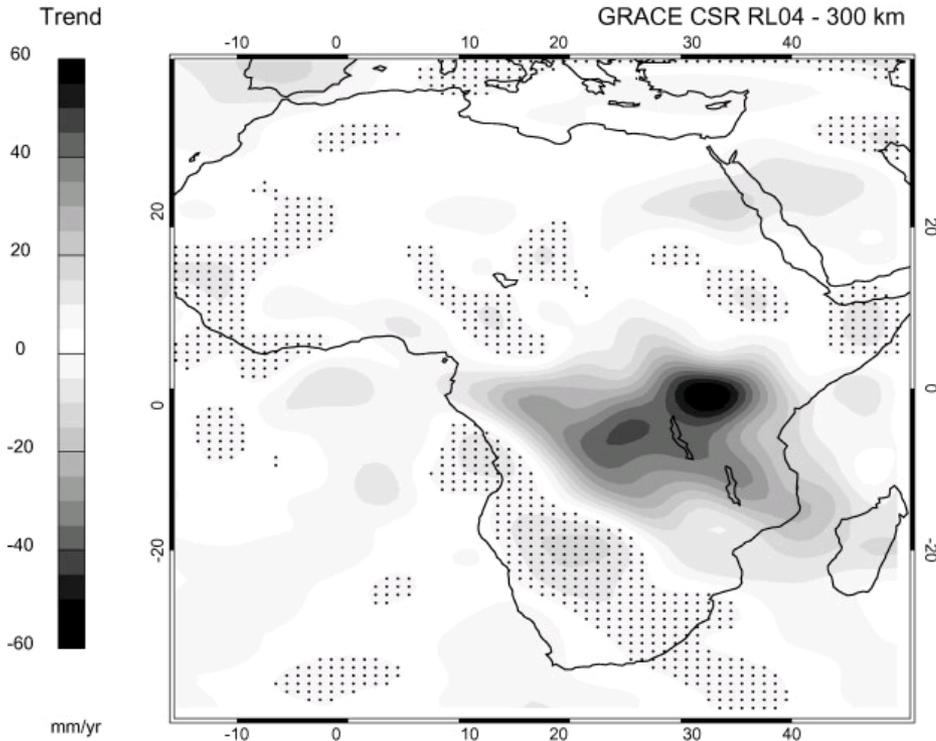
Ocean impacts



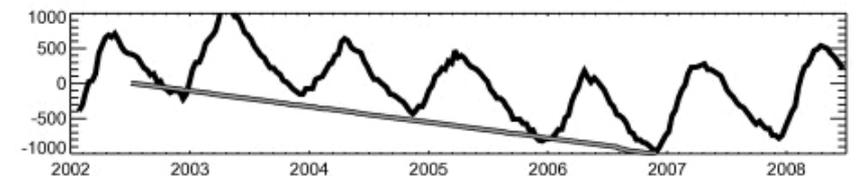
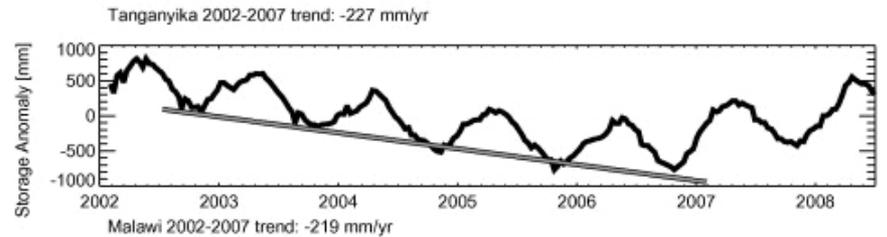
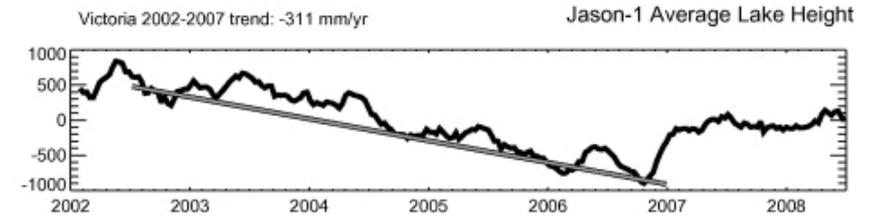
- Oceans
 - half of global NPP
 - 70% of surface area
 - 41% has multiple impacts



