Health Impacts of Disasters and Climate Change: Challenges to Hospitals and Public Health Systems

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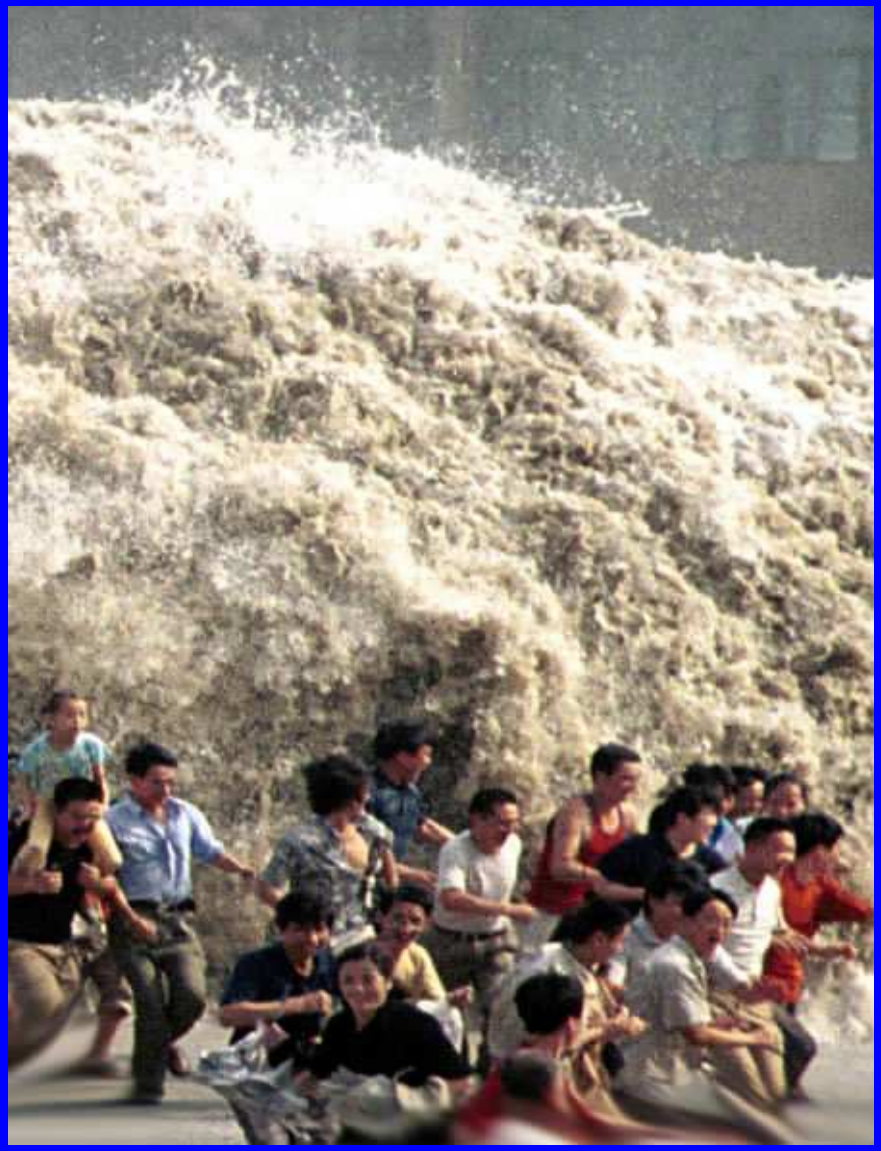
Third Global Congress of Women in Politics and Governance

21 October 2008

Disasters - threats to life & health

- 2 billion people affected with 600,000 fatalities globally (1990-1999)
- More than 2/3 of deaths occurred in Asia
- 127 major disasters, 23% of all disasters worldwide, occurred in WPR in the past 10 years
- Philippines is considered the most disaster-prone with its active volcanoes and an average of 20 typhoons a year.
- Loss of loved ones, homes, livelihood

Hospital damaged in disasters



~ Globally, hundreds of hospitals/health facilities destroyed or damaged during disasters each year

~ Millions of people are left without emergency care during and after disasters when hospitals and health facilities fail to function.

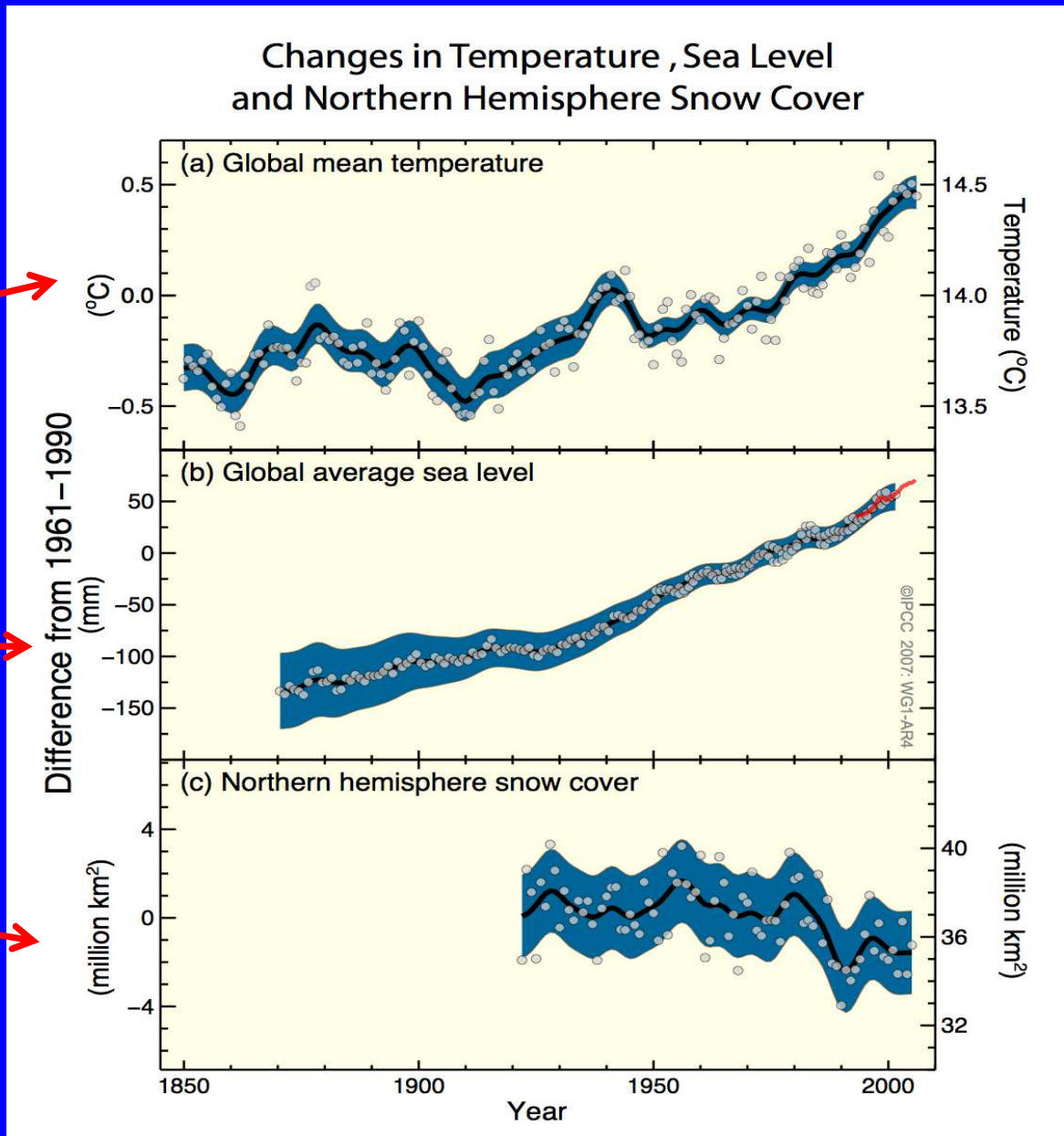
~ Millions more without public health and clinical services when operations are disrupted due to damage to facility

Climate change is Unequivocal

Rising atmospheric temperature

Rising sea level

Reductions in North Hemisphere snow cover



Climate change is here!

