

# Costs of water related climate change versus the limitations in financing

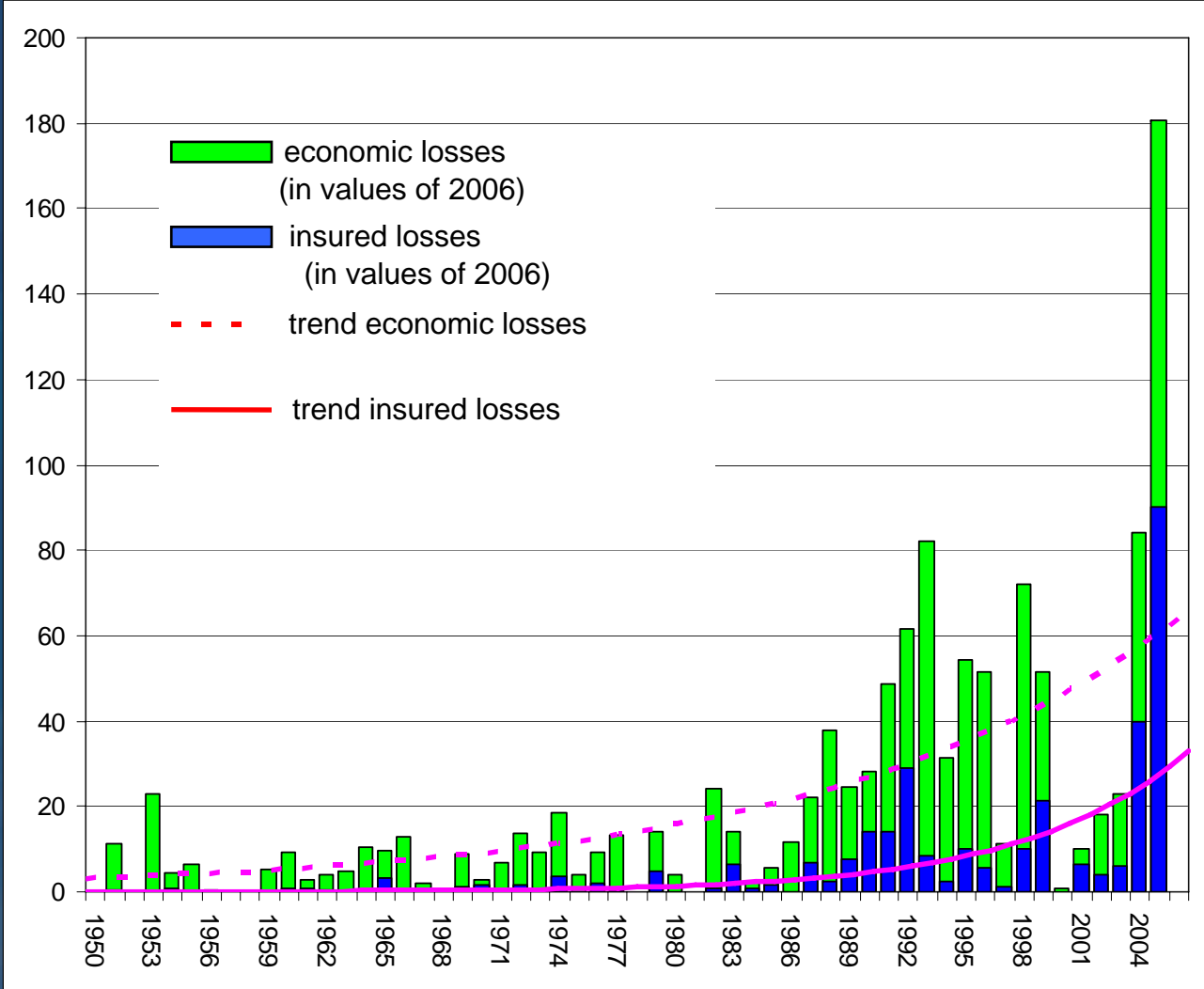
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presented by

