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2009年1月21日

「気候変動と健康～施策と研究の優先順位」

ジュスタシオ・モレノ・ラピタン

WHO 健康開発総合研究センター (WHO 神戸センター)

都市化と健康危機管理プログラム 研究官

#### 経歴

1990年フィリピン大学にて医学の学位取得

96年アドヴェンチスト大学にて公衆衛生の修士号取得

UNHCR [国連難民高等弁務官事務所] 主催の「緊急管理研修プログラム」ならびに  
国際赤十字委員会主催「大集団のための救急コース」修了。

1995年～98年、健康開発ケア担当理事

99年～2003年、「国境なき医師団」ベルギーオフィス・メディカルコーディネータ

2003年 WHO 西太平洋地区コンサルタント

2004年度 WHO 東チモール事務所公衆衛生担当官

#### WHO での主な業績

2007年出版の冊子「気候変動による熱波・洪水と健康への影響：都市部での医療担当者  
のための研修ワークショップに関するプロトタイプ」発行責任者。

2007年7月にクアラルンプールにて開催の「気候変動と東南アジアならびに東アジア  
諸国に関するワークショップ」の進行役を務める。

2008年 WHO 設立60周年・世界健康年を記念して神戸で開催されたシンポジウム「気  
候変動が健康に及ぼす課題」の開催を担当

2008年10月マドリードにて開催された「健康と気候変動に関するグローバル・リサ  
ーチ・アジェンダ」WHO 協議会に参加。

2008年11月神戸にて開催された「都市部における気候変動と健康～施策と優先順位  
に関する WHO ワークショップ」を担当。

HEM21

21 January 2009

### **Climate change and health: priorities for action and research**

Dr Jostacio M. Lapitan

Technical Officer, Urbanization and Emergency Preparedness  
World Health Organization (WHO) Centre for Health Development (WHO Kobe Centre)

#### Biosketch:

Dr Lapitan holds a medical degree from the University of the Philippines (UP, 1990). He completed his Masters in Public Health at the Adventist UP (AUP, 1996). He later completed the UNHCR's "Emergency Management Training Program" and the ICRC's "Health Emergency for Large Populations" course. Before his current post at WKC, Dr Lapitan was a Public Health Officer of the WHO Country Office for Timor-Leste (2004); a Consultant of the WHO Western Pacific Regional Office (2003); Medical Coordinator of Medecins Sans Frontieres (MSF) or Doctors Without Borders-Belgium (1999-2003); and Executive Director of Care for Health and Development (1995-1998).

With WHO he has been responsible for the publication "Heat waves, floods and the health impacts of climate change: a prototype training workshop for city health officials" (2007). He facilitated the "Workshop on Climate Change and Health in South-East and East Asian Countries in Kuala Lumpur (July 2007) and organized a symposium entitled "Challenges to Health Security from Climate Change" in Kobe/Hyogo on the occasion of WHO's 60<sup>th</sup> anniversary and World Health Day 2008. He participated at the "WHO consultation on a global research agenda on health and climate change" held in Madrid (October 2008) and was the Responsible Officer for the "WHO workshop on research priorities for climate change and health in urban settings" (November 2008) held in Kobe, Japan.

# Climate change and health in urban settings: priorities for action and research

Dr Jostacio M. Lapitan  
Technical Officer  
WHO Centre for Health Development



## Outline of the presentation

- What are the risks?
- Who is at risk?
- What we can do...





## Climate change – a multiplier and exacerbator of existing health risks



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## Weather, an ancient human health exposure

“Whoever wishes to investigate medicine properly, should proceed thus: in the first place to consider the seasons of the year, and what effects each of them produces for they are not at all alike, but differ much from themselves in regard to their changes. Then the winds, the hot and the cold, especially such as are common to all countries, and then such as are peculiar to each locality”

On Airs, Waters and Places. Hippocrates (Circa 400 B.C)



