

International Peace Research Association



Social Vulnerability and Disasters in México: Challenges for Resiliencebuilding

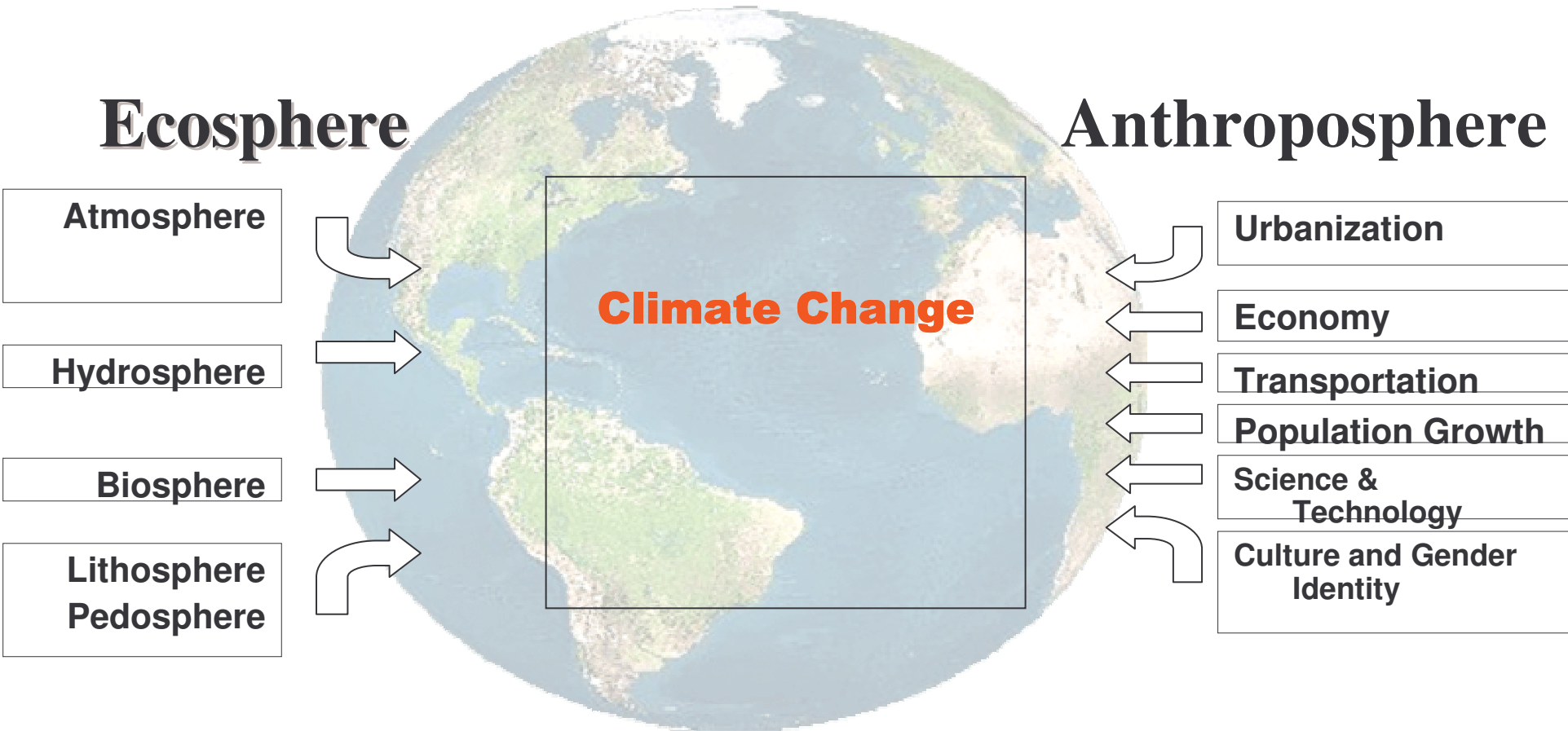
**Úrsula Oswald Spring
National University of Mexico/CRIM
MRF Chair on Social Vulnerability
University of United Nations/EHS
Leuven, 15-19th of July 2008**