Ten Warmest Years on Record

2005
1998
2002
2003
2001
1997
1995
1990
1999
1991
2000

The health effects of climate change

Some expected impacts will be beneficial but most will be adverse. Expectations are mainly for **changes in frequency or severity of familiar health risks**

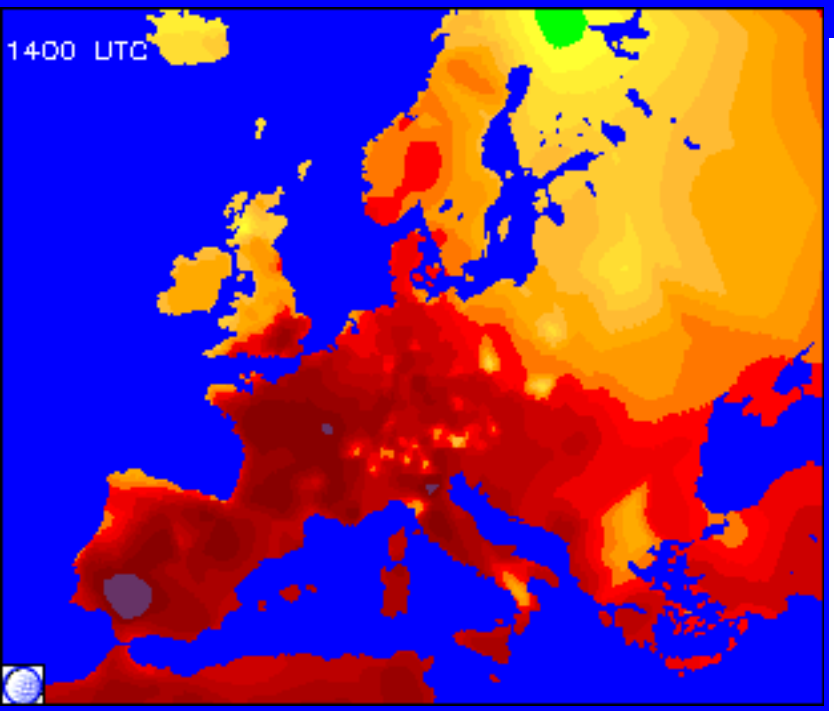
CLIMATE CHANGE →

Health effects

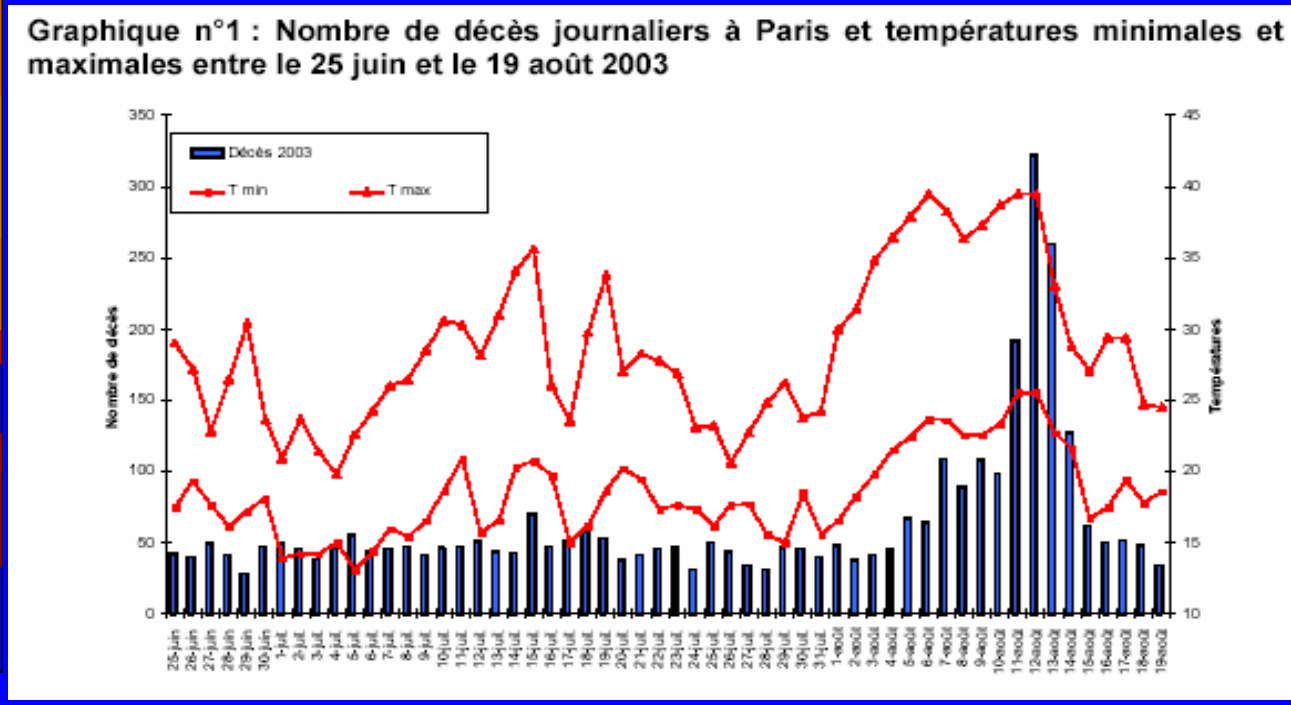
- **Temperature-related illness and death**
- **Extreme weather- related health effects**
- Air pollution-related health effects
- Water and food-borne diseases
- Vector-borne and rodent- borne diseases
- Effects of food and water shortages
- Effects of population displacement

Based on Patz et al, 2000

Climate, a health determinant



European temperatures, Summer 2003

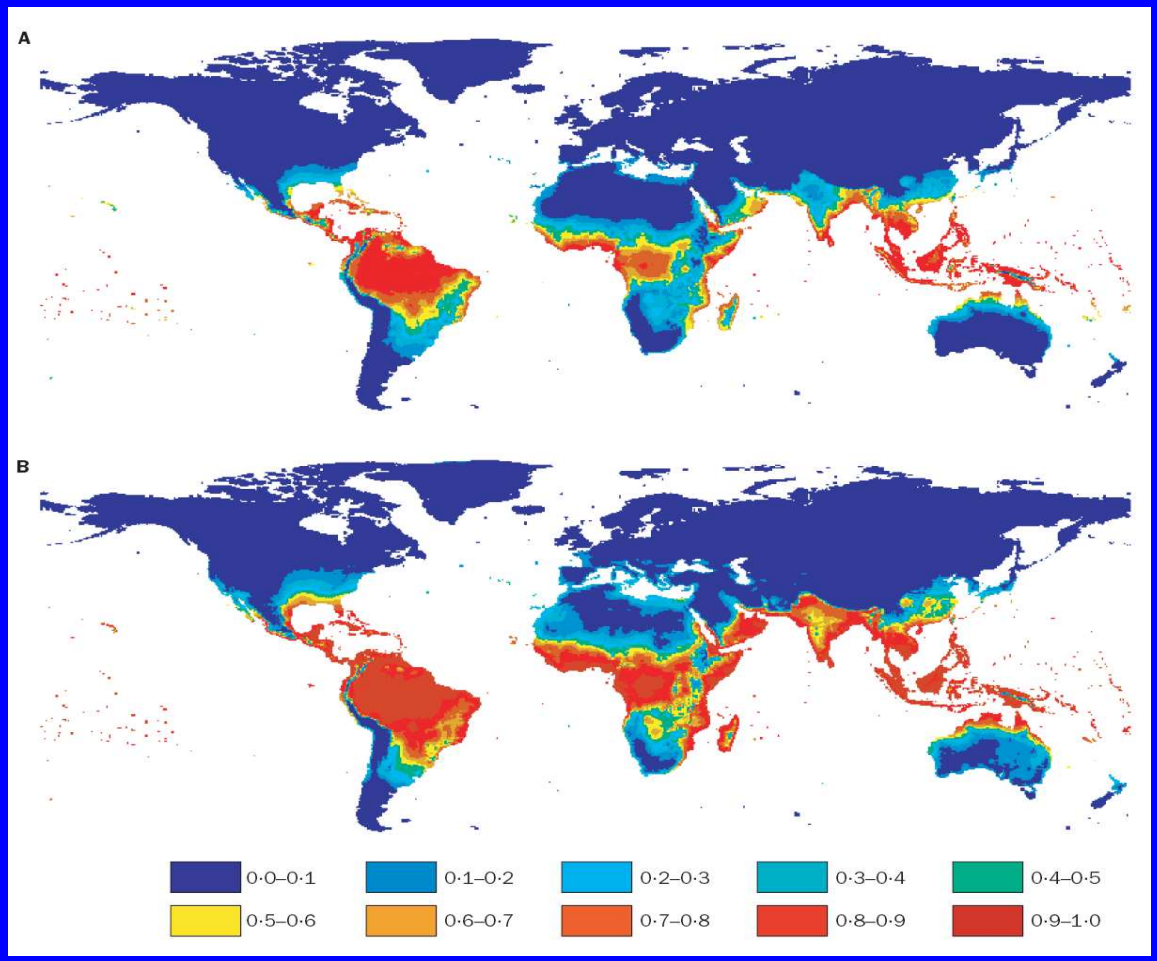


Deaths During Summer Heatwave. Paris Funeral Services (2003)