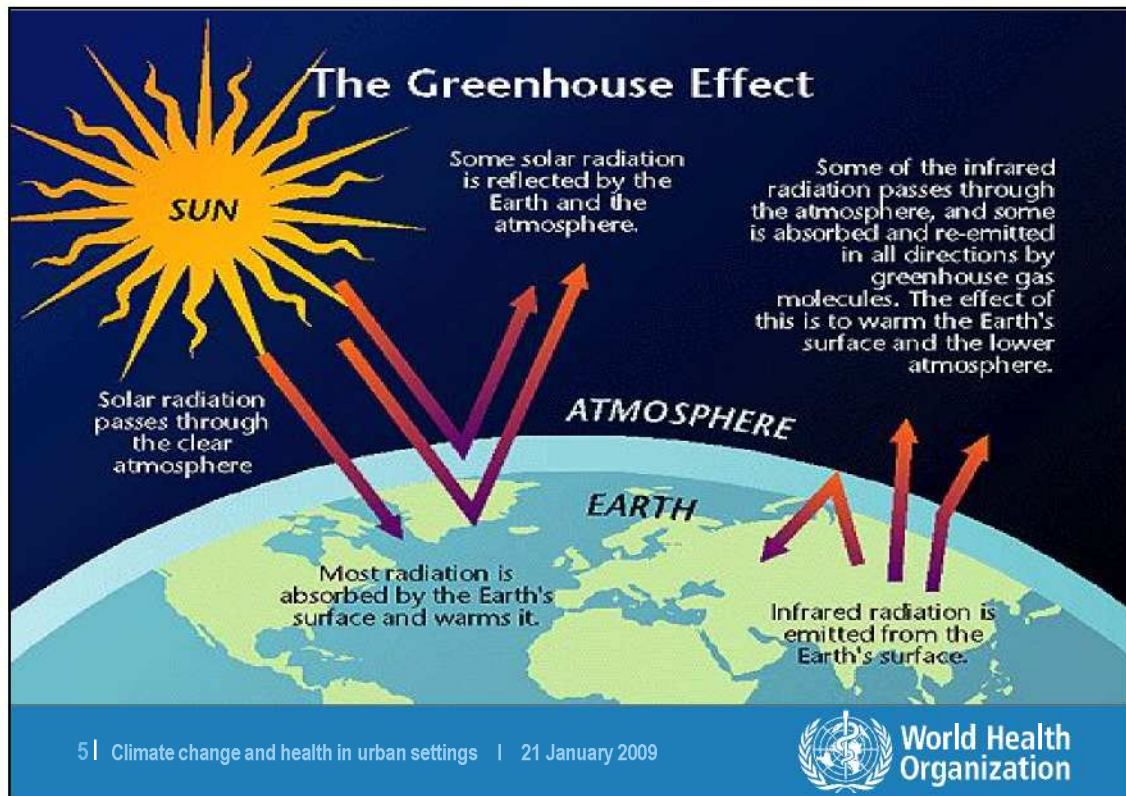
Hurricane Georges, Dominican Republic, 1998



Hurricane Mitch, 2000

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## Definitions

- Climate is what you expect
  - based on 30-year averages
- Weather is what you get
- Climate variability
  - Short-term fluctuations around the average weather
  - Includes ENSO (El Niño/La Niña - Southern Oscillation)
- Climate change
  - Operates over decades or longer
  - General Circulation Models (GCMs)
    - Scenarios, NOT predictions

**Climate change is projected to entail changes in variance, as well as changes in mean.**

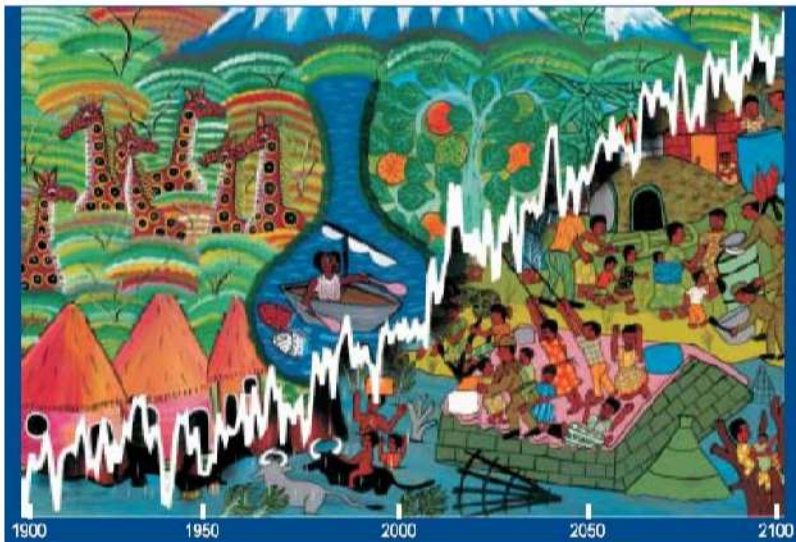
(a) Increase in mean temperature: The 'New climate' curve is shifted to the right, indicating higher average temperatures. This results in 'Less cold weather' and 'More hot weather', with a significant increase in 'More record hot weather'.