Vulnerability

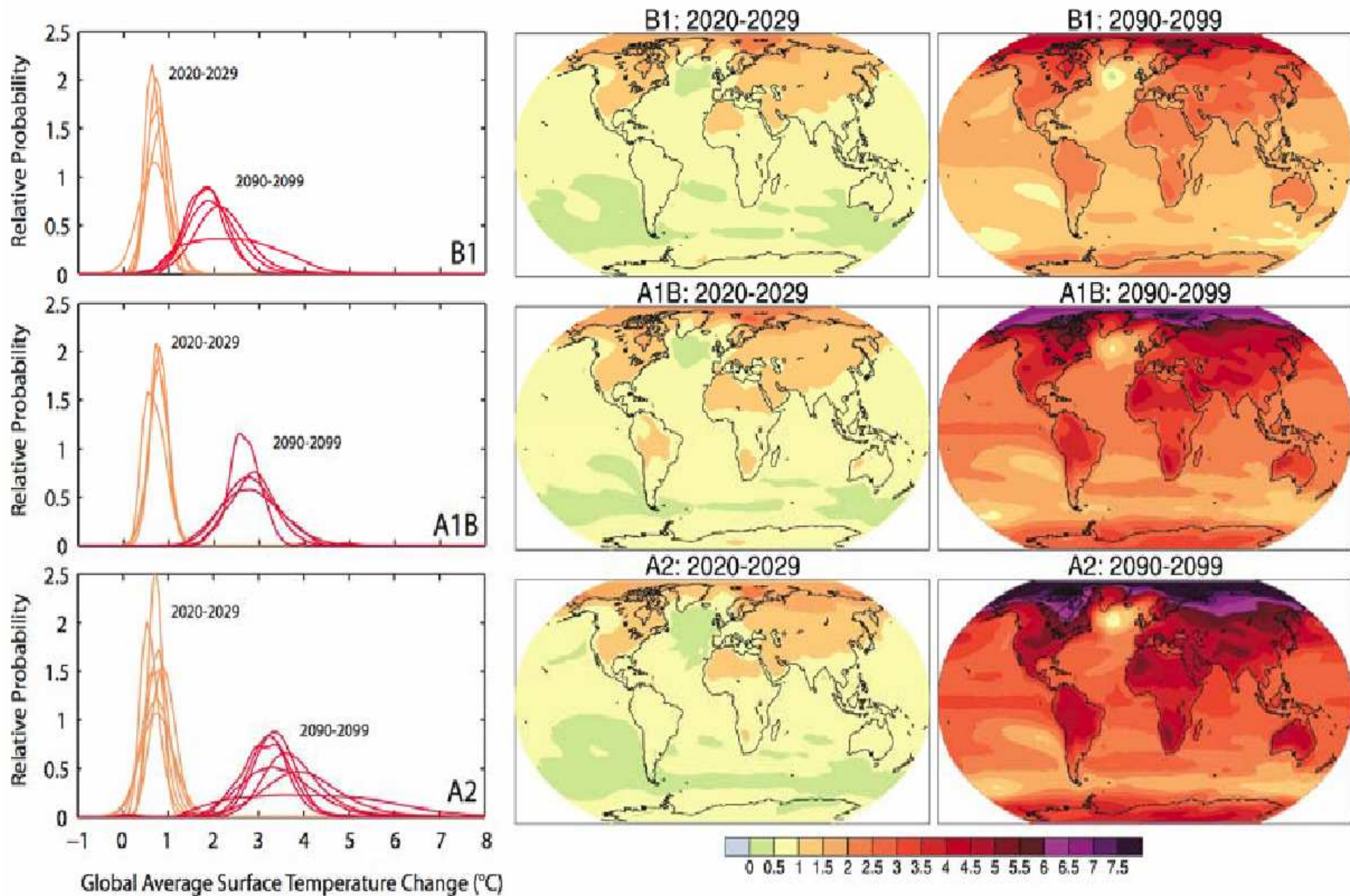


- Results from “**poverty**, exclusion, marginalization and inequities in material consumption” O’Riordan (2002: 369).
- “The conditions determined by physical, social, economic, and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards” (ISDR, 2004: 7)
- “Is conceptually located at the **interaction of nature and culture**” that also links “social and economic structures, cultural norms and values and environmental hazards” (Oliver-Smith, 2004:11).
