Climate Change and Sustainable Development?

UNSW • SOCW7852 • 20-21 March 2012

Johannes M Luetz
j.luetz@unsw.edu.au

(Source: ppt Stephen H. Schneider)

Development ⇔ Climate Change

> "The climate change that the world is already locked into has the potential to result in large-scale development setbacks, first slowing, then stalling and reversing progress in poverty reduction, nutrition, health, education and other areas ..."

—2007/2008 UN Human Development Report:
Fighting climate change : Human solidarity in a divided world.

Notion of Sustainability

"*sustainable:*
able to be maintained
at a certain rate or level.
Ecology: conserving an
ecological balance by
avoiding depletion of
natural resources..."

—Oxford Dictionary, Second Edition, 2005, p. 1703

Sustainable Development?

Our Common Future: Brundtland Report 1987, pp 24-25

27. Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs...

28. Meeting essential needs requires not only a new era of economic growth for nations in which the majority are poor, but an assurance that those poor get their fair share of the resources required to sustain that growth...

29. Sustainable global development requires that those who are more affluent adopt life-styles within the planet's ecological means – in their use of energy, for example. Further, rapidly growing populations can increase the pressure on resources and slow any rise in living standards...

30. Yet in the end, sustainable development is not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs. We do not pretend that the process is easy or straightforward. Painful choices have to be made. Thus, in the final analysis, sustainable development must rest on political will.

Climate change and development

1. **Introduction**
2. Science
3. Impacts
4. Implications
5. Migration
6. Problems
7. Solutions?

PLANET **PREPARE**

2008 World Vision Preparedness Study

P rotect Development
R esearch Priorities
E mpower Communities
P artner And Network
A dvocate Justice And Change
R einforce Disaster Defences
E ducate Children


Photo: Paul Willows/NASA

Island of Matsungan, Papua New Guinea

Matsungan, Papua New Guinea: Island Chief John Kela (right) standing on what he says was formerly dry ground. Photo: Johannes Luetz

Chief Kela: "What will the future hold for our children and grandchildren?"

Intro

Carteret Islander and Director of Tulele Peisa NGO, Papua New Guinea

Photo: Pip Starr

Ursula Rakova: "Storm surges regularly overtop our islands – then the sea and low-lying land become 'level.' Resettlement is underway. It is so sad to leave."

Intro

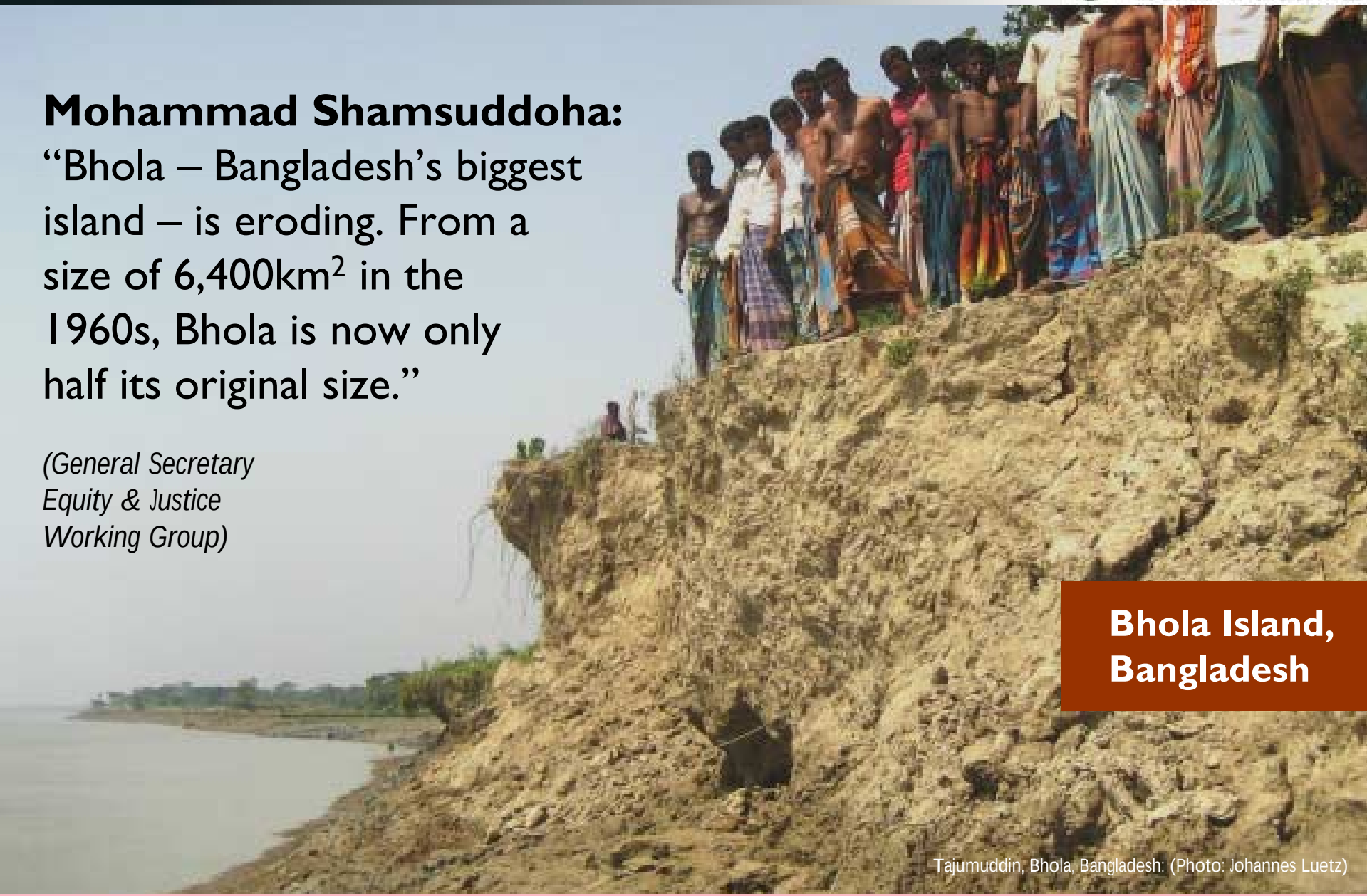
Group of environmental or climate change related forced migrants who abandoned their coastal village "because of rising sea levels."

Intro

Albert Nai: "The bush is better than the beach!"
(At his new home with two of his grandchildren)

Mohammad Shamsuddoha:
"Bhola – Bangladesh's biggest island – is eroding. From a size of 6,400km^2 in the 1960s, Bhola is now only half its original size."

(General Secretary Equity & Justice Working Group)



Bhola Island, Bangladesh

Tajumuddin, Bhola, Bangladesh: (Photo: Johannes Luetz)

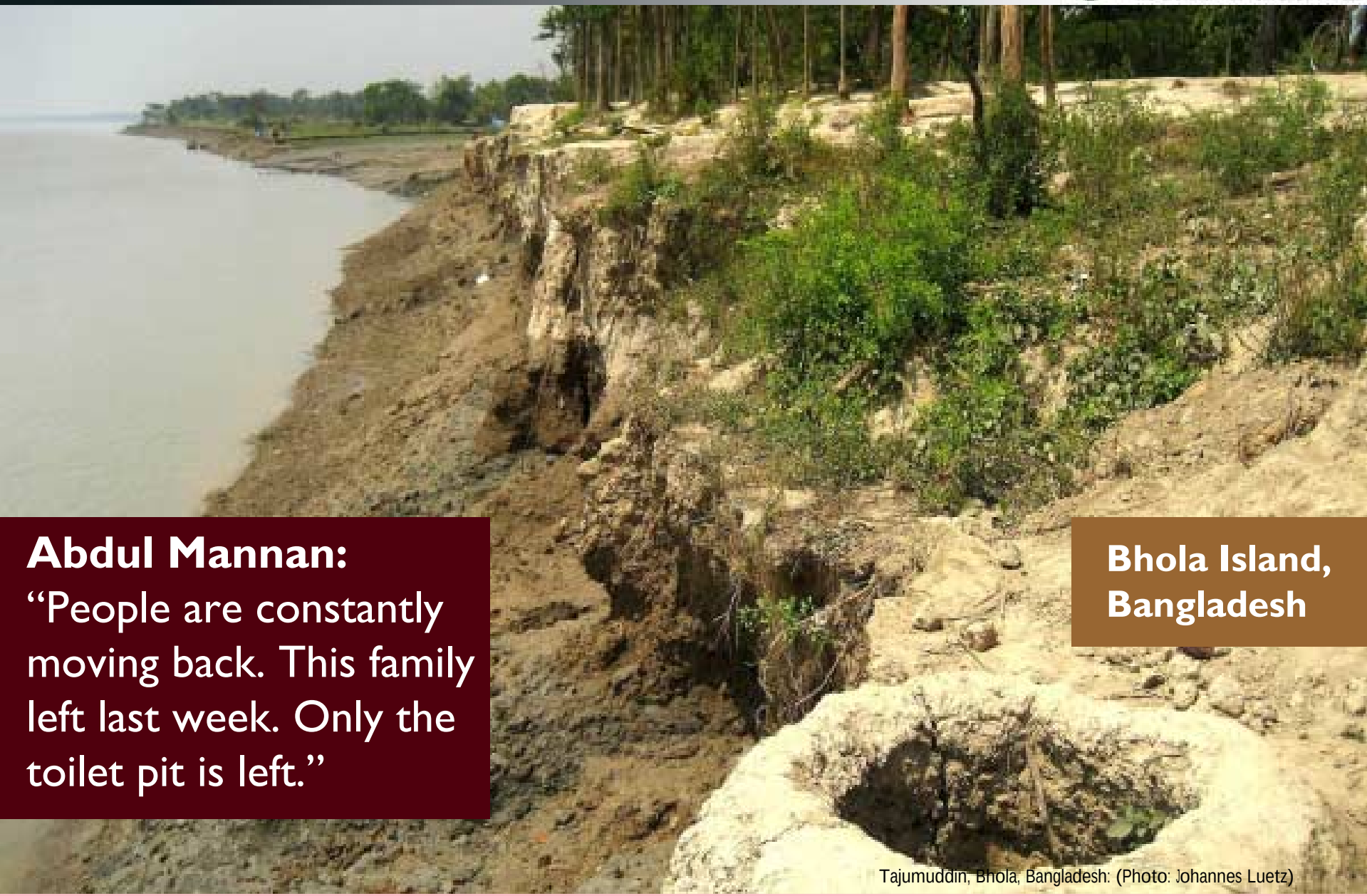
Intro

Bhola Island, Bangladesh

Tajumuddin, Bhola, Bangladesh: (Photo: Johannes Luetz)

Abdul Mannan: "The place where I was born lies 5 kilometres out in the sea. I've already moved my home and family four times." Community elder Abdul Mannan (centre) points out signs of erosion.

Intro



Abdul Mannan:
"People are constantly moving back. This family left last week. Only the toilet pit is left."

Bhola Island, Bangladesh

Tajumuddin, Bhola, Bangladesh: (Photo: Johannes Luetz)

Displacement – selected sources, projections, timeframes

Source	Projection	Timeframe
IPCC (2001)	150 million	2050
Myers (1995 and 2005)	200 million	2050
Myers (2006)	250 million	2050
Nicholls (2004)	50-200 million	2080
IOM (2009)	200 million	2050
Stern Review (2006)	150-200 million	2050
Christian Aid (2007)	1 billion	2050

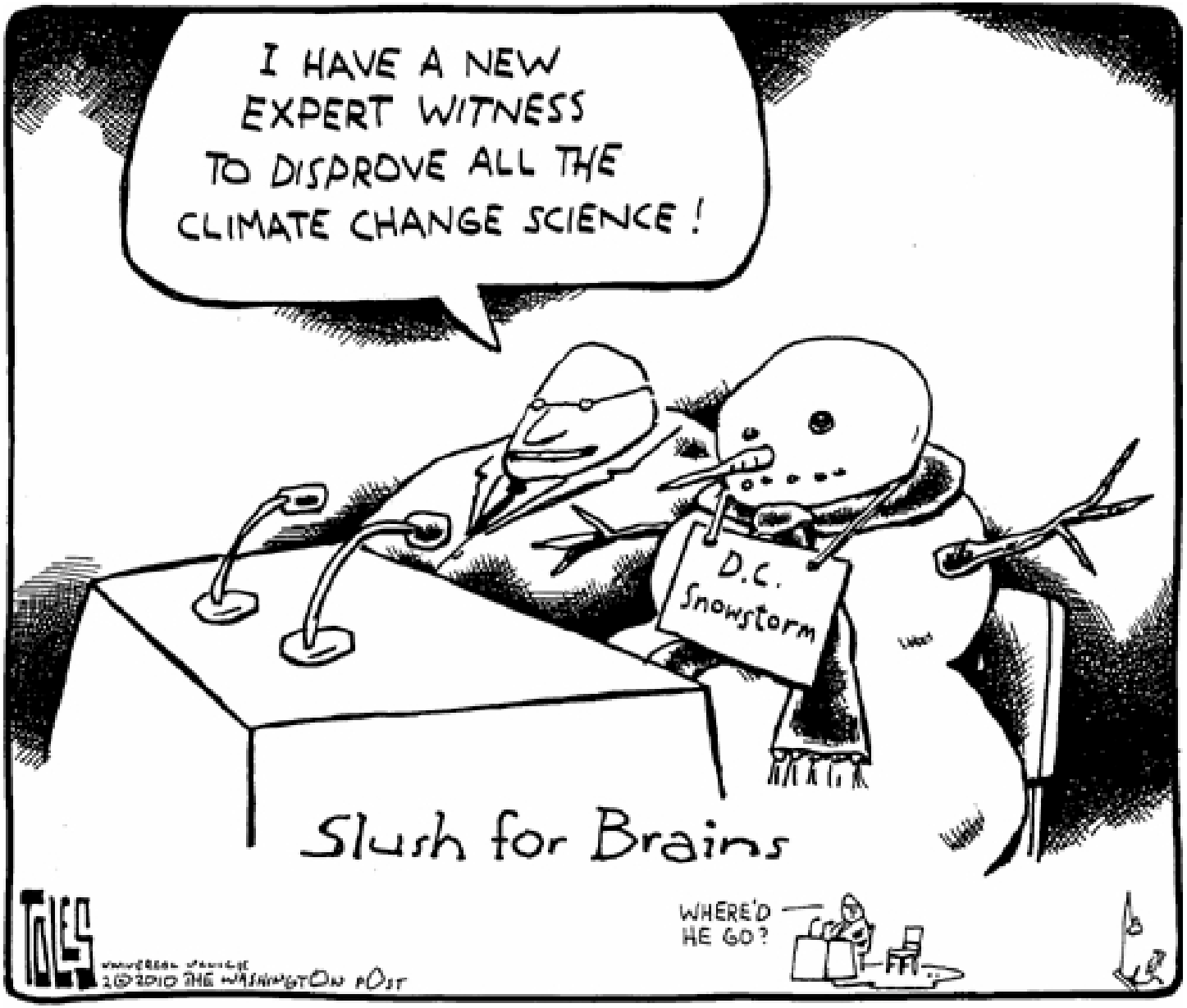
21st century trend…?

Climate change and development

1. Introduction
2. **Science**
3. Impacts
4. Implications
5. Migration
6. Problems
7. Solutions?

Weather ≠ Climate

http://tv.unsw.edu.au/04E68CE0-08D5-11E1-832C0050568336DC

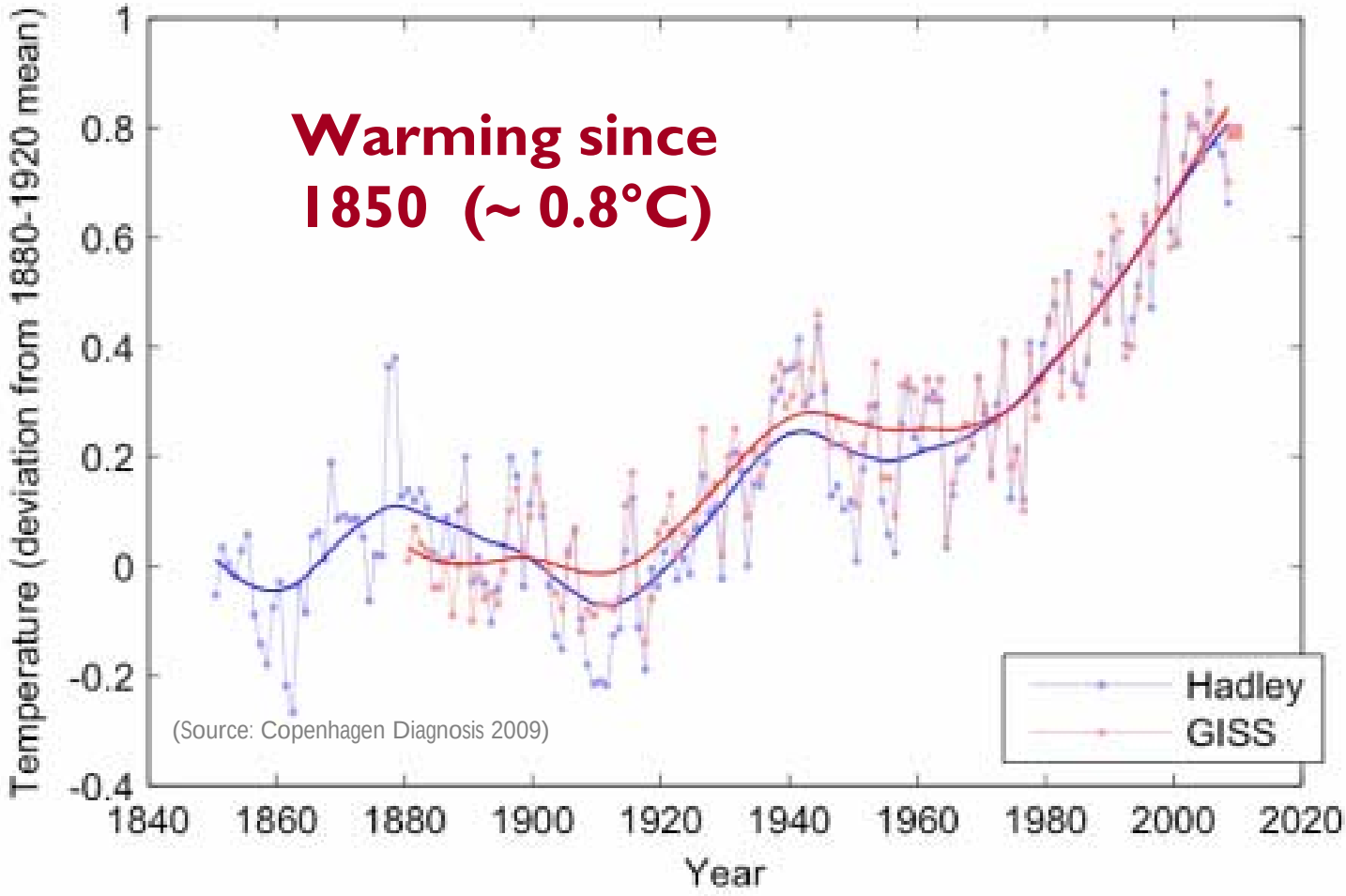


(Source: ppt Stephen H. Schneider)

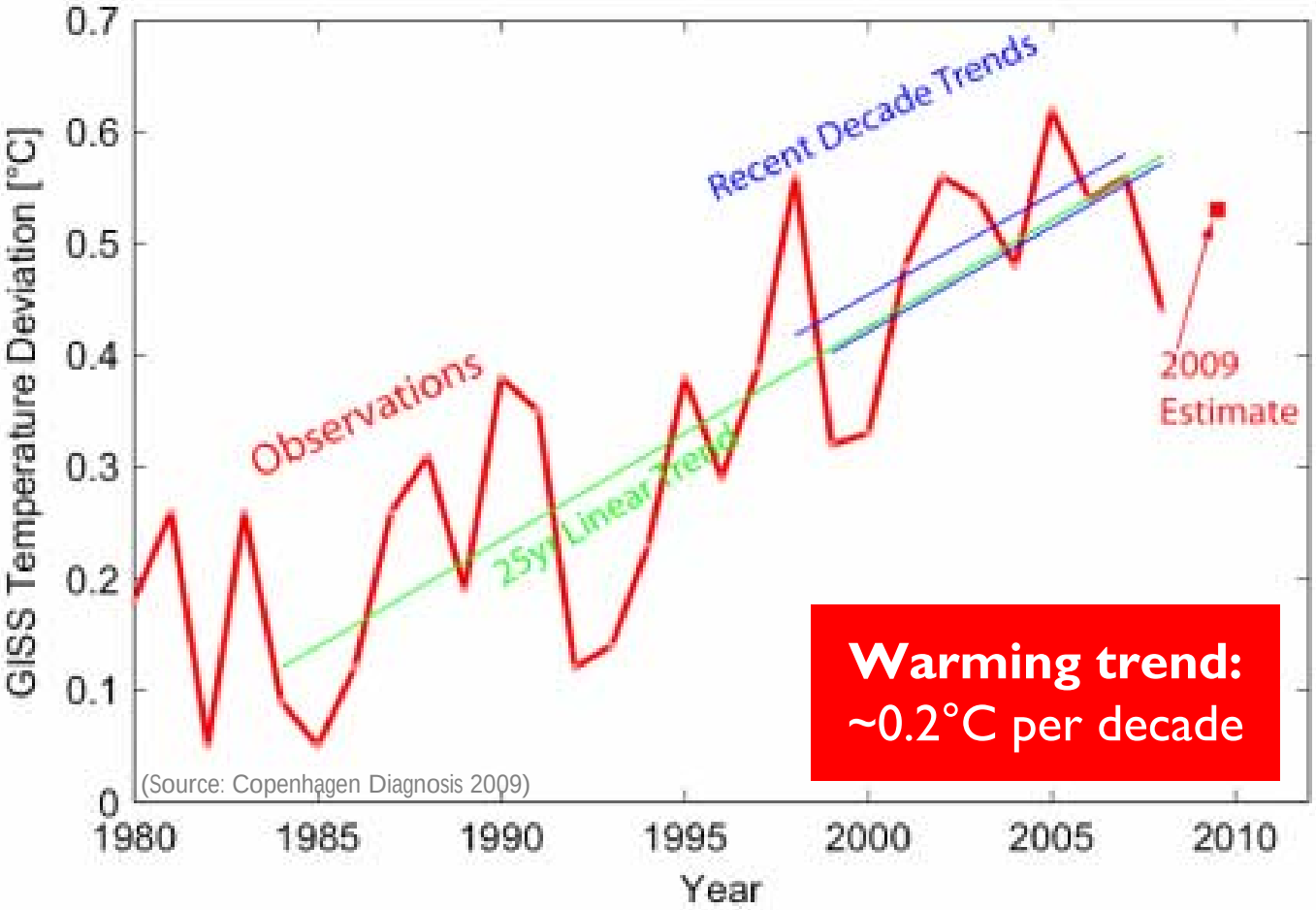
"Hundreds Gather to Protest Global Warming"

(Source: ppt Stephen H. Schneider)