(b) Increase in variance of temperature: The 'New climate' curve is wider and shorter, indicating more extreme temperatures. This results in 'More cold weather' and 'More hot weather', with increases in both 'More record cold weather' and 'More record hot weather'.

(c) Increase in mean and variance of temperature: The 'New climate' curve is both shifted right and wider. This results in 'Less change for cold weather' and 'Much more hot weather', with a significant increase in 'More record hot weather'.

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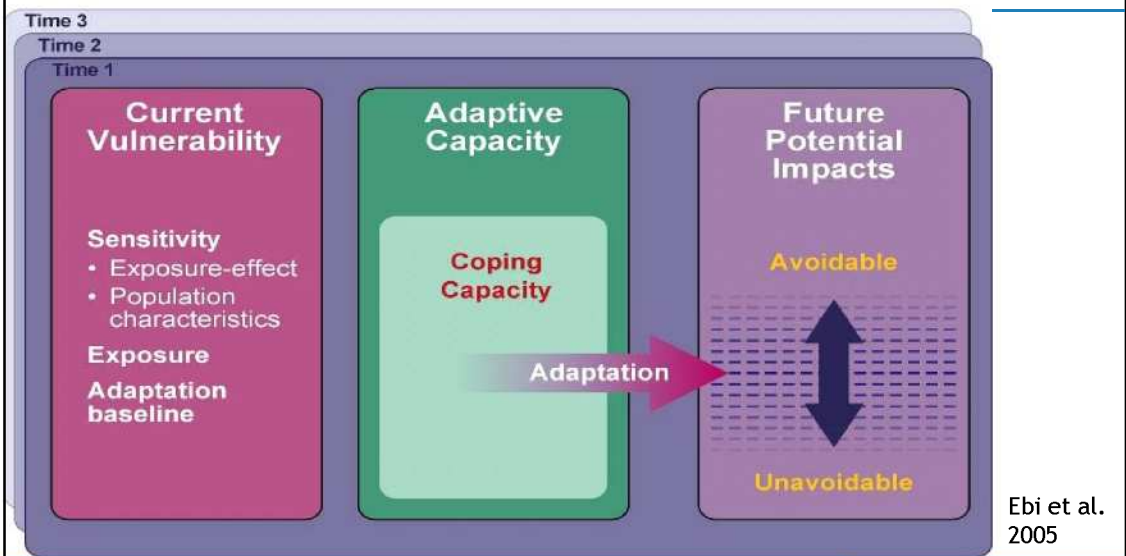
**Never before have carbon dioxide levels climbed so fast and so high!**



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## Vulnerability and adaptation



Ebi et al. 2005

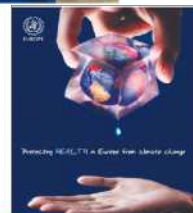
## Precautionary approach

**Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures.**



## What are the risks?

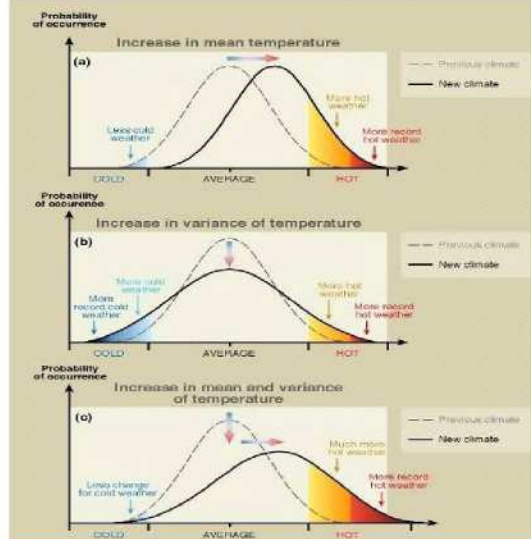
- **What are the risks?**
- **Who is at risk?**
- **What we can do...**





## Key messages of AR4

- Climate change is now
- Health impacts are occurring
- Inertia in the climate system means change will continue for decades after successful control or exhaustion of greenhouse gas emissions
- Extent of health impacts will depend on our ability to design and implement effective adaptation measures