- Increases the **empowerment of victims**. Wisner (2004: 194-205) distinguishes four approaches for dealing with social vulnerability: demographic, taxonomic, situational, contextual or proactive.

Climate Change (CC) and its Implication on Security

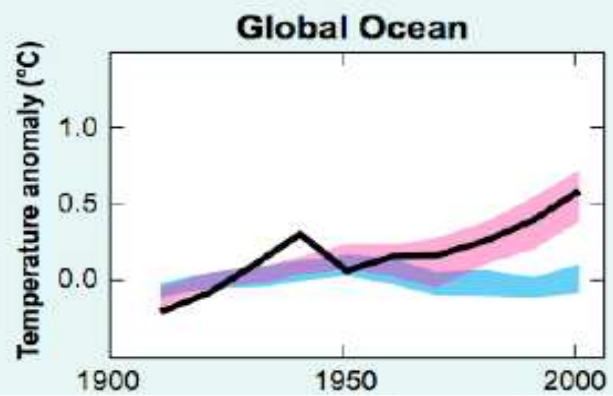
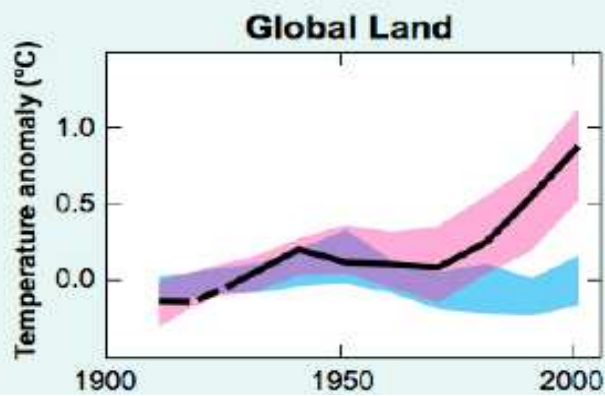
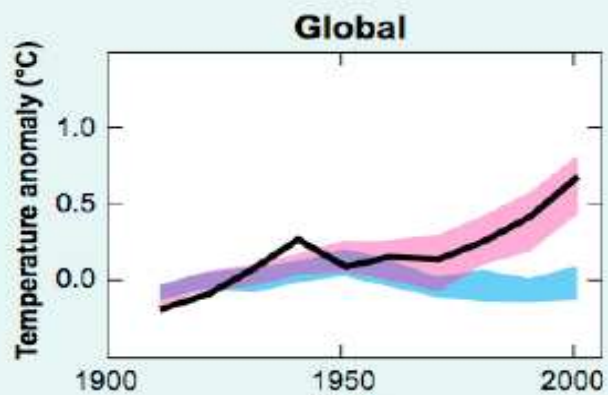
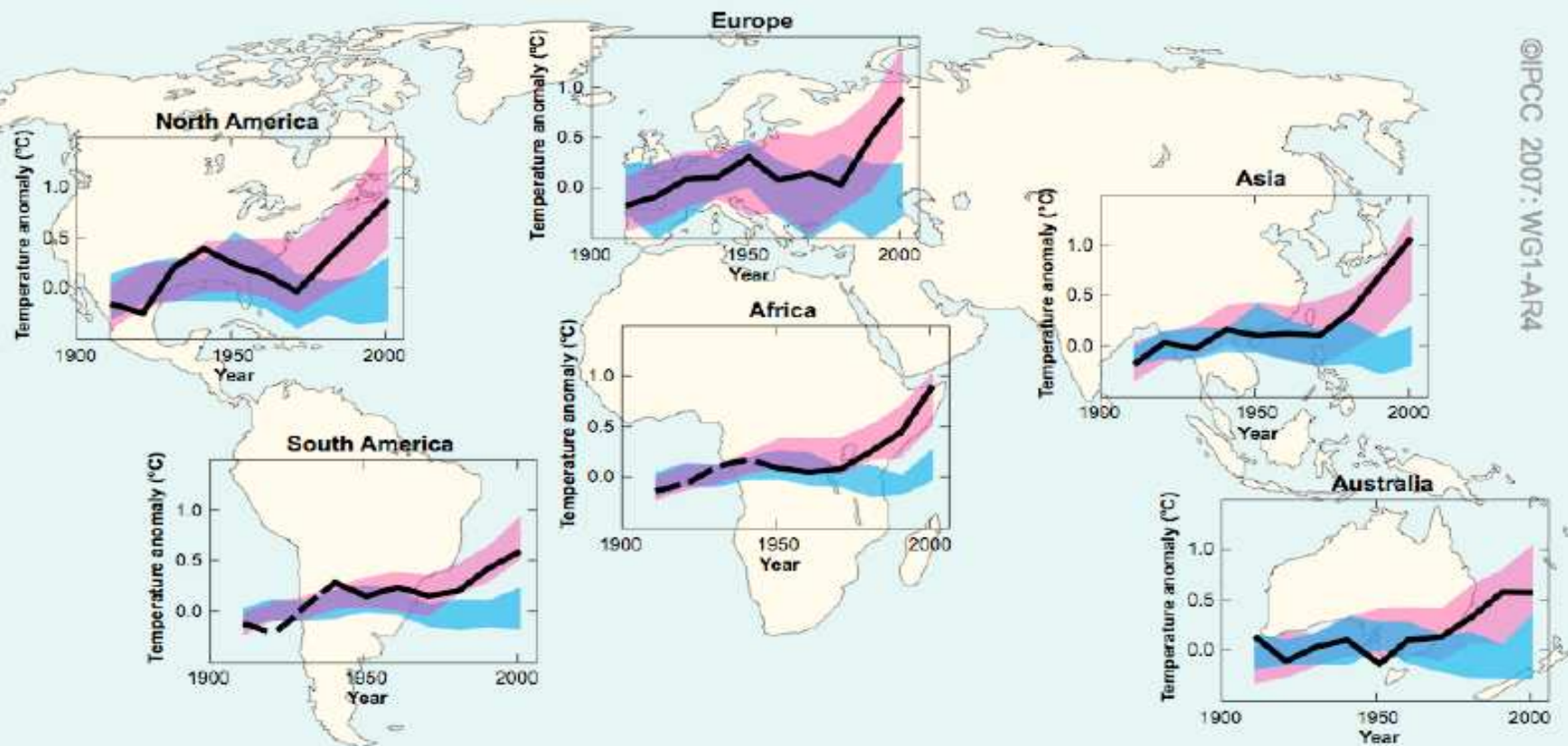