Global average temperature 1850-2009

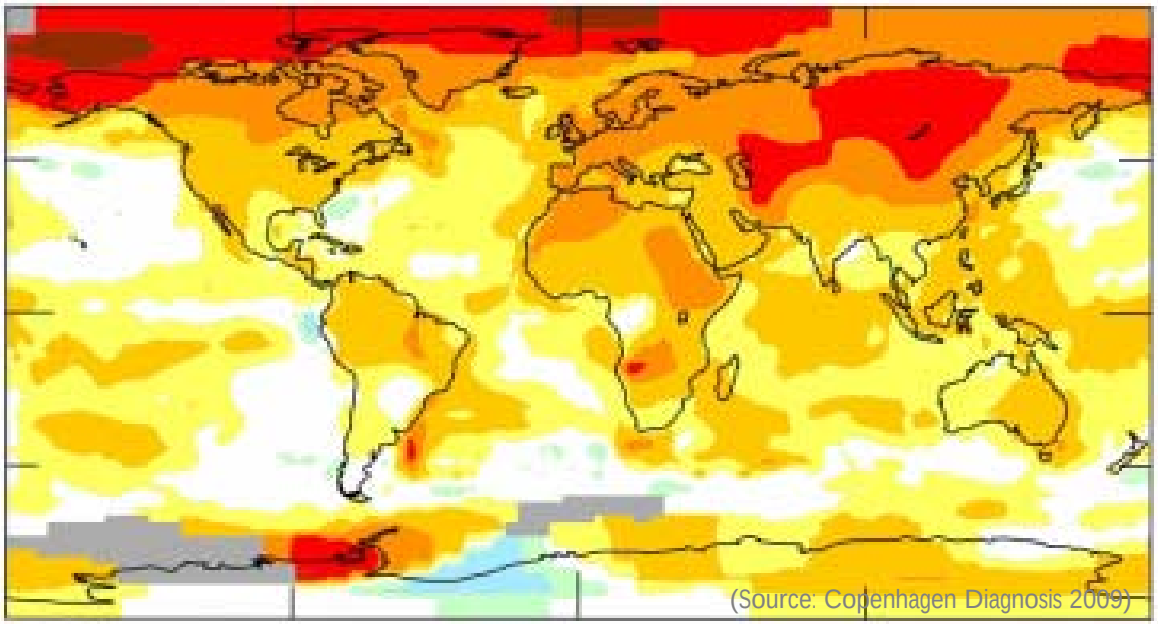


Global temperature change 1980-2009



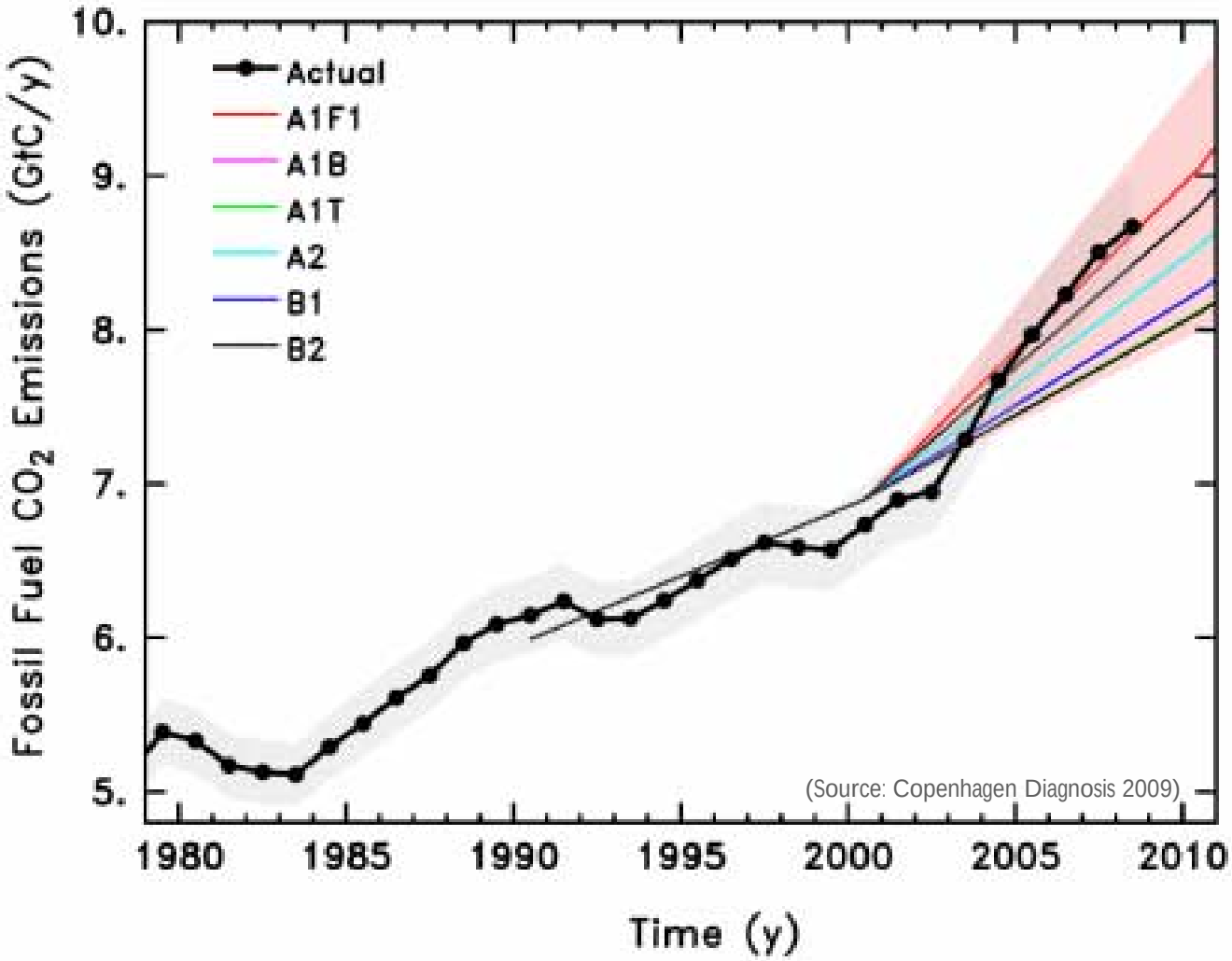
(Source: NASA GISS data)

Mean temperature change between 1950's and 2000's



Among top 10 warmest years
2001
2002
2003
2004
2005
2006
2007
2008
2009

Global CO_2 emissions from fossil fuels



Annual CO_2 Increases:

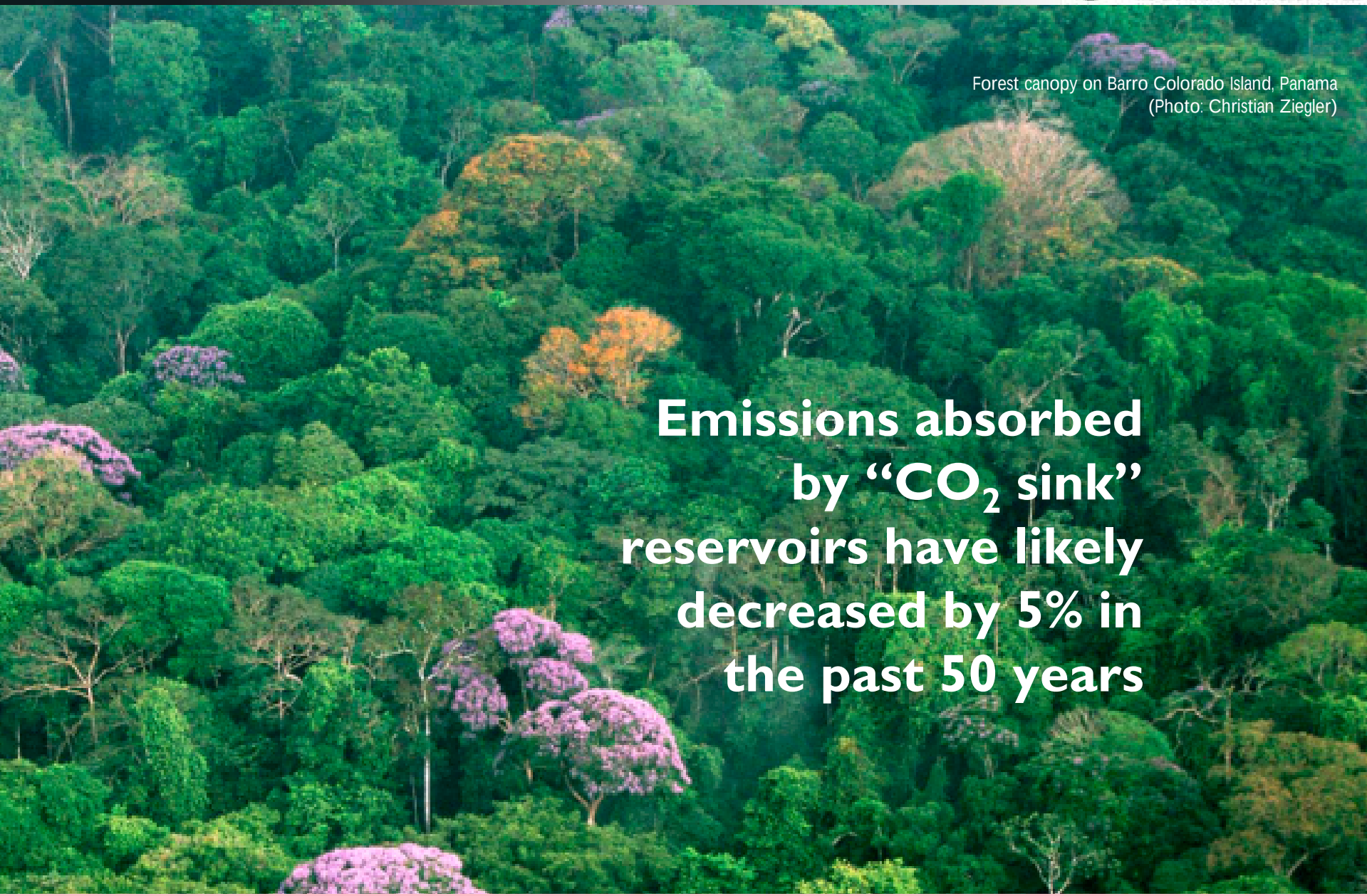
1990s: 1.5 ppm CO_2
Now: 1.9 ppm CO_2

Emissions in 2008: 40% higher than in 1990

Environmental Degradation

Deforestation in the Amazon

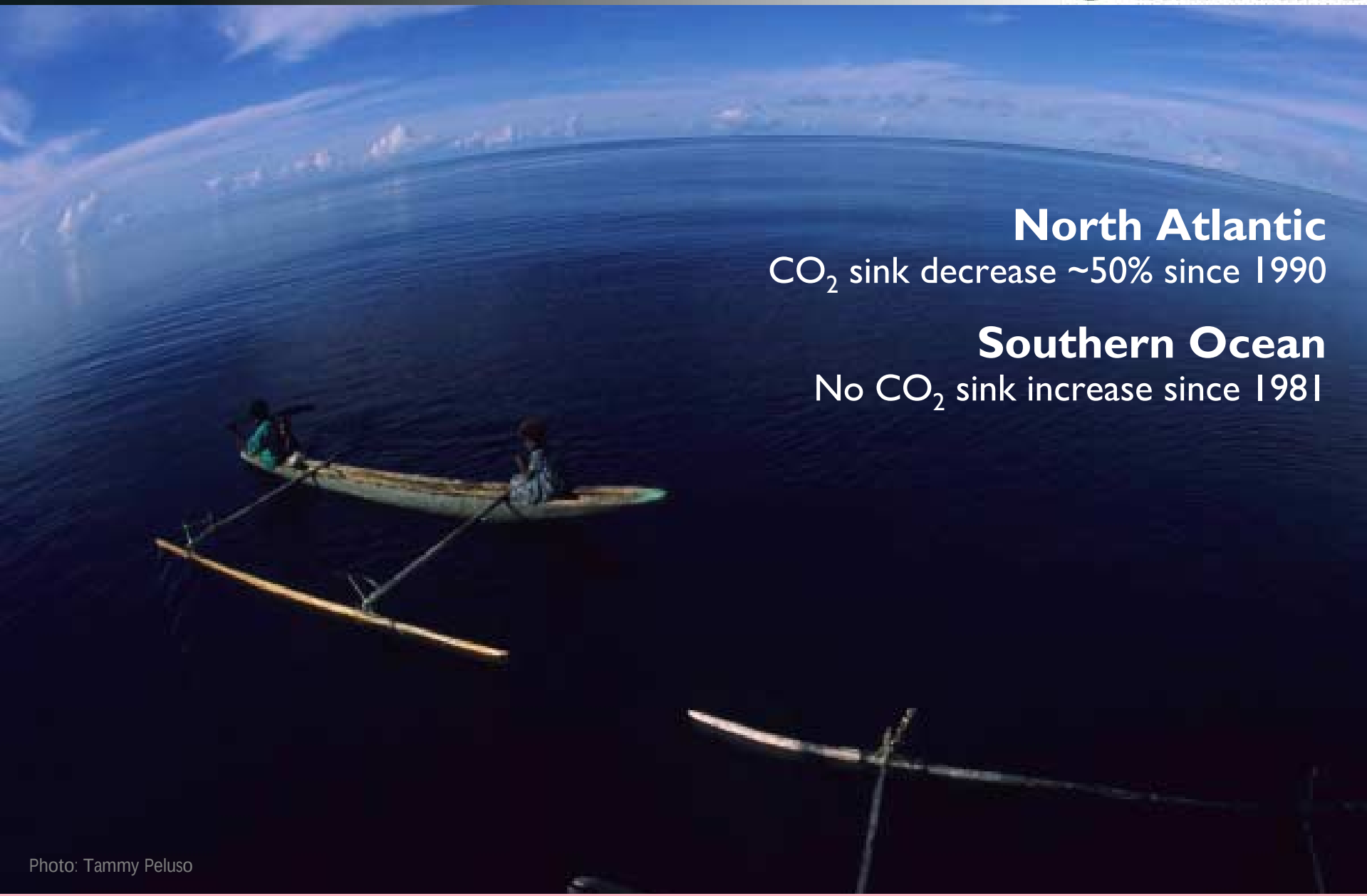
Declining CO_2 Removal?



Forest canopy on Barro Colorado Island, Panama
(Photo: Christian Ziegler)

Emissions absorbed by "CO_2 sink" reservoirs have likely decreased by 5% in the past 50 years

Declining CO_2 Removal?



North Atlantic

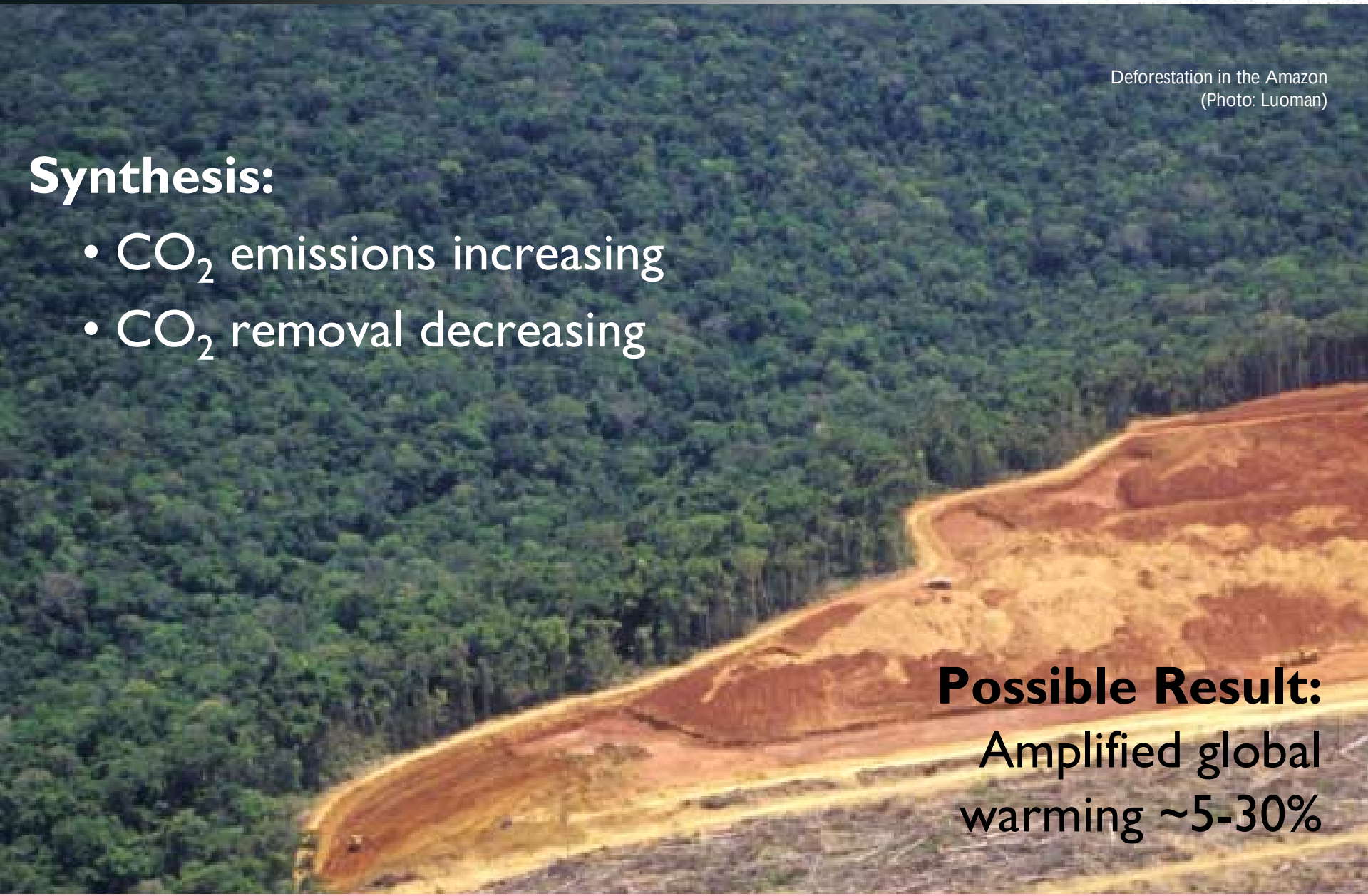
CO_2 sink decrease ~50% since 1990

Southern Ocean

No CO_2 sink increase since 1981

Photo: Tammy Peluso

Declining CO_2 Removal?



Deforestation in the Amazon
(Photo: Luoman)

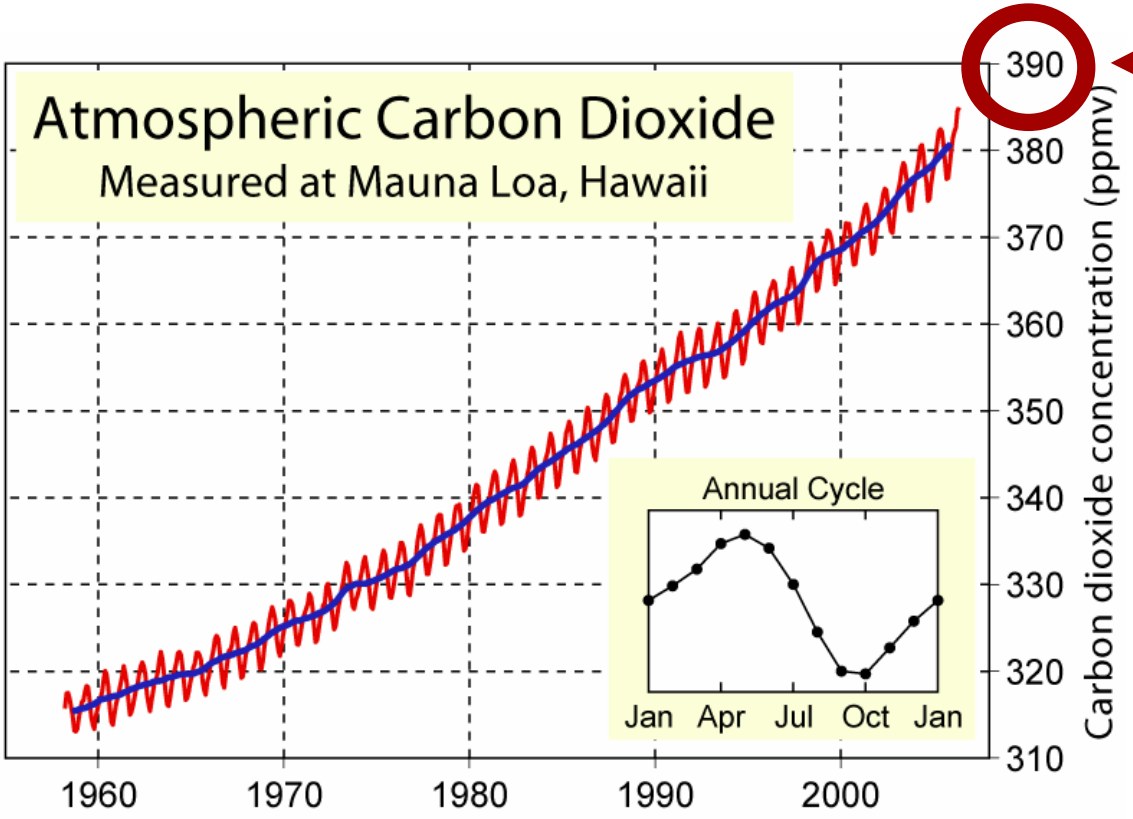
Synthesis:

- CO_2 emissions increasing
- CO_2 removal decreasing

Possible Result:
Amplified global warming ~5-30%

CO_2 Concentrations

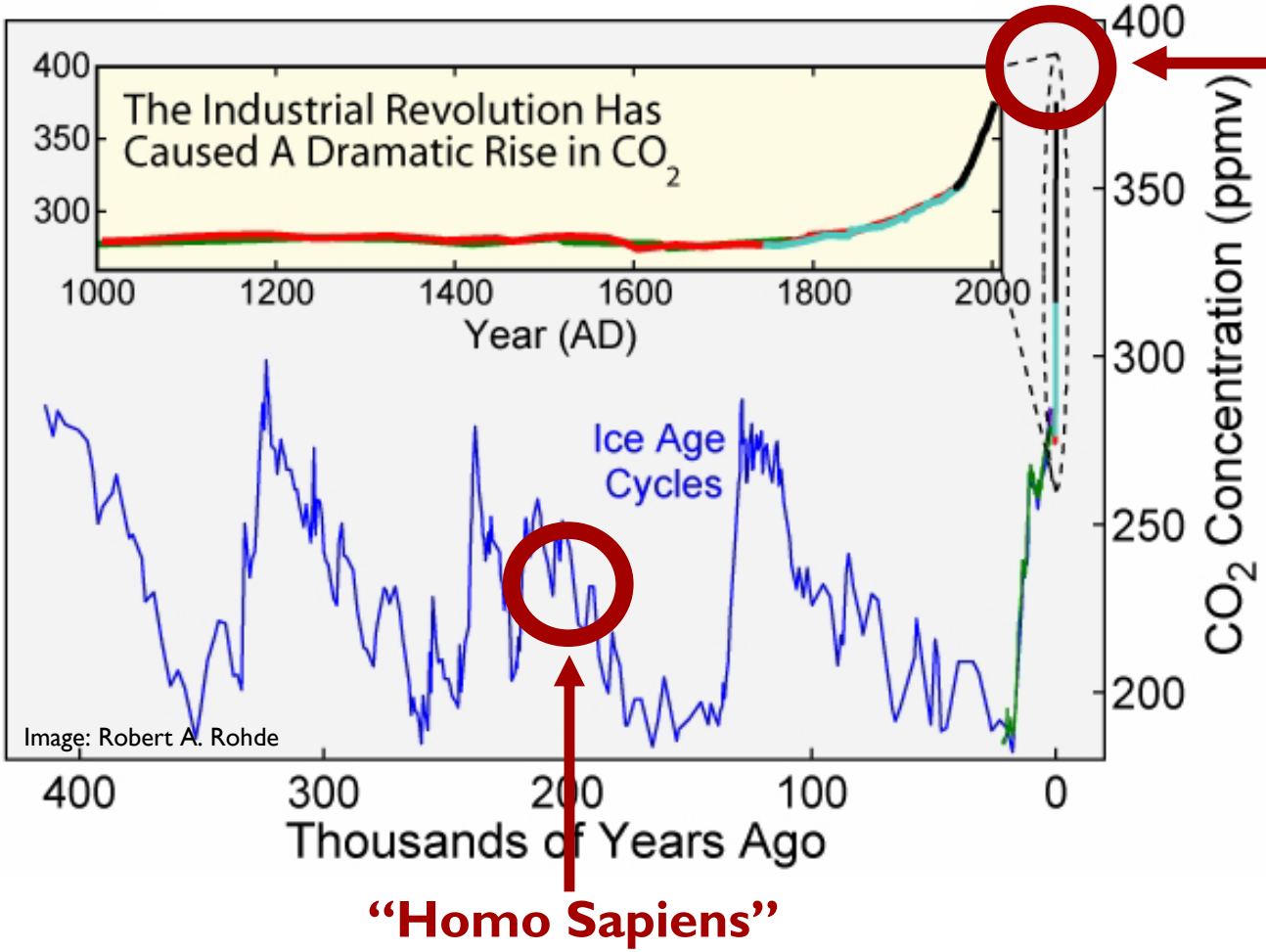
CO_2 level in March 2010: 390 ppm



The Keeling curve is an essential piece of evidence of anthropogenic greenhouse gas increases. The longest such record exists at Mauna Loa, Hawaii.

(Source: National Oceanic and Atmospheric Administration -- ftp://ftp.cmdl.noaa.gov/ccg/co2/trends/co2_mm_mlo.txt).

CO_2 Context



CO_2 level in March 2010: 390 ppm

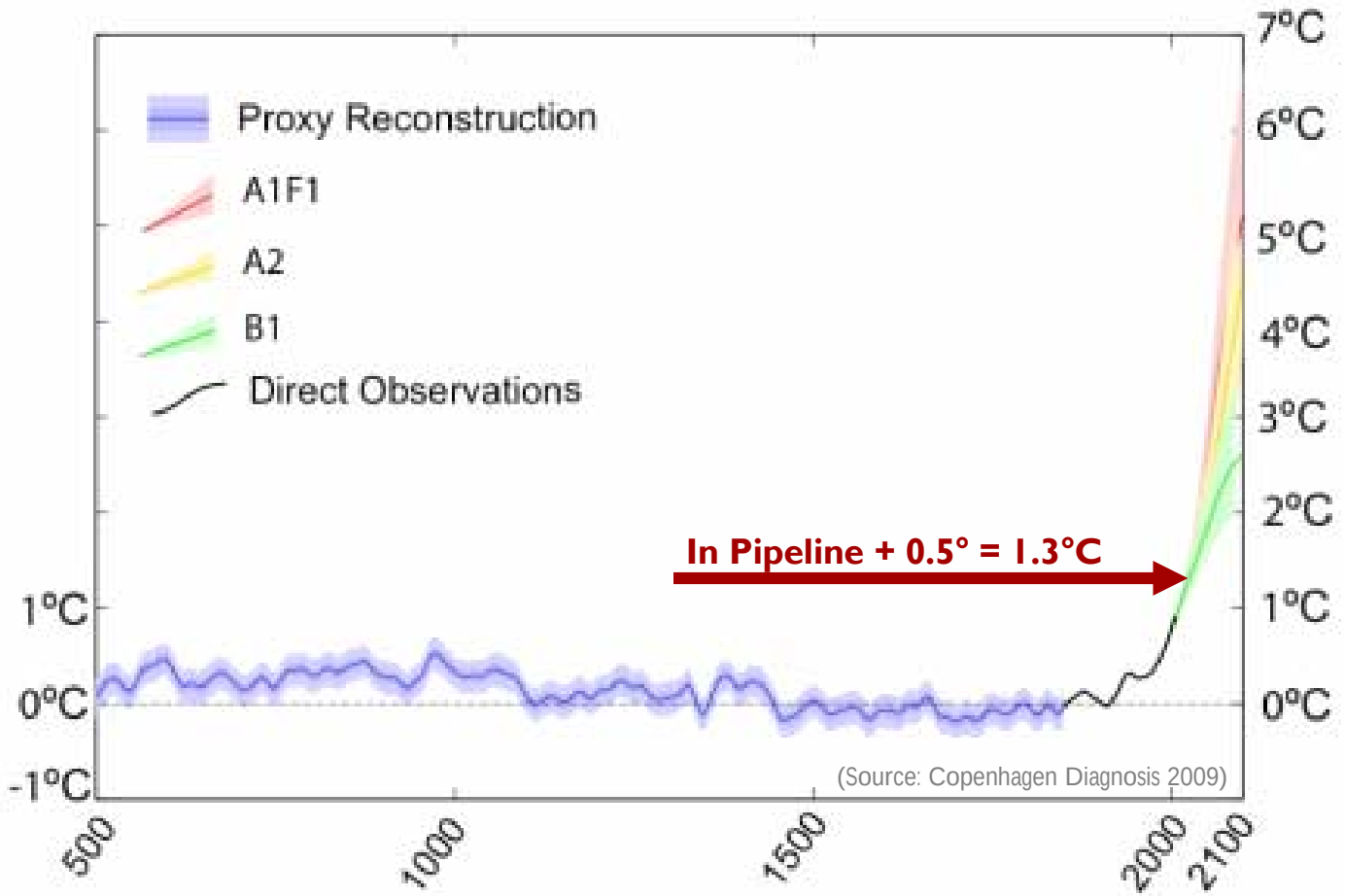
"Homo Sapiens"

Today's CO_2 levels are unprecedented in the last 800,000 years; potentially the last 3-20 million years.