Many of the major killers are climate sensitive

- **Each year:**
  - Undernutrition kills 3.7 million
  - Diarrhoea kills 1.8 million
  - Malaria kills 1.1 million

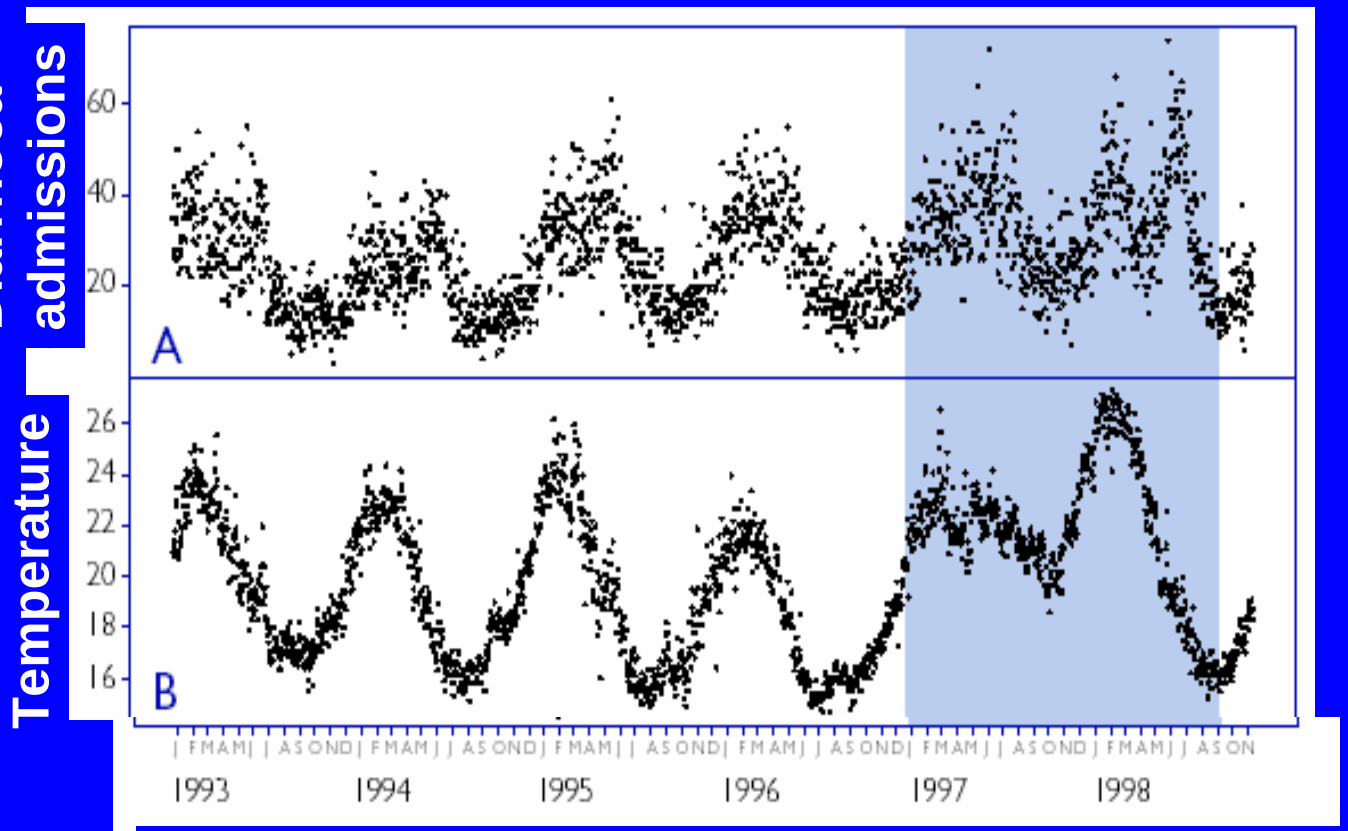
Climate Change and Dengue



Climate change is expected to increase the proportion of the global population exposed to dengue from about 35% (upper figure), to 50-60% (lower figure), by 2085.