Henk van Schaik (CPWC)

UN ECE workshop  
1-2 July, 2008, Amsterdam

# Historic losses from weather disasters 1950-2005

Direct economic losses [mld. US\$]



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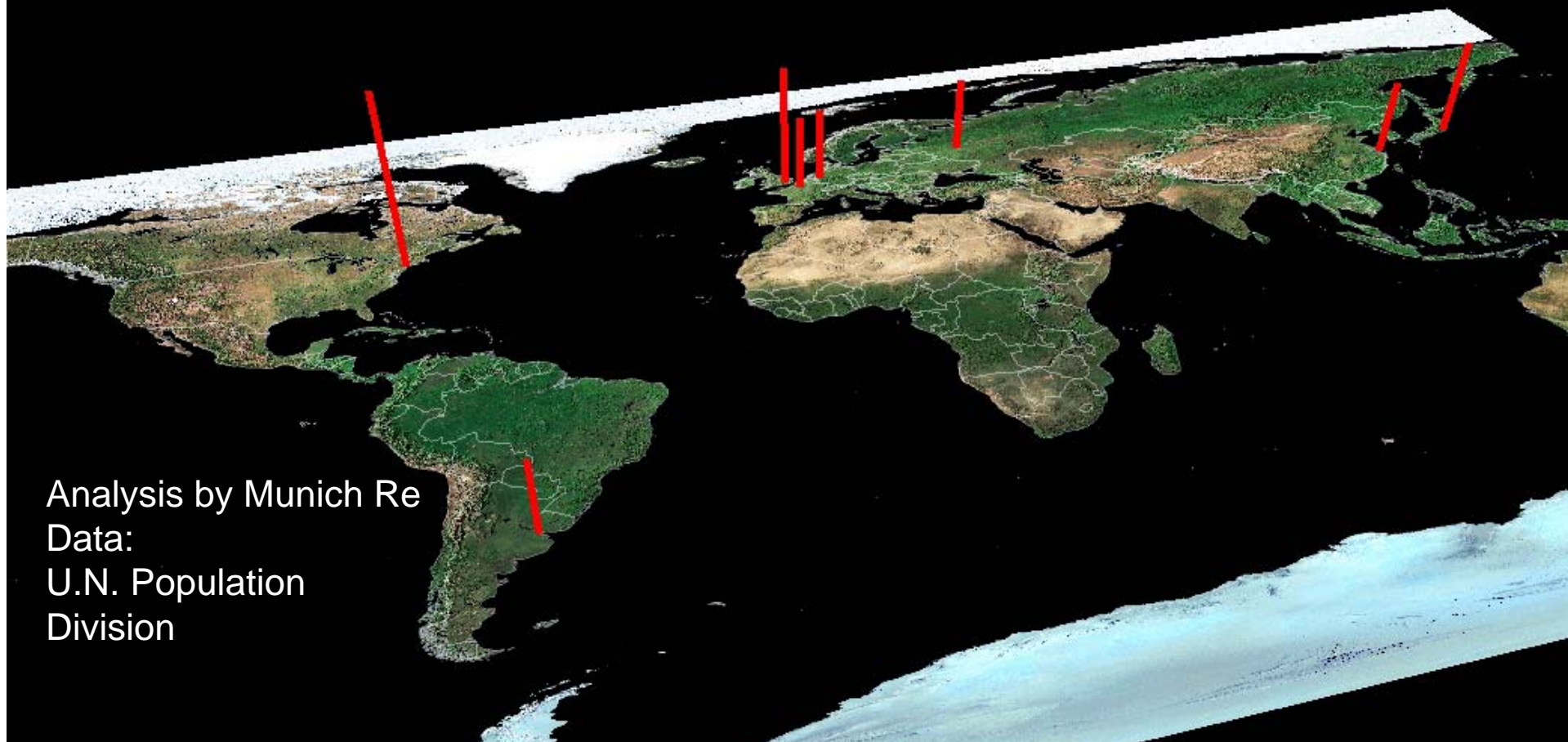
## Findings