(Sources: 1. (blue) Vostok ice core. 2. (green) EPICA ice core. 3. (red) Law Dome ice core. 4. (cyan) Siple Dome ice core. 5. (black) Mauna Loa)

UNSW THE UNIVERSITY OF NEW SOUTH WALES

Reconstructed, observed and future warming projections

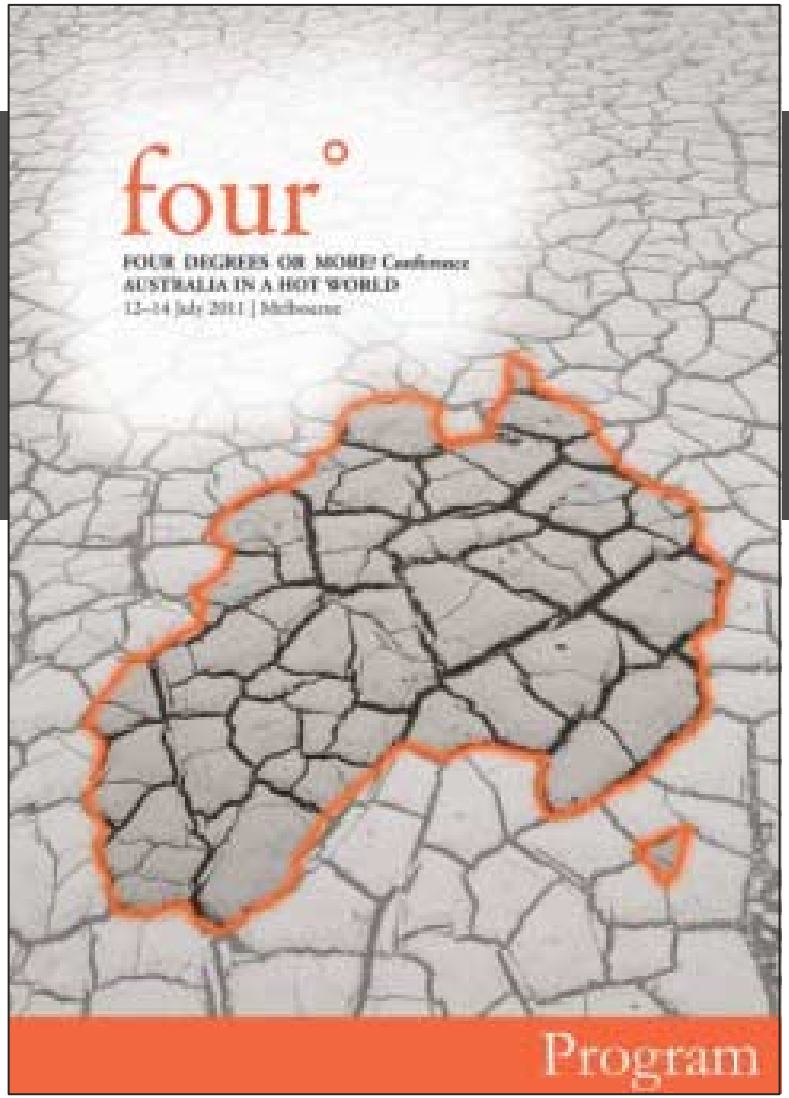


In Pipeline + 0.5° = 1.3°C

Policy Goal: 2.0°C

To Date: 0.8°C

Four degrees or more?



Available resources:

- Audio files
- Presentation files

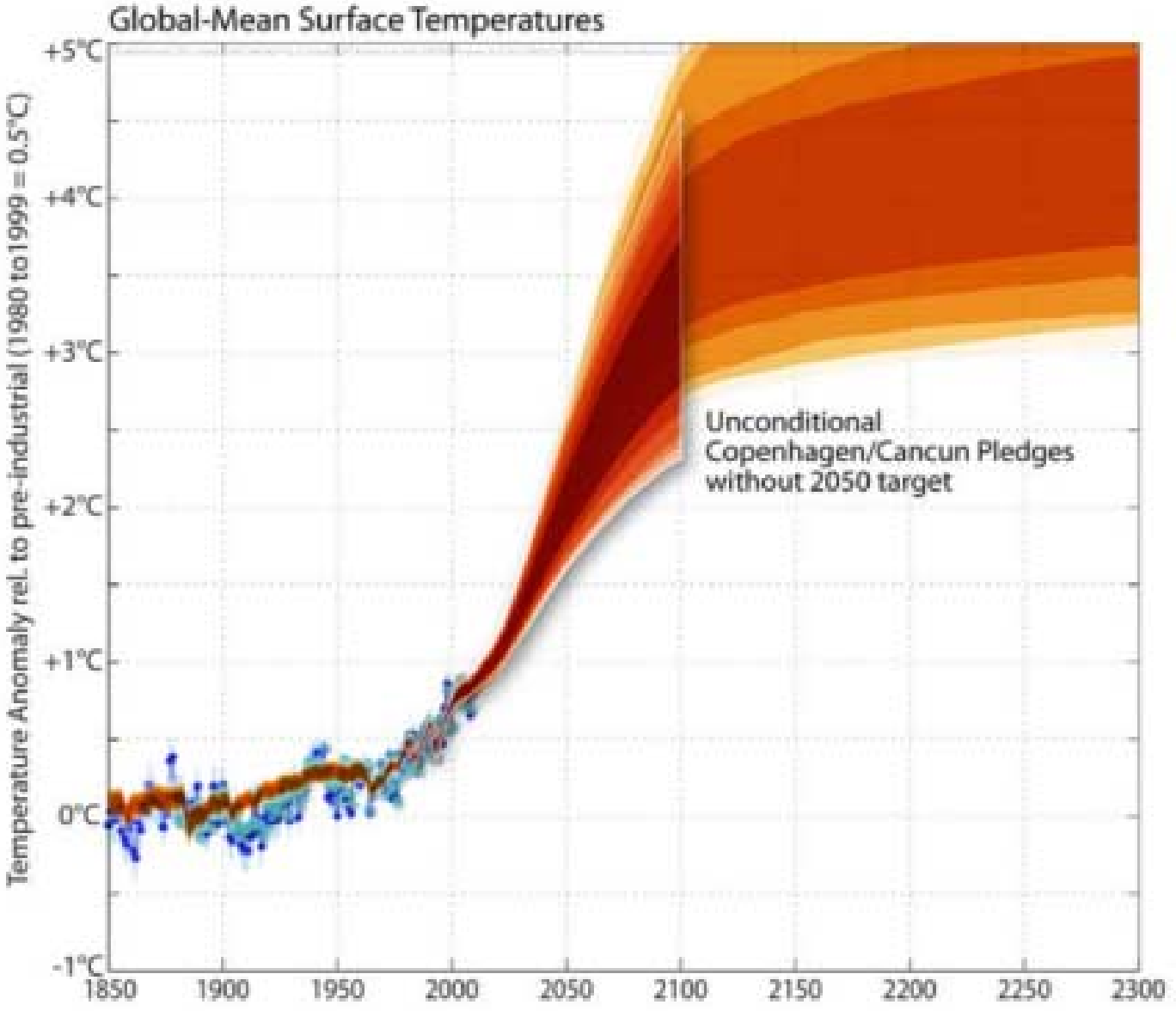
Conference

12-14 July 2011, Melbourne

FOUR DEGREES OR MORE?
AUSTRALIA IN A HOT WORLD

www.fourdegrees2011.com.au

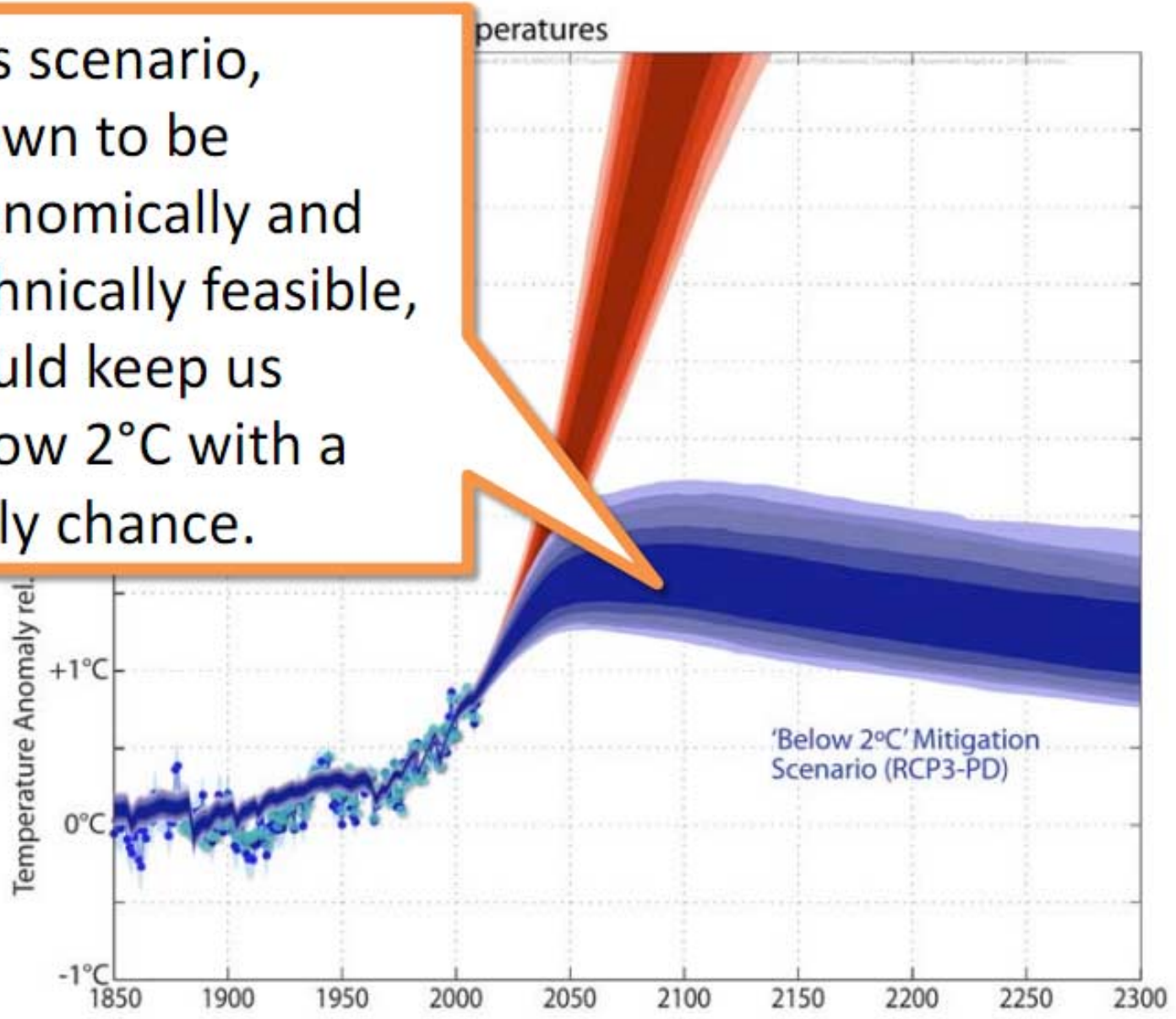
Copenhagen implemented



Based on: Rogelj et al., Nature, 2010

Source: Meinshausen 2011, presentation available: http://www.fourdegrees2011.com.au/presentations/

This scenario, shown to be economically and technically feasible, would keep us below 2°C with a likely chance.



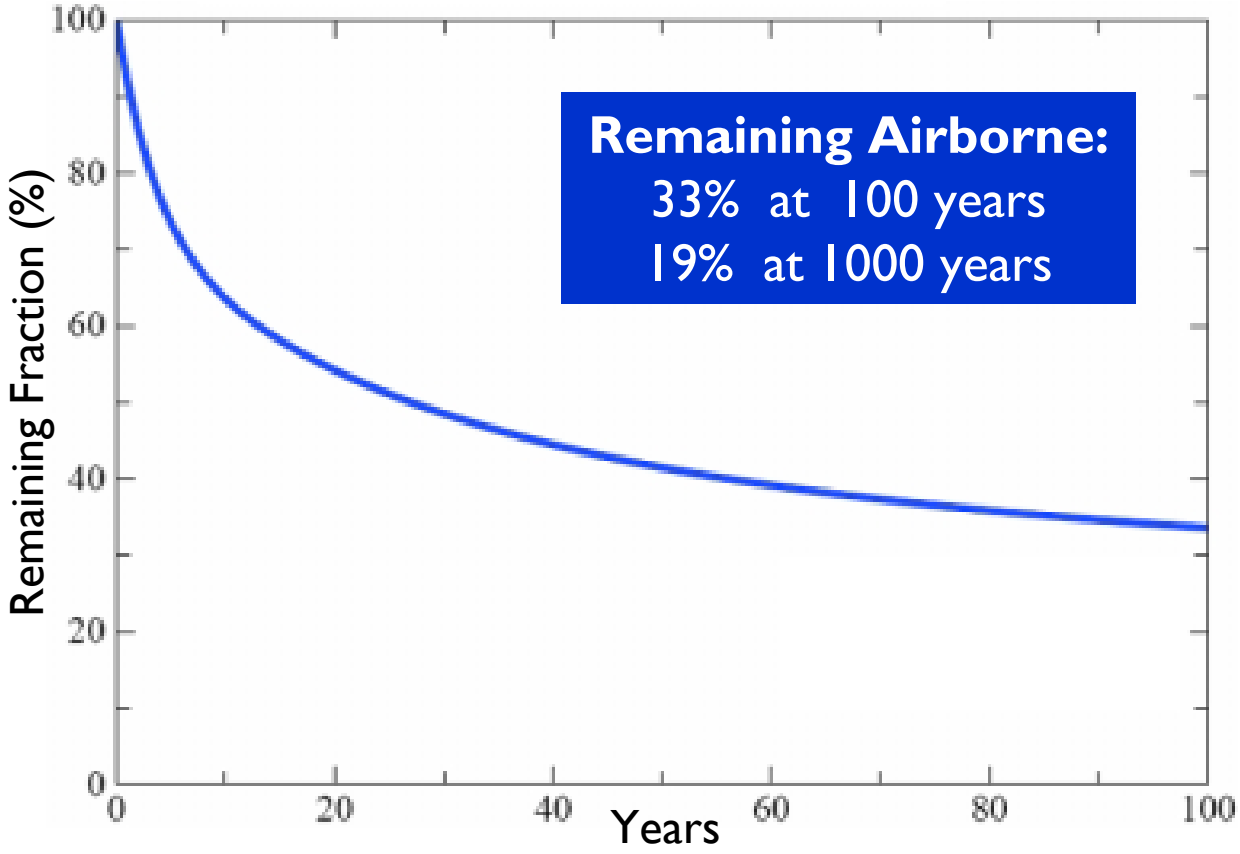
Source: Meinshausen 2011, presentation available: http://www.fourdegrees2011.com.au/presentations/

Stopping Distance

http://tv.unsw.edu.au/video/hit-the-brakes

Longevity of CO_2

Slow decay of fossil fuel CO_2 emissions



The fraction of CO_2 remaining in the air, after emission by fossil fuel burning, declines rapidly at first, but 1/3 remains in the air after a century and 1/5 after a millennium.

(*Atmos. Chem. Phys.* **7**, 2287-2312, 2007).

Longevity of CO_2

Boeing 767-300

1t Jet Fuel Burned
= 3.157t CO_2 Emissions

(Photo: Adrian Pingstone)

Longevity of CO_2

Top of Atmosphere as seen from space at 335km altitude
(Photo: NASA Earth Observatory)

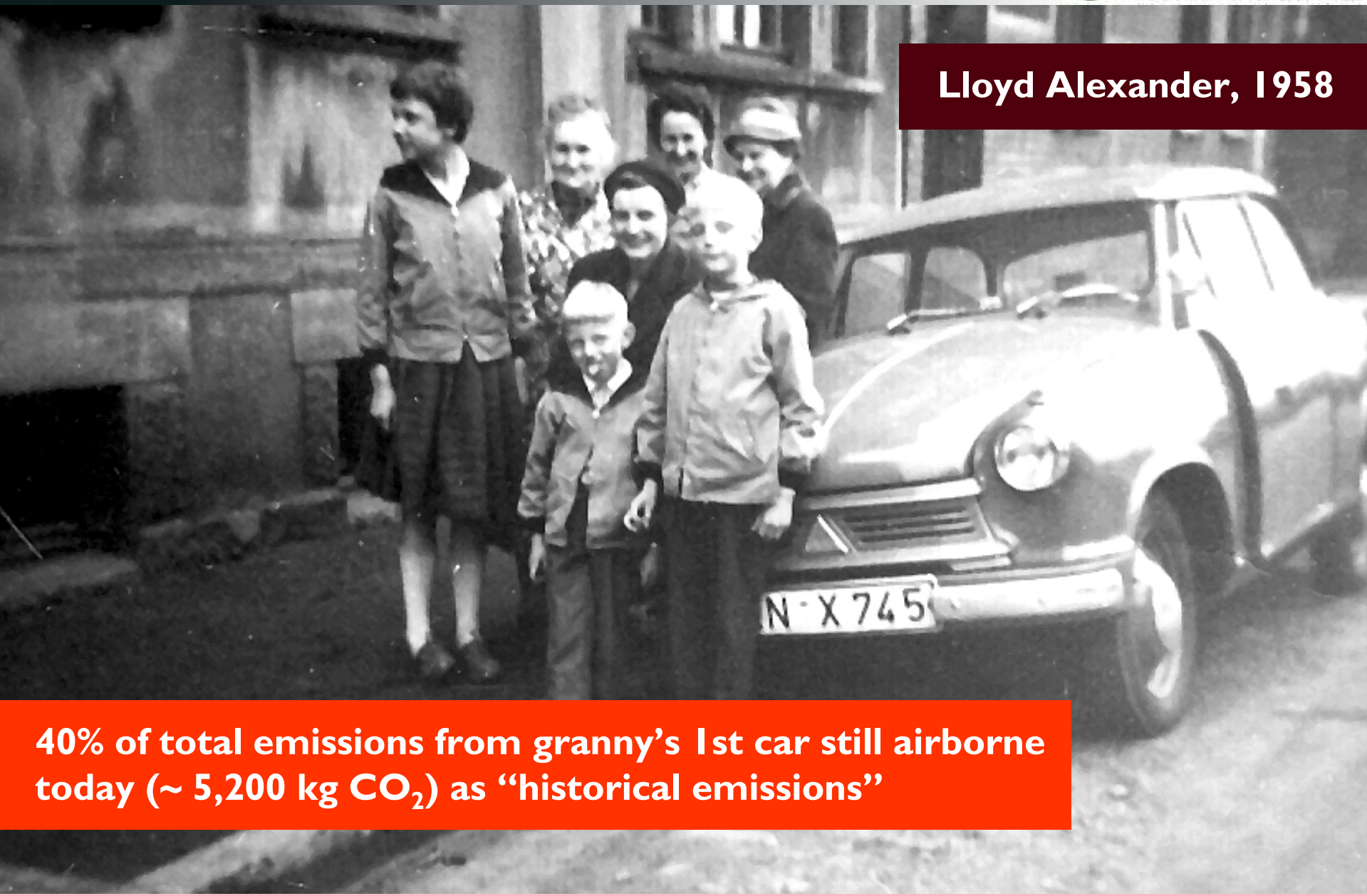
Per-capita emissions for Canada trip in 2010: 1.4t CO_2 (2110: 460kg, 3010: 260kg)

*** 2.7 (Radiative Forcing Index, RFI) = ~ 3.8t CO_2**

Historical Emissions

"Granny Maria" – 1958

Historical Emissions



Lloyd Alexander, 1958

40% of total emissions from granny's 1st car still airborne today (~ 5,200 kg CO_2) as "historical emissions"

Historical Emissions

Cumulative CO_2 Emissions 1850-2006

Rank	Country	Mt CO_2e	% of World Total
1	United States of America	333,747.8	29.00%
2	European Union (27)	305,750.1	26.57%
3	China	99,204.2	8.62%
4	Russian Federation	93,081.6	8.09%
5	Germany	[80,377.0]	[6.99%]
6	United Kingdom	[68,235.8]	[5.93%]
7	Japan	44,535.2	3.87%
8	France	[32,278.6]	[2.81%]
9	India	27,433.6	2.38%
10	Canada	25,133.1	2.18%
Top 10	**Cumulative Total**	**928,886**	**80.71%**

CAIT, World Resources Institute
CAIT GHG data are derived from CDIAC, EDGAR, EIA, EPA, Houghton, IEA, and WB.

Climate change and development

1. Introduction
2. Science
3. **Impacts**
4. Implications
5. Migration
6. Problems
7. Solutions?

Impacts

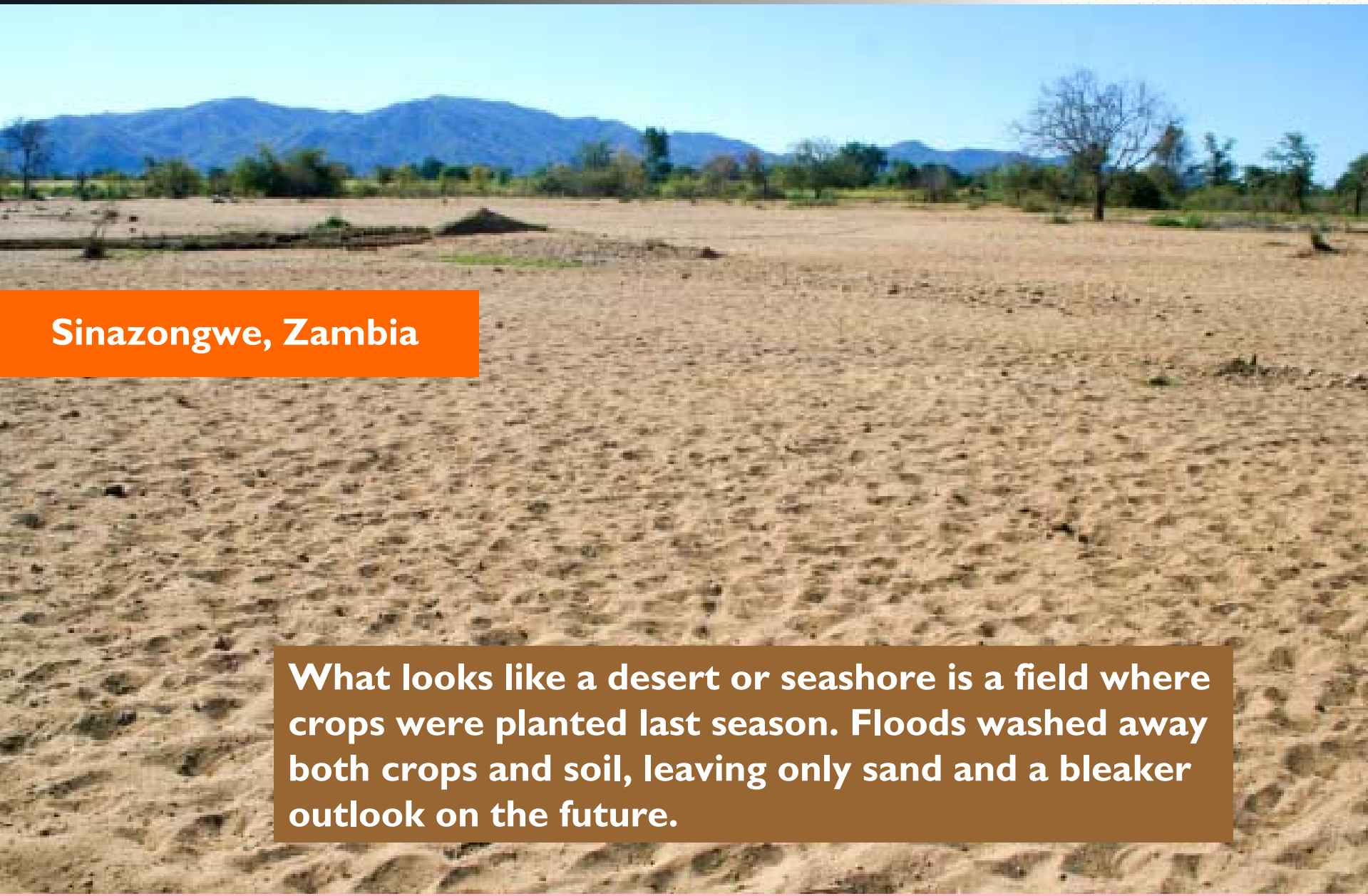
"Climate change will make it harder to manage the world's water. People will feel many of the effects of climate change through water. The entire water cycle will be affected. While the world as a whole will get wetter as warming speeds up the hydrological cycle, increased evaporation will make drought conditions more prevalent. Most places will experience more intense and variable precipitation, often with longer dry periods in between. The effects on human activity and natural systems will be widespread."