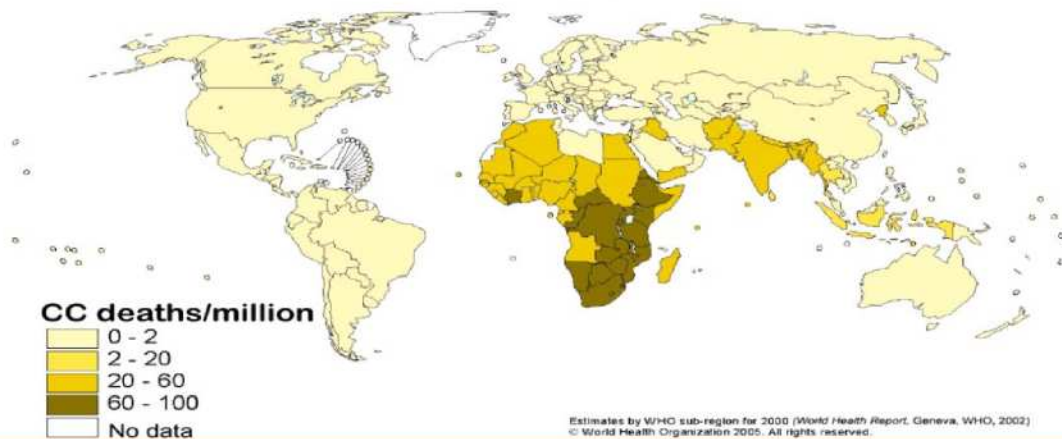


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## Current health burden due to climate change

### Deaths from climate change



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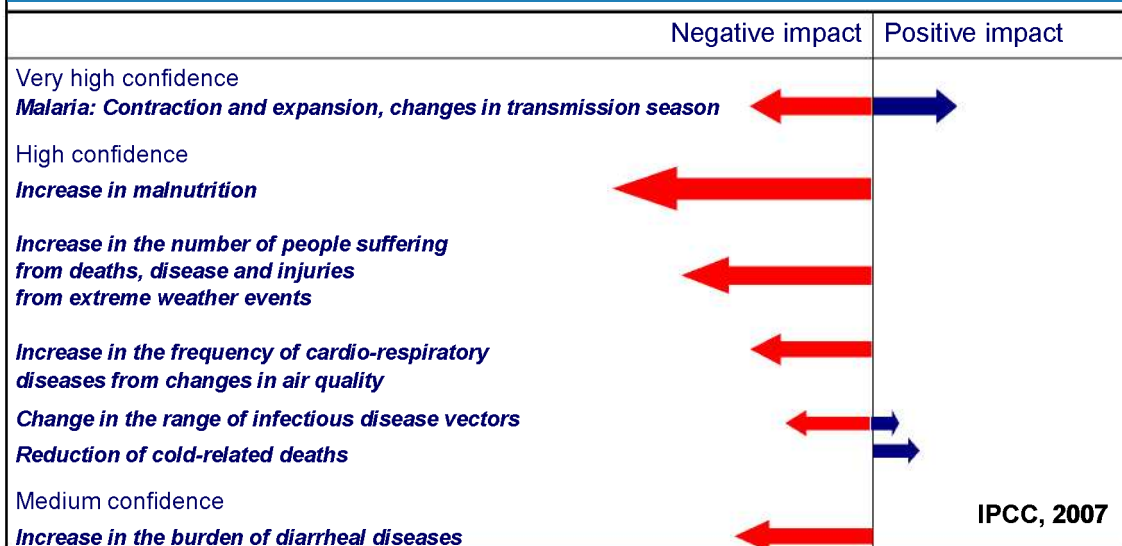
## IPCC AR4 health impacts of climate change

### Projected trends

- Malnutrition
- Increase in morbidity and mortality due to heatwaves, floods, droughts, windstorms, and fires
- Cardiovascular disease
- Dengue
- Diarrhoeal diseases
- Mixed effects on malaria
- Some health benefits