AOGCM Projections of Surface Temperatures



Source: Summary 4th IPCC, 2007

Changes in temperature global and by continent



Direct outcomes of Climate Change

1. Increase in temperature; heat and cold waves
2. Rise in sea levels
3. Storms and floods
4. Desertification and loss of soil fertility and erosion
5. Irreversible ecological changes and destruction of ecosystems
6. Effects on livelihood, food production, water security and life quality
7. Increase in migration from poor countries
8. Possible hotspot conflict-zones
9. Possible large-scale changes (Amazon, Gulf Stream, depleted Asian monsoons, etc.)

Threats, Disasters and Social Vulnerability





1998
Hurricane Mitch: Central America



1998
Blizzard, Canada and USA

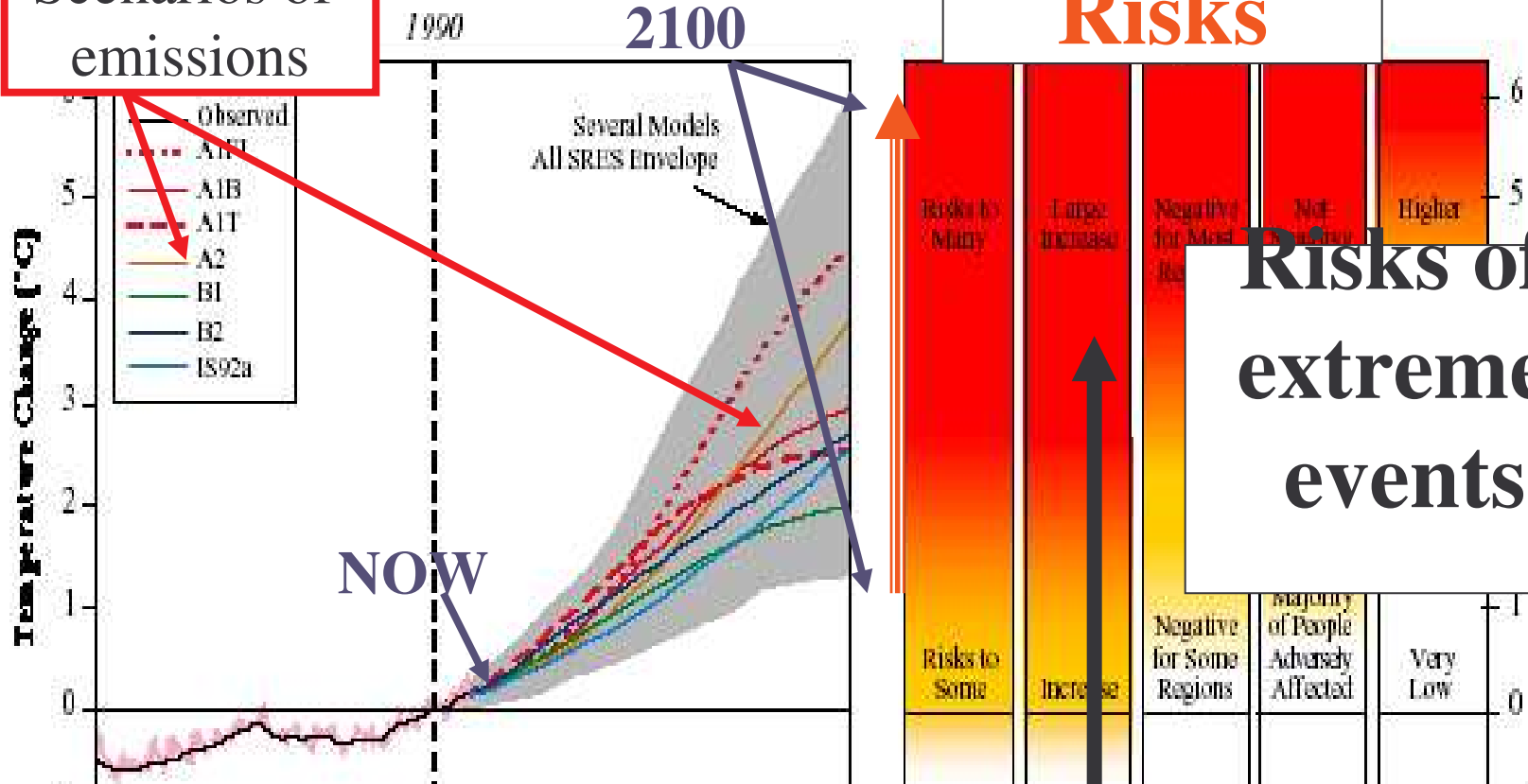
Challenges, Capacity and Resilience

- **Challenges** are a combination of potential and real institutional, societal, economic and political processes, that are able to deal with risks, fears and hazards.
- **Capacity** is “a combination of all the strengths and resources available within a community, society or organization that can reduce the level or risk, or the effects of a disaster.” (ISDR, 2004: 2)
- **Resilience** is “the capacity of a system, community or society potentially exposed to hazards **to adapt**, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure. This is determined by the degree to which the social system is **capable of organizing itself** to increase its capacity for learning from past disasters for better futures, **protection** and to improve risk reduction measures.” (ISDR, 2004: 6)

Why are extreme events increasing?

- **More people, complex societies, society of consumption and GEC**
 - Megacities & poor countries are highly vulnerable
 - Old infrastructure and few maintenance in developed countries
 - Higher mobility and decision making where to live, work, relax and travel with high socio-environmental costs
 - Urbanization along rivers, coast, high plateau, former lakes
 - Society of consumption with high input of fossil fuel and amounts of waste
- **Social effects, discrimination, neglect and violence**
 - Greater social gaps within societies & between North and South
 - Megacities with high immigration, lack of infrastructure, violence
 - Transnational crime and public insecurity
 - Gender discrimination and GBV
 - Neglect of poor people: physical and economic stress to resource access
- **Human Interventions in ecosystems**
 - Changes of natural landscape and lacking land planning
 - Exhaustion of natural resources
 - Greater demand and contamination of water
 - Emission of green-house gases and pollution
 - Destruction of biodiversity due to land use changes
 - Food insecurity, famine, food speculation and biofuel
 - New illnesses and epidemics due to greater mobilization of people

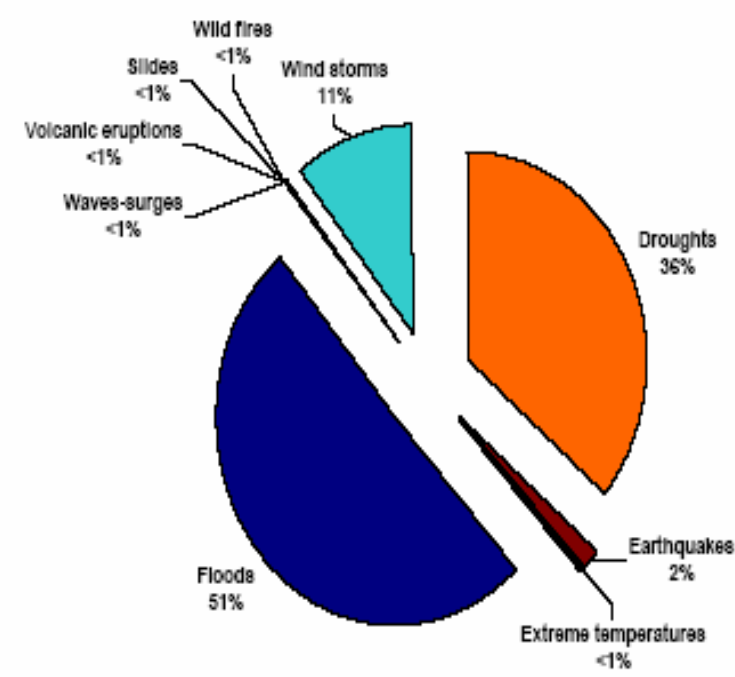
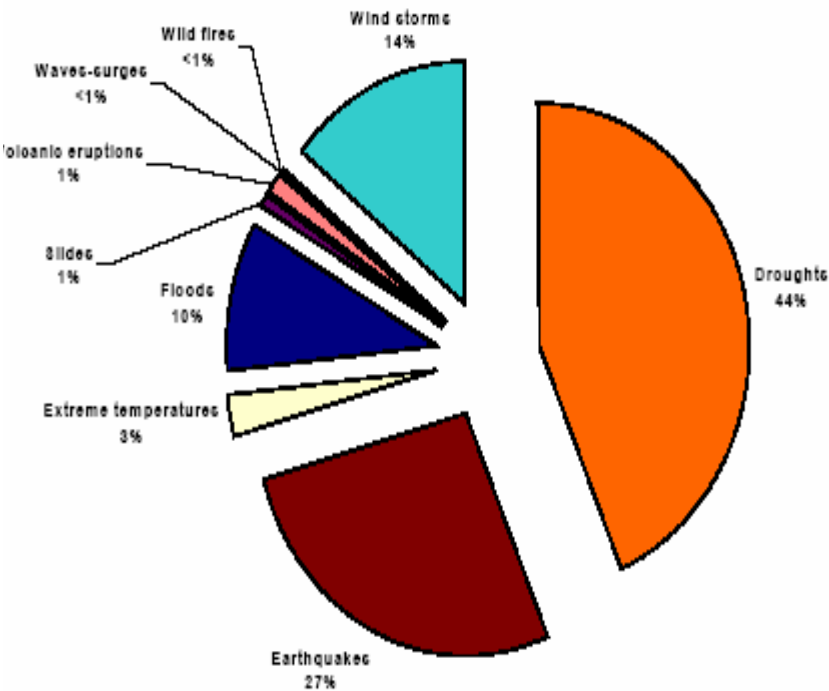
Scenarios of emissions



Risks of extreme events

Climate change increase risks
Climate will change at least during this century without urgent actions