—World Bank, World Development Report 2010

Droughts

Droughts

Droughts



Sinazongwe, Zambia

What looks like a desert or seashore is a field where crops were planted last season. Floods washed away both crops and soil, leaving only sand and a bleaker outlook on the future.

Droughts

DRIED**UP**

Kerkorisogal, Kenya: Children learn English under a tree, taught by teacher James Nakure Etot (36). Kerkorisogal is named for the river that runs through it. But the river hasn't flowed in a year and a half. Ekurichanait Naborkut (34), head teacher at Kerkorisogol School, says hunger often hits his classroom hard: "When there is no food, the children become sleepy and are absent."

Floods & Storms

Cainta / Pasig, Philippines: Two days after Typhoon Ketsana/Onday's landfall, World Vision Philippines, with the help of a Coast Guard helicopter, drops 75 relief packs. Flood waters remain high, trapping thousands of people. (September 2009)

WATERED**DOWN**

Floods

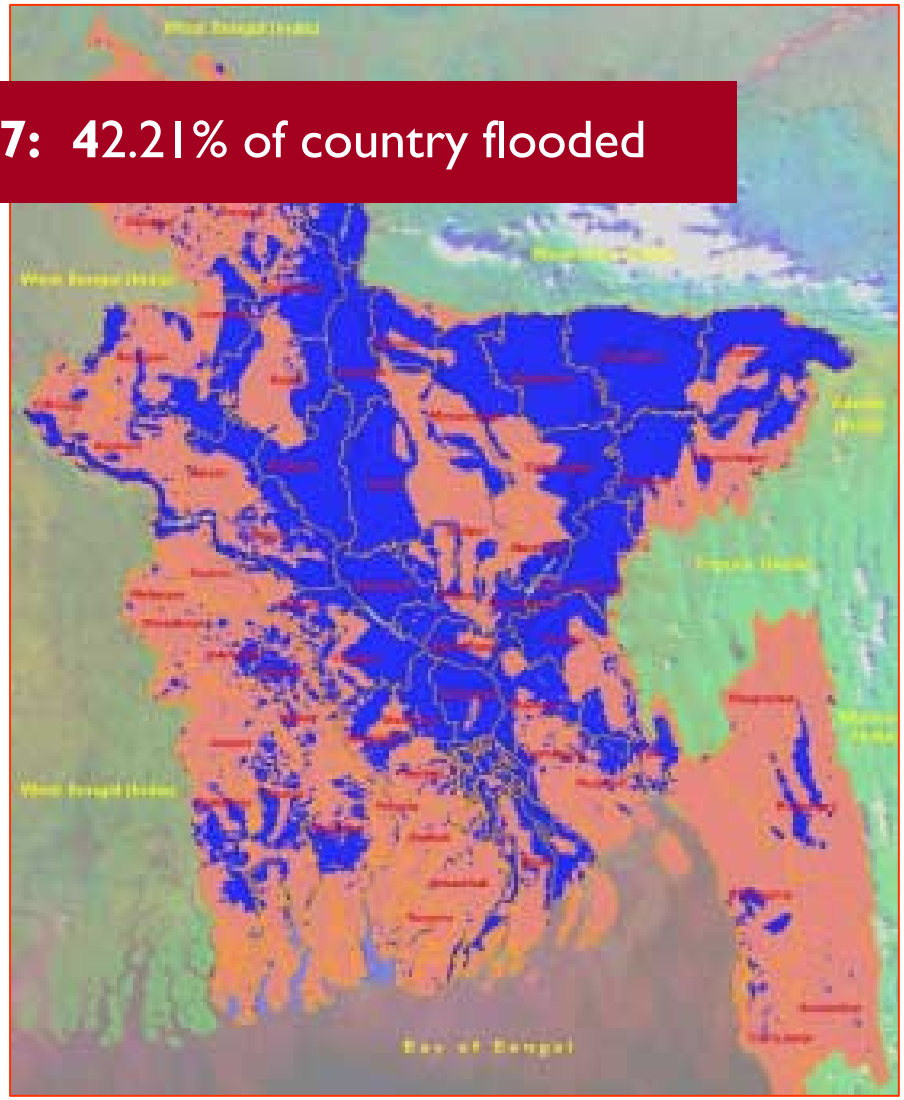
Precipitation rate increase by 5-10% per °C warming

"When it rains, it pours"

Khailshabunia (Bangladesh) under water

Photo: Amio Ascension / World Vision

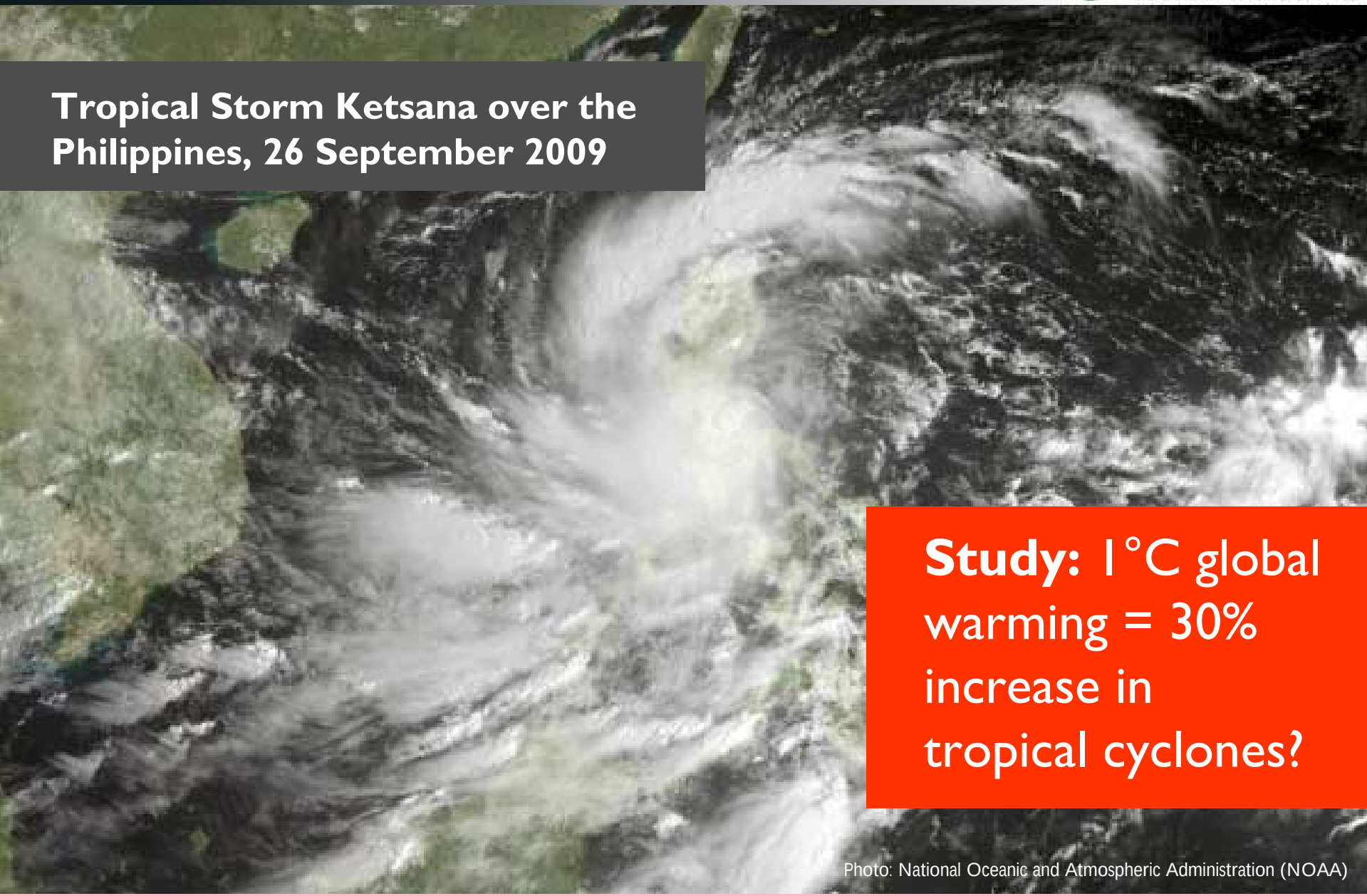
Floods



Bangladesh, world's largest river delta: One-third floods annually during the monsoon. Extreme floods cover up to two-thirds of the country.

Bangladesh Space Research and Remove Sensing Organization (SPARRSO). Satellite image: August 2,3,4,5,7 & 8, 2007

Storms



Tropical Storm Ketsana over the Philippines, 26 September 2009

Study: 1°C global warming = 30% increase in tropical cyclones?

Photo: National Oceanic and Atmospheric Administration (NOAA)

Typhoon Ondoy / Ketsana, 2009

http://www.chrispforr.net/phils/survivors/survivors.htm

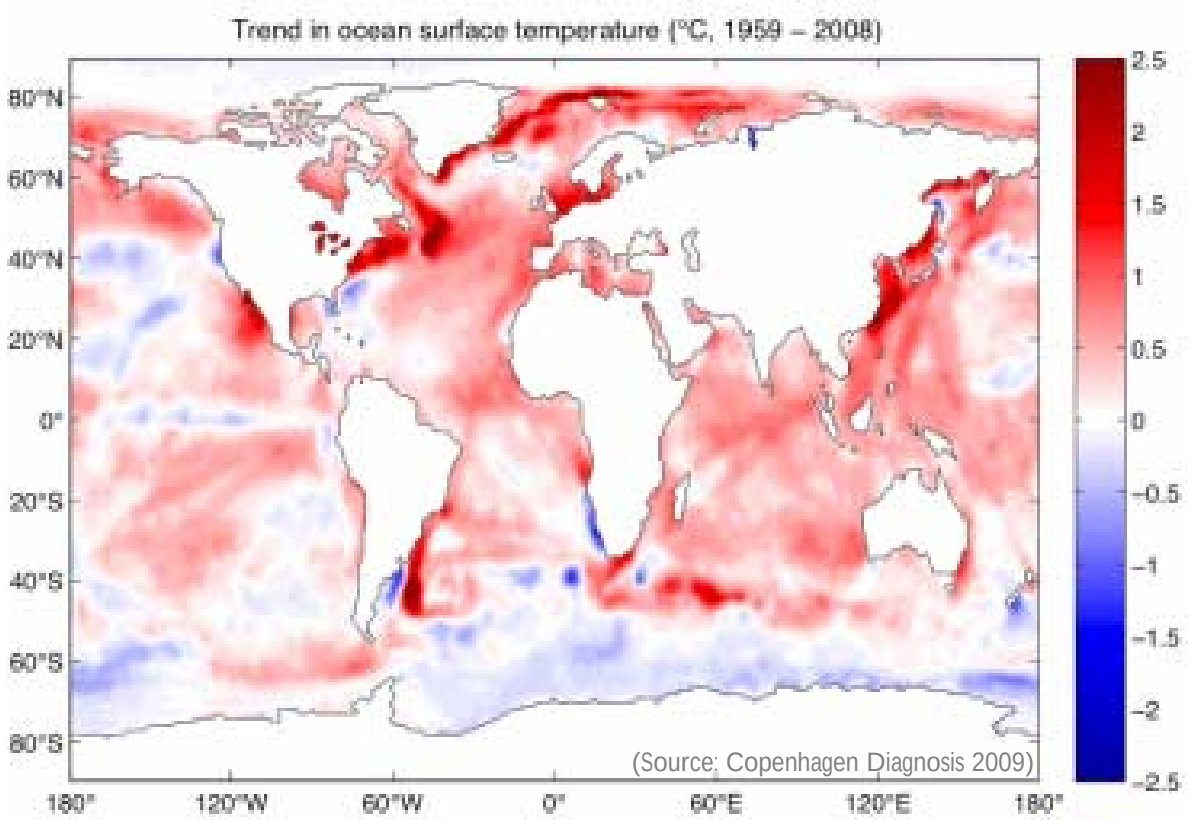
Show field research video footage:

File name "Philippines 5":
20:30 (1min) – Typhoon belt shifted south
31:00 (1min) – Wealth accounting
File name "Philippines 8":
05:00 (1min) – Severe Tropical Storm Washi

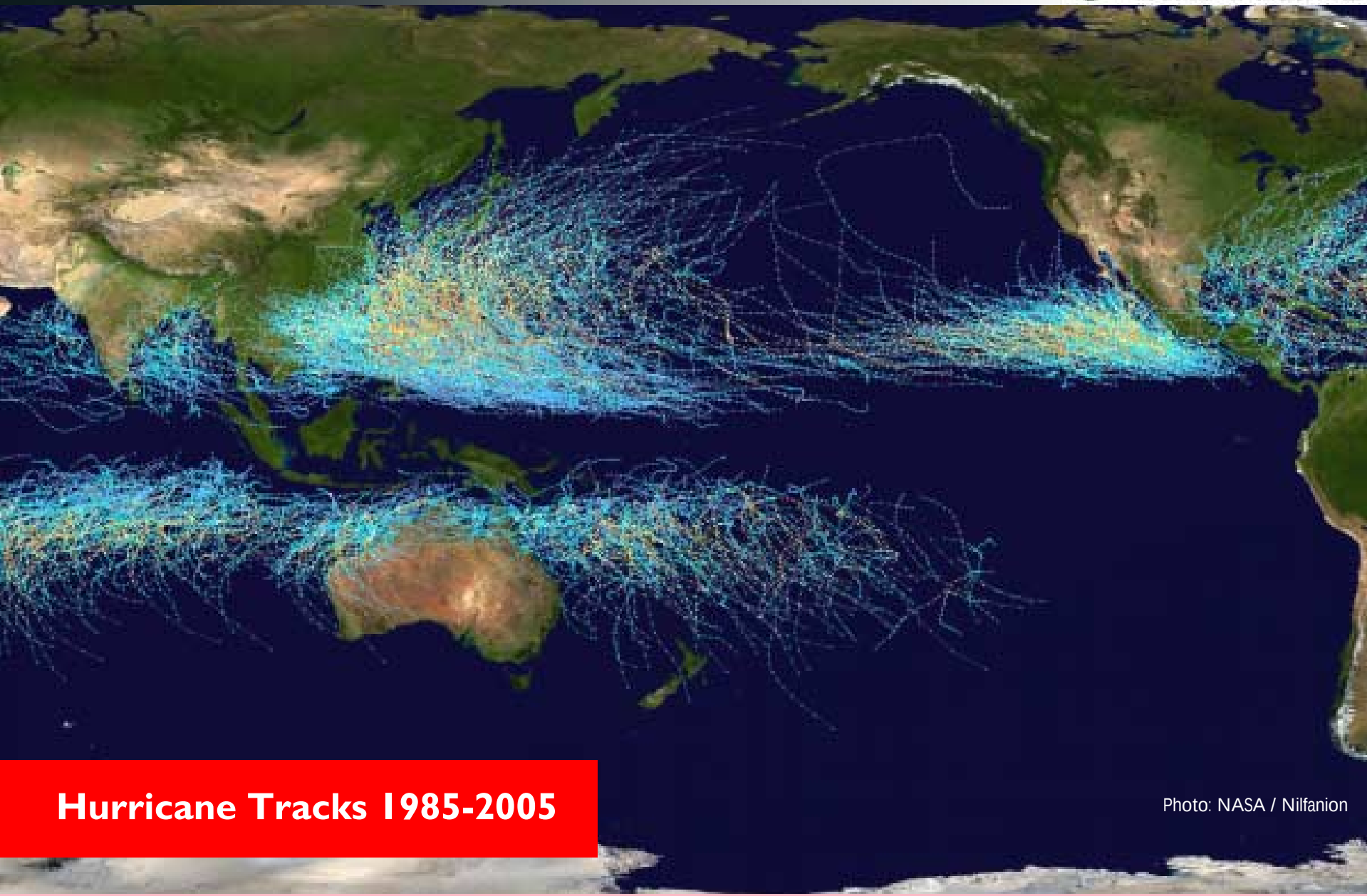
(Photo: Chris Pforr)

Ocean heat uptake

50% higher than previous calculations

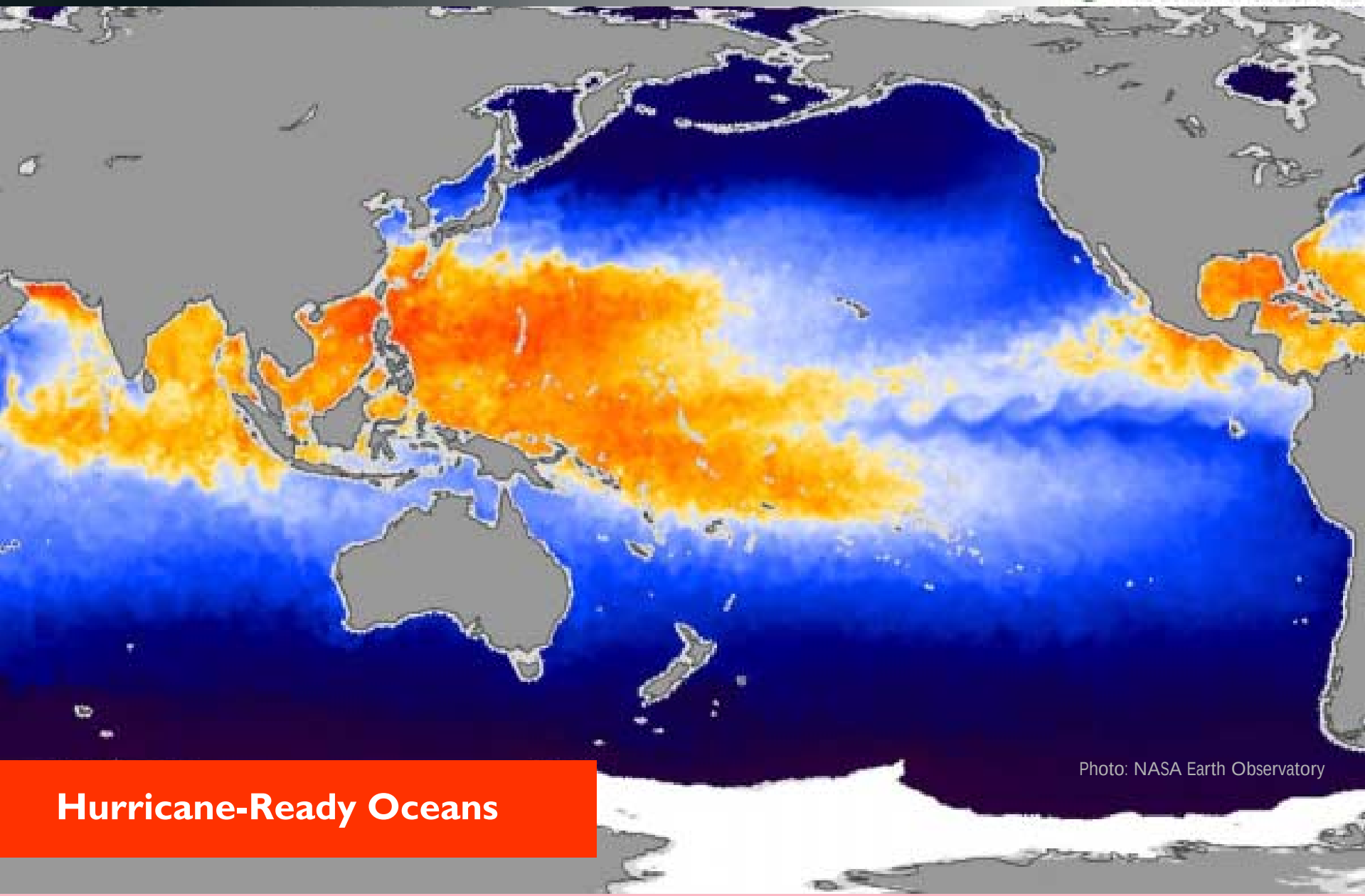


2007:
warmest year ever recorded



Hurricane Tracks 1985-2005

Photo: NASA / Nilfanion



Hurricane-Ready Oceans

Photo: NASA Earth Observatory

Irrawaddy Delta

Storm Surges: Most lethal aspect of wind storms. Hydrological conditions can lift sea level by multiple metres and drive a massive flood of sea water many kilometres inland.

Irrawaddy Delta

World Bank Natural Disaster Hotspots Report:

"By far the most certain aspect of climate change that will influence surge characteristics is global-mean-sea-level-rise … The overall conclusion is that the surge hazard will evolve significantly during the 21century."

Stronger Storms?

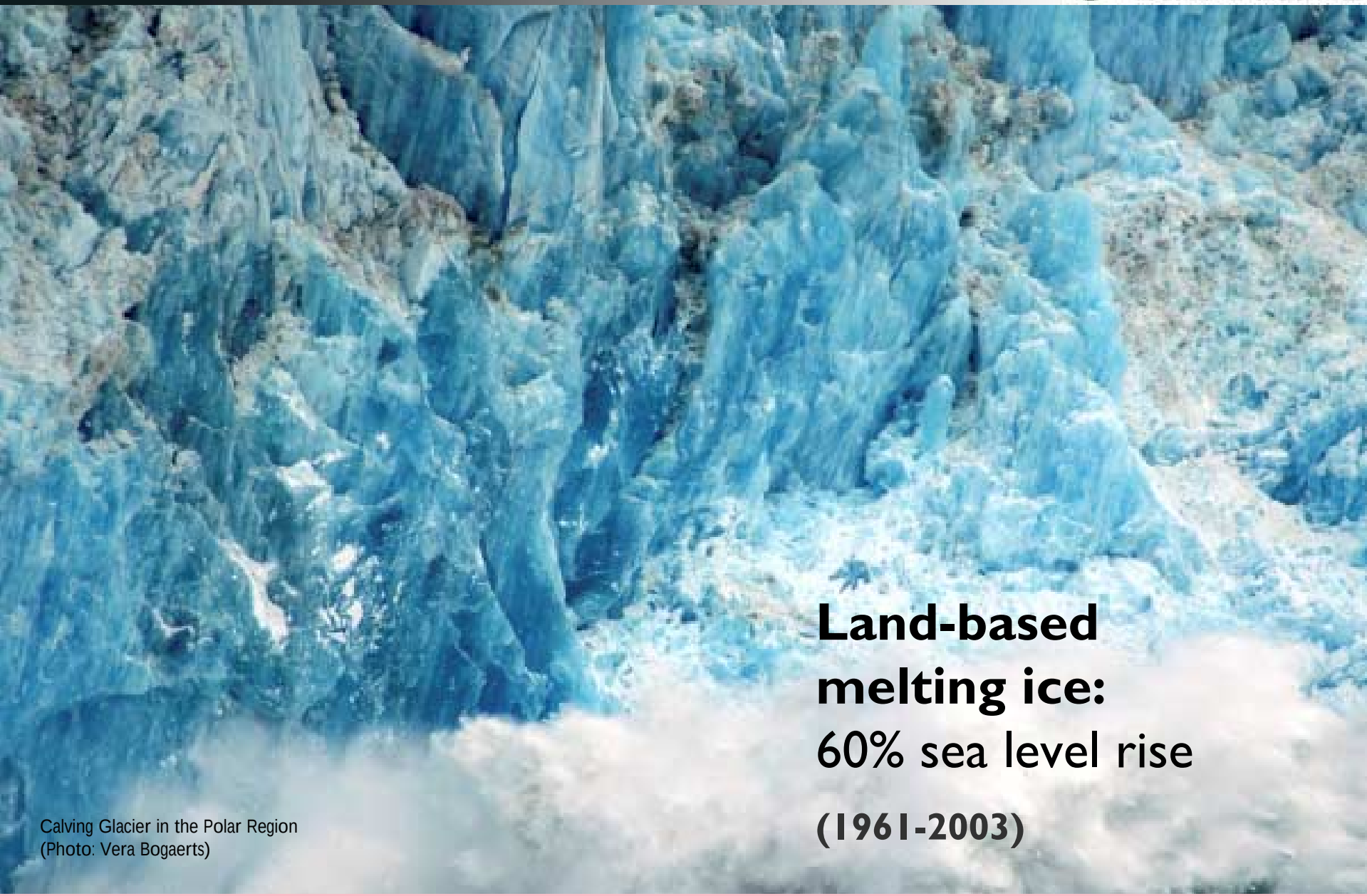
"What we are witnessing is not an aberration, but rather a 'curtain raiser' on the future. These events are not abnormal; they're what I call the 'new normal.' The number of recorded disasters has doubled from approximately 200 to over 400 per year over the past two decades. Nine of out every ten disasters are now climate related. Last year, my office at the UN issued an unprecedented 15 funding appeals for sudden natural disasters, five more than the previous annual record. 14 of them were climate-related."

—Sir John Holmes, UN Under-Secretary General for Humanitarian Affairs and Emergency Relief Coordinator.