Continental scale water balance

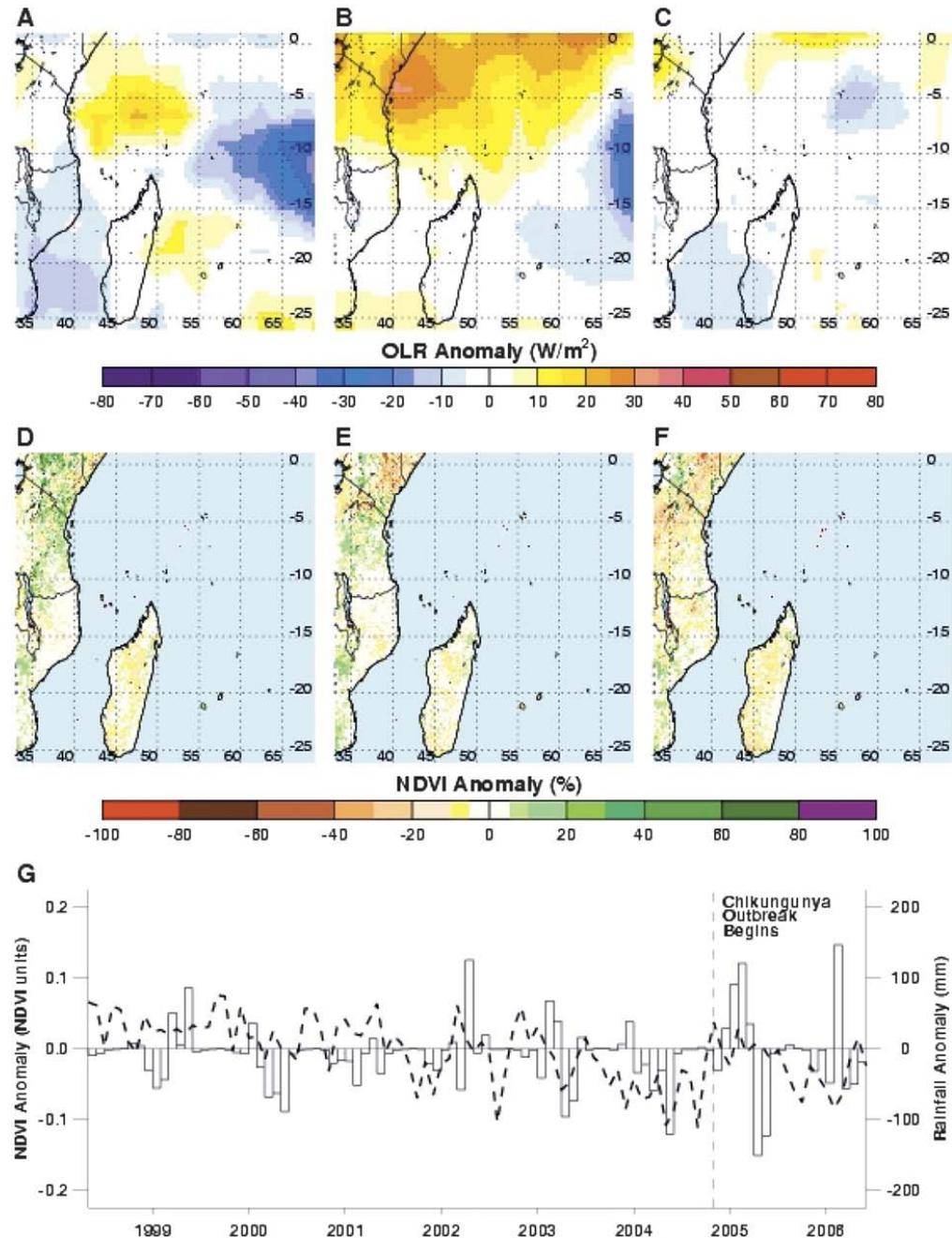


Lake level from JASON-1
Regional soil moisture from GRACE



Chikungunya outbreaks in East Africa

Outbreaks associated with warm, dry conditions, based on SPOT-4 and OLR from NOAA polar orbiter.