Personas Afectadas y Muertas en Desastres del Mundo (1974-2003): 30 años



(1) injured + homeless + affected

Total: 2'066,273 personas muertas; 5'076'494,541 personas afectadas

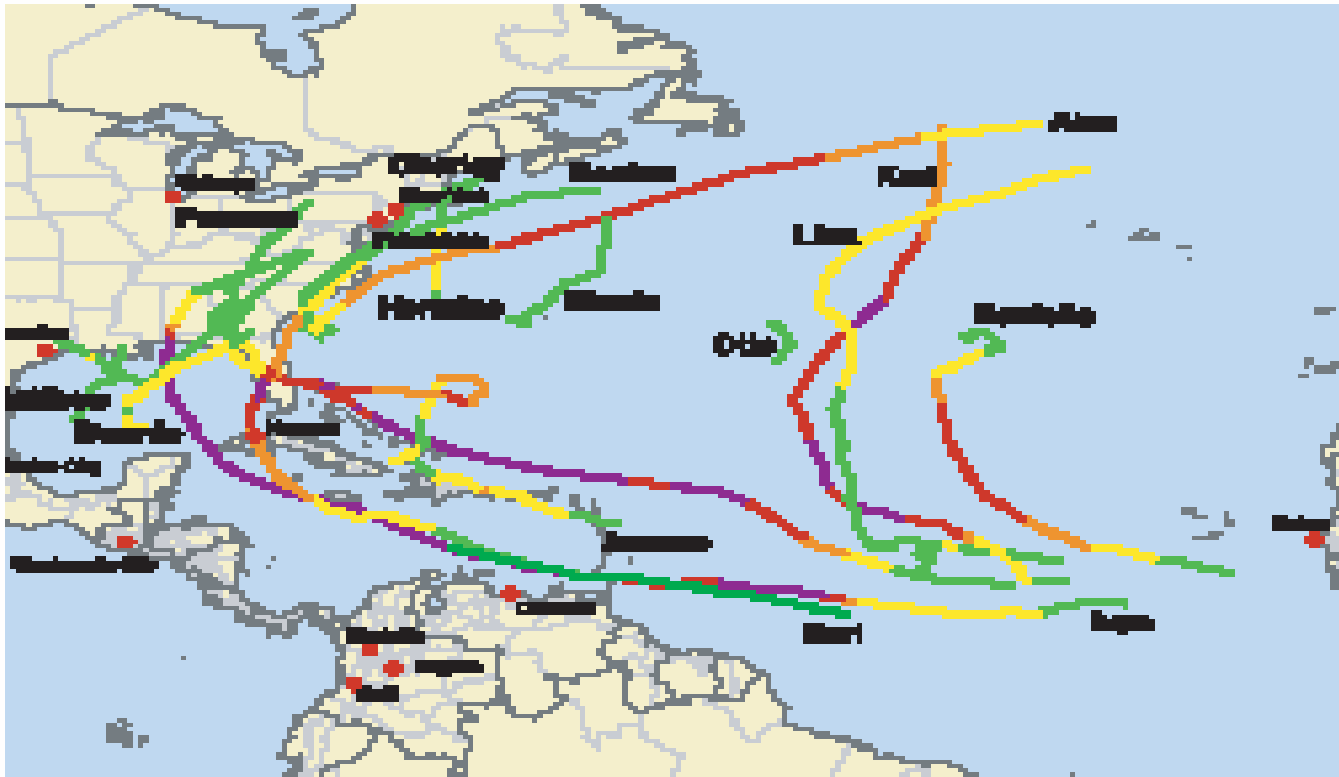
fuentes: Hoyois and Guha-Sapir (2004)

Riesgos Naturales en México: Erupciones Volcánicas, Inundaciones, Ciclones, Sismos, Desprendimientos de Tierra

Grado de Riesgo	Personas (millions)	% de Población Afectada
Muy Alta	28.6	26
Alta	11.0	10
Regular	24.2	22
Baja	14.3	13
Muy Baja	31.9	29

Trayectoria de Ciclones Tropicales en el Atlántico en 2004

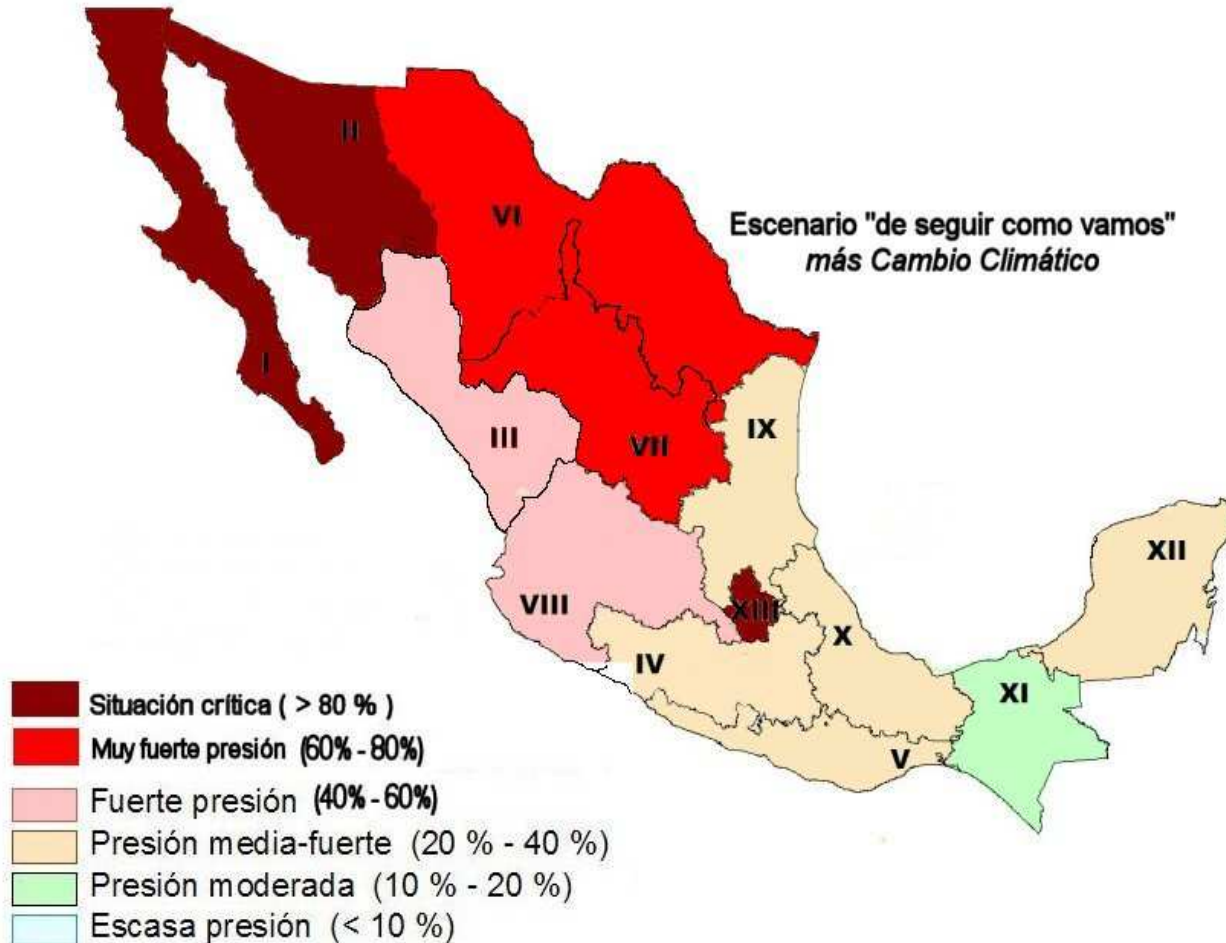
Fig. 1 Tracks of tropical cyclones and hurricanes in the Atlantic in 2004