Hales et al, *Lancet* 2002

How sensitive is health to climate?
Diarrhoea

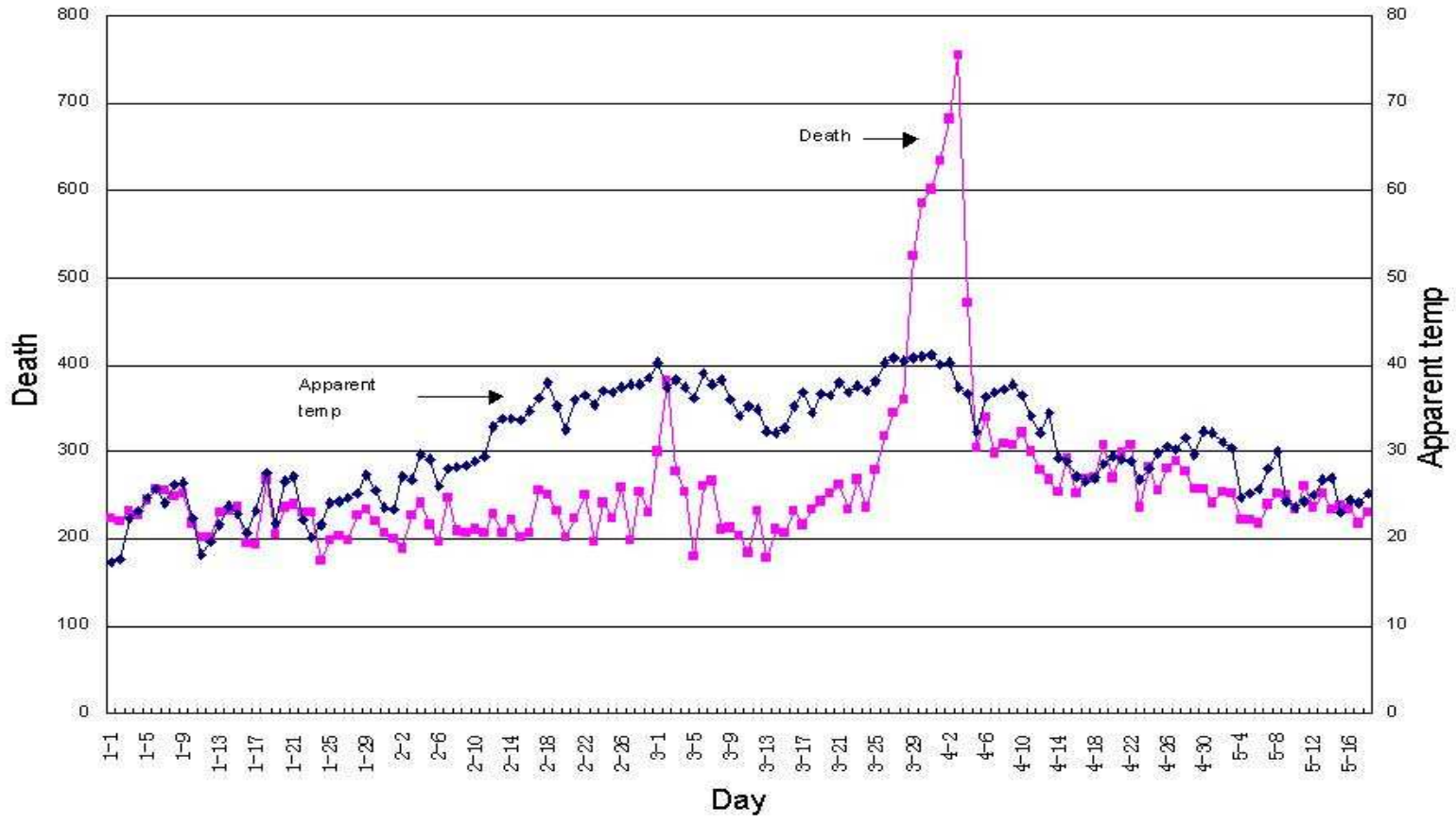


Daily measurements Jan 1993 – Dec 1998

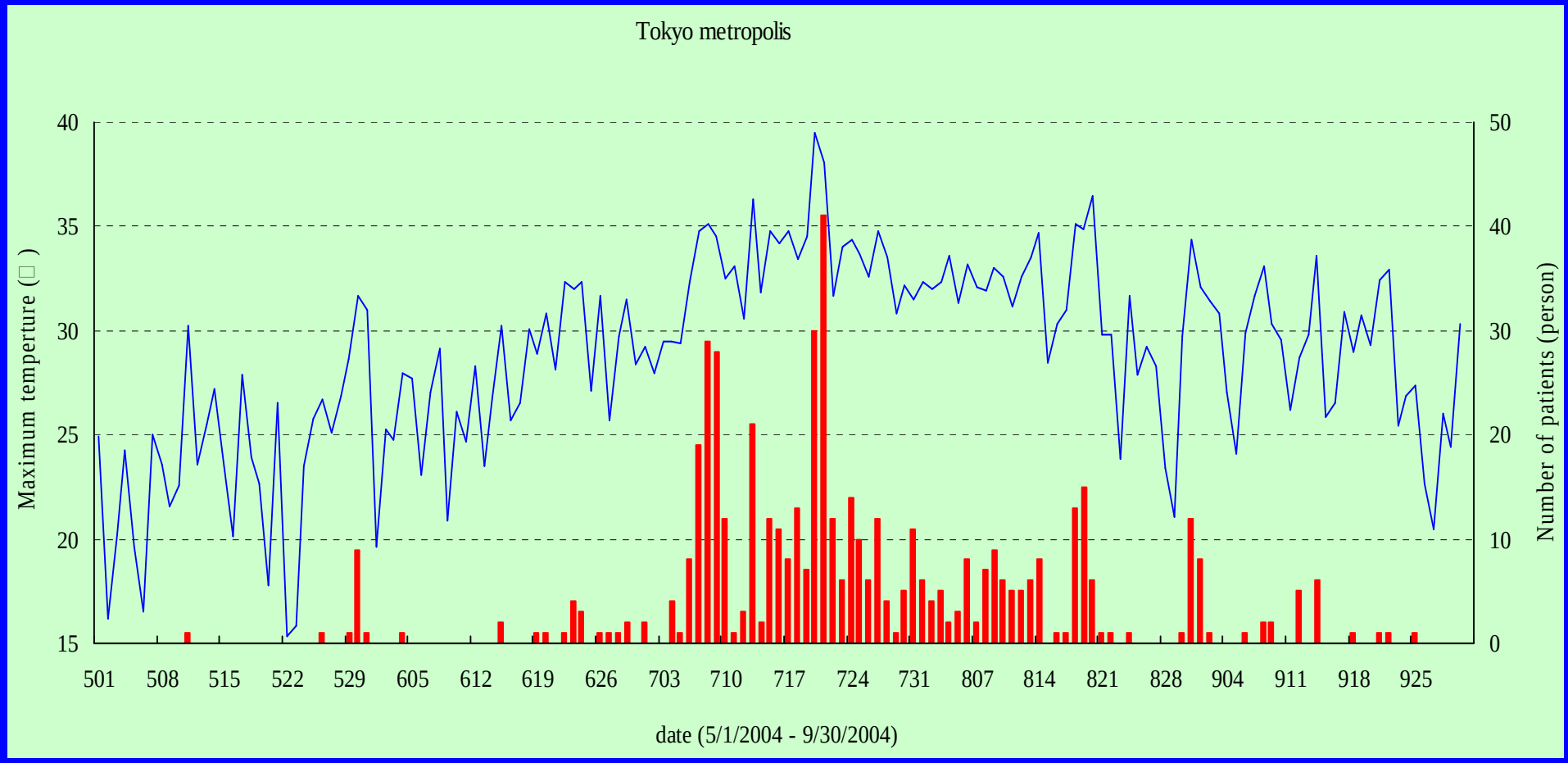
Incidence of diarrhoeal disease is strongly related to climate variables. In Lima, Peru, diarrhoea increased 8% for every 1^0C temperature increase.

(Checkley et al, Lancet, 2000)

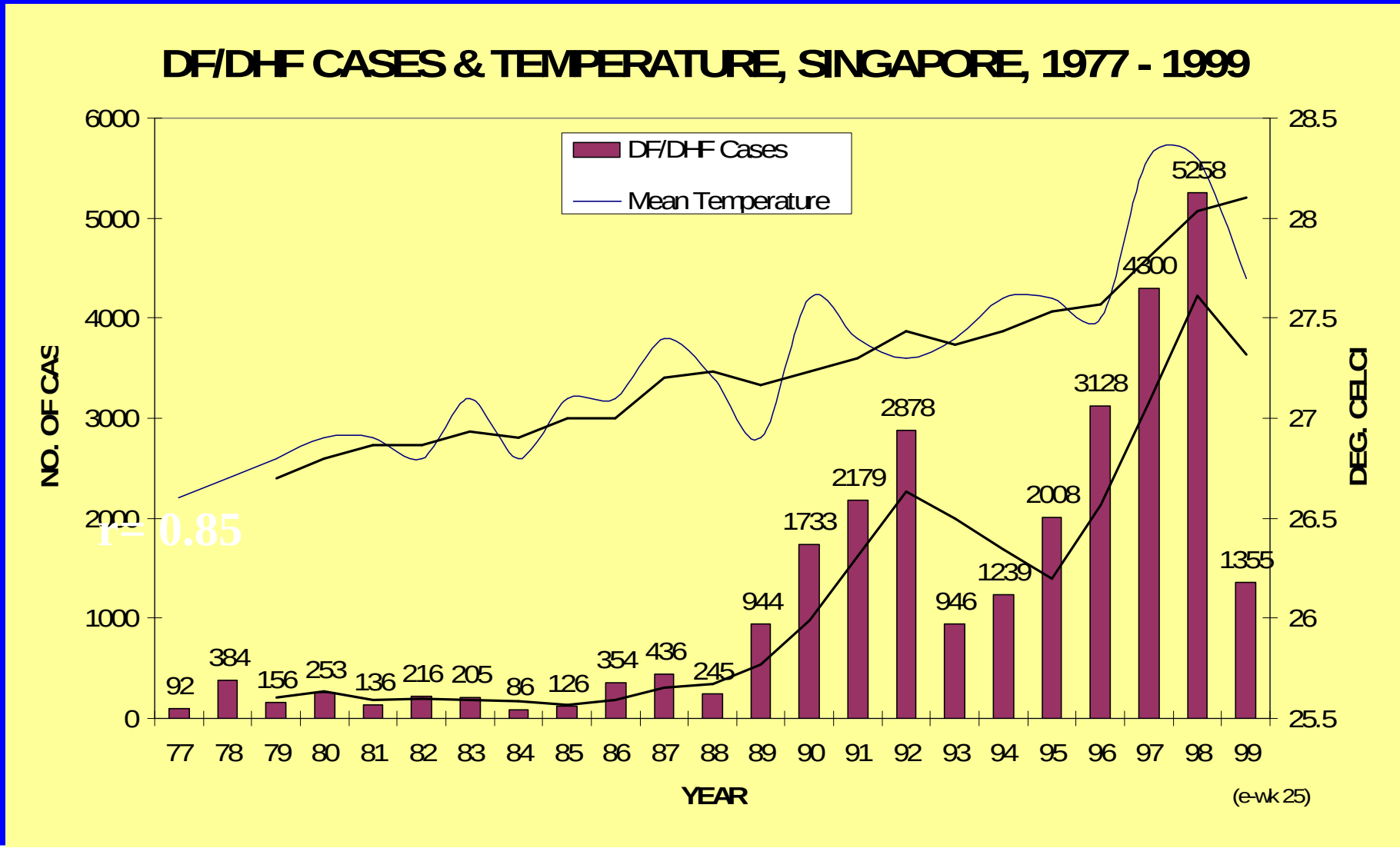
Temperature and Mortality in Shanghai in the summer of 1998