Chretien et al. Am J Trop Med Hyg
2007

Proposed Outline for the Working Group II Contribution to the Fifth Assessment Report

Major themes

- Context for the AR5
 - Natural and managed ecosystems and resources
 - Human settlements, industry, and infrastructure
 - Human health, well-being, and security
 - Adaptation and development
 - Synthesis
-
- Regional aspects of climate change
 - With WG1 and WG3 input and collaboration

Context for the AR5

1. Point of departure
2. Foundations for decision-making on adaptation

Natural and managed ecosystems and resources

3. Freshwater resources and their management
4. Terrestrial and freshwater ecosystems
5. Coastal ecosystems and low-lying areas
6. Ocean ecosystems
7. Food systems and food security

Human settlements, industry, and infrastructure

8. Urban Areas
9. Rural Areas
10. Industry and Infrastructure

Human health, well-being, and security

11. Human Health
12. Human Security
13. Livelihoods and poverty

Adaptation and development

14. Adaptation needs and options
15. Adaptation planning and implementation
16. Adaptation opportunities, constraints and limits
17. The economics of adaptation

Synthesis

18. Detection and attribution of observed impacts
19. Key risks and vulnerabilities
20. Climate-resilient pathways: adaptation, mitigation, and sustainable development

Part B: Regional aspects of climate change

with WG1 and WG3 input and collaboration

21. The Regional Approach

Regional Chapters

22. Africa

23. Europe

24. Asia

25. Australasia

26. North America

27. Central and South America

28. Polar Regions

29. Small Islands

30. International Waters [High Seas]

Context for the AR5

1. Point of departure

- The setting
- Major conclusions of WG II AR4
- Major conclusions of SREX
- Major conclusions of WG I AR5

2. Foundations for decision-making on adaptation

- Key concepts
- Impacts, adaptation and vulnerability on a range of scales
- Assessing risk
- Characterising future developments (storylines and scenarios used in this assessment)
- Climate information, decision support, and monitoring
- Assessing impacts, adaptation, and vulnerability
- Multi-metric evaluations
- Characterising and communicating uncertainty
- Managing risk
- Climate-resilient pathways

Natural and managed ecosystems and resources

3. Freshwater resources and their management

- Climatic drivers: variables affecting hydrosphere and cryosphere
- Non-climatic drivers: changing water demand, governance on water, and mitigation measures
- Vulnerabilities of fresh water systems and links to other sectors
- Managing risks: water related extreme events
- Adaptation in water management and sustainable development

[CONTEXT]

4. Terrestrial and freshwater ecosystems

- Climate change and specific ecosystems
- Intensively managed systems
- Protected and conservation areas
- Global assessment of terrestrial and freshwater ecosystem services
- Global Assessment of vulnerability of C pools, bioenergy implications, and C management potentials in terrestrial and freshwater ecosystems
- Global Assessment of threats to biodiversity in terrestrial and freshwater ecosystems

[CONTEXT]

Natural and managed ecosystems and resources

5. Coastal ecosystems and low-lying areas

- Ecosystems
- Services
- Observed trends
- Sensitivity and exposure to key drivers
- Vulnerability of ecosystem to impacts/extremes
- Consequences
- Adaptation

[CONTEXT]

6. Ocean ecosystems

- Ecosystems
- Services
- Observed trends
- Sensitivity and exposure to key drivers
- Vulnerability of ecosystem to impacts/extremes
- Consequences
- Adaptation

[CONTEXT]

Natural and managed ecosystems and resources

7. Food systems and food security

- Production
- Food systems
- Food security at national and household level and the means to achieve it
- Key issues for adaptation

[CONTEXT]