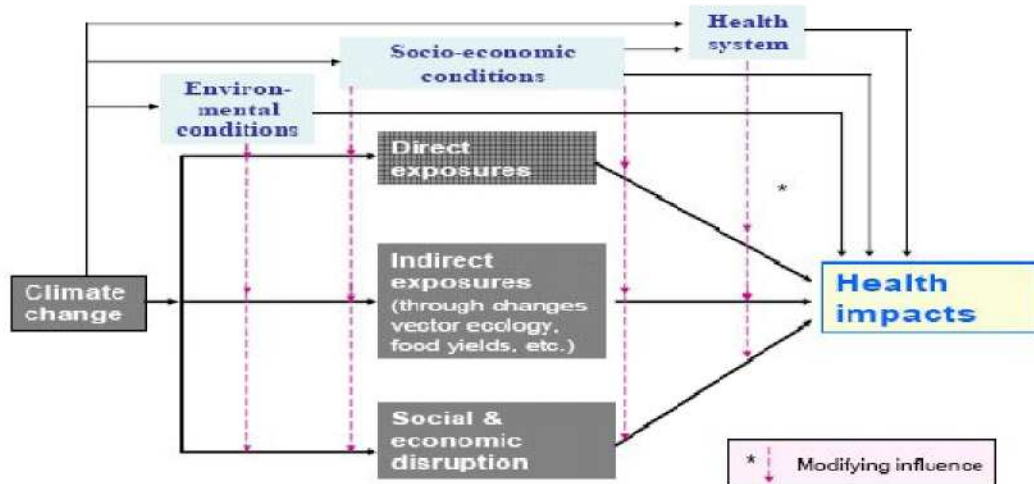


## Direction and magnitude of change of selected health impacts



IPCC, 2007

## Pathways by which climate change may affect human health (IPCC, 2007)



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## Who is at risk?

- What are the risks?
- Who is at risk?
- What we can do...



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## Health impacts of climate change

- Adverse impacts will be greatest among low-income countries
- Economic development is important, but is insufficient to protect the world's population against the health impacts of climate change  
<http://www.ipcc.ch/>
- Adaptive capacity needs to be improved everywhere



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## Climate change will affect everybody but not in the same way

### Populations differ in vulnerability

- Children are most at risk from the effects of climate change.
- Heat primarily affects older people.
- Emergency service providers and labourers in outdoor environments are especially affected by extreme weather events.
- Wealth protects.



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## Heat disorders in Japan, 2007 Based on the results of ambulance transportation records