Temperature and heat-related victims in the summer of 2004 in Tokyo

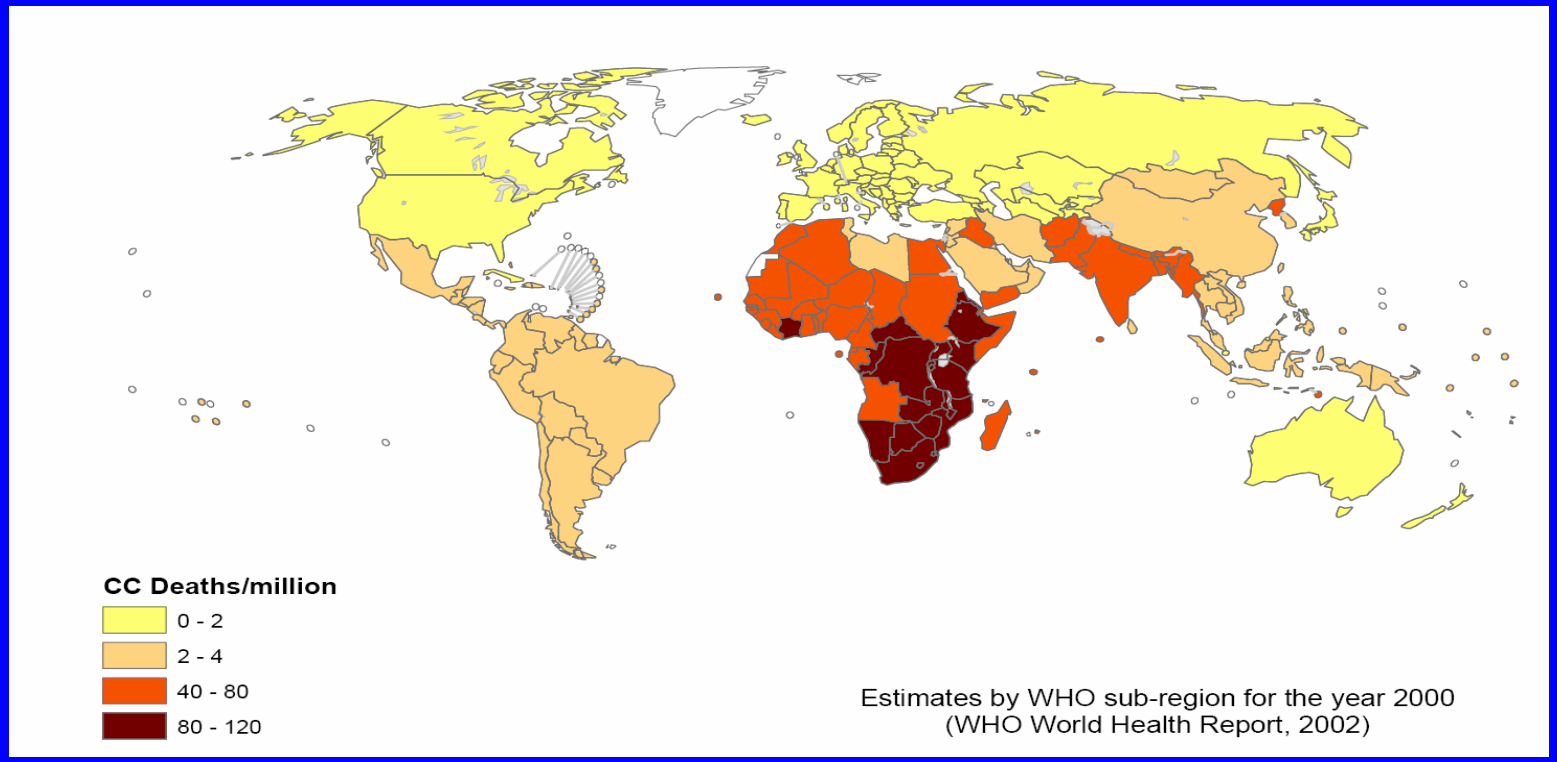


Dengue Fever/DHF Cases & Temperature, Singapore, 1977 - 1999



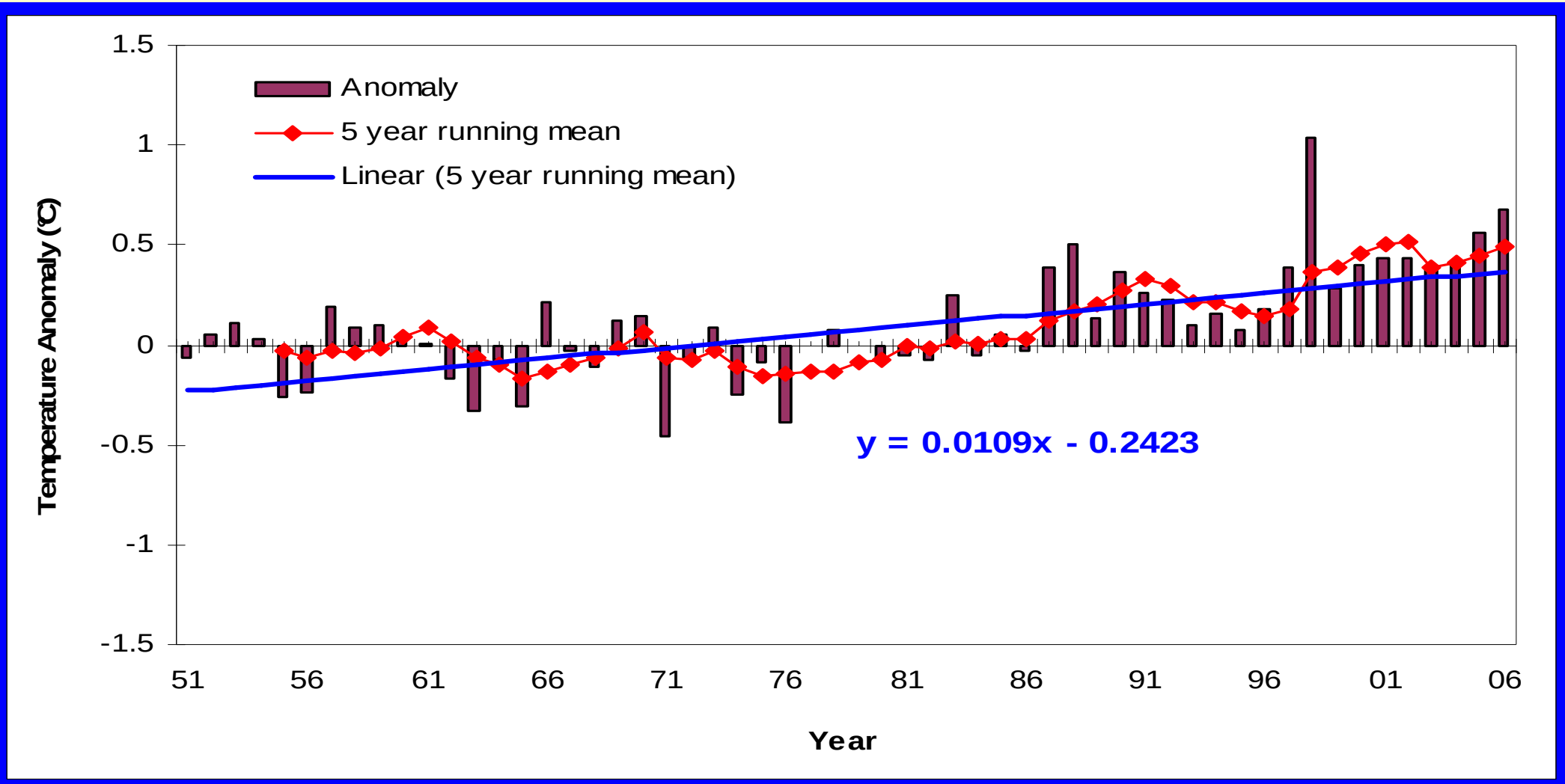
Office of the WHO Representative in the Philippines