Human settlements, industry, and infrastructure

8. Urban Areas

- Urbanization processes and climate risks
- Urban micro climates
- Civic services and infrastructure
- Housing
- Informal settlements
- Economic base
- Tourism
- Development plans and development pathways
- Governance
- Landscape and regional interconnections

[CONTEXT]

Human settlements, industry, and infrastructure

9. Rural Areas

- Landscape and regional interconnections [and dynamics (migration)]
- Housing
- Economic base and livelihoods
- Tourism
- Infrastructure
- Social capital and resilience

[CONTEXT]

10. Industry and Infrastructure

- Regional and global supply chains
- Networked infrastructure
- Social and economic services

[CONTEXT]

Human health, well-being, and security

11. Human Health

- Determinants of health: current and future trends
- Current sensitivity to climate and weather
- Early effects of observed climate change on health
- Future impacts on human population health
- Air quality and human health
- Water quality and availability and human health
- Implications of climate change for child health
- Implications of climate change for health inequalities
- Adaptation and health

[CONTEXT]

Human health, well-being, and security

12. Human Security

- Social and economic impacts of disasters, extreme events
- Inequalities, gender and marginalized populations
- Vulnerability to multiple stresses
- Cultural -- practices and values
- Local and traditional knowledge
- Migration and population displacement
- Relationship of climate change impacts to conflict
- Community resilience to climate risks and variability

[CONTEXT]

13. Livelihoods and poverty

- Metrics for impacts on poverty and human development
- Impacts of climate change on chronic and transient poverty
- The impact of climate change responses on poverty
- Climate change interactions with poverty reduction initiatives

[CONTEXT]

Adaptation and development

14. Adaptation needs and options

- Synthesis of adaptation needs and options from sectoral and regional chapters
- National Adaptation Programmes of Action (NAPAs) and other national and sectoral needs assessments
- Addressing maladaptation
- Indicators for Measuring adaptation
- Case studies of Least Developed Countries and other vulnerable countries and groups

[CONTEXT]

15. Adaptation planning and implementation

- Local, national, regional and global policies, strategies and initiatives
- Technology development, transfer and diffusion
- Financing for adaptation
- Insurance and social protection
- Knowledge sharing, learning and capacity building
- Institutional arrangements
- Links between adaptation and development

[CONTEXT]

Adaptation and development

16. Adaptation opportunities, constraints and limits

- Synthesis of adaptation opportunities, constraints and limits from sectoral and regional chapters
- Limits to adaptation, including ethical dimensions
- Interactions between limits
- Effect of alternative mitigation pathways on adaptation
- Ancillary social and ecological effects of adaptation

17. The economics of adaptation

- Adaptation costs and benefits at global, national, sectoral and local levels
- Inter-relationships between adaptation costs and residual damage
- Economic instruments to provide incentives for adaptation
- Limits of economic approaches to adaptation decision-making
- Ancillary economic effects of adaptation

Synthesis

18. Detection and attribution of observed impacts

- Integration and consistency of observed impacts
- Attribution of observed impacts

19. Key risks and vulnerabilities

- Multiple interacting systems and stresses
- Indirect, Trans-boundary, and long distance impacts
- Key vulnerabilities, aggregate impacts, thresholds, irreversible changes, and reasons for concern

20. Climate-resilient pathways: adaptation, mitigation, and sustainable development

- Ecosystem services and biodiversity threats
- Multi-metric valuation
- Consumption, lifestyles, behavior, culture
- Human well-being
- Adaptation, mitigation, and sustainable development

Part B: Regional aspects of climate change

with WG1 and WG3 input and collaboration

21. The Regional Approach

- Introduction
- The regional climate and non-climate data
- The regional projections
- Similarities in systems across regions

Regional Chapters

22. Africa

23. Europe

24. Asia

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Part B: Regional aspects of climate change

Chapter structure (22-30)

- Introduction to the region
- Key points from previous assessments
- Vulnerabilities, impacts, adaptation, and development at sub-regional level
- Integrated analysis of adaptation and mitigation at regional level
- Inter-, and intra-regional impacts
- Regional synthesis
- Case studies