In 2004, there were 15 tropical cyclones in the Atlantic, nine of which reached hurricane force with wind speeds exceeding 118 km/h.

- Green line: < 100 km/h
- Yellow line: 100–150 km/h
- Orange line: 150–200 km/h
- Red line: 200–250 km/h
- Purple line: > 250 km/h

Impactos Potenciales del Cambio Climático en México en Agua (2030)



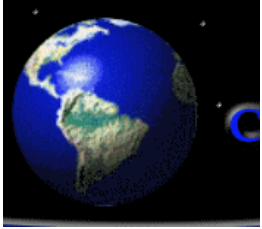
Baja California y Sonora, **D.F.**, **Morelos**, Puebla, **Tlaxcala** situación crítica

La región de **Sinaloa** y la hidrológica del **Lerma** fuerte presión.

Incluso zonas del sur de México y la Península de **Yucatán**: presión de mediana a fuerte.

History of Droughts in Mexico





Possible Future Impacts

- **Increase** in sea level between 18 y 59 cm (11,000km of coast lines)
- **Increase** in heat and cold waves, flood and drought
- **Reduction** in regional field yields
- **Increase** in plagues and illnesses of plants/ animals
- **Reduction** in water availability and its pollution
Increase in illnesses: malaria, dengue, esquistosomiasis, cholera, salmonella, hepatitis
- **Few adaptability** of ecosystems
- **Soil** erosion, loss of natural fertility

Fuentes: C. Conde 2007; U. Oswald 2007

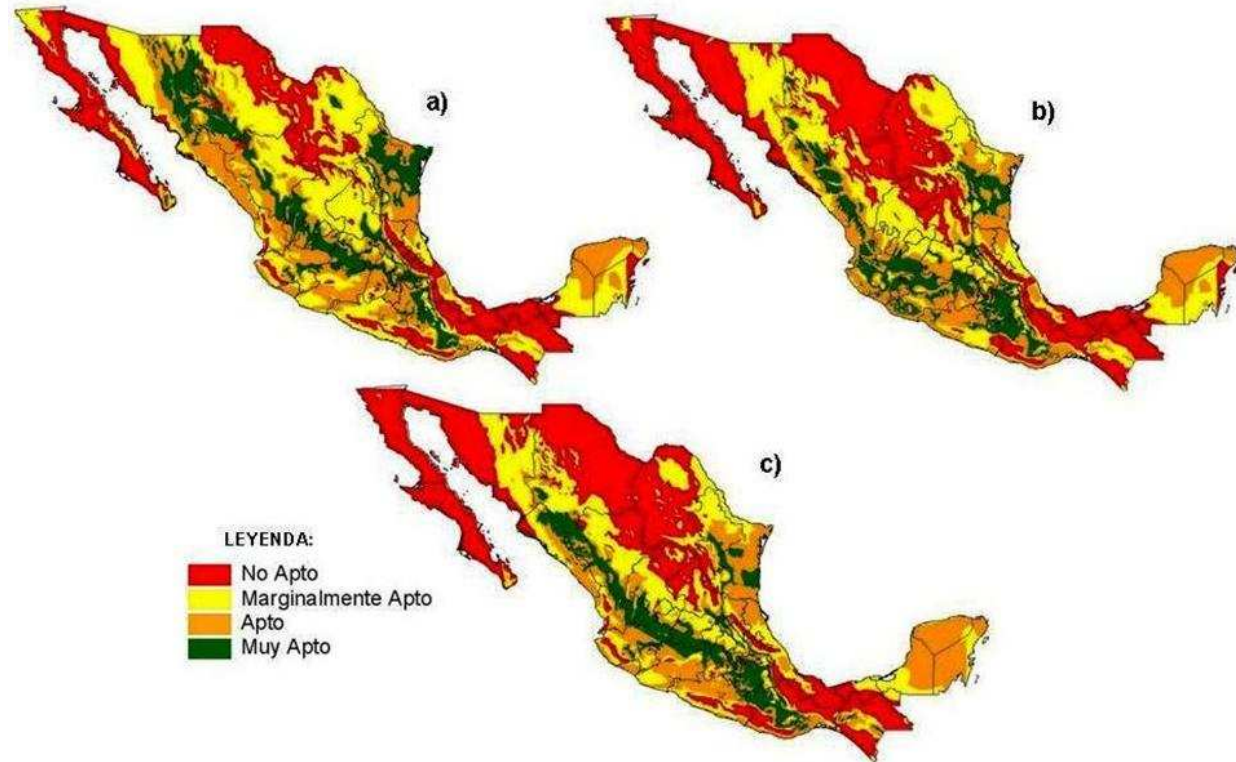
Vulnerability in Agriculture & Food

Increased vulnerability:

- Average age of corn growing peasants: over 50 years (FAPRACC,2004); 1/3 are women
- Migration: 500,000 peasants/year
- From 1988: Prices of corn -45%; Tortilla +279%
- 74 billion USD invested in grain importation (C. Conde 2007; U. Oswald 2007)