Health risks are significant, and concentrated on the poor



WHO comparative risk assessment estimated that by 2000, climate change that had occurred since the 1970s was causing over 150,000 additional deaths per year (WHO, 2002)

Observed Mean Annual Mean Temperature Anomalies in the Philippines
Period: 1951-2006 (departures from the 1961-1990 normal values)



An increase of ***0.6104°C*** from 1951-2006

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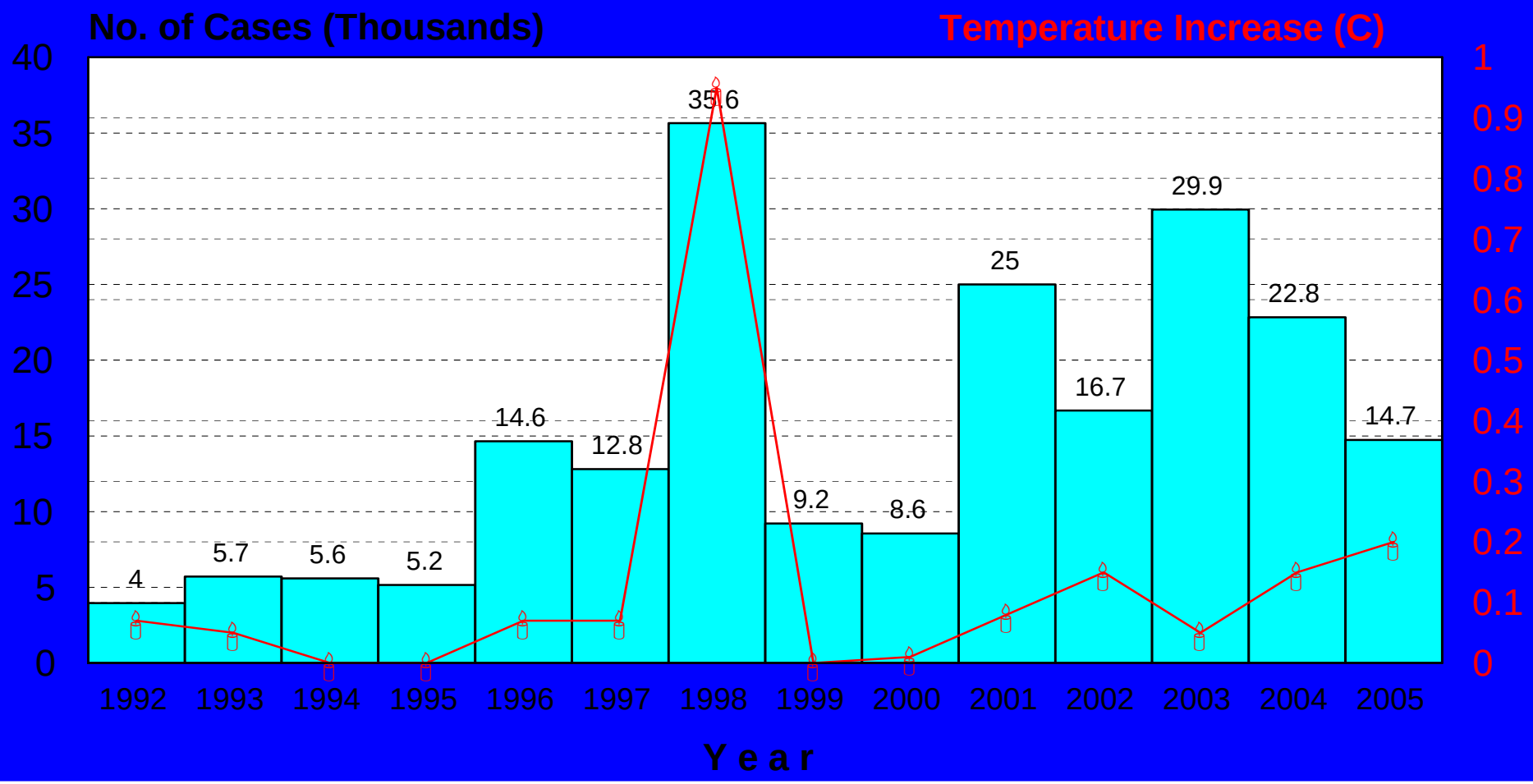
Dengue Fever Cases
Philippines, 1992 - 2005



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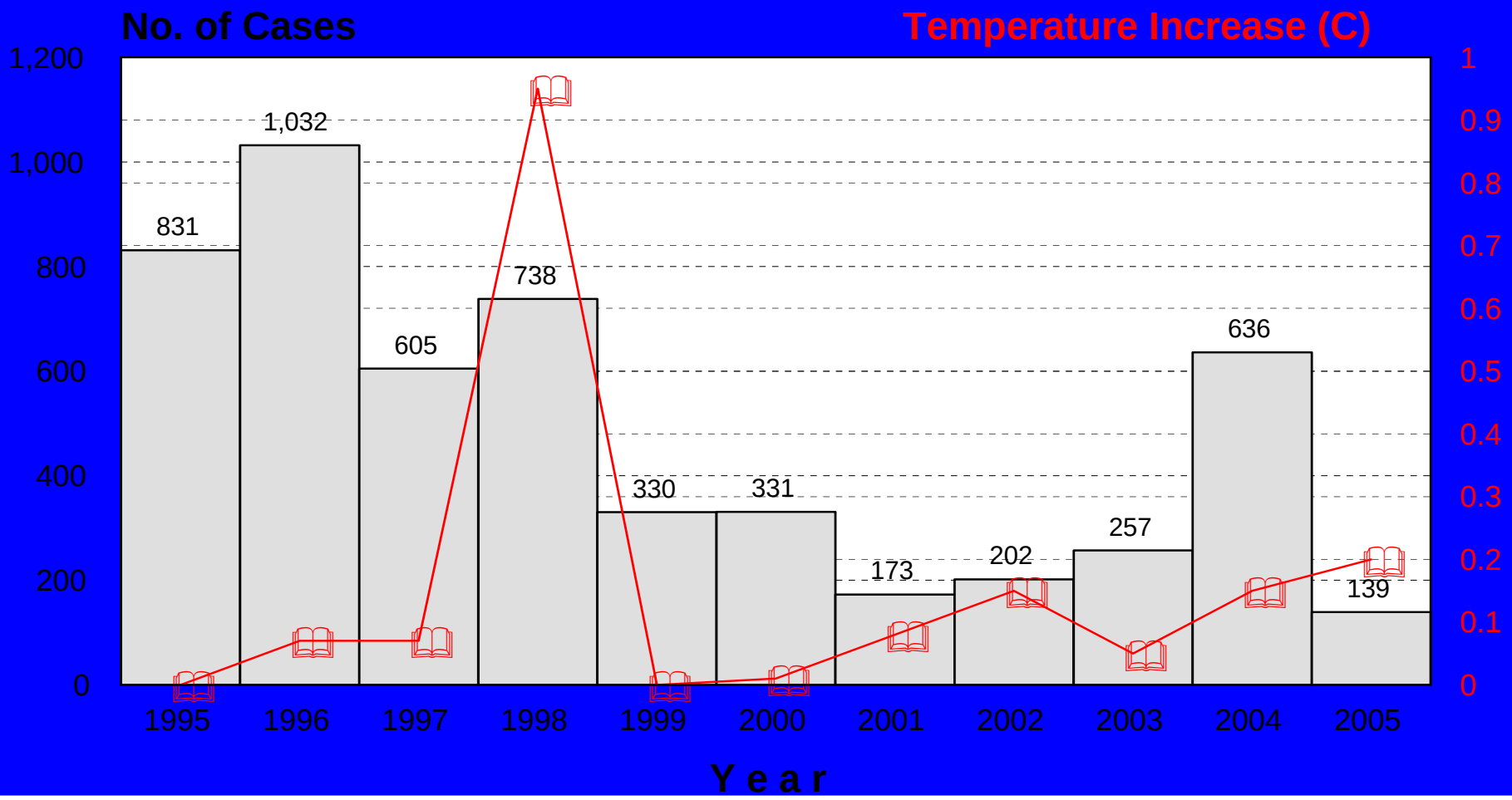
Cholera Cases
Philippines, 1995 - 2005