- Global weather losses increased from 8.9 billion to 45.1 billion dollar per year between 1977-2006
- Losses increased 125% per decade
- Global average GDP increased 35-45% per decade

Bouwer et al. 2007, *Science*

# Mega-cities with over 5 million inhabitants

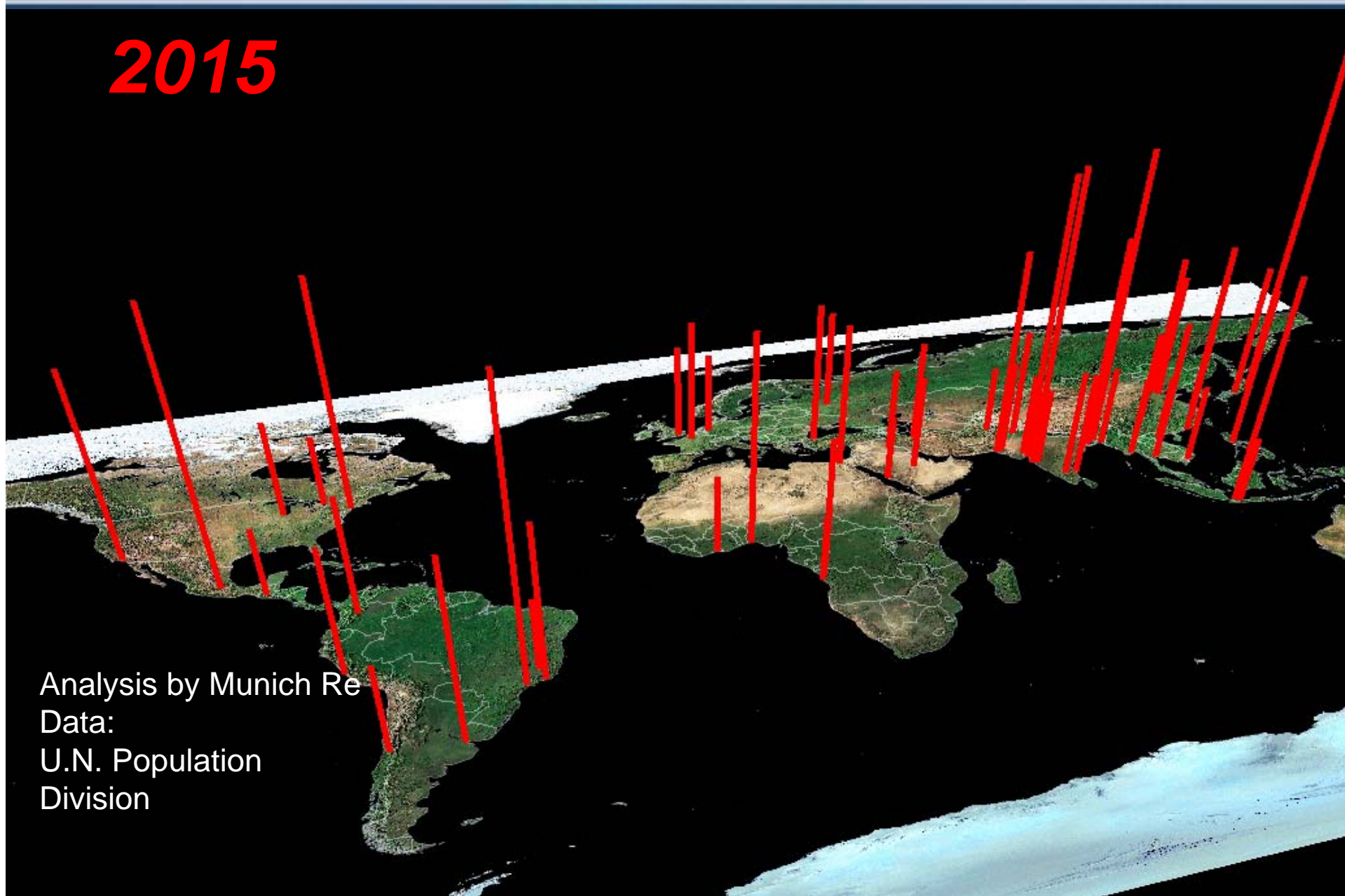
**1950**



Analysis by Munich Re  
Data:  
U.N. Population  
Division

# Mega-cities with over 5 million inhabitants

**2015**



Analysis by Munich Re  
Data:  
U.N. Population  
Division

## Findings

- Projections 2005-2015:
  - Losses increase up to 22% (Tokyo) and 88% (Shanghai, Jakarta)
  - Affected population increase up to 35% (Dhaka)

Bouwer et al. 2007, *Science*

# Conclusions

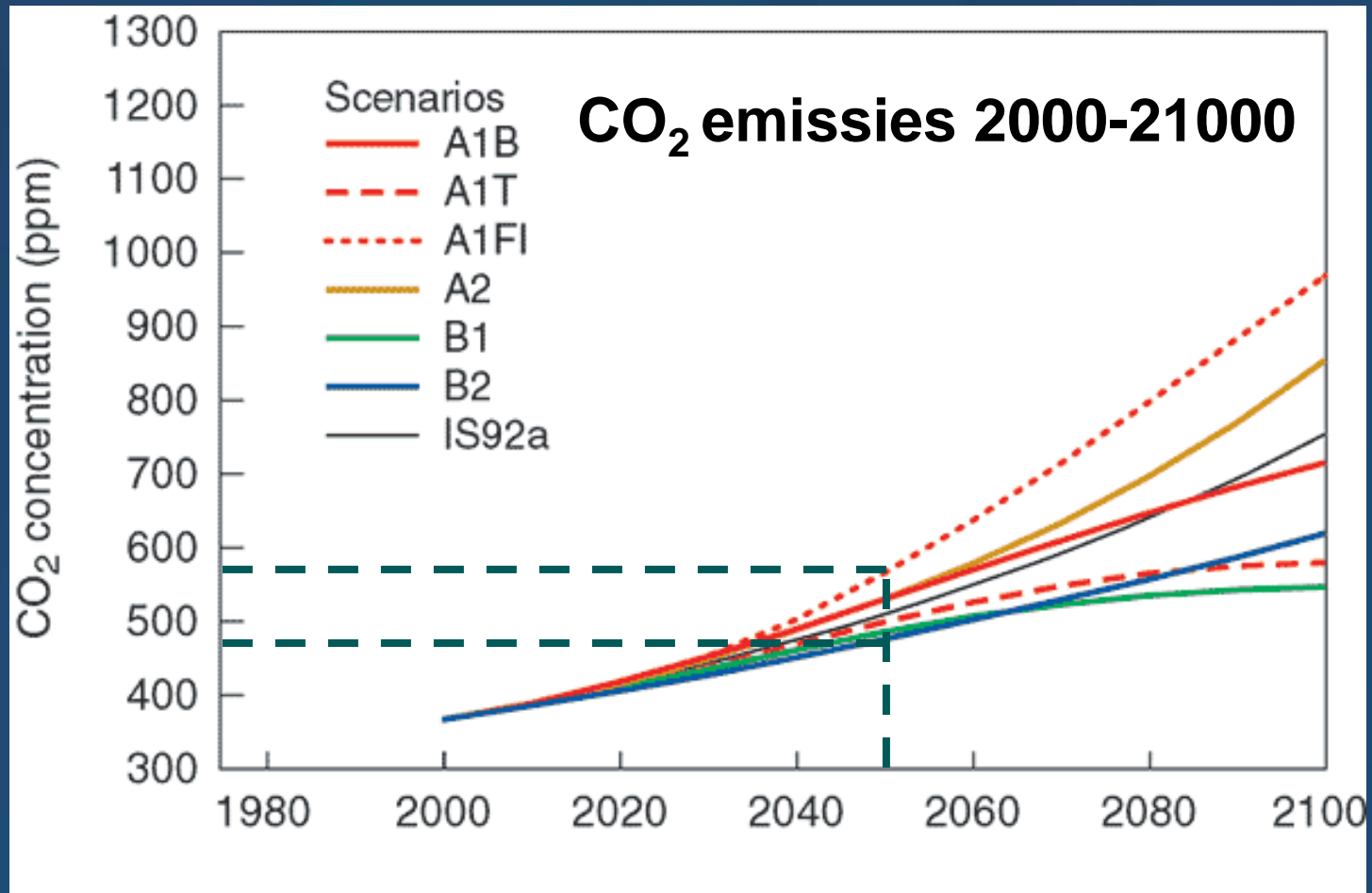
- No climate signal in loss records yet
- Major driver: increased exposure
- Therefore role of climate seems negligible (still)
- Disproportionate increase in vulnerabilities
- Adaptation/vulnerability reduction:
  - Flood protection
  - Incentives for risk reduction, e.g. government programmes for flood proof building, insurance, etc.