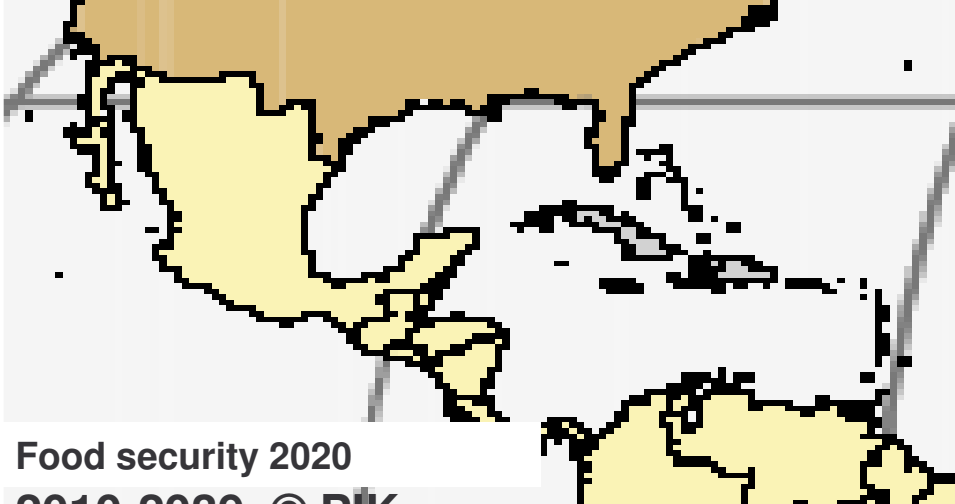
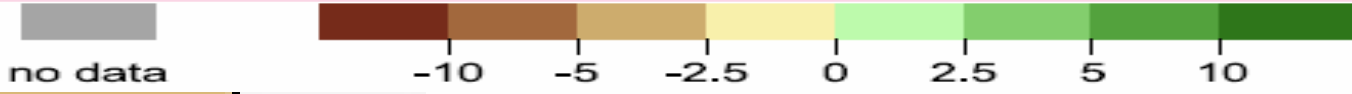
With Climate Change

- In 2050: aptitude of corn fields get reduced between 13% y 27% of national agricultural land for corn growing.



Monterroso, A. G, Rosales, 2006.

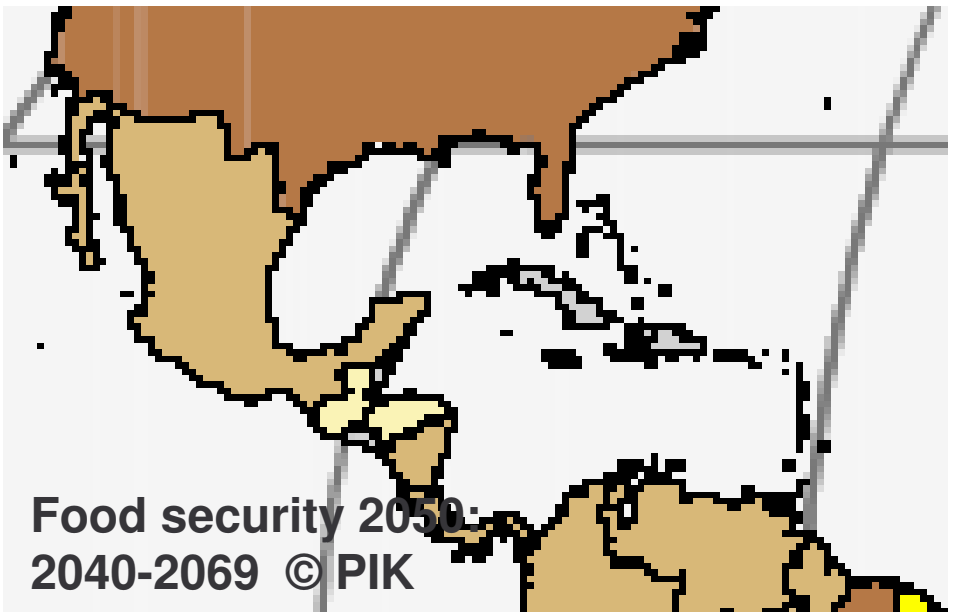
Projections of yield averages/ha due to climate change: 2020, 2050 y 2080 with and without mitigation



