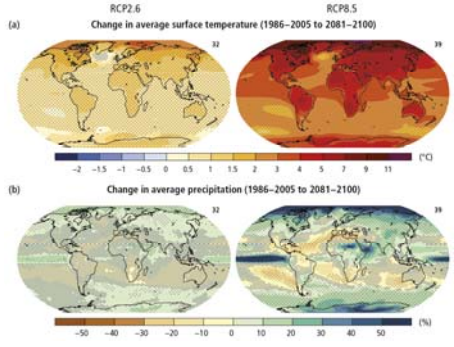
LS 2X03 - Lecture 7 – Climate Change and Infectious Diseases

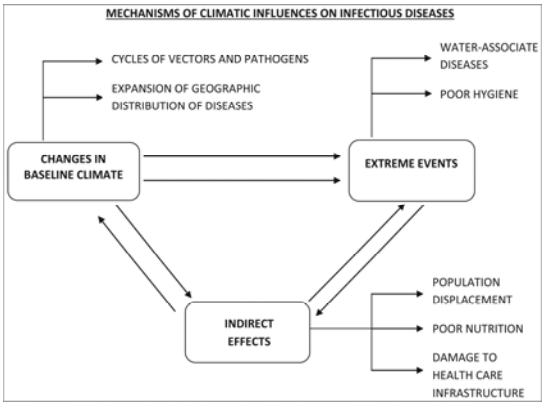
1. Infectious Diseases and the Future Climate
2. Extreme Events and Infectious Diseases
3. Vector-Borne Diseases
4. Migration and Water-Borne Diseases
5. Responses to Risks

Key Concepts

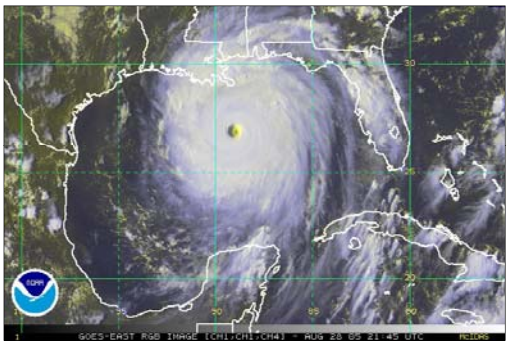
- Infectious Diseases and the Future Climate
- Extreme Events and Infectious Diseases
- Vector-Borne Diseases
- Migration and Water-Borne Diseases
- Responses to Risks

1. Infectious Diseases and the Future Climate





Hurricane Katrina, August 2005



Katrina, 2005: 12 Days After

Floods in Pakistan, 2010

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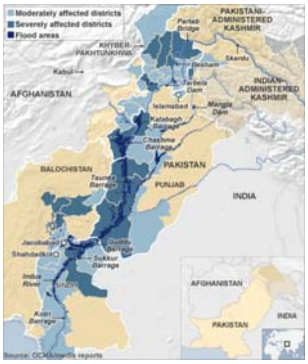
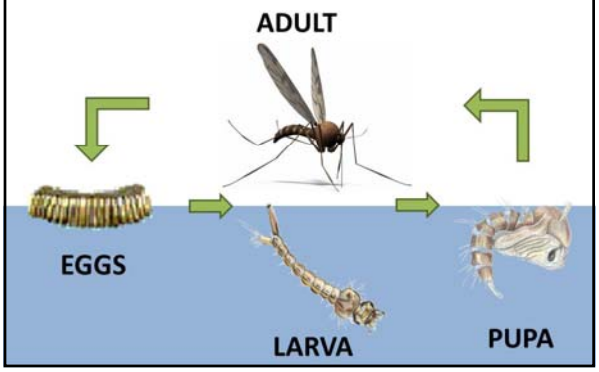
• 2,000 people died
• 3,000 were injured
• Affected people:

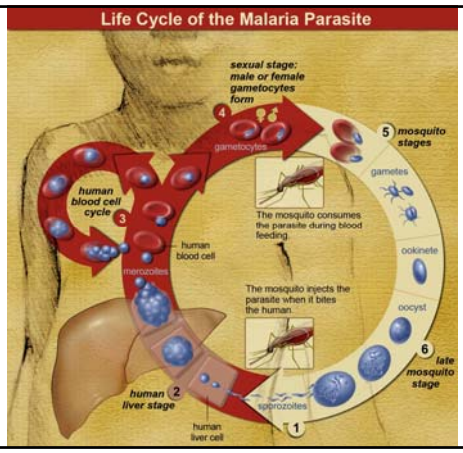
•



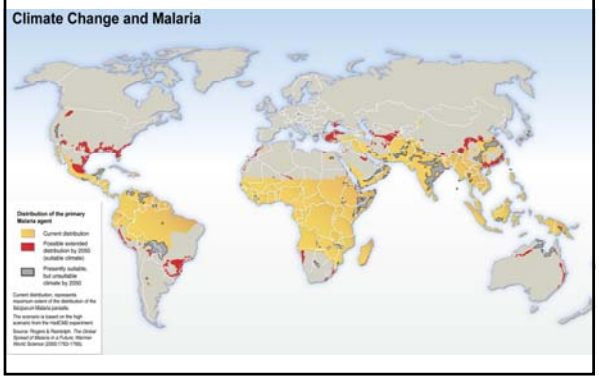
Mosquito-Borne Diseases: Long-term Impacts

