Climate Change and Communicable Diseases: A European Perspective

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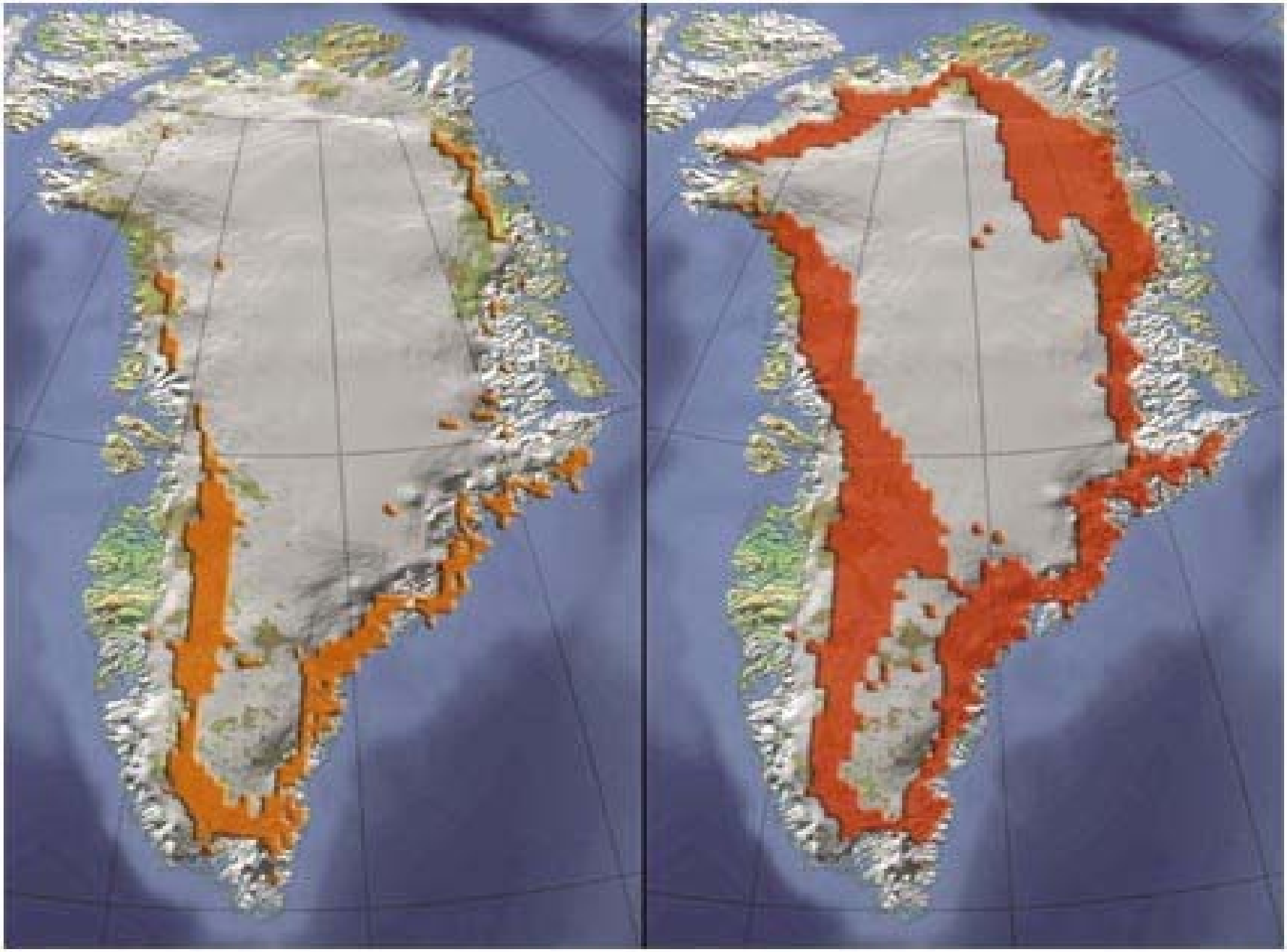