Photo: Kirill Putchenko

Sea Level Rise

Sea Level Rise

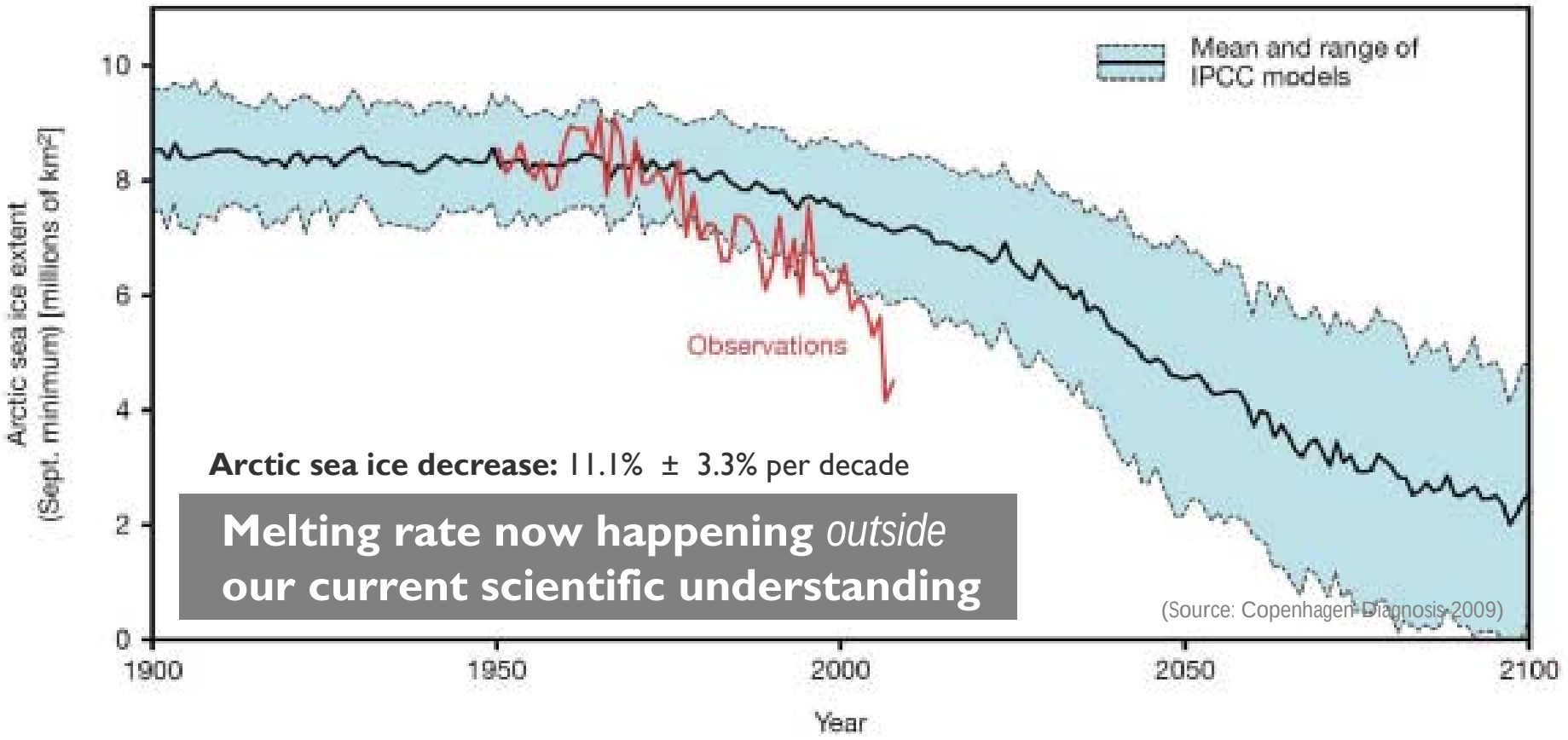


Land-based melting ice:
60% sea level rise

(1961-2003)

Calving Glacier in the Polar Region
(Photo: Vera Bogaerts)

Observed and modeled Arctic sea-ice decline

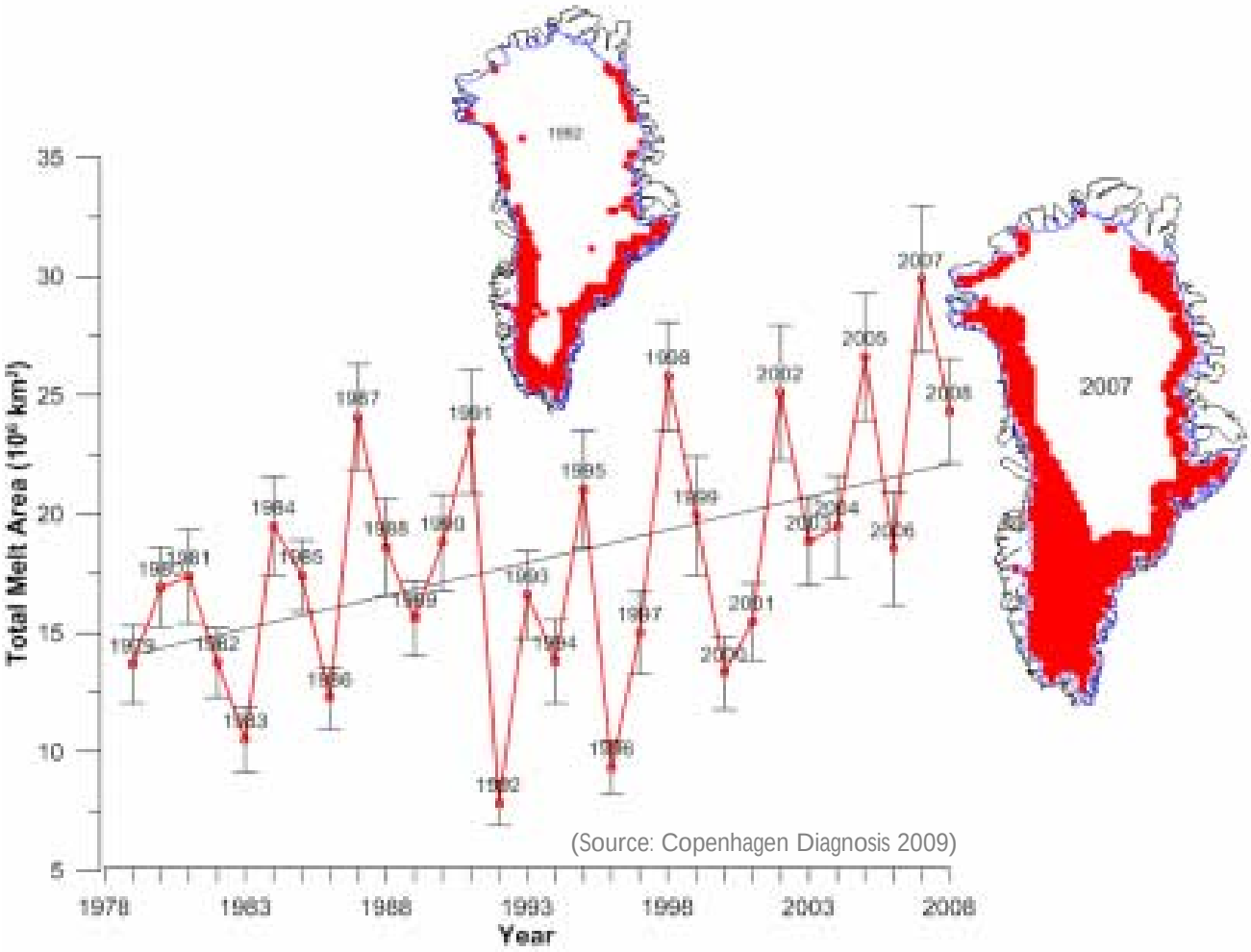


Arctic sea ice decrease: 11.1% ± 3.3% per decade

Melting rate now happening *outside* our current scientific understanding

(Source: Copenhagen Diagnosis 2009)

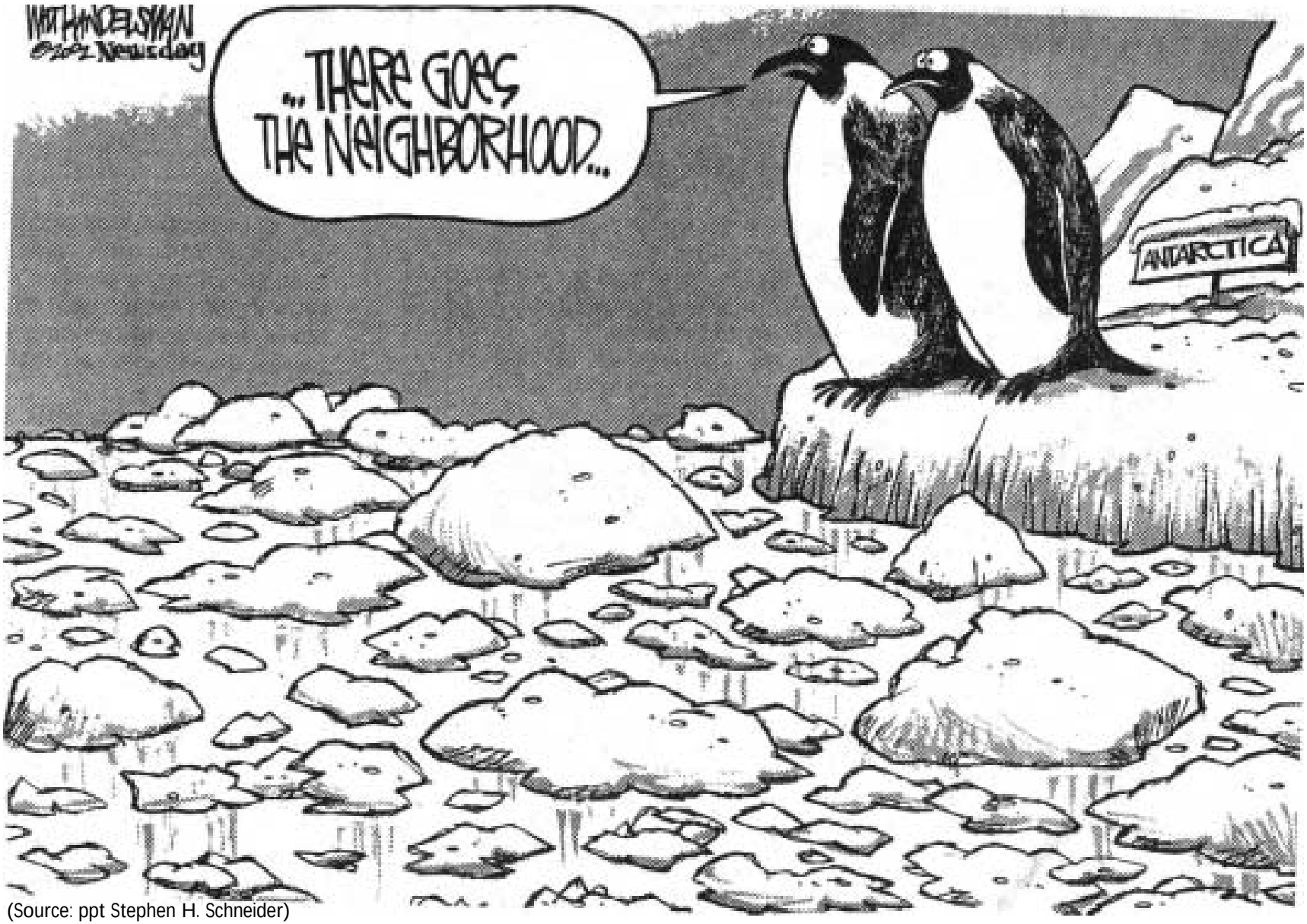
Greenland ice-melt since 1979



2002-2009:
Greenland ice mass loss doubled

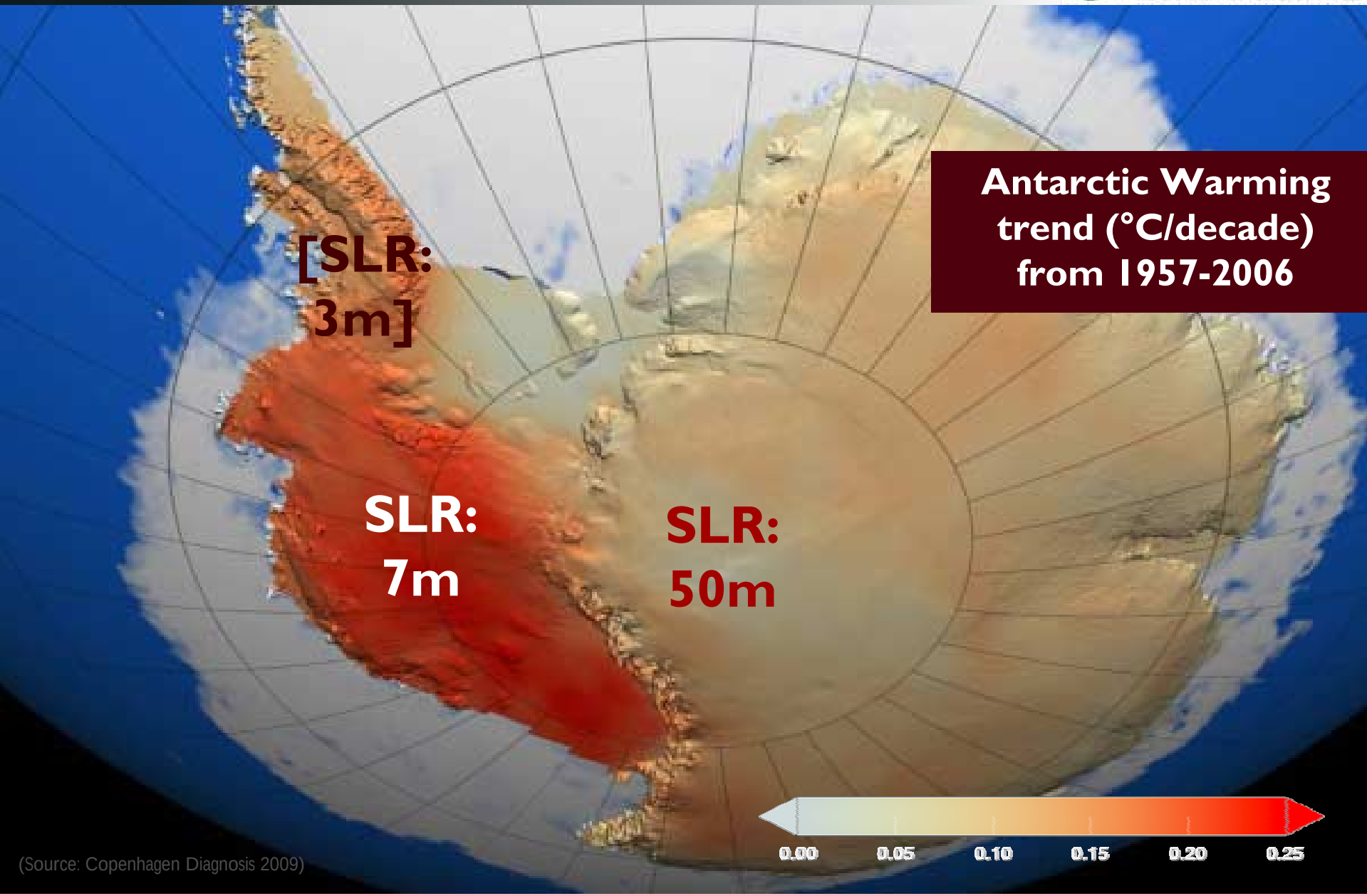
2007:
melting area 50% of total ice sheet

6.6 metres:
Greenland's total SLR potential



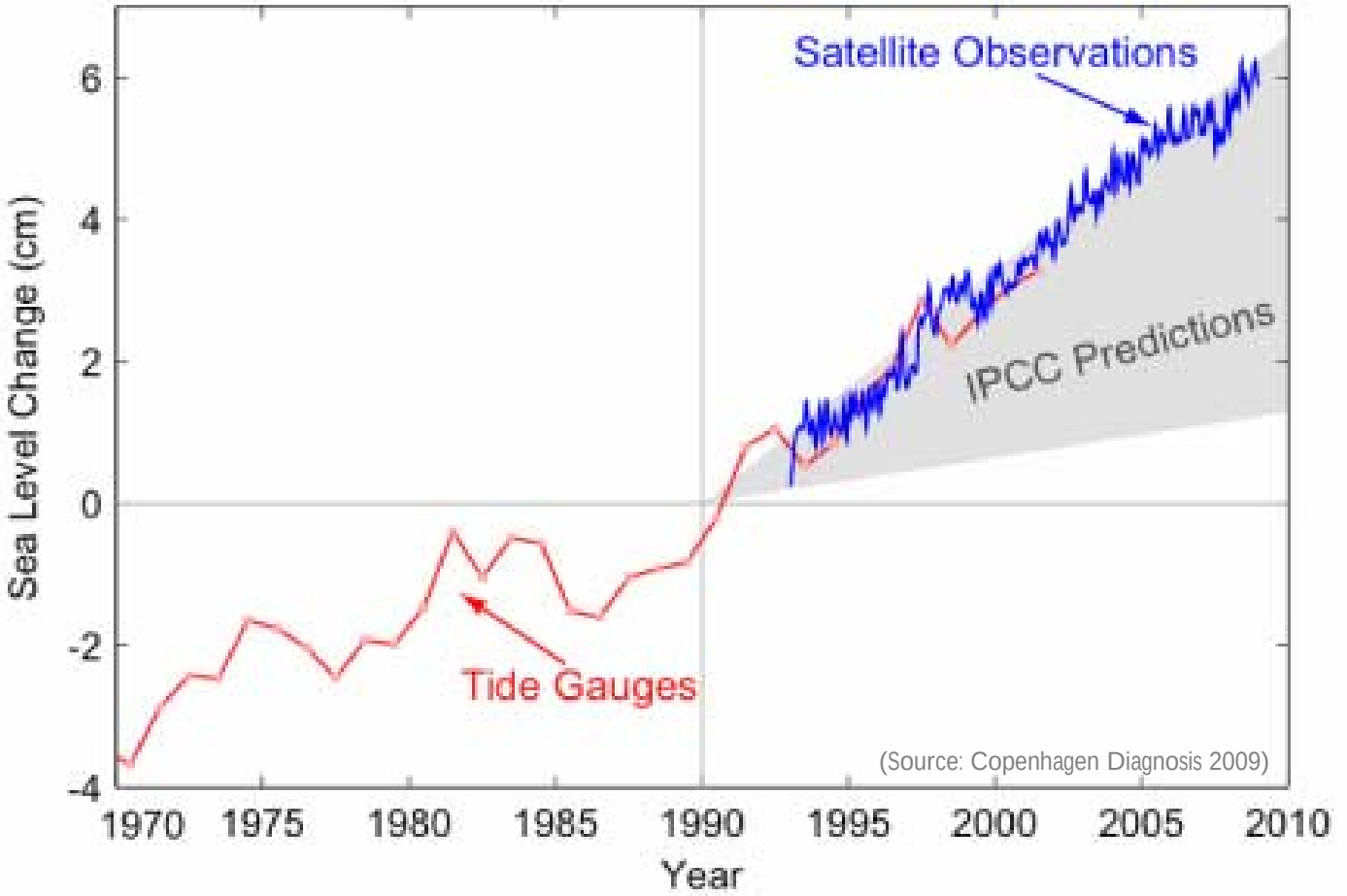
(Source: ppt Stephen H. Schneider)

Sea Level Rise



(Source: Copenhagen Diagnosis 2009)

Global sea level change 1970-2010



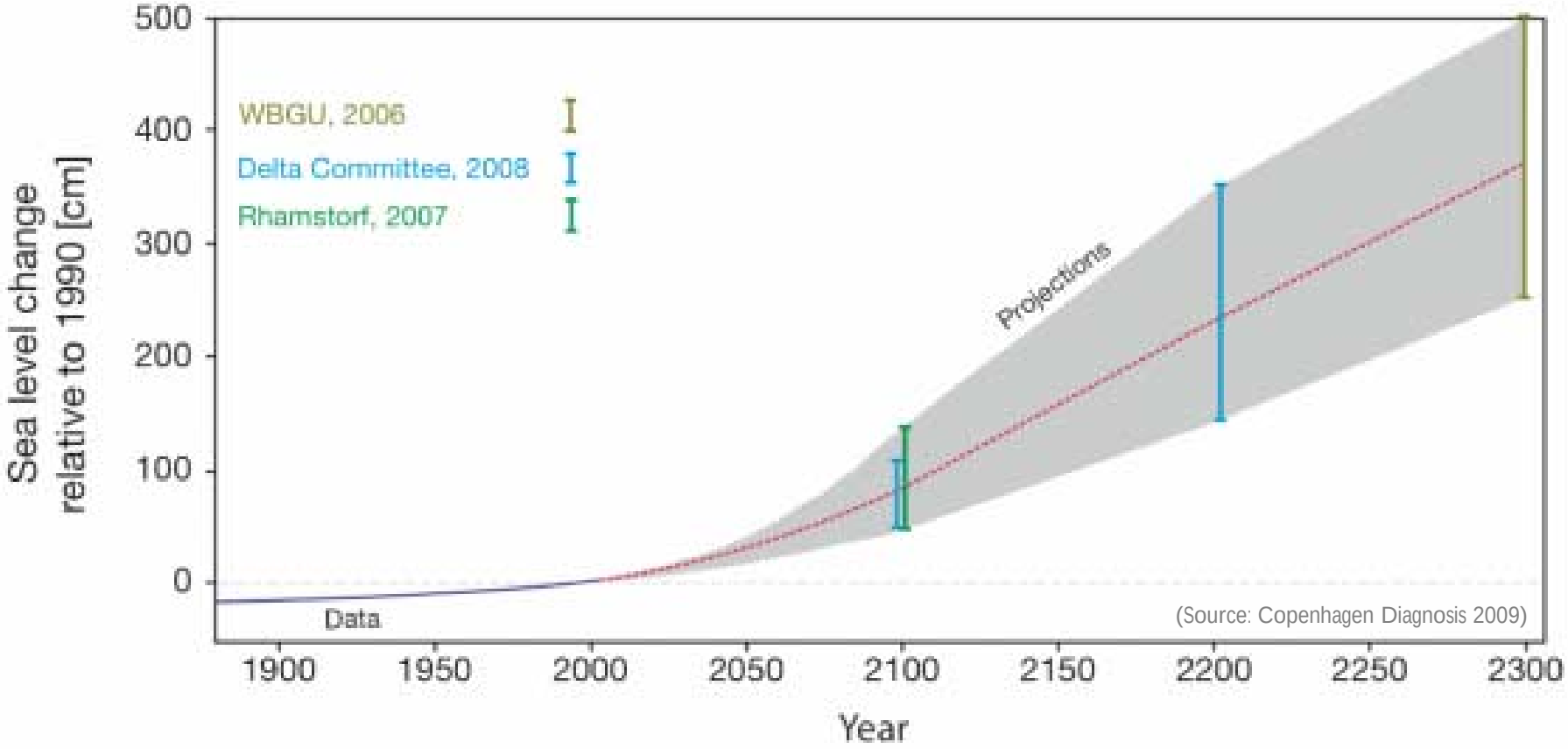
SLR by 2100: 1-2m

Last 15 years: 5cm SLR ~ 80% faster than IPCC

Projected Sea Level Rise

SLR by 2300: up to 5m

Future sea-level projections



Climate change and development

1. Introduction
2. Science
3. Impacts
4. **Implications**
5. Migration
6. Problems
7. Solutions?

Small Island States

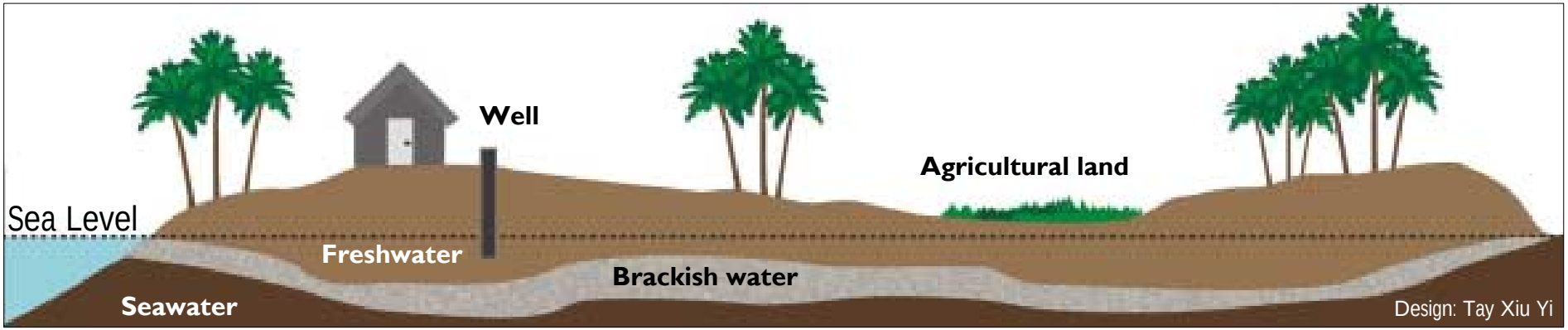
Intergovernmental Panel on Climate Change (IPCC)

Island near Fiji (Photo: Wikipedia)

Fourth Assessment Report, 2007: "By mid-century, climate change is expected to reduce water resources in many small islands … to the point where they become insufficient to meet demand during low-rainfall periods."