The Life Cycle of Mosquitoes



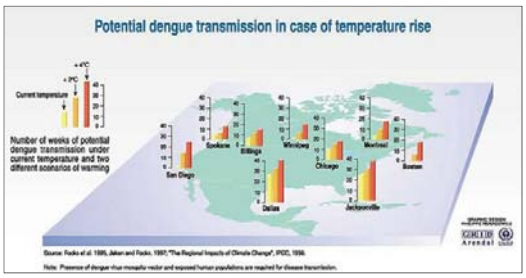


The Future of Malaria

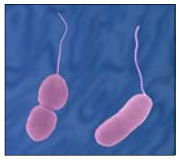


The Future of Dengue Virus

- ~ 1/3 of world population currently lives in the regions of the world where:



Increases in infections related to Seafood Consumption



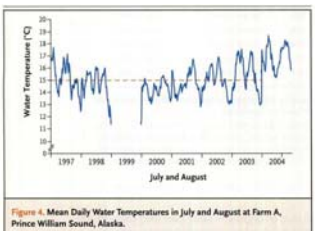
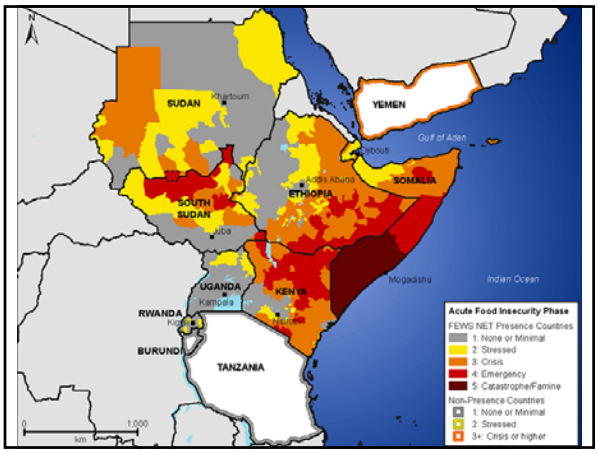
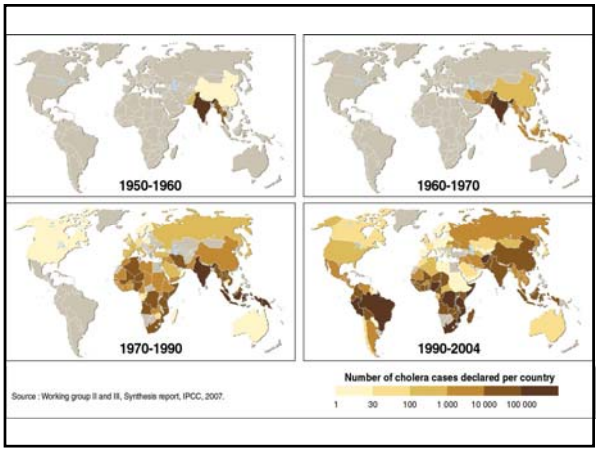
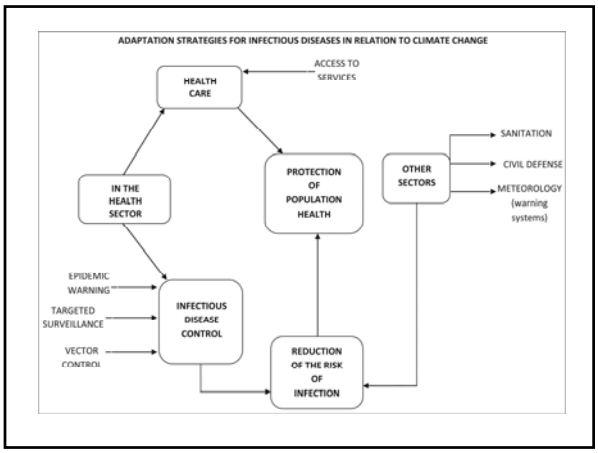


Figure 4. Mean Daily Water Temperatures in July and August at Farm A, Prince William Sound, Alaska.


SUDAN
Khartoum
YEMEN
Gulf of Aden
Djibouti
SOMALIA
Addis Ababa
ETHIOPIA
SOUTH SUDAN
Juba
UGANDA
Kampala
KENYA
Nairobi
Mogadishu
Indian Ocean
RWANDA
Kigali
BURUNDI
TANZANIA
Acute Food Insecurity Phase
FEWS NET Presence Countries
1: None or Minimal
2: Stressed
3: Crisis
4: Emergency
5: Catastrophe/Famine
Non-Presence Countries
1: None or Minimal
2: Stressed
3+: Crisis or higher
0
1,000
km


1950-1960
1960-1970
1970-1990
1990-2004
Source : Working group II and III, Synthesis report, IPCC, 2007.
Number of cholera cases declared per country
1
30
100
1 000
10 000
100 000


ADAPTATION STRATEGIES FOR INFECTIOUS DISEASES IN RELATION TO CLIMATE CHANGE
ACCESS TO SERVICES
HEALTH CARE
IN THE HEALTH SECTOR
PROTECTION OF POPULATION HEALTH
OTHER SECTORS
SANITATION
CIVIL DEFENSE
METEOROLOGY (warning systems)
EPIDEMIC WARNING
TARGETED SURVEILLANCE
VECTOR CONTROL
INFECTIOUS DISEASE CONTROL
REDUCTION OF THE RISK OF INFECTION

End of Lecture Question

1.

Conclusion

- Climate change will lead directly and indirectly to impacts on the incidence of infectious disease, particularly after extreme events
- The distribution and ecology of vector-borne diseases is likely to be affected
- Countries with poor public health infrastructure are likely to be the most affected

TO DO!

1. For next Lecture: read Article 7

2. Tutorials next week:

- Group Discussion on News articles: what they are? How to distinguish good ones from bad ones?
- Bring Discussion Worksheet (will be posted on A2L)