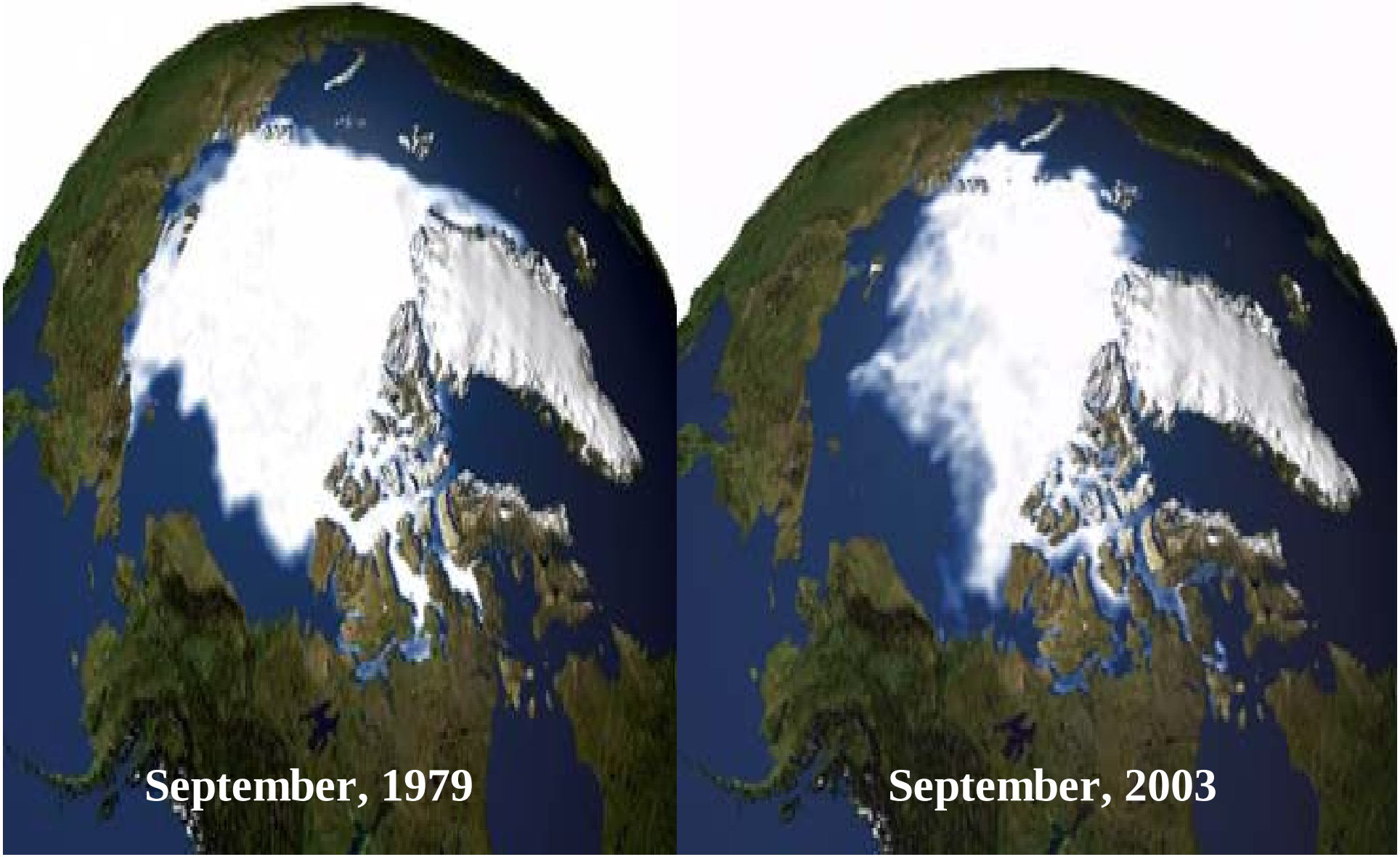
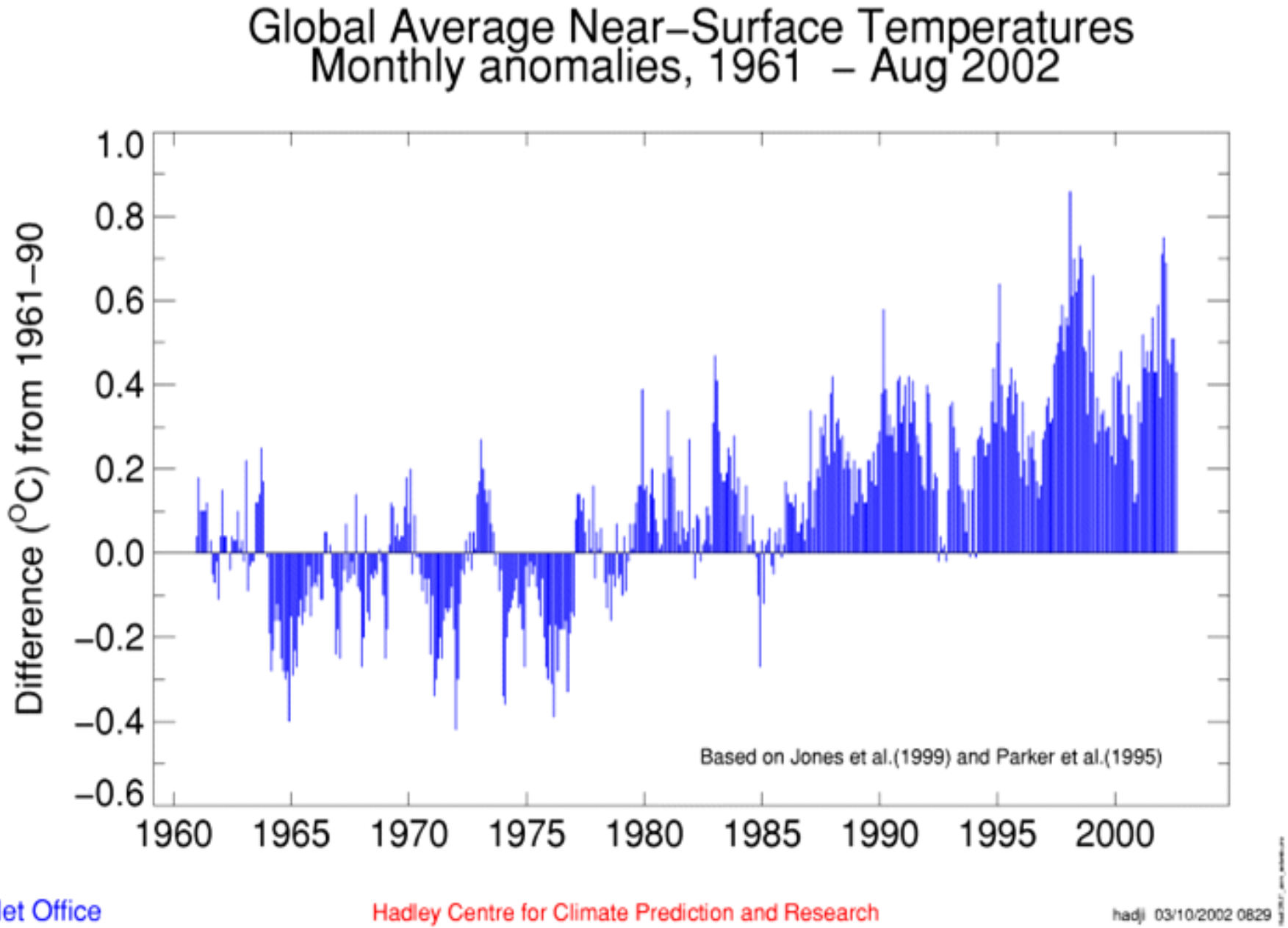
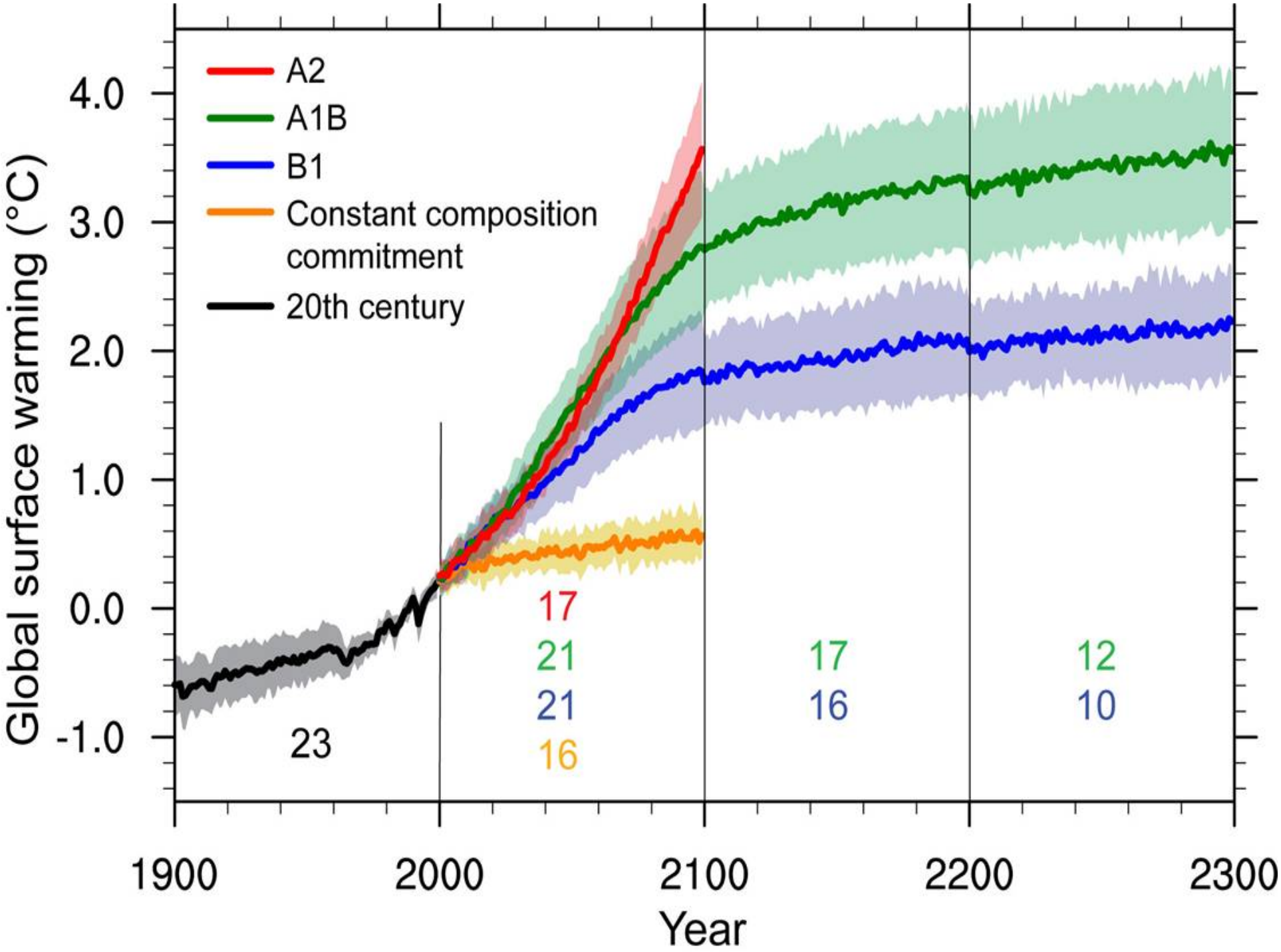
http://www.ecdc.eu.int/



North Pole - Ice Caps







Public Health Response to Climate Change

- Survey of 30 European State Epidemiologists
- ECDC meeting, in collaboration with
  - WHO Regional Office for Europe,
  - European Environmental Agency (EEA),
  - Joint Research Centre (JRC) at Ispra,

- Initiate discussion about public health response to climate change.