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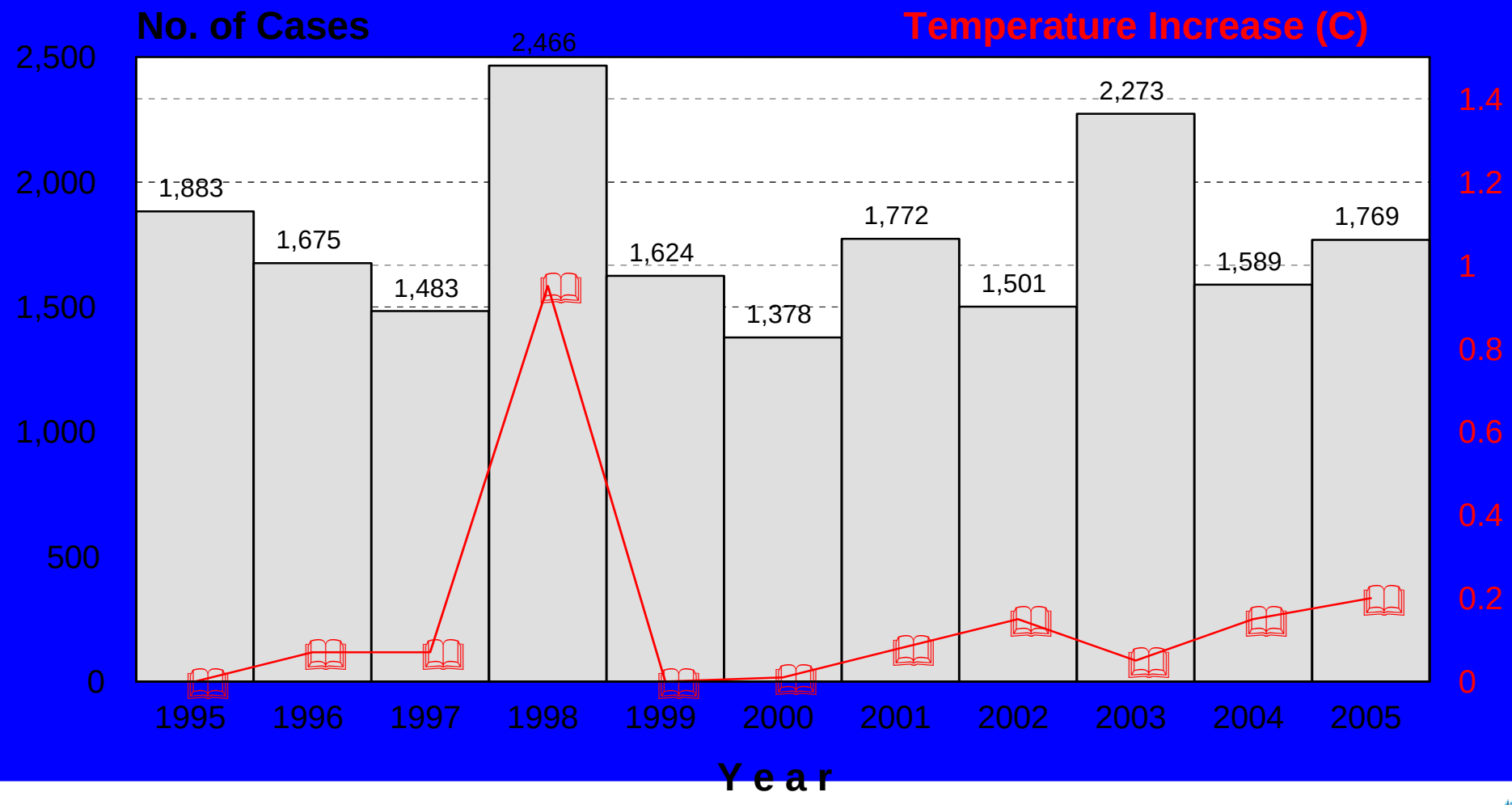
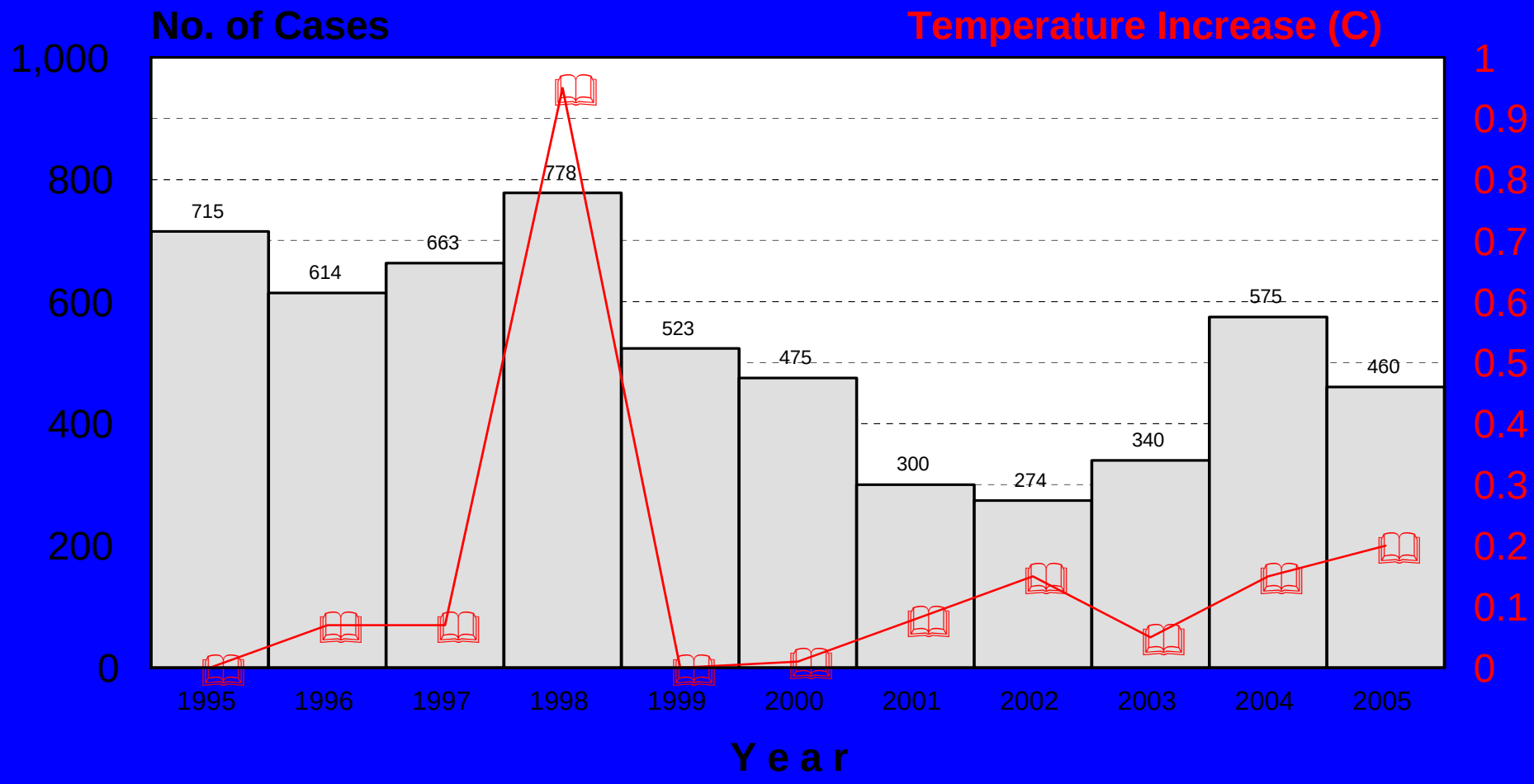
Malaria Cases
Philippines, 1995- 2005



Typhoid Fever Cases

Philippines, 1995 - 2005



Other Implications on Communities

- More disasters
- More floods and landslides
- Permanent loss of land
- Severe drought
- Implications on food production
- Implications on poverty
- Implications on social cohesion
- Risk of armed conflicts

Implications to Healthcare Facilities

- Health care services will inevitably be subject to increased demands from the community, thus overburdening existing facilities and the health care system in general.
- Adaptive strategies for healthcare facilities are necessary to ensure continuity of service delivery to the population in catastrophic weather events such as heat waves, floods, storm surges and cyclones..
- Adaptation strategies should include an allowance for an increase in the likelihood of these diseases occurring.