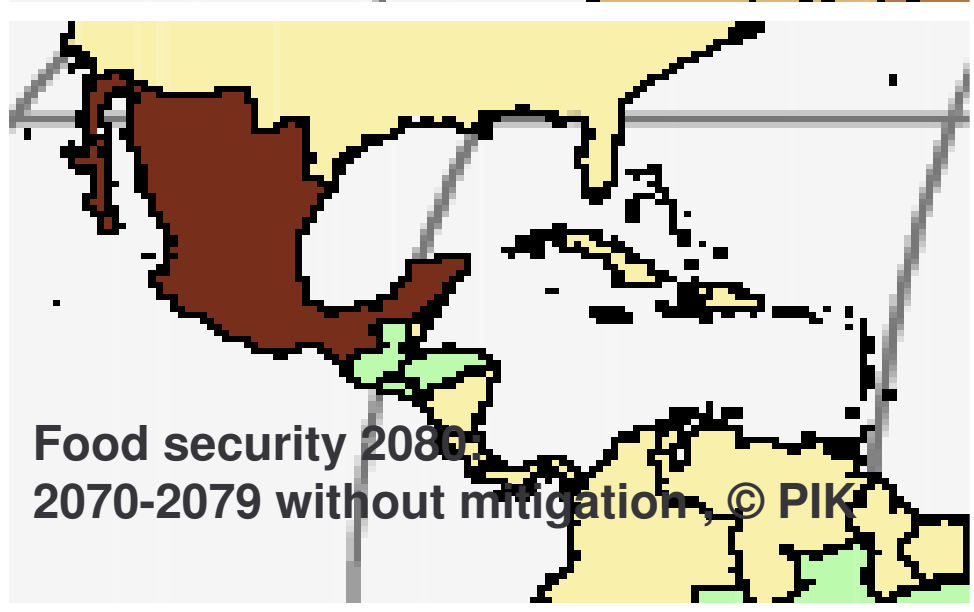
Food security 2020
2010-2039 © PIK



Food security 2080
2070-2079 with mitigation © PIK

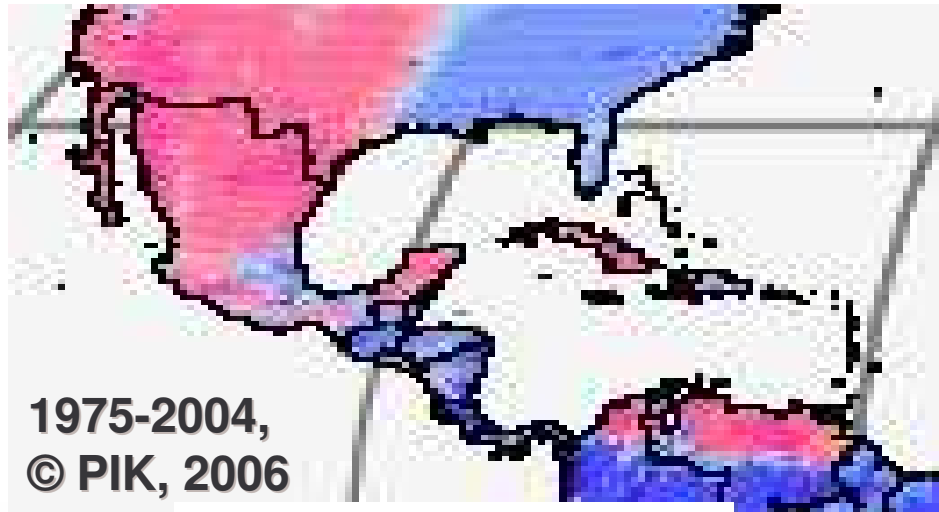


Food security 2050
2040-2069 © PIK



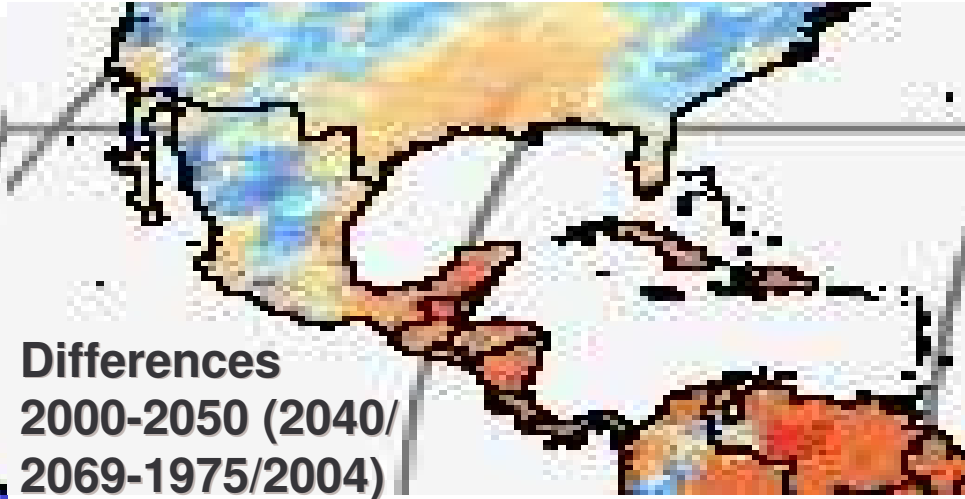
Food security 2080
2070-2079 without mitigation © PIK

Threats of drought, projections on 1975-2004 averages for 2050 y 2080 © PIK



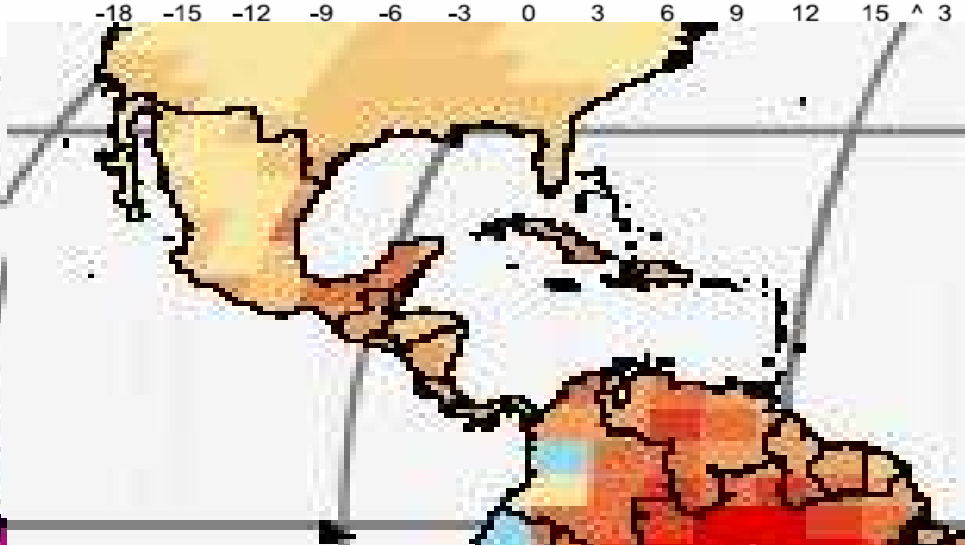
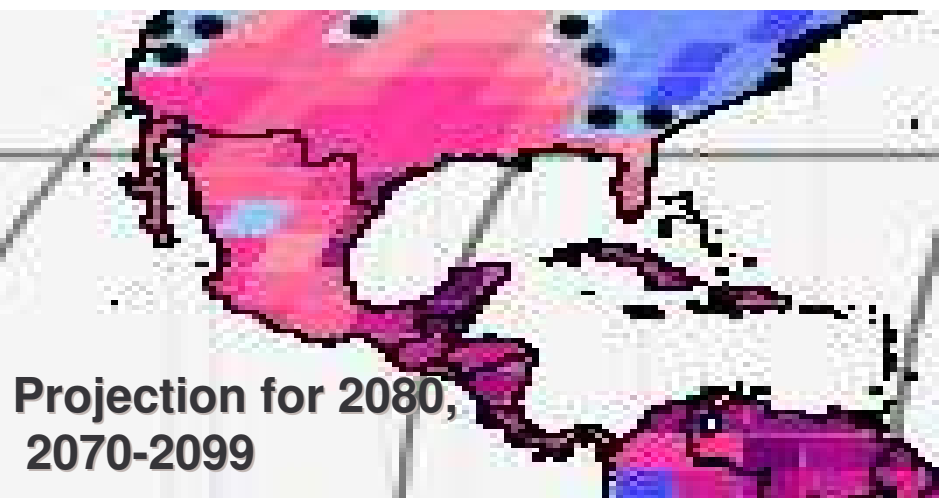
Hydric balance (mm)

-18 -15 -12 -9 -6 -3 0 3 6 9 12 15 ^ 3



CC & hydric balance (mm)

-18 -15 -12 -9 -6 -3 0 3 6 9 12 15 ^ 3



Thank you for your attention



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