# Financing climate adaptation

1. Why adapting?
2. What are the costs?
3. Financierings constructions
4. Sources under the climate convention
5. Other sources
6. Conclusions

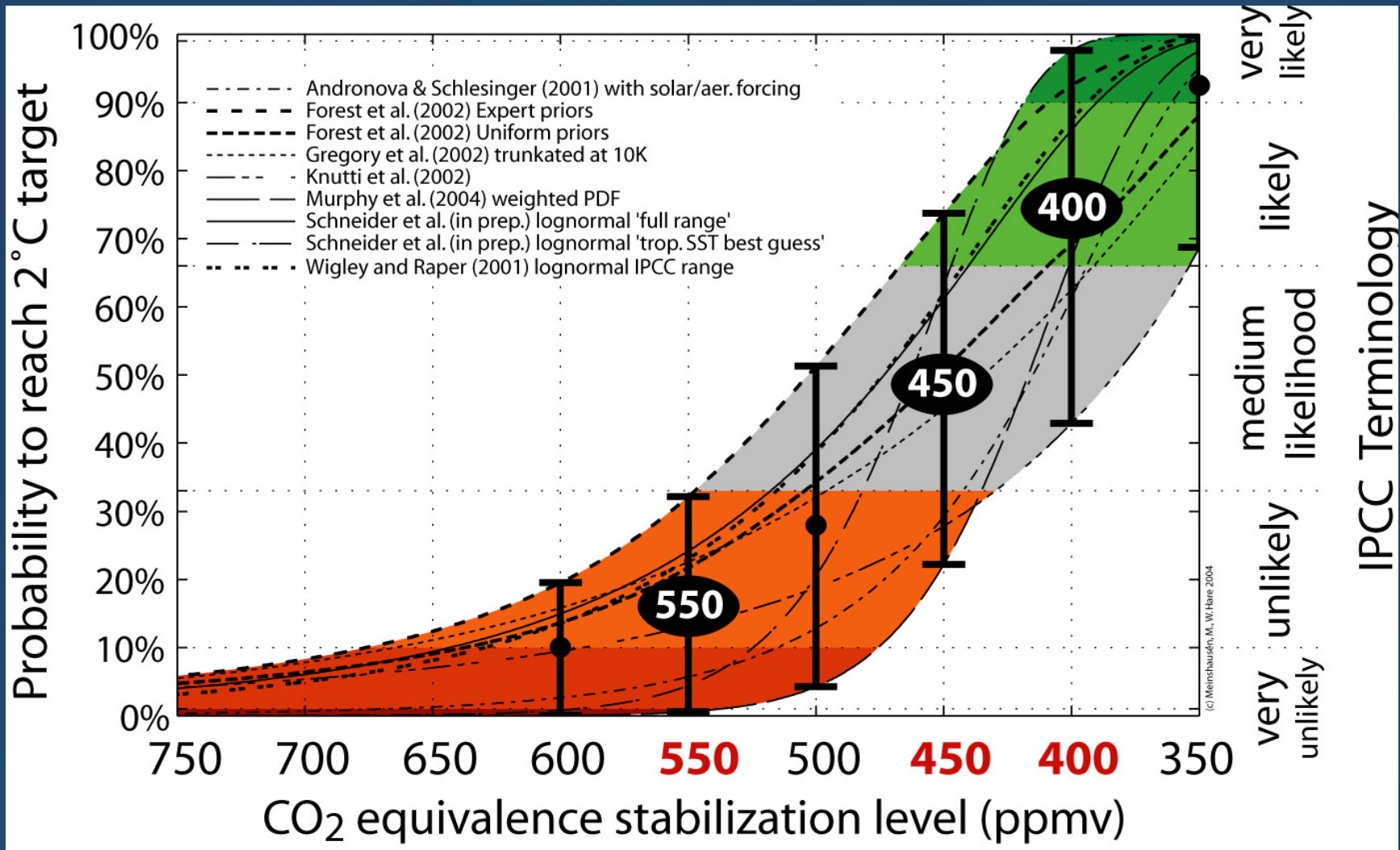


# 1. Why adapting?



Bron: IPCC 2001

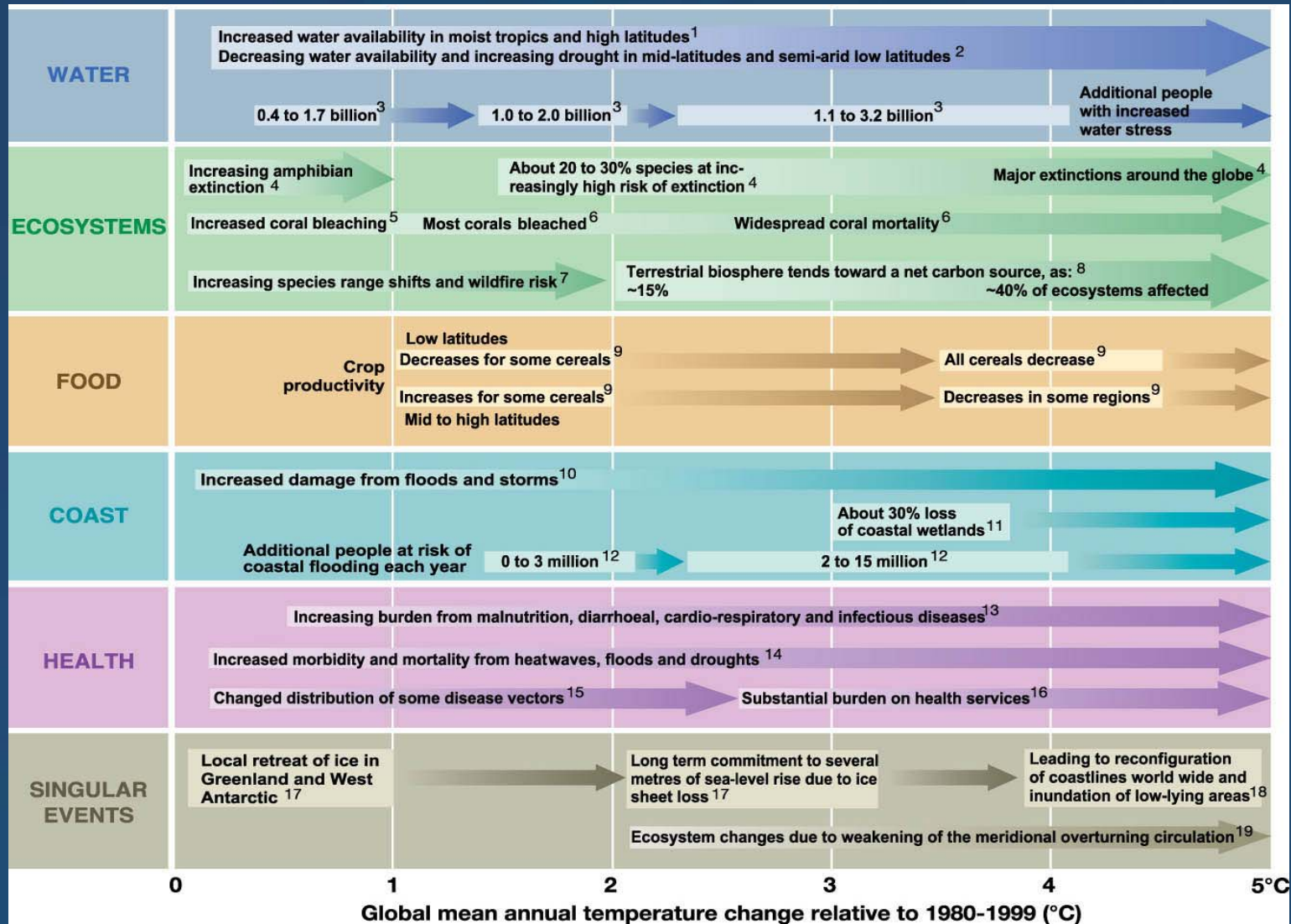
# 1. Why adapting?