**Dr Masaji Ono**  
National Institute for Environmental Studies, Japan

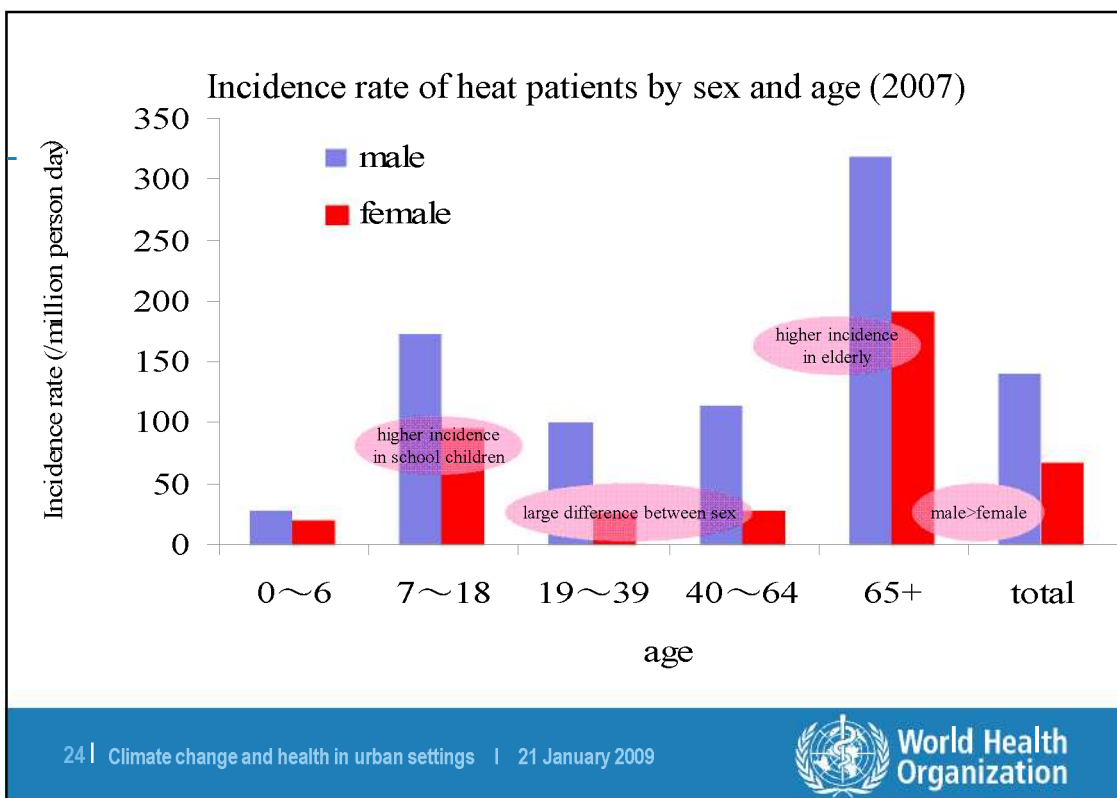
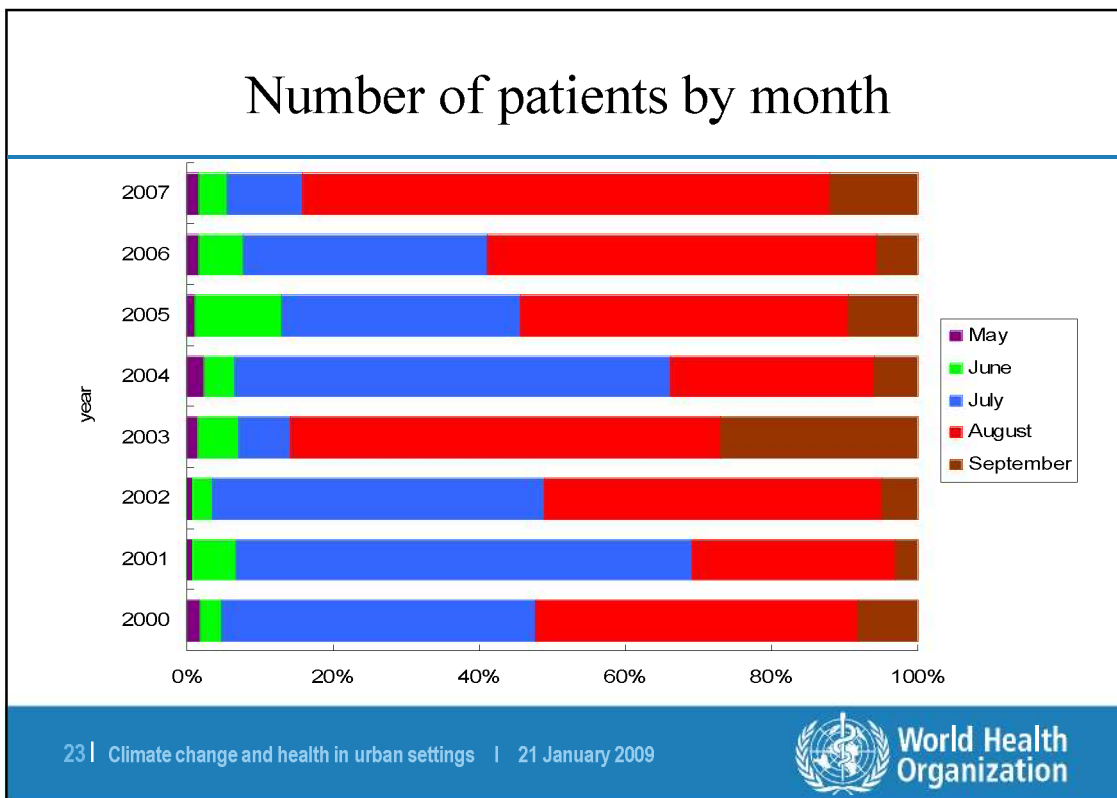
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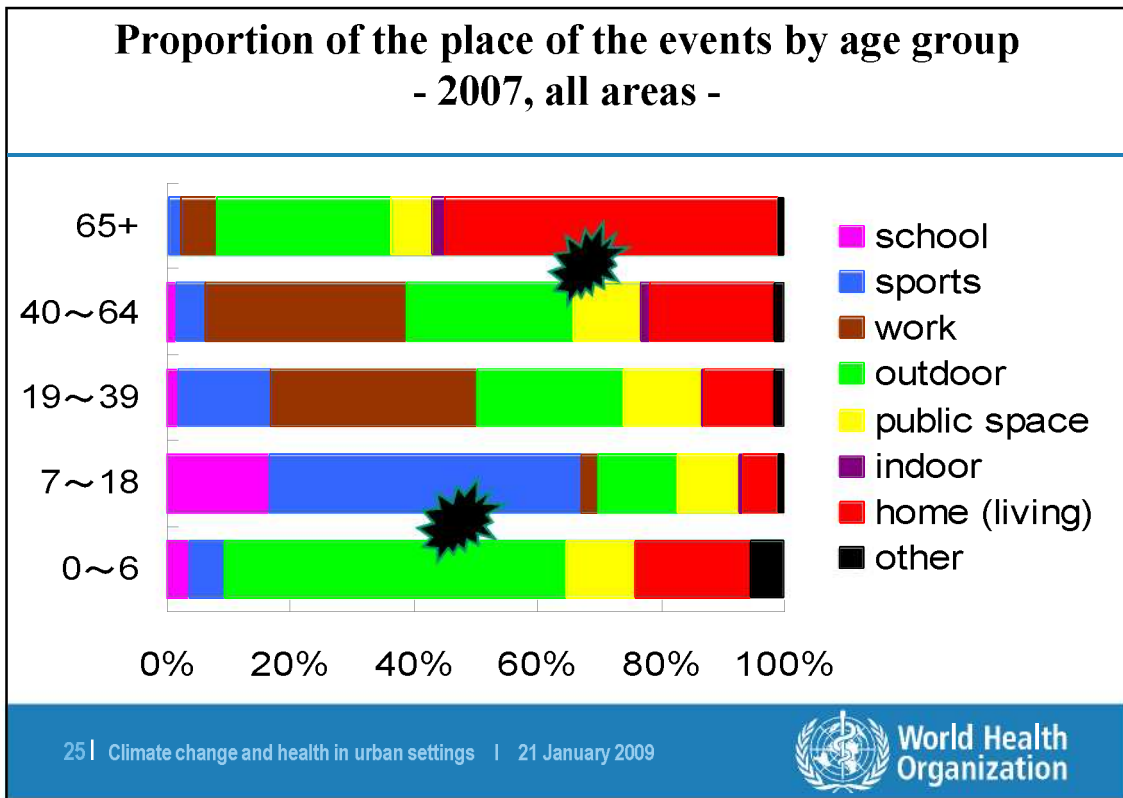