Small Island States

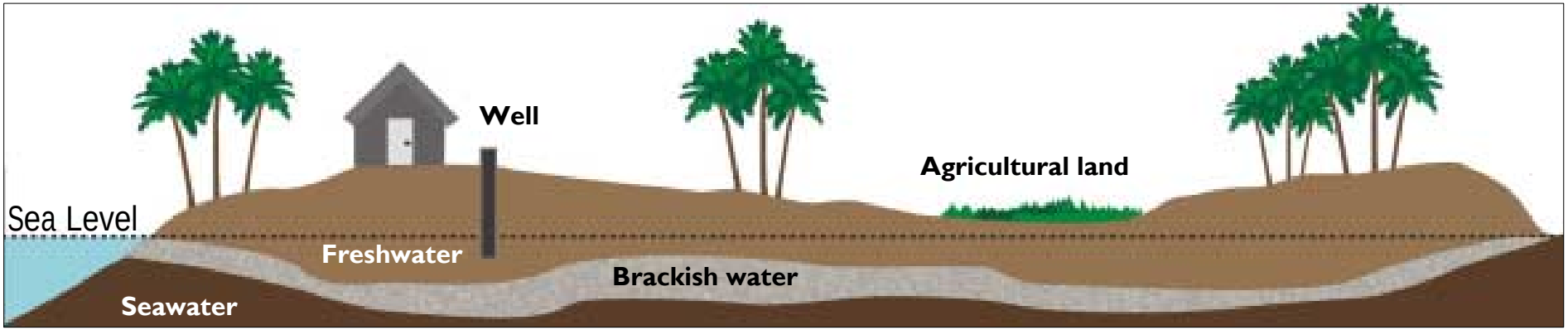
Figure 1: Initial sea level



Island Submergence

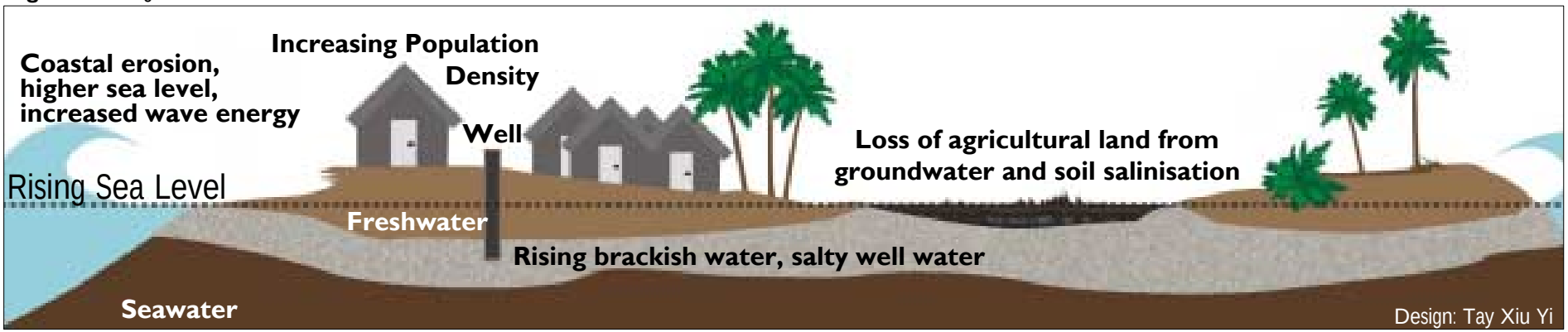
Small Island States

Figure 1: Initial sea level

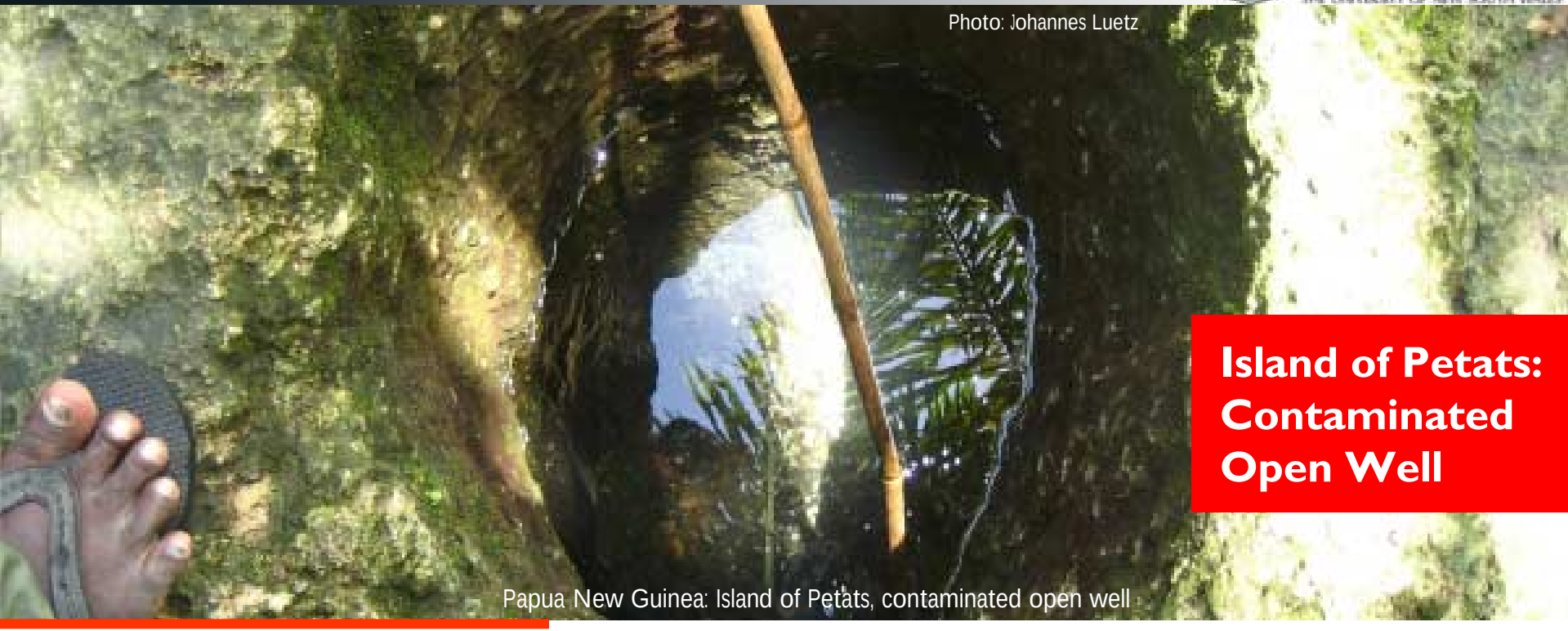


Island Submergence

Figure 2: Rising sea level



Small Island States



Luke Rutsie (36), Petats: "The well water tastes very salty – islanders now use it only for cooking and bathing."

Small Island States

Island of Pororan: Contaminated Closed Well

Papua New Guinea, Island of Pororan, contaminated closed well

Photo: Johannes Luetz

Francis Giran (59), Pororan: "The well water has become salty and unfit for consumption. This World Vision-built pump is brown with rust."

UNSW
THE UNIVERSITY OF NEW SOUTH WALES

"Overtopping"

CARTERET ATOLL

Photos: Tulele Peisa, Courtesy Pip Starr and Ursula Rakova

Multiplier Effects

Environment and non-environment-related drivers reinforce each other

Carteret Islands

ISLAND ADAPTATION
THROUGH SEA WALLS?

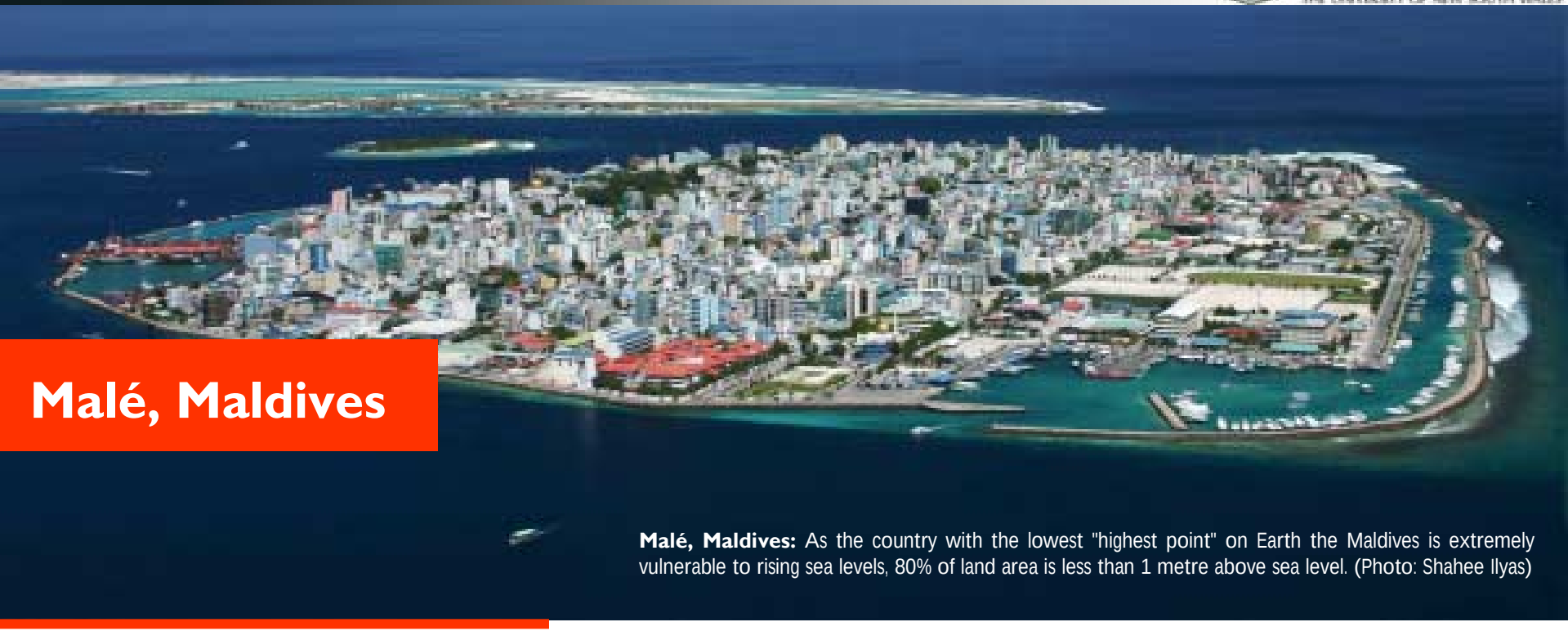
Small Island States

Show field research video footage:

File PNG1:
18:00 (1min) – Han Island
19:20 (15sec) – drowning trees
22:45 (45sec) – coconut, land lost
26:00 (30sec) – flooded sea walls

ISLAND ADAPTATION
THROUGH SEA WALLS?

Small Island States



Malé, Maldives

Malé, Maldives: As the country with the lowest "highest point" on Earth the Maldives is extremely vulnerable to rising sea levels, 80% of land area is less than 1 metre above sea level. (Photo: Shahee Ilyas)

Mohamed Nasheed, President Maldives, 2009:

"We do not want to leave the Maldives, but we also do not want to be climate change refugees living in tents for decades."

Small Island States

Island of Dhuvafaaru, Maldives
(Photo: Johannes Luetz)

Small Island States

Dhuvafaaru, Maldives

Island of Dhuvafaaru, Maldives
(Photo: Johannes Luetz)

Small Island States

Dhuvafaaru, Maldives

Island of Dhuvafaaru, Maldives
(Photo: Johannes Luetz)

Abandoned Hathifushi Island

Show field research video footage:

File name "Maldives 4":
04:00 (1min) – Abandoned Hathifushi Island
23:00 (1min) – Skipper, stuff, storm surge
48:00 (1min) – Faridhoo: highest point on M.

Island of Hathifushi, Maldives
(Photo: Johannes M Luetz)

Engineering Solutions?

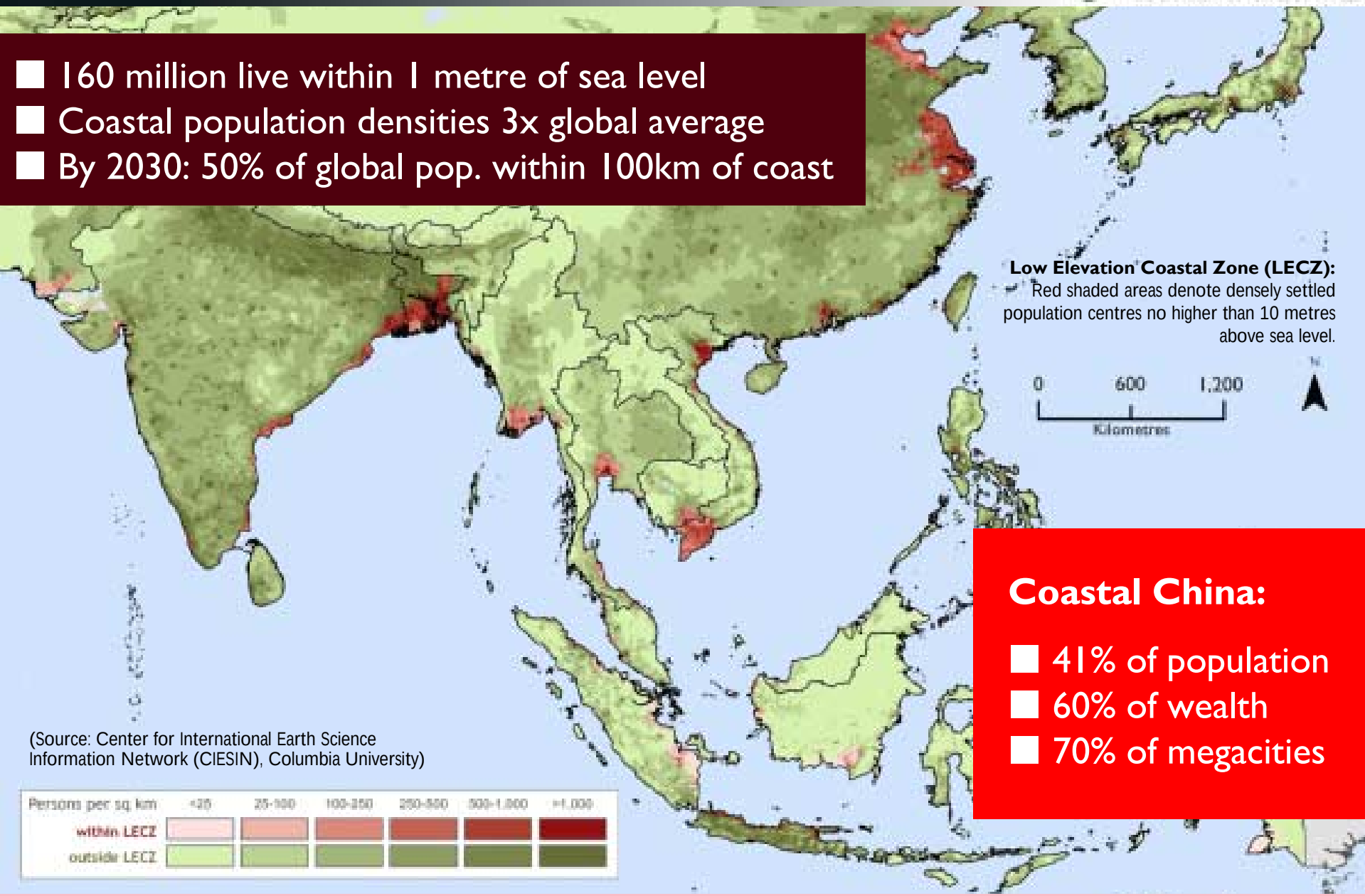
Show field research video footage:

File name "Maldives 5":
40:00 (7min) – Minister Aslan Interview
File name "Maldives 6":
18:30 (45sec) – Hulhumalé from the air

(Photo: Wendy Barrón Pinto)

Coastal Development?

- 160 million live within 1 metre of sea level
- Coastal population densities 3x global average
- By 2030: 50% of global pop. within 100km of coast



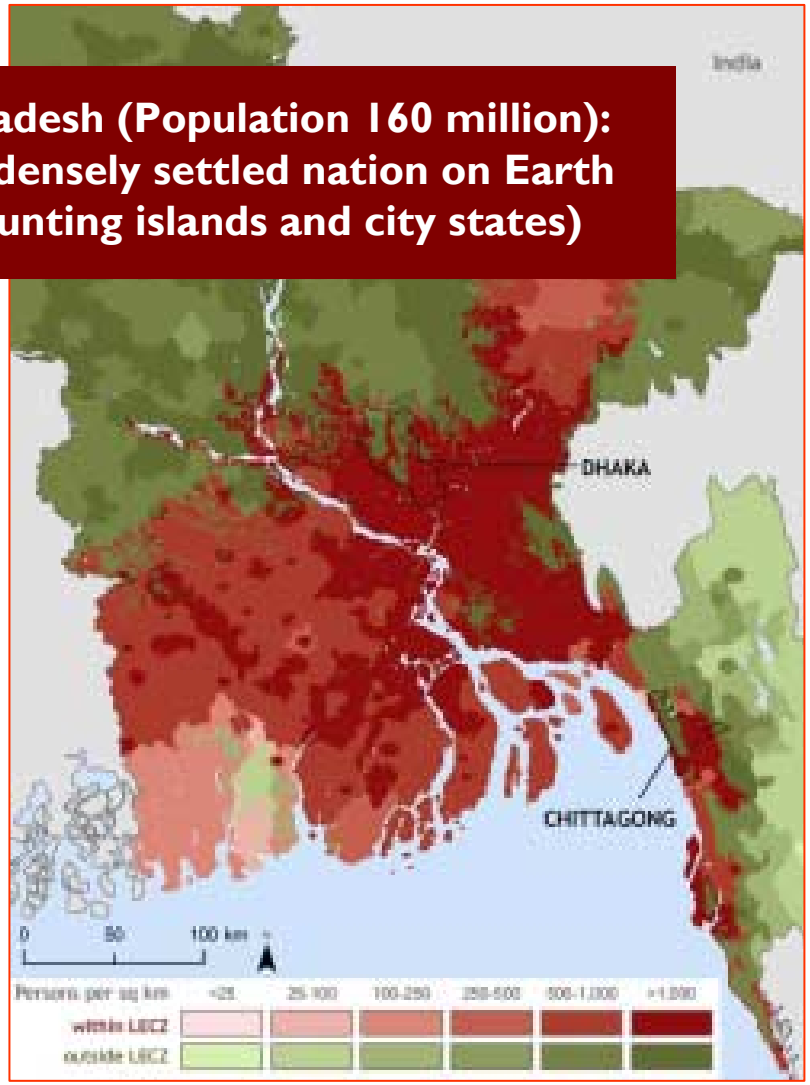
(Source: Center for International Earth Science Information Network (CIESIN), Columbia University)

Coastal China:

- 41% of population
- 60% of wealth
- 70% of megacities

Coastal Dwellers

Bangladesh (Population 160 million): most densely settled nation on Earth (discounting islands and city states)



Low Elevation Coastal Zone (LECZ): Dark red shaded areas denote densely settled population centres no higher than 10 metres above sea level.

Graphic: Centre for International Earth Science Information Network (CIESIN), Columbia University

Bridge to “nowhere”

Show field research video footage:

File name “Bangladesh 1”:
55:00 (1min) – Bridge to “nowhere”

(Photo: Johannes Luetz)

(Photo: Johannes Luetz)

Bhola


Show field research video footage:
File name "Bangladesh 2":
31:20 (seconds) – Google maps!
34:00 (3min) – student
(Photo: Johannes Luetz)

Dhaka

Show field research video footage:

File name "Bangladesh 5":
46:00 (1min) – Dhaka tenants, settlements
59:00 (30sec) – Bhola-CEGIS (6km@61min)
00:00 (3min) – INDIA1: erosion/ accretion

(Photo: Johannes Luetz)

Adapted from Milliman *et al.* (1989).
Presentation by Sir John Houghton 7 Sep 2011

Coastal Megacities

Jakarta: One of many cities that needs to prepare for sea level rise. With 40% of the city below sea level, there have already been calls to relocate the Indonesian capital to Bandung, 180km away.

Coastal Megacities

Jakarta: With its 13 rivers floods in Jakarta can be devastating. The February 2007 flood displaced 450,000 people. More than 70% of the city was inundated.

Climate change and development

1. Introduction
2. Science
3. Impacts
4. Implications
5. **Migration**
6. Problems
7. Solutions?

"Our results reveal that hundreds of millions of people in the developing world are likely to be displaced by Sea Level Rise within this century."

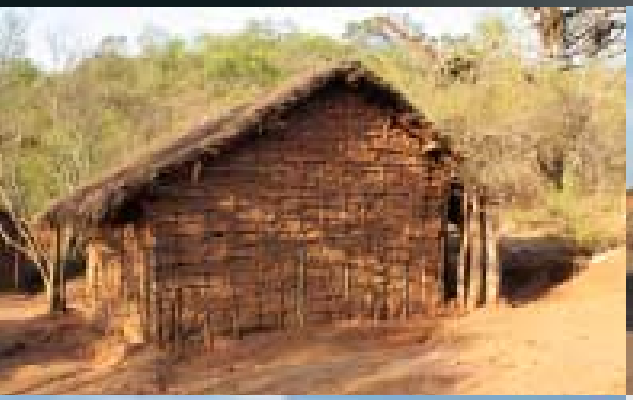
(World Bank Policy Research, 2007)

(Photo: Johannes Luetz)

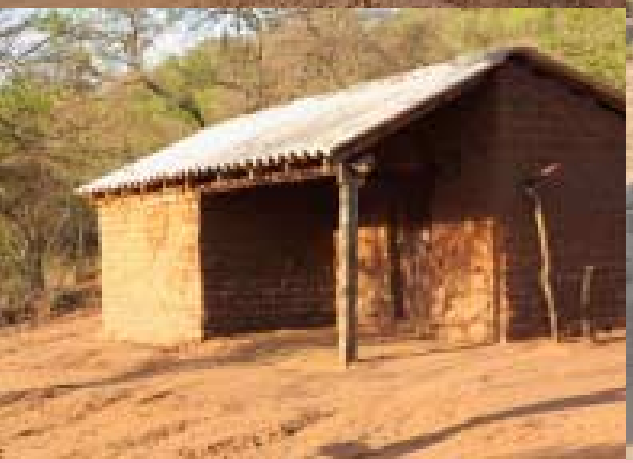
http://youtu.be/KBq2jNrD-yg OR
http://tv.unsw.edu.au/video/bolivia-leaving-the-land

Four "Hot Spot" Categories:

1. Densely settled deltaic regions
2. Low-lying small island developing states (SIDS)
3. Coastal megacities (e.g. China)
4. Glacier-fed / water-stressed inland regions



Abandoned houses



(Photos: Johannes Luetz)

Forced Migration

http://www.vimeo.com/4177527

Award winning documentary

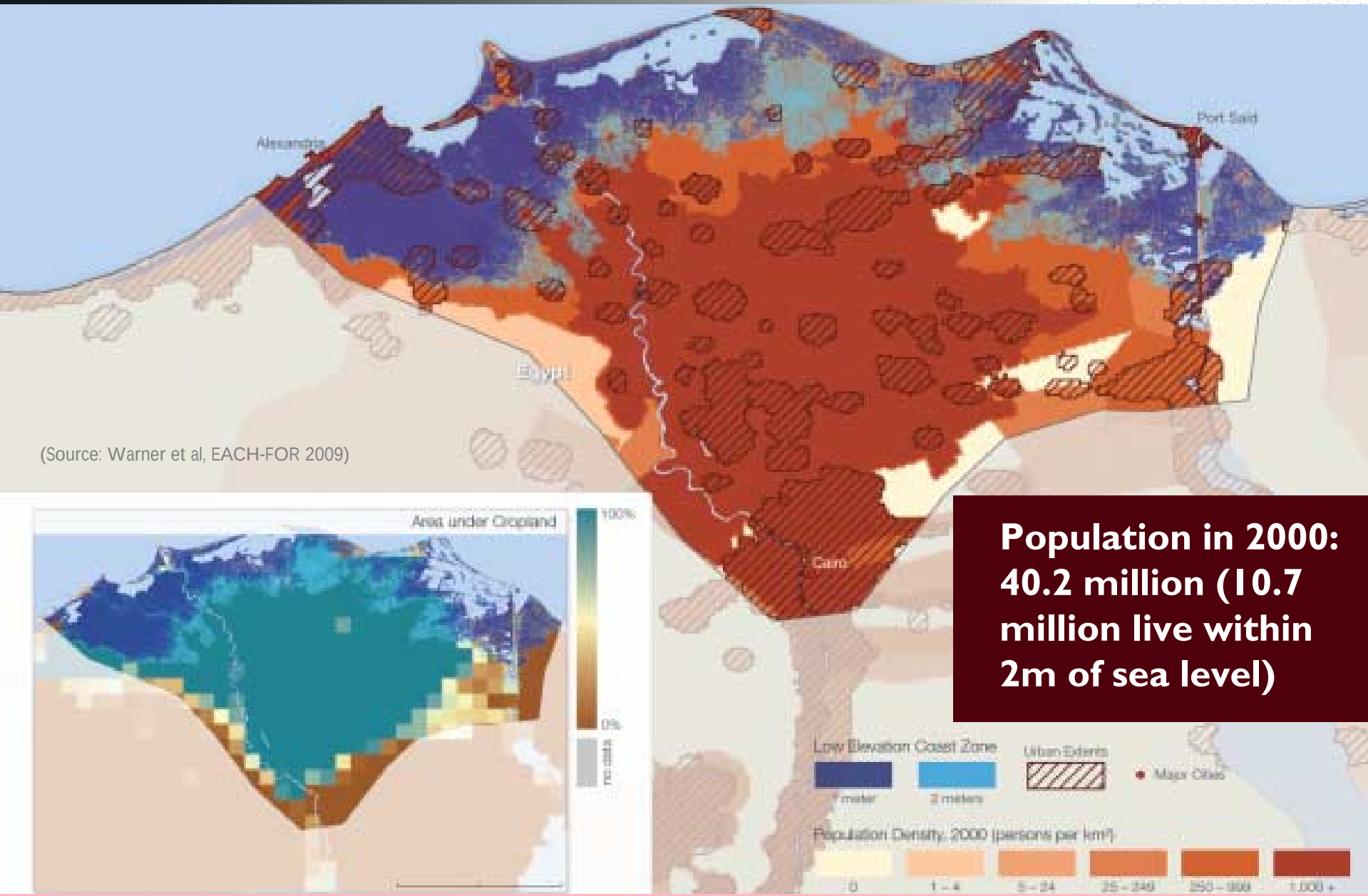
There once was an island (trailer feature documentary)
http://youtu.be/M7akwGUtGDw

Deltas

(Source: Nicholls and Wong, IPCC 2007)

Relative vulnerability of coastal deltas: population potentially displaced by current sea-level trends to 2050 (Extreme > 1 million; high 1 million to 50,000; medium 50,000 to 5,000)