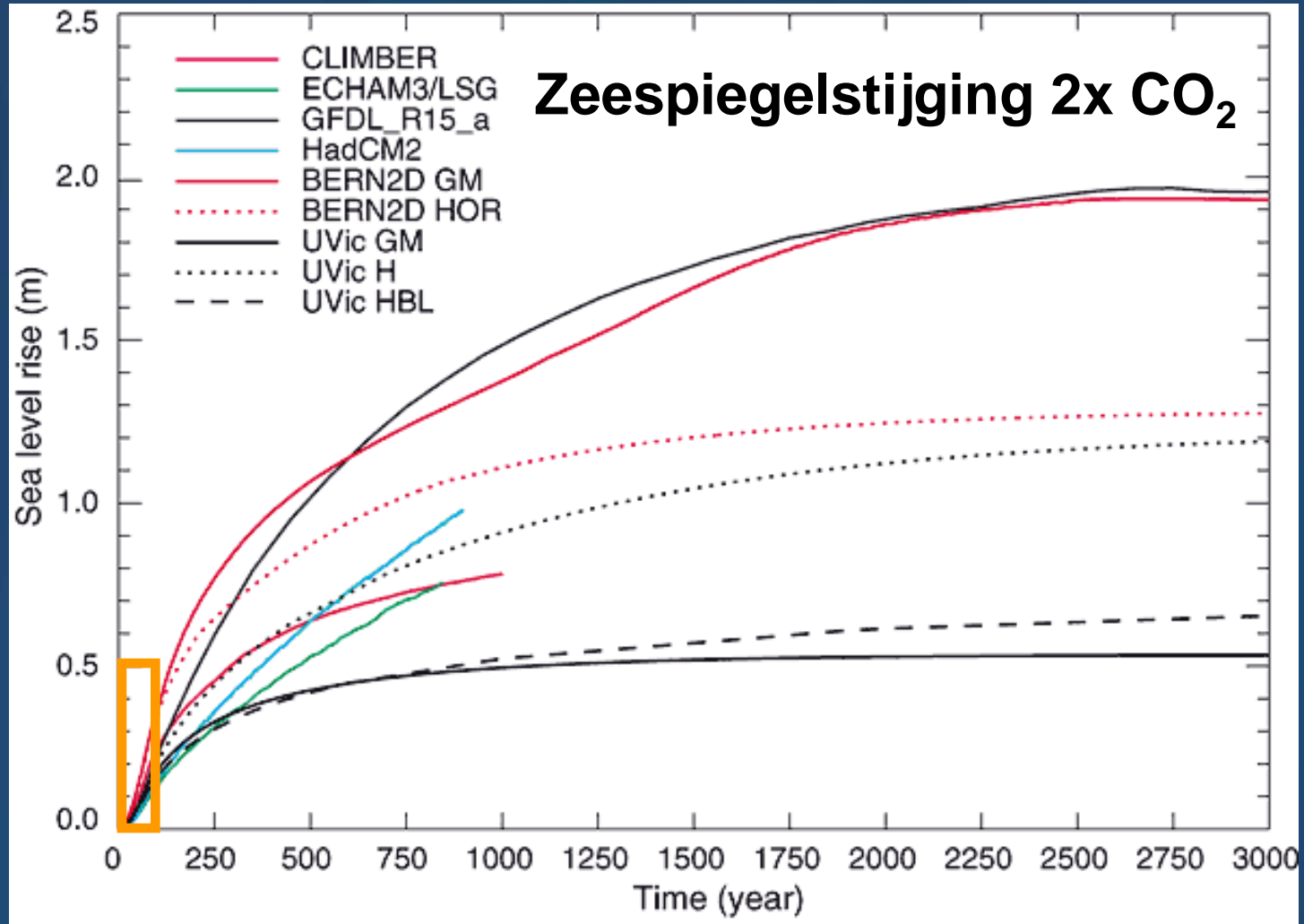
Bron: Meinshausen 2004



# Consolidating our knowledge: impacts by sector



# 1. Waarom adaptatie?



Bron: IPCC 2001

## 2. What are the costs?

- Damages: in the order of 2-10% of global GDP, depending on the temperature rise.
- Costs of adaptation: 7-10% of the costs of damages
- But: large uncertainty about vulnerability

Bron: IPCC 2001

## 3. Financiering constructions

### 1. Mutual interest

→ Adaptation in public investments

### 2. Solidarity

→ ODA

### 3. Liability

→ Adaptation funds under climate convention

## 4. Sources under the climate convention

- Special Climate Change Fund  
Part of 410 miljoen US\$ for technology transfer
- Least Developed Countries Fund  
Part of 410 miljoen US\$ for  
National Adaptation Programmes of Action
- Adaptation Fund  
Revenues from CDM (~2% of emission reductions) for  
implementation

## 5. Other sources

- Global Environment Facility
- ODA
- Public investments
- Private investments
- Insurances (re insurances)



## 5. Global Environment Facility

- Strategic Priority on Adaptation:  
50 miljoen US\$
- Other multilateral environment conventions, including
  - Convention on Biodiversity
  - Convention on Wetlands
  - Convention on Desertification

## 5. ODA

- ~50 billion US\$ per year, but decreasing
- Objective and targets: development and MDGs
- Chances for mainstreaming

## 5. Public investments

- Investments in infrastructure:
  - Coastal defence
  - Water management
  - Energy production
  - Transport (roads, rail, bridges)
- Disaster preparedness
- Early warning
- Education and awareness raising

## 5. Private investments

- Potentially 207.6 miljard US\$ per year (1998-2002)
- Possibly to direct via spatial planning and sectoral policies towards land use and constructions

## 5. Insurances

- Coverage for damages due to extremes
- Measures to mitigate damages e.g. Building codes and regulations

## 6. Conclusions

- Climate change is unavoidable
- Financing under the Convention is available for studies
- Financing under the UNFCCC Convention is grossly insufficient for implementation measures
- Therefore: awareness raising about climate risks
- Mainstreaming in investments
- Additional financing mechanisms necessary: for example compensation via international law?