| Number of the patient from heat disorders (person) |      |       |       |       |       |       |       |       |
|--|------|-------|-------|-------|-------|-------|-------|-------|
|  | 2000 | 2001  | 2002  | 2003  | 2004  | 2005  | 2006  | 2007  |
| Sapporo  |      |       |       |       |       | 29    | 68    | 95    |
| Sendai   |      |       | 66    | 18    | 54    | 54    | 37    | 115   |
| Saitama  |      |       |       |       |       | 176   | 164   | 350   |
| Chiba *  | 59   | 74    | 104   | 56    | 114   | 115   | 178   | 164   |
| Tokyo (1) *  | 269  | 393   | 416   | 207   | 521   | 642   | 363   | 879   |
| Tokyo (2) *  | 143  | 186   | 227   | 147   | 271   | 373   | 225   | 389   |
| Tokohama *   | 92   | 212   | 190   | 131   | 221   | 253   | 226   | 398   |
| Kawasaki *   | 47   | 88    | 98    | 85    | 157   | 126   | 90    | 166   |
| Niigata  |      |       |       |       |       |       |       | 119   |
| Shizuoka   |      |       |       |       |       |       |       | 158   |
| Hamamatsu  |      |       |       |       |       |       |       | 115   |
| Nagoya *   | 85   | 140   | 134   | 100   | 101   | 119   | 163   | 231   |
| Kyoto  |      |       |       |       | 199   | 252   | 211   | 407   |
| Osaka  |      |       | 184   | 126   | 201   | 172   | 240   | 339   |
| Sakai  |      |       |       |       |       | 79    | 96    | 173   |
| Kobe   |      |       |       | 114   | 134   | 140   | 176   | 262   |
| Hiroshima *  | 39   | 112   | 79    | 69    | 182   | 145   | 180   | 267   |
| Kitakyushu   |      |       |       | 104   | 178   | 124   | 200   | 205   |
| Fukuoka  |      |       |       |       |       | 136   | 280   | 270   |
| Total  | 734  | 1,205 | 1,498 | 1,157 | 2,333 | 2,935 | 2,897 | 5,102 |
| Sub Total *  | 734  | 1,205 | 1,248 | 795   | 1,567 | 1,773 | 1,425 | 2,494 |
| * Cities covering 2000~2007                        |      |       |       |       |       |       |       |       |

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## What we can do...

