

Presentation at 'Climate justice' conference, Institute of Education, London, 12 November 2011

Main references

- IPCC (2007). Fourth assessment report.
- UNEP (2009). Climate science compendium.
- IFRC (2010). World disasters report.
- IPCC (2011). Special report on extreme events.
 - Examining linkage between climate change and extreme weather events, and how to manage risks
 - Known as 'SREX'
 - To be released on 18th November
 - Some material leaked in advance

Full references:

• IPCC (2007). Fourth assessment report. Climate change 2007.

- IPCC WGI (2007). Working Group I Report: The Physical Science Basis. http://www.ipcc.ch/publications_and_data/ar4/wg1/en/contents.html

- IPCC WGII (2007). Working Group II Report: Impacts, Adaptation and Vulnerability. http://www.ipcc.ch/publications_and_data/ar4/wg2/en/contents.html

• UNEP (2009). Climate change science compendium 2009. http://www.unep.org/compendium2009/

• IFRC (2010). World disasters report 2010: Focus on urban risk. International Federation of Red Cross and Red Crescent Societies.

http://www.ifrc.org/Global/Publications/disasters/WDR/WDR2010-full.pdf

• IPCC (2011). Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. (The summary and full report will be available from http://www.ipcc.ch/)



• Adding greenhouse gases to the atmosphere is like adding **blankets** – they keep more of the heat in

Diagram from BBC website



IPCC WGI (2007). Box TS.5, Figure 1. Schematic showing the effect on extreme temperatures when the mean temperature increases, for a normal temperature distribution.

Phenomenon and	Likelihood of future trends based on projections for 21st century using SRES scenarios	Examples of major projected impacts by sector				
direction of trend		Agriculture, forestry and ecosystems	Water resources	Human health	Industry, settlement and society	
Warm spells/ heatwaves. Frequency increases over most land areas	Very likely	Reduced yields in warmer regions due to heat stress; increased danger of wildfire	Increased water demand; water quality problems, e.g., algal blooms	Increased risk of heat-related mortality, especially for the vulnerable	Reduction in quality of life for vulnerable groups	
Heavy precipitation events. Frequency increases over most areas	Very likely	Damage to crops; soil erosion, inability to cultivate land due to water-logging of soils	Adverse effects on quality of surface and groundwater; contamination of water supply; water scarcity may be relieved	Increased risk of deaths, injuries and infectious, respiratory and skin diseases	Disruption of settlements, commerce transport and societies due to flooding; pressures on infrastructures; propertv loss	
Area affected by drought increases	Likely	Land degradation; lowor yields/crop damage and failure; increased livestock deaths; increased risk of wildfire	More widespread water stress	Increased risk of food and water shortage; increased risk of malnutrition; increased risk of water- and food- borne diseases	Water shortages for settlements, industry and societies; potential for population migration	
Intense tropical cyclone activity increases	Likely	Damage to crops; uprooting of trees; damage to coral reefs	Power outages causing disruption of public water supply	Increased risk of deaths, injuries, water- and food-borne diseases; post- traumatic stress disorders	Disruption by flood and high winds; withdrawal of some insurance; potential for population migrations; property loss	
Increased incidence of extreme high sea level (excludes tsunamis)	Likely	Salinisation of irrigation water, estuaries and freshwater systems	Decreased freshwater availability due to saltwater intrusion	Increased risk of deaths and injuries by drowning in floods; migration related health effects	Costs of coastal protection versus costs of land-use relocation; potential for movement of populations and infrastructure; also see	

Summarised from: IPCC WGII (2007). Summary for Policymakers. Table SPM.1. Examples of possible impacts of climate change due to changes in extreme weather and climate events, based on projections to the mid- to late 21st century. These do not take into account any changes or developments in adaptive capacity. The likelihood estimates in Column 2 relate to the phenomena listed in Column 1.

Very likely – between 90% and 99% probability

Likely – between 66% and 90% probability





Source: UNEP (2009). P2-3.



Summarised from: IFRC (2010). Figure 1.1. Distribution of fatalities and economic loss from tropical cyclones per year.

Major 'natural' disasters 2000-10

Event	Year	Death toll	Number affected
South Asian tsunami	2004	226,000	2,322,000
Haiti earthquake	2010	223,000	3,400,000
Cyclone Nargis (Burma)	2008	138,000	2,420,000
Sichuan earthquake	2008	87,000	45,977,000
Kashmir earthquake	2005	73,000	5,128,000
European heatwave	2003	72,000	Not reported

Source: IFRC (2010)

• Of all 'natural' disasters from 2000 to 2008, flood events affected the largest number

• 99 million people per year

Source:

Summarised from: IFRC (2010). Table 2.1. Large disaster events over the period 2000–2010 impacting on cities; and p34-36.





IPCC WGII (2007). Technical summary. Figure TS.8. Relative vulnerability of coastal deltas as indicated by estimates of the 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). Climate change would exacerbate these impacts.

Regional projections of climate impacts (1)								
	Global mean annual temperature change relative to 1980-1999 (°C) 1 2 3 4	5°C						
AFRICA	10 to 15% ¹ 25 to 40% ¹ Sub-Saharan species at risk of extinction Semi-arid / arid areas increase by 5 to 8% ² 350 to 600 million ³ Additional people with increased water stress							
ASIA	2 to 5% decrease wheat and maize 5 to 12% decrease Crop yield rice in China ⁴ potential Additional people at risk of coastal flooding each year 0.1 to 1.2 billion ⁶ 0.2 to 1.0 billion ⁶ Additional people with increased water stress							
AUSTRALIA / NEW ZEALAND	Annual bleaching of Great Barrier Reef 7 3,000 to 5,000 more heat related deaths per year ⁸ -10% Murray-Darling River flow ⁹ -50% Decreasing water security in south and east Australia and parts of east New Zealand ¹⁰							
EUROPE	+5 to +15% in Northern Europe ¹¹ +10 to +20% ¹¹ -5 to -35% ¹¹ +10 to +20% ¹¹ -5 to -35% ¹¹ +10 to +30% ¹² +10 to +30% ¹² +3 to +4% in Southern Europe ¹² -10 to +20% ¹² +10 to +20% ¹¹ +10 to +30% ¹² -15 to +30% ¹² +10 to +30% ¹²							
	Source: IPCC (2007)						

IPCC WGII (2007). Technical summary. Table TS.4. Examples of regional impacts projected for changes in climate (and sea level and atmospheric CO2 where relevant) associated with different amounts of increase in global average surface temperature in the 21st century. This is a selection of some estimates currently available.



IPCC WGII (2007). Technical summary. Table TS.4. Examples of regional impacts projected for changes in climate (and sea level and atmospheric CO2 where relevant) associated with different amounts of increase in global average surface temperature in the 21st century. This is a selection of some estimates currently available.



Associated Press (2011). Future holds more extreme weather. 1 November.

http://hosted.ap.org/dynamic/stories/U/US_SCI_CLIMATE_EXTREMES?SITE=AP&SECTIO N=HOME&TEMPLATE=DEFAULT

'Likely' – between 66% and 90% probability