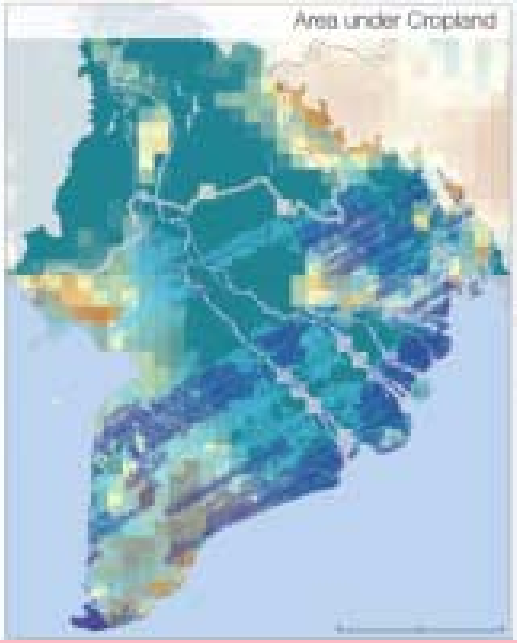
Egypt: Nile Delta

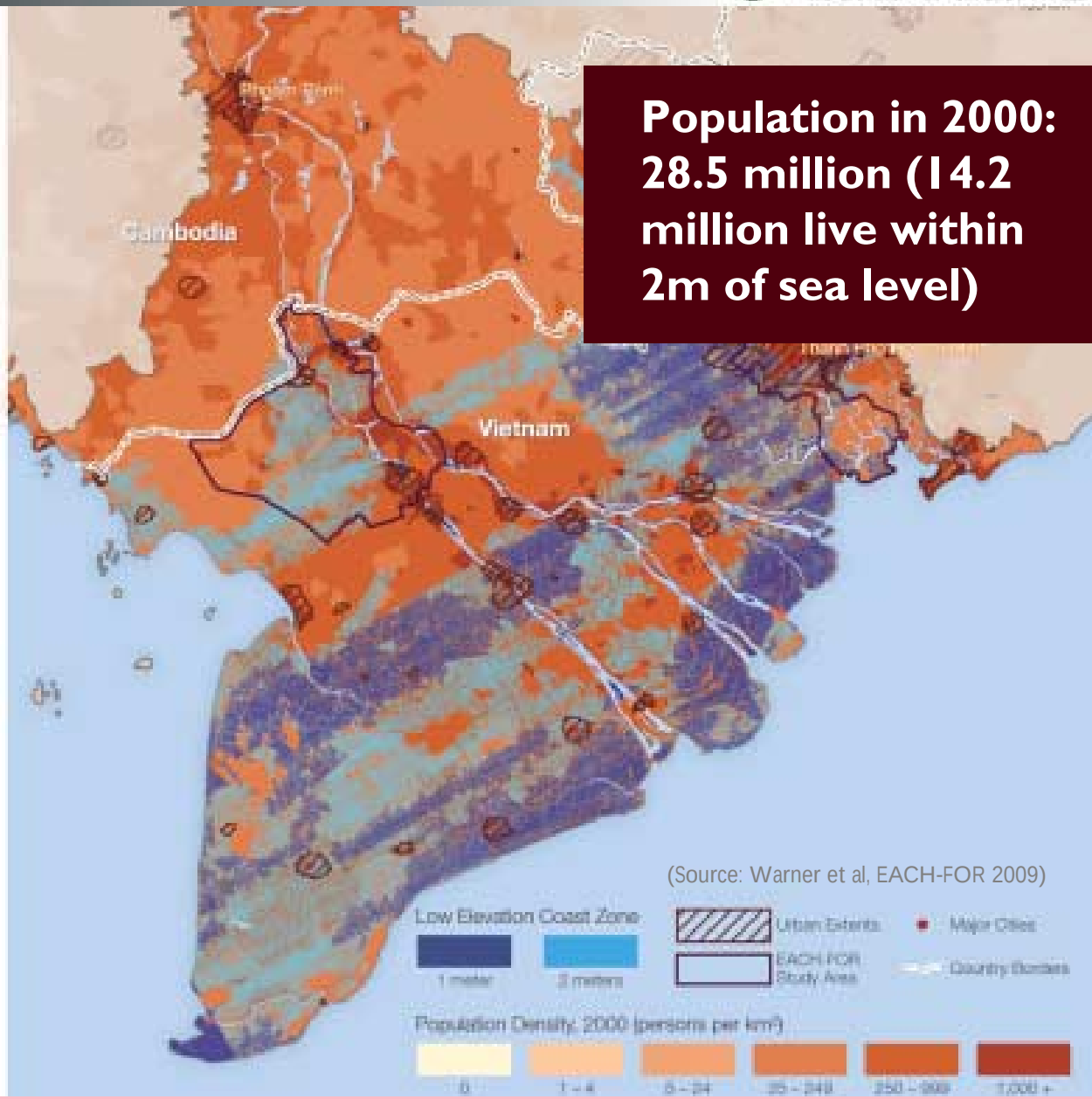


(Source: Warner et al, EACH-FOR 2009)

Population in 2000: 40.2 million (10.7 million live within 2m of sea level)

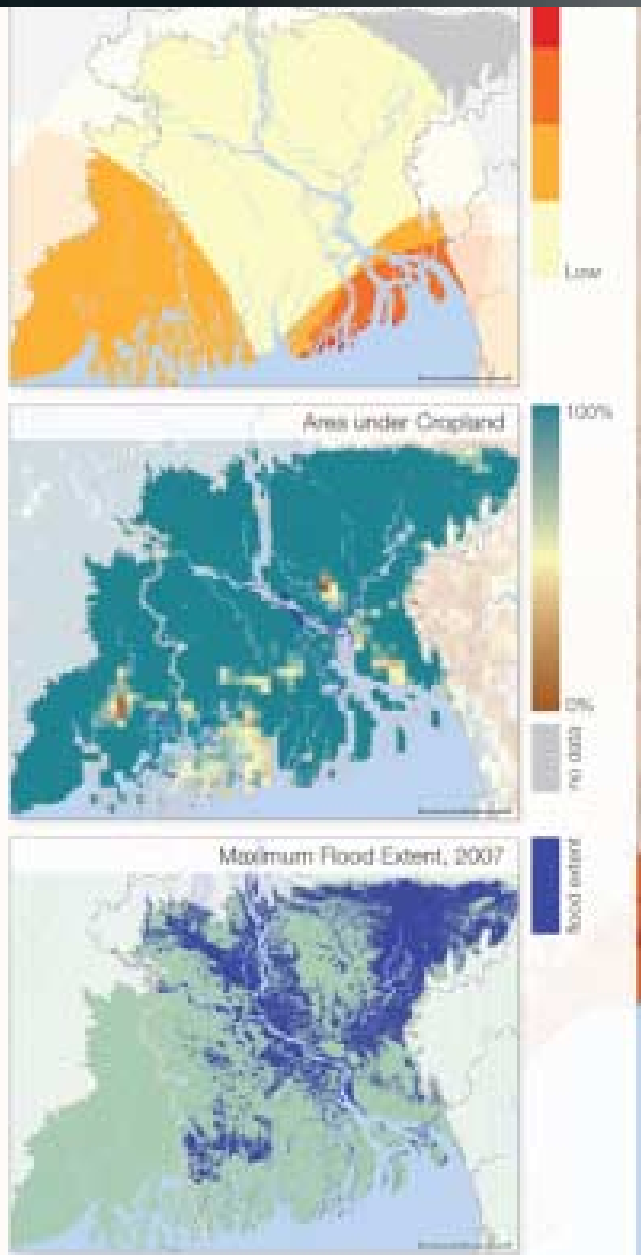
Vietnam: Mekong Delta

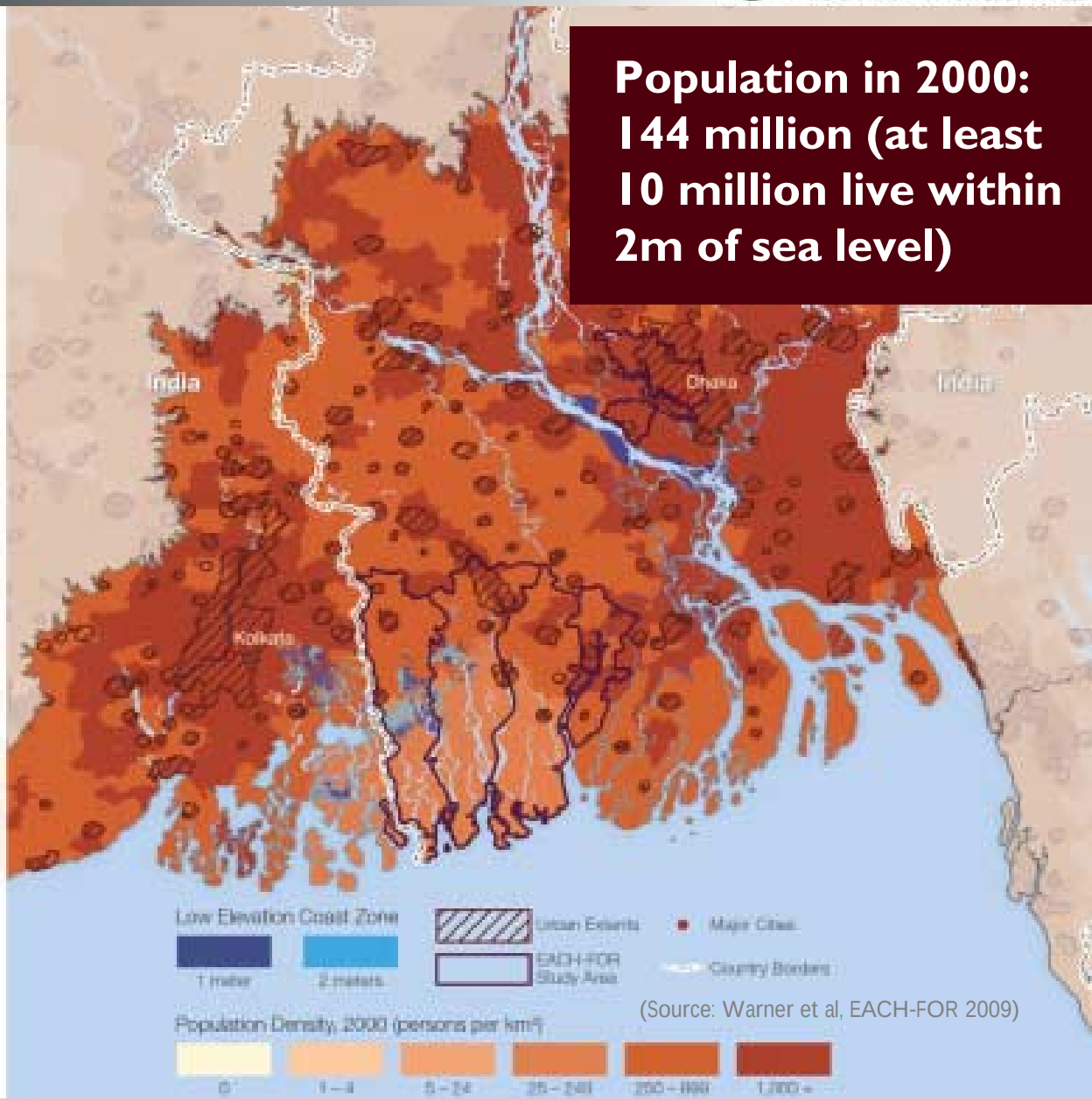




Population in 2000: 28.5 million (14.2 million live within 2m of sea level)

The Ganges Delta



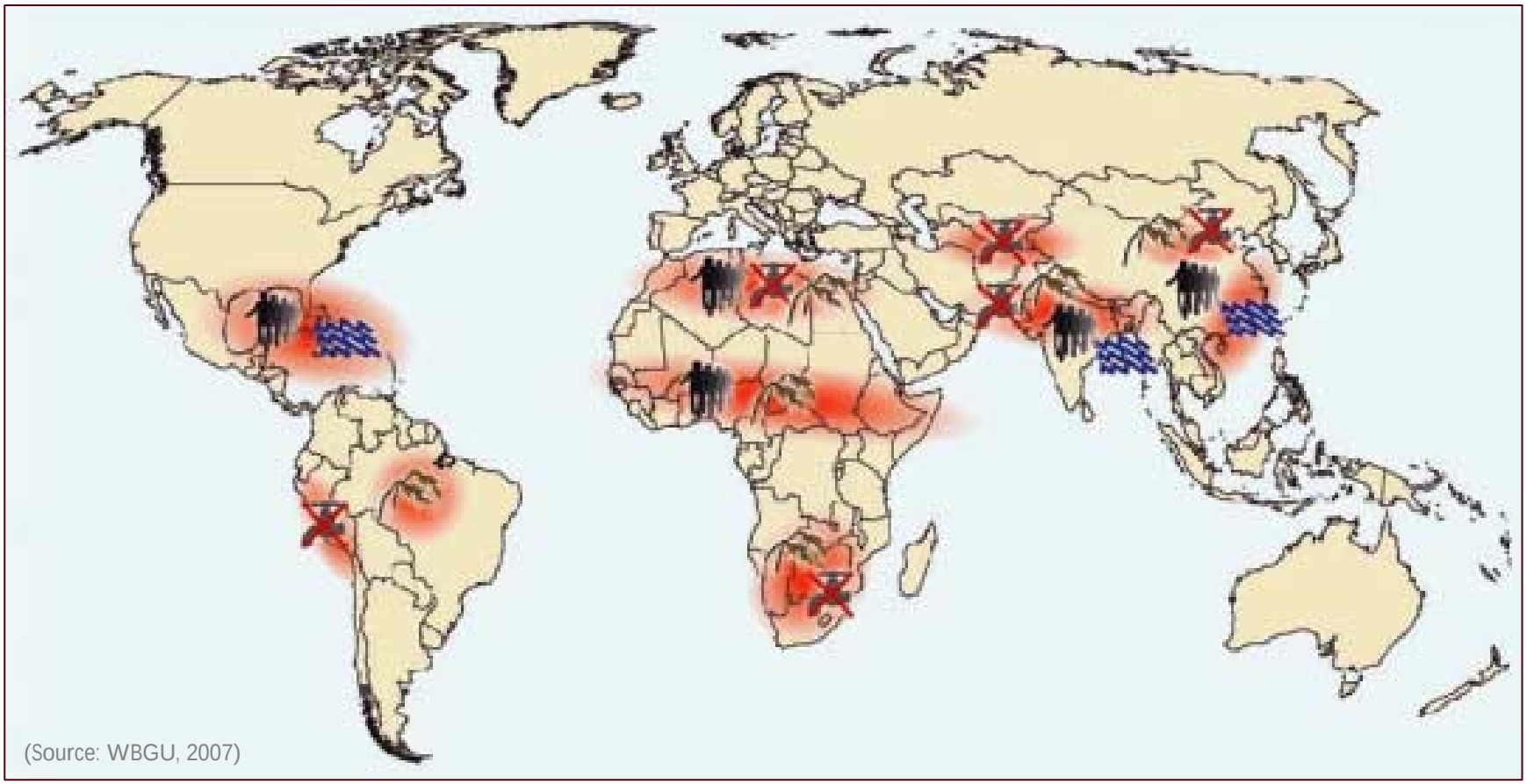


Population in 2000: 144 million (at least 10 million live within 2m of sea level)

(Source: Warner et al, EACH-FOR 2009)

Water Stress

Video stream: http://news.bbc.co.uk/2/hi/science/nature/8394324.stm



(Source: WBGU, 2007)

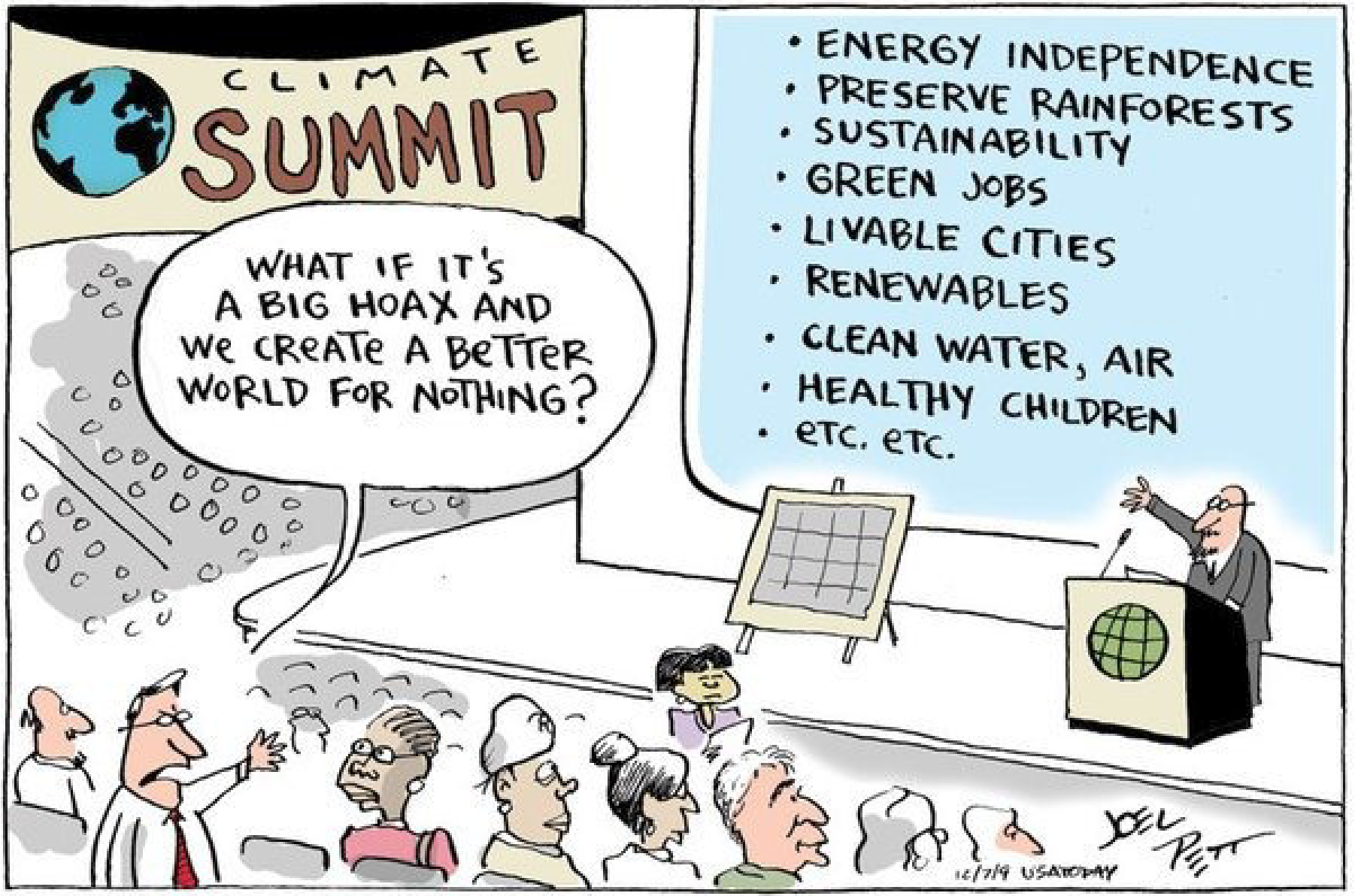
Glaciers Retreating

Climate change and development

1. Introduction
2. Science
3. Impacts
4. Implications
5. Migration
6. **Problems**
7. Solutions?

Problems, Barriers

1. Multicausality issues impossible to untangle
2. Different values, priorities, capabilities, awareness
3. Risk aversion ⇔ risk accommodation?
4. Uneven distribution of impacts
5. Failure of markets to reflect "costs" (≠ "price") (need to "internalise externalities")
6. Formidable opposition by "contrarians"/ special interests
7. Misinformation, exaggerations, distortions, "Doubt"


CLIMATE
SUMMIT
WHAT IF IT'S A BIG HOAX AND WE CREATE A BETTER WORLD FOR NOTHING?
• ENERGY INDEPENDENCE
• PRESERVE RAINFORESTS
• SUSTAINABILITY
• GREEN JOBS
• LIVABLE CITIES
• RENEWABLES
• CLEAN WATER, AIR
• HEALTHY CHILDREN
• ETC. ETC.
12/7/19 USATODAY
JOEL PETT

The need to give economic value to Ecosystem or Biosystem services

"... important environmental assets tend not to be priced in a market like other assets. These assets are common property – they belong to everybody, and to nobody. Without ownership rights there is not the incentive for any person or group to look after them properly... if the environment has a zero price to users it will eventually be used up."

(Business Council of Australia, Achieving Sustainable Development: A Practical Framework, BCA, 1991, p. 9. Cited in: Sharon Beder, The Hidden Messages Within Sustainable Development, Social Alternatives, vol.13, no. 2, July 1994, pp. 8-12.)

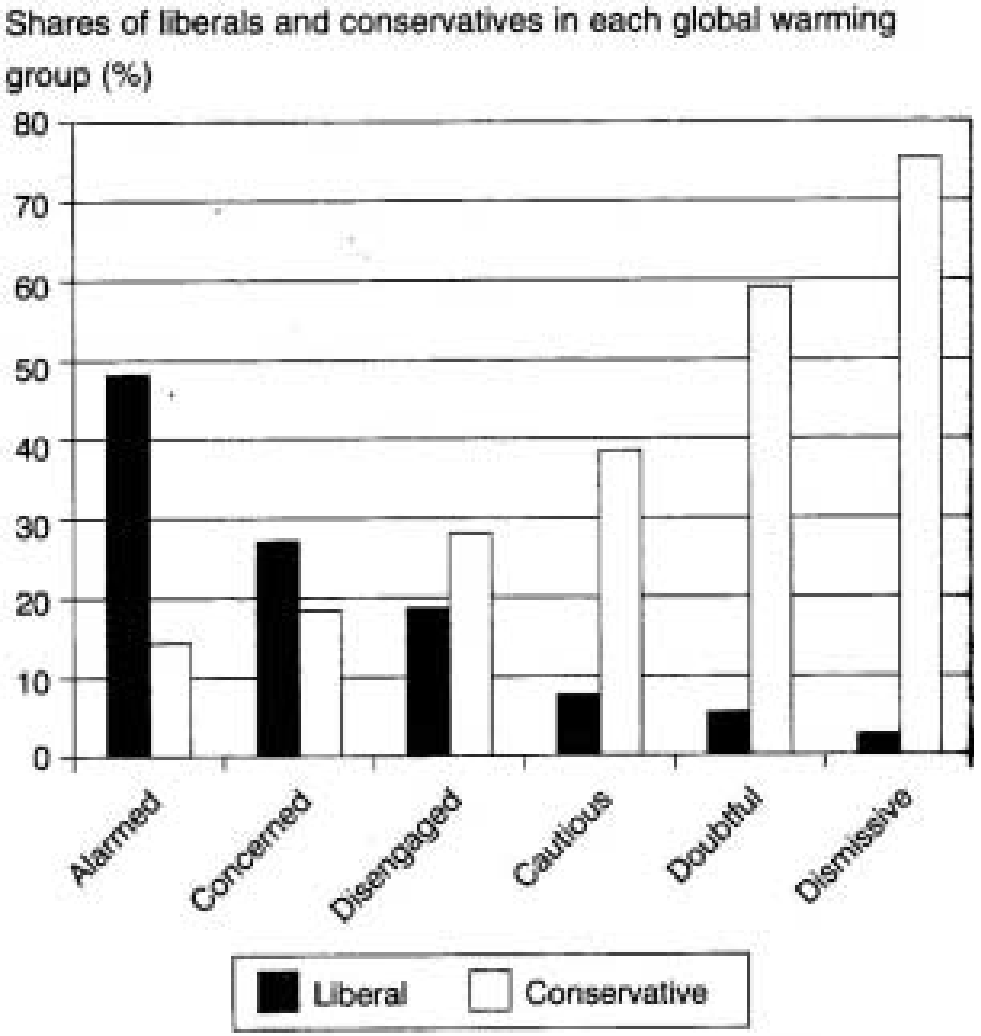
How to internalise these costs into the economic or the market system

"Economic growth can be made compatible with environmental enhancement only if the emission of pollution is less than that which can be assimilated and transformed by the natural environment."

Pereira, W & Seabrook, J. 1989, Red Ink in the Blueprint for a Green Economy, Anusandhan, December, p.2. Cited in: Sharon Beder, 'Economy and environment: competitors or partners?', Pacific Ecologist 3, Spring 2002, pp. 50-56.