- What are the risks?
- Who is at risk?
- What we can do...

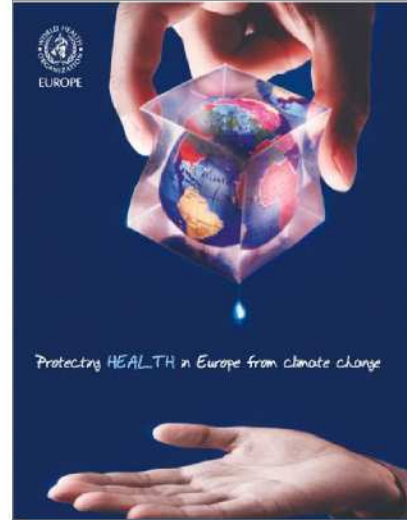




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## Adaptation

- Climate change cannot be totally avoided.
- Climate change may be more rapid and more pronounced than current estimates.
- The severity of impacts will depend on the capacity to adapt and its effective deployment.
- Immediate benefits can be gained from better adaptation to climate variability and extreme events.
- **Climate change brings opportunities as well as threats.**



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## Determinants of adaptive capacity

- **Economic resources**
- **Technology**
- **Information and skills**
- **Infrastructure**
- **Institutions**
- **Equity**
- **Health status and pre-existing disease burdens**



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## Awareness raising & capacity building

HEAT WAVES, FLOODS AND THE HEALTH IMPACTS OF CLIMATE CHANGE

*A Prototype Training Workshop for City Health Officials*

[www.who.or.jp](http://www.who.or.jp)

World Health Organization  
Centre for Health Development

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World Health Organization

## Promoting and strengthening evidence-based research

### World Health Assembly (WHA) 61.19

193 Member States of WHO passed this resolution in May 2008 calling for a stronger action to address the health risks associated with climate change



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## Actions at multiple levels: strengthening public health systems



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## Making a difference – leading by example

*“I said that I wasn’t clever.*

*I was just noticing how things  
were, and that wasn’t clever.  
That was just being observant.*

*Being clever was when you  
looked at how things are  
and used the evidence to work  
out something new.”*

*(Mark Haddon, 2002)*



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## Solutions are available

- **We need champions** “We are the champions - my friends” “Let’s make it our mission to stop our emissions.”
- **Adaptation is possible**
- **Integrated solutions are available if we think of co-benefits or multiple benefits**
- **Sharing lessons learnt with one another as one humanity is crucial**



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## Governance and capacity building

**193 Member States agreed on a World Health Assembly resolution 61.19, May 2008**



**WHO global workplan for action (in process)**

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## Dealing with heat waves

**Mortality increases between 1% and 4%  
for each degree of C temperature raise (KOVATS 2006)**

- Over 70 000 extra deaths reported in Europe in summer 2003 (ROBINE 2008).
- 86 000 extra deaths estimated per year with a global mean temperature increase of 3C in 2071-2100 in the EU (PESETA 2008).
- Decreased work productivity

### How to reduce the health effects of heat waves

*Implement heat-health action plans by*

- *ensuring health systems' preparedness and ability to respond*
- *reducing community exposure to heat*
- *providing timely weather-related health alerts and advice to citizens*

## Climate change → Human change

If not now,  
when?

If not us,  
who?



More info on climate change and health:  
<http://www.who.int/globalchange/climate>

## Consultation on defining a global research agenda (Madrid, 2008)

- Training
- Guidance documents
- Case studies
- Indicators
- Health models
- Partnerships



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## WHO workshop on research priorities for climate change and health in urban settings (Kobe, 2008)

### Priority research issues:

- The need for a clearinghouse on best practices and lessons learnt;
- The development of communication tools (within and across sectors); and
- The development of indicators of vulnerability, resilience, effectiveness of responses, and related issues.



WHO Workshop on Research Priorities for Climate Change and Health in Urban Settings  
Kobe, Japan, 27-29 November 2008

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## We can do it!

### PPr

- Political commitment
- Policies
- Programmes
- Practices (lifestyles)
- technology



*“Healthier people  
in healthier environments”*

## Announcement

- IGES-WHO Joint International Symposium 2009 on Climate change, environment and health on 2 March 2009 at the Hyogo House 13h30 to 16h30



Healthy  
Urbanization

[www.who.or.jp](http://www.who.or.jp)