- Carthey and Chandra, 2007

Health and Facility Impacts of Heat waves

- The Sydney 2005 heat waves were reported as the cause of a considerable increase in hospital admissions, placing pressures on the healthcare system.
- Such events require the employment of additional staff, increased demand for medical supplies plus greater need for equipment suitable for use with overweight and older people, in addition to potentially resulting in the overcrowding iof healthcare facilities.

Health and Facility Impacts of Heat waves

- Öne hospital was swamped by people not needing medical equipment - simply looking to take advantage of its spacious air conditioned reception area".
- Can cause hospital computers to overheat and fail (1997)
- Increased use of fans and air conditioners may cause overheating in electricity supply cables and other electrical appliances, posing a risk of fire.
- Water shortages and water supply failures may also become a problem during prolonged heat waves as demand for water may increase dramatically.
- Transport systems may also suffer from problems and interruptions, complicating the situation.

Health and Facility Impacts of Floods

- The flooding of the River Elbe in 2002 in Saxony/Germany required immediate public health action/ proper public hygiene response.
- Floods result in degradation of human health and loss of life, high financial cost, trauma, and human misery.
- When healthcare facilities are flooded, electrical power outages may be unavoidable, so evacuation for oxygen-dependent patients and emergency patients may be needed.
- Flooding may create access problems for physicians and other staff travelling to and from hospital

Health and Facility Impacts of Storm Surges

- As a result of Hurricane Katrina (USA) in 2005, some hospitals were submerged in water, contaminated with sewage and chemicals (19 hospitals evacuated and 18 closed)
- Storms may potentially knock down health care facilities and wash away roads.

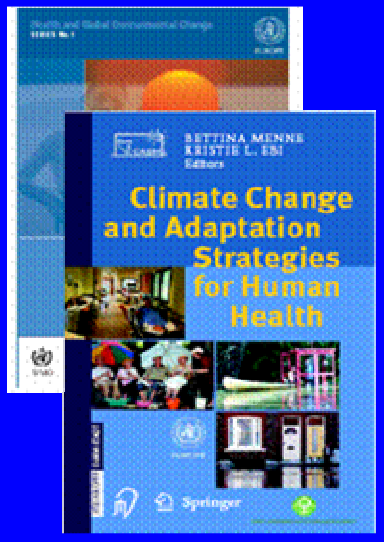
Possible Infrastructural Responses to Extreme Weather Events: Immediate

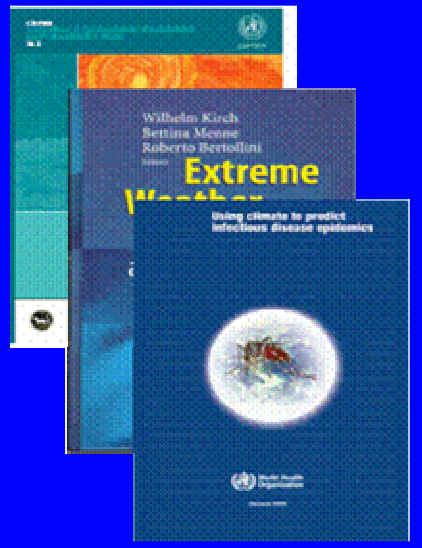
- Increased public awareness
- Warning procedures for the community, esp those at highest risk
- Thermal control
- Environmental control
- Emergency fire fighting response
- Evacuation of those in immediate danger to safer facilities, surge hospitals, etc

Possible Infrastructural Responses to Extreme Weather Events: Long-Term

- Urban Planning
- Health System Responses
- Facility Management

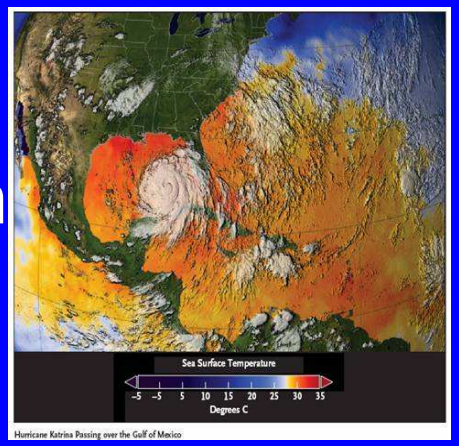
WHO programme- From describing risks, to highlighting vulnerabilities, to proposing responses





Six focus areas for WHO, public health, and climate change

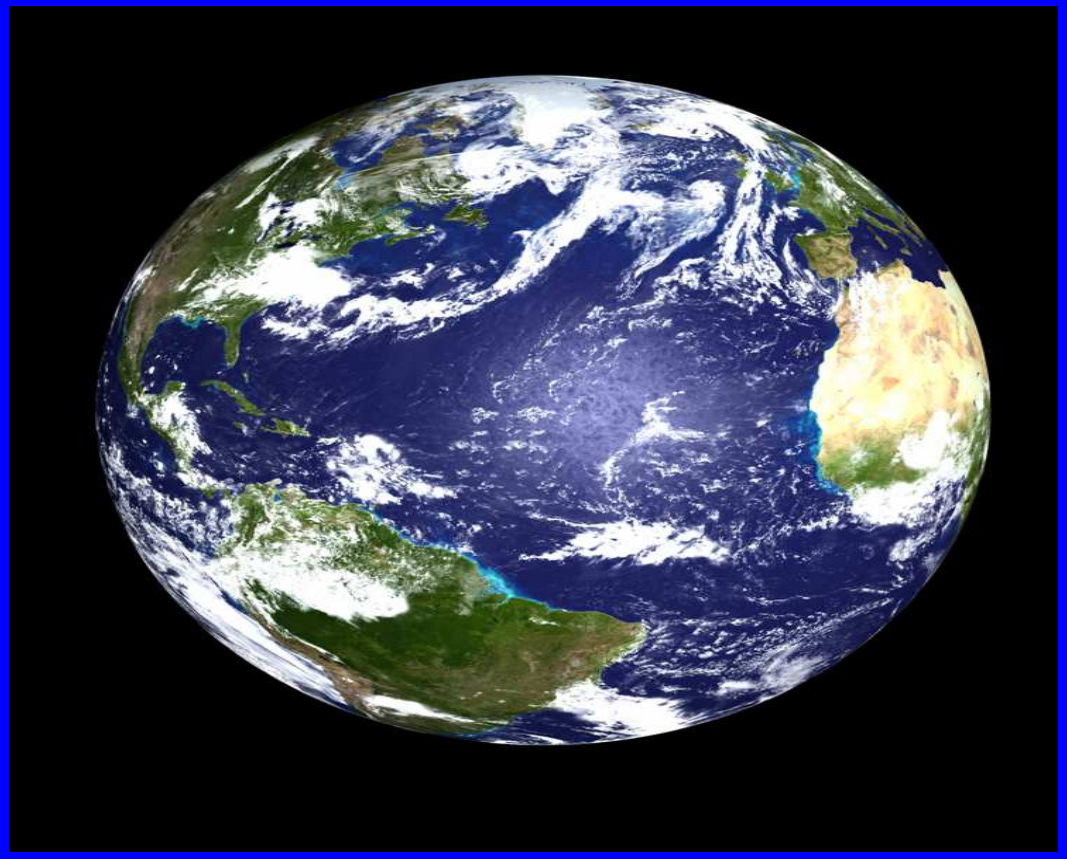
1. Health security
2. Strengthening health system
3. Health development
4. Evidence and information
5. Delivery
6. Partnerships



Hurricane Katrina Passing over the Gulf of Mexico

Protect health from climate change.

Let’s leave our children a living planet.



Thank you