Example of externalised costs (from 8:00-10:00 min): http://youtu.be/gLBE5QAYXp8

Battle of Ideologies

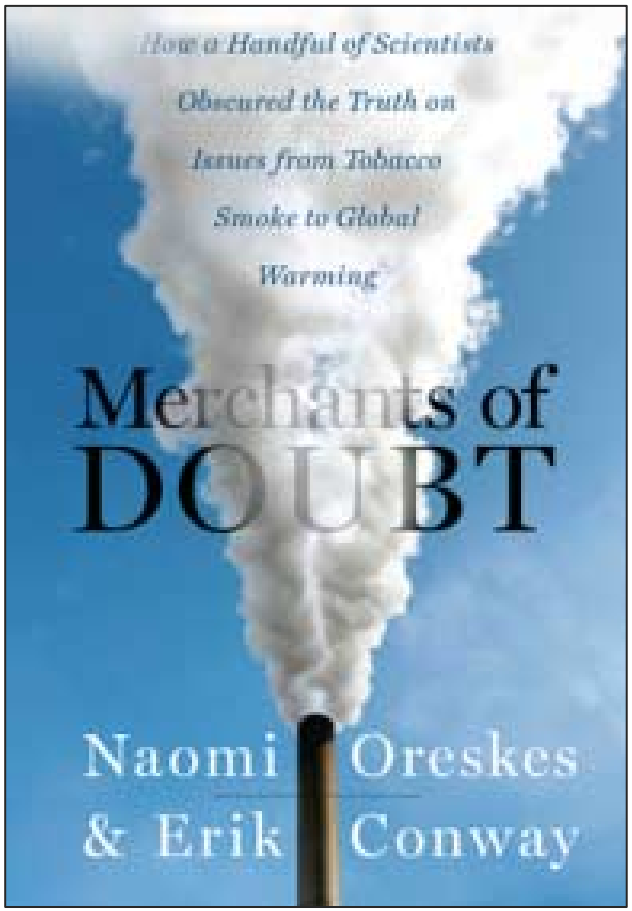


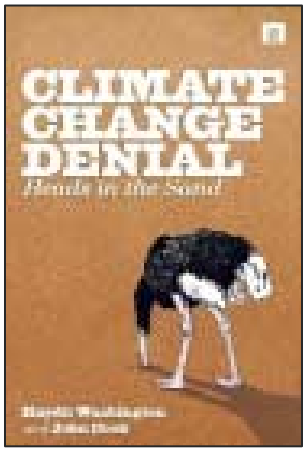
Source: Based on Table 20 in Edward Maibach, Connie Roser-Renouf and Anthony Leiserowitz, *Global Warming 'Six Americas' 2009*

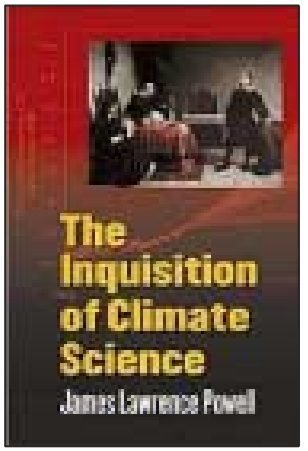
Note: 'Moderates' are not shown

Source
Clive Hamilton (2010): Requiem for a species: Why we resist the truth about climate change p110

Doubt

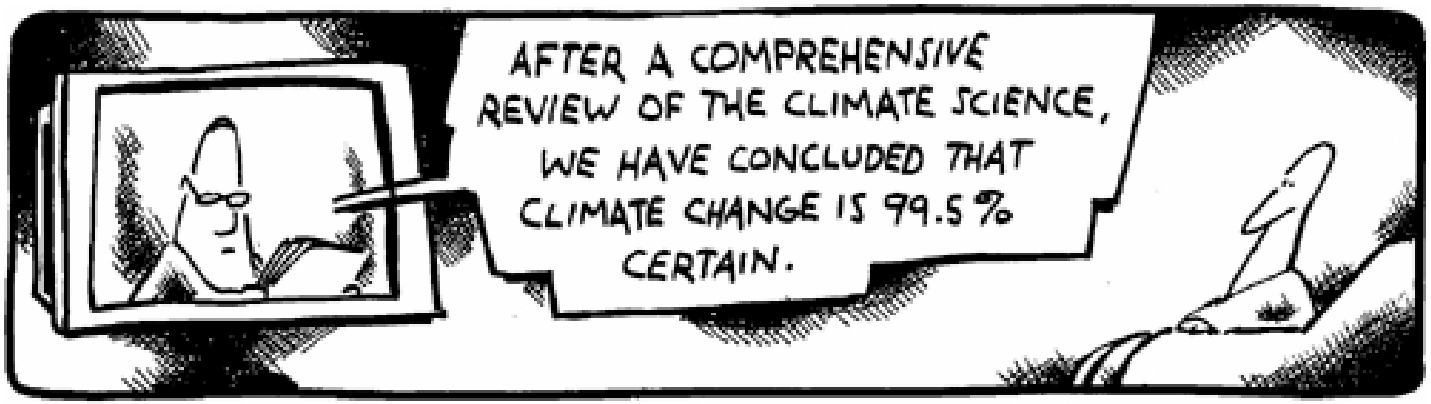




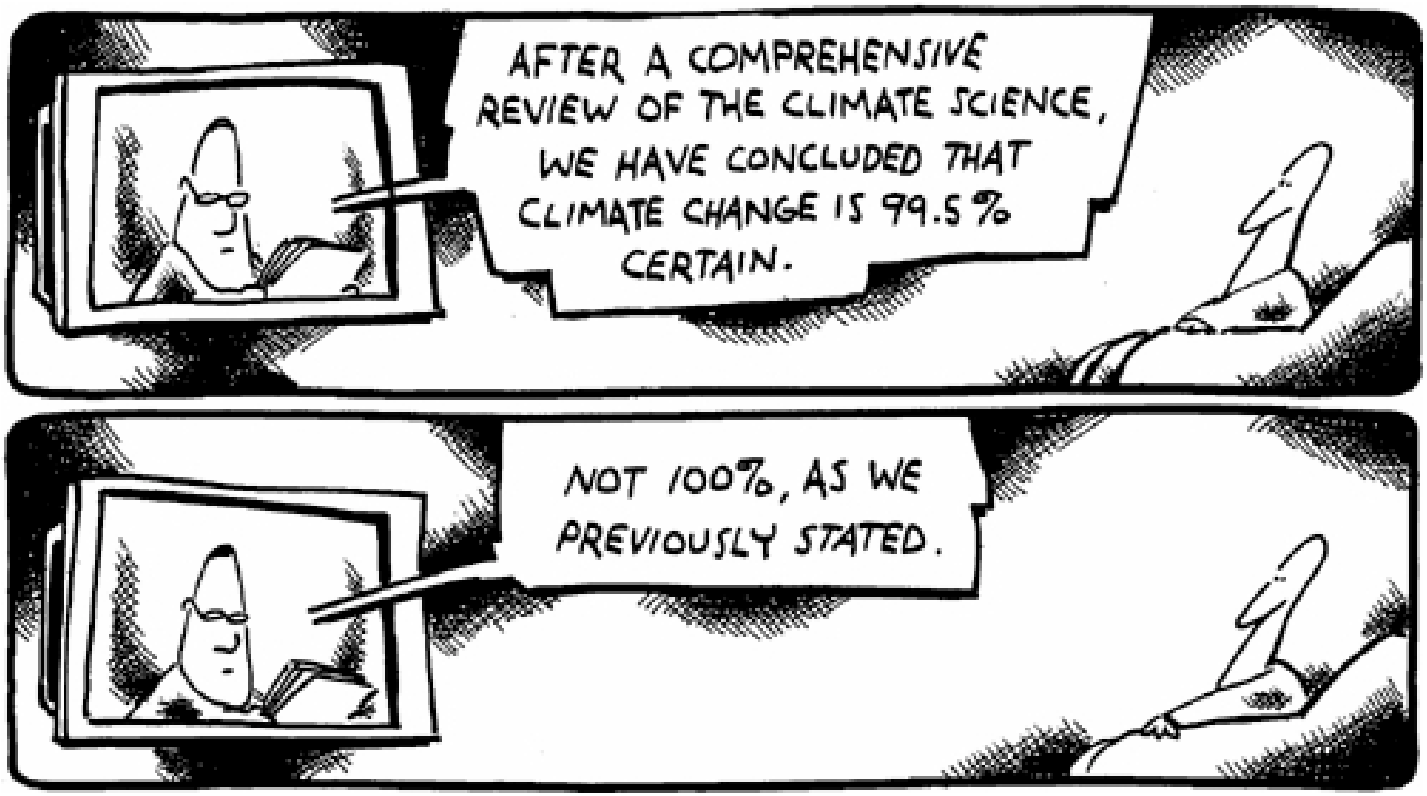


http://www.merchantsofdoubt.org/

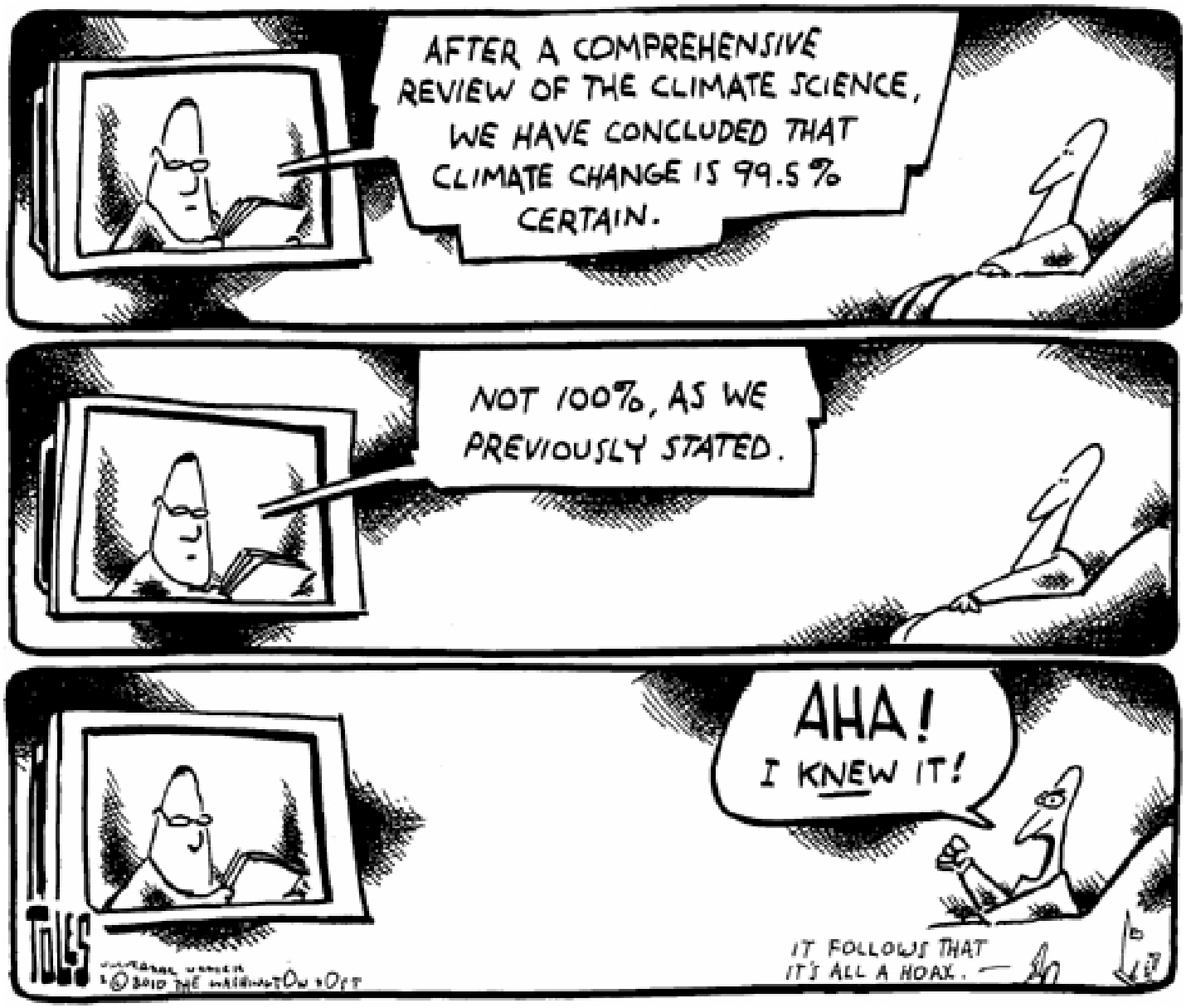
http://www.arts.unsw.edu.au/news-and-events/public-lecture-with-naomi-oreskes-645.html



(Source: ppt
Stephen H. Schneider)



(Source: ppt
Stephen H. Schneider)



(Source: ppt Stephen H. Schneider)

Climate change and development

1. Introduction
2. Science
3. Impacts
4. Implications
5. Migration
6. Problems
7. **Solutions?**

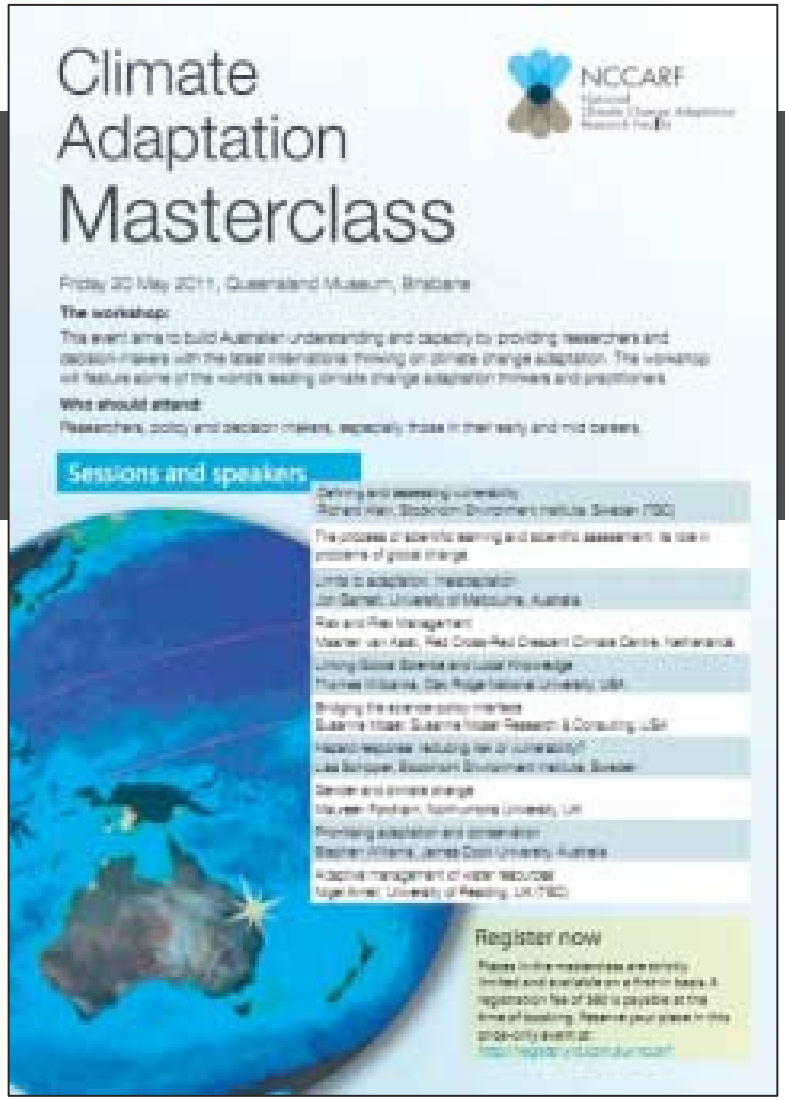
Adaptation

"The climate change that the world is already locked into has the potential to result in large-scale development setbacks, first slowing, then stalling and reversing progress in poverty reduction, nutrition, health, education and other areas ...

Hoping – and working – for the best while preparing for the worst, serves as a useful first principle for adaptation planning."

—2007/2008 UN Human Development Report:
Fighting climate change : Human solidarity in a divided world.

Adaptation Critical



Available resources:

- Audio files
- Presentation files

Masterclass

20 May 2011, Brisbane

FROM THEORY TO IMPLEMENTATION

http://www.nccarf.edu.au/masterclass

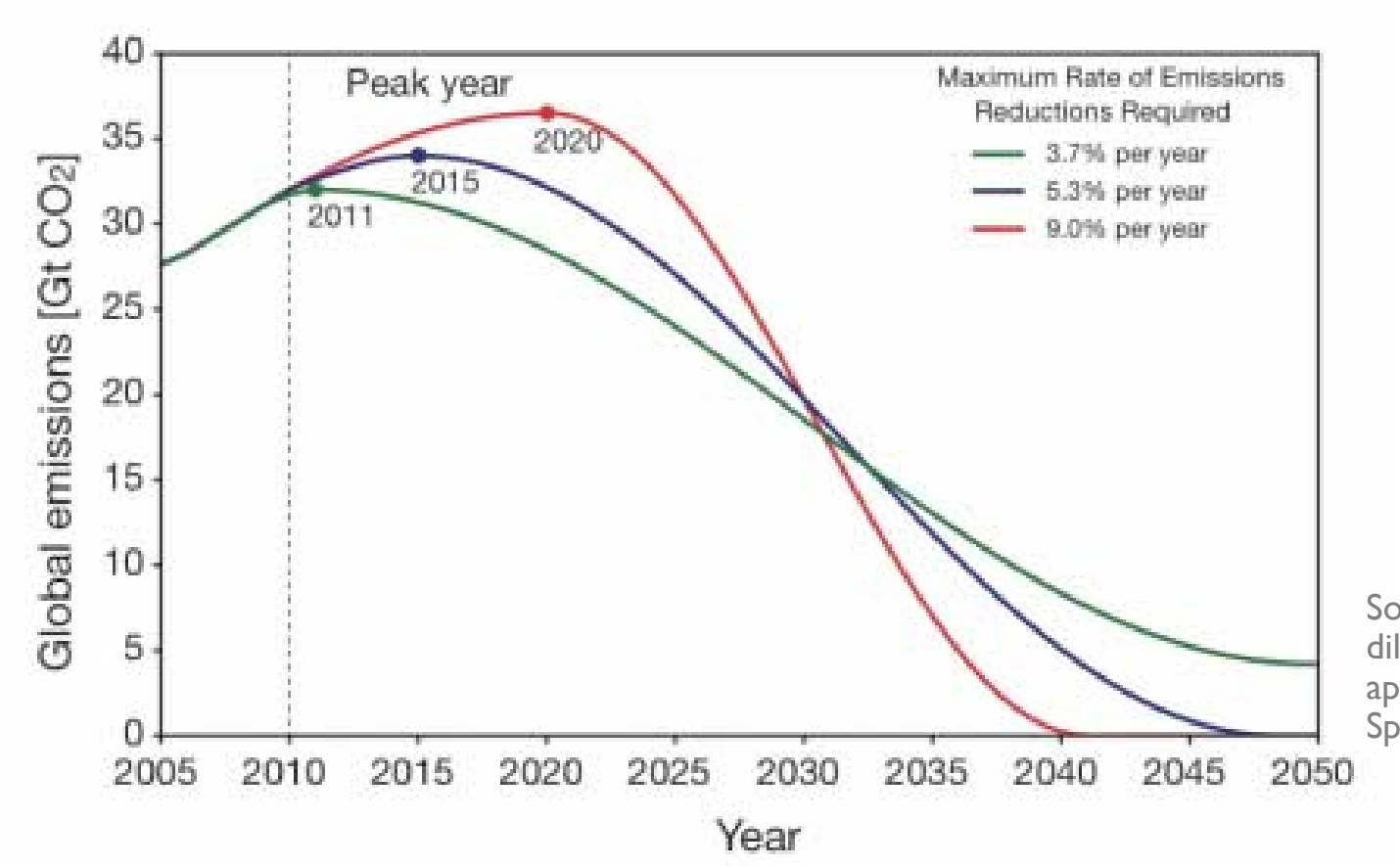
The Power of Now

"There is a window of opportunity for avoiding the most damaging climate change impacts, but that window is closing: the world has **less than a decade** to change course. Actions taken – or not taken – ...will have a profound bearing on the future."

2007/2008 UN Human Development Report

Global decarbonisation

Exemplary emissions pathways which remain within 750Gt and leave a 67% chance of limiting global warming to 2°C

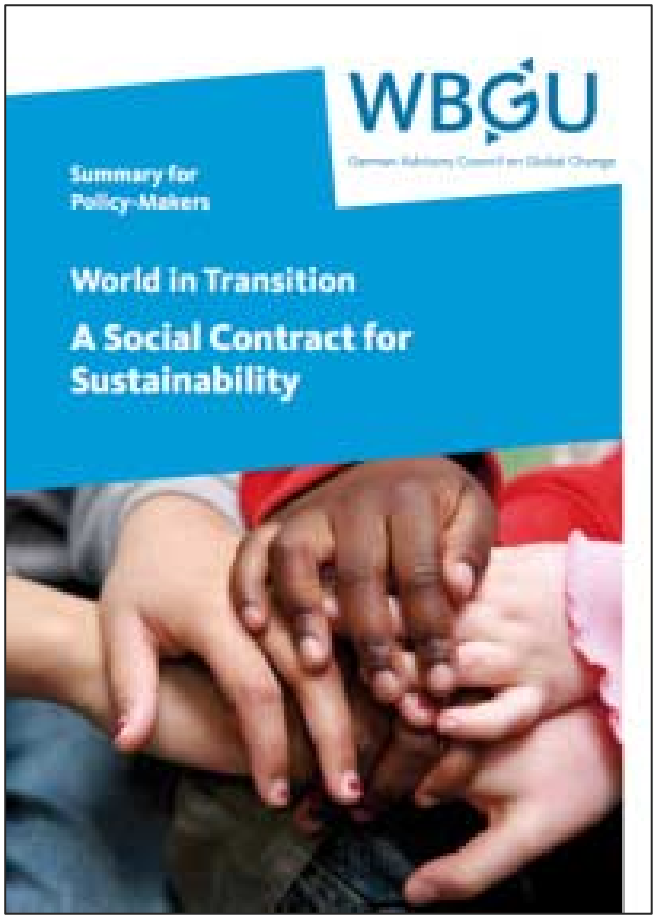


Solving the climate dilemma: The budget approach; WBGU Special Report 2009

World in Transition: Social Contract for Sustainability

Flagship Report 2011

http://www.wbgu.de/en/home



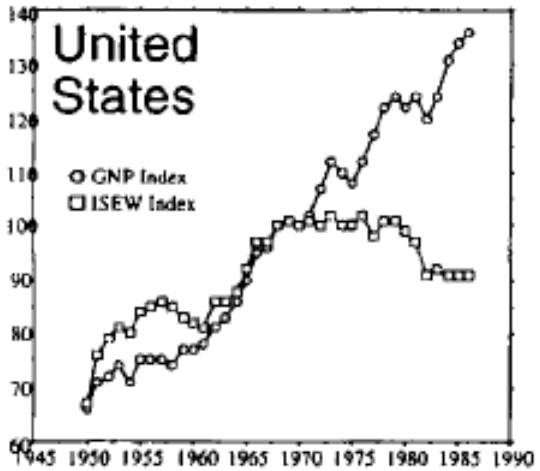
Can we do it?

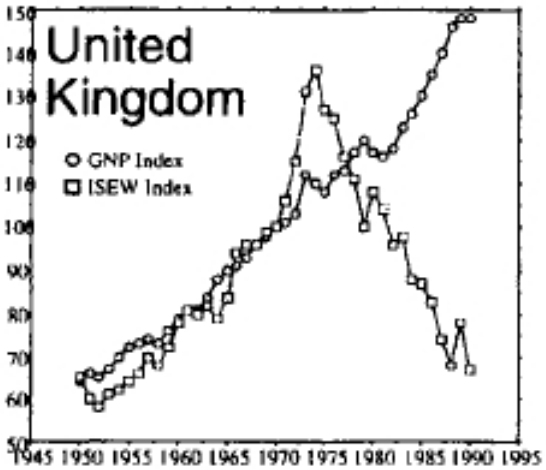
Annual per-capita CO_2 emissions below 1 ton

A decarbonised global society with near-zero emissions of CO_2 needs to be reached by 2050 (1 Person = 1t CO_2)

Economic growth and quality of life: A threshold hypothesis

"... for every society there seems to be a period in which economic growth (as conventionally measured) brings about an improvement in the quality of life, but only up to a point – the threshold point – beyond which, if there is more economic growth, quality of life may begin to deteriorate." (Max-Neef 1995; Genuine Progress Indicators GPI; Index of Sustainable Economic Welfare ISEW; Environment and Sustainable Development Indicators ESDI)





Intergenerational equity

"Those of us alive today are the first generation to know that we live in the Age of Global Warming. We may also be the last generation to have any chance of doing something about it. Our forebears had the excuse of ignorance. Our descendants will have the excuse of helplessness. We have no excuse."

(William Antholis and Strobe Talbott (2010) Fast Forward: Ethics and Politics in the Age of Global Warming", The Brookings Institution)

"200-year present"

Insight, hindsight, foresight

"A favourite concept of mine is the 200-year present, a way of thinking about change. The 200-year present began 100 years ago with the year of birth of the people who have reached their hundredth birthday today. The other boundary of the 200-year present, 100 years from now, is the hundredth birthday of the babies born today. If you take that span, you and I will have had contact with a lot of people from different parts of that span. So think in terms of events over that span and realise how long change takes."

(Elise Boulding, Professor Emeritus of Sociology at Dartmouth College and Former Secretary General of the International Peace Research Association, interviewed by Julian Portilla in 2003)

Ten Pressures

Longevity of CO_2

Environmental Degradation

Accelerating CO_2 Emissions

Declining CO_2 Removal

Escalating Temperatures

Rogue Weather

Sea Level Rise

Historical Emissions

Inertia of the Climate System

Population Pressures

One Remedy

L ongevity of CO_2

E nvironmental Degradation

A ccelerating CO_2 Emissions

D eclining CO_2 Removal

E scalating Temperatures

R ogue Weather

S ea Level Rise

H istorical Emissions

I nertia of the Climate System

P opulation Pressures

Sustainability – time, space, species

- inter-generation
- inter-geography
- inter-species

The Future

*"**When it comes to the future**, there are three kinds of people: those who let it happen, those who make it happen, and those who wonder what happened."*

(John M. Richardson, Jr., American Academic, born 1938)

Thank You!

PhD Sponsors:

Contacts


UNSW
JOHANNES M LUETZ
BA MBA PhD Candidate
Researcher & Tutor
Thesis: Climate Migration
Institute of Environmental Studies
THE UNIVERSITY OF NEW SOUTH WALES
UNSW SYDNEY NSW 2052 AUSTRALIA
T: +61 (2) 9385 4603
M: +61 (4) 1215 5736
F: +61 (2) 9663 1015
E: j.luetz@unsw.edu.au
W: www.ies.unsw.edu.au

Energy Efficient Penguin: http://youtu.be/_kocZ-j-o3I

Backup: Biosphere Consciousness

World resource use to triple by 2050 (UNEP 2011)

"Decolonisation of the atmosphere" (Cochabamba Documents 2010)

Gaia Theory (Lovelock 2009)

Biosphere consciousness (Rifkin 2009)