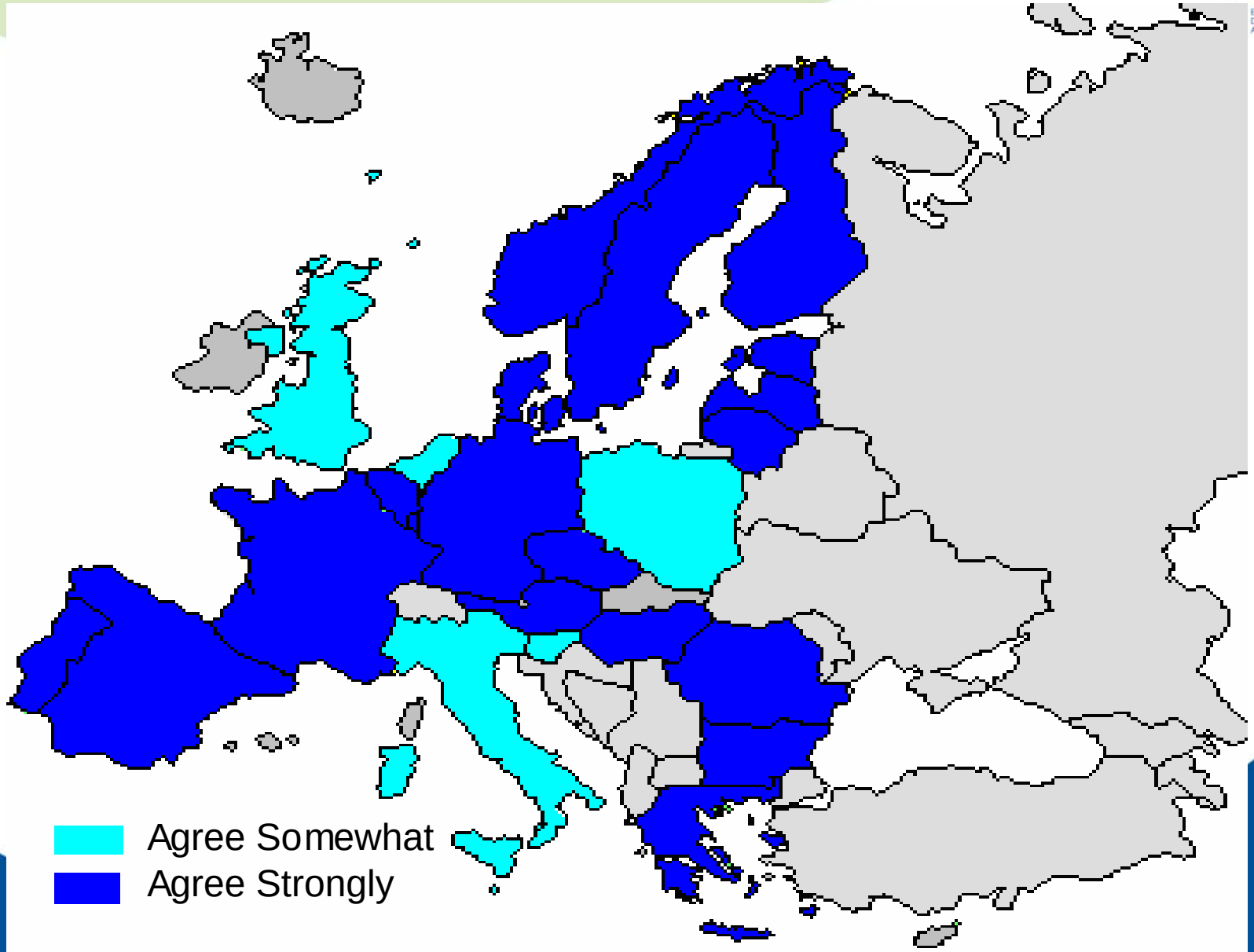
What climate related threats do you consider to be the biggest issue for public health?

- 1. Infectious pathogens (e.g. TBE)
- 2. Heat waves (prolonged episodes)
- 3. Flooding (disaster)
- 4. Aeroallergens (pollen)
- 5. Temperature (mean)
- 6. Cold waves (blizzards)
- 7. Sea-level rise (gradual)
- 8. Land/mud slides
- 9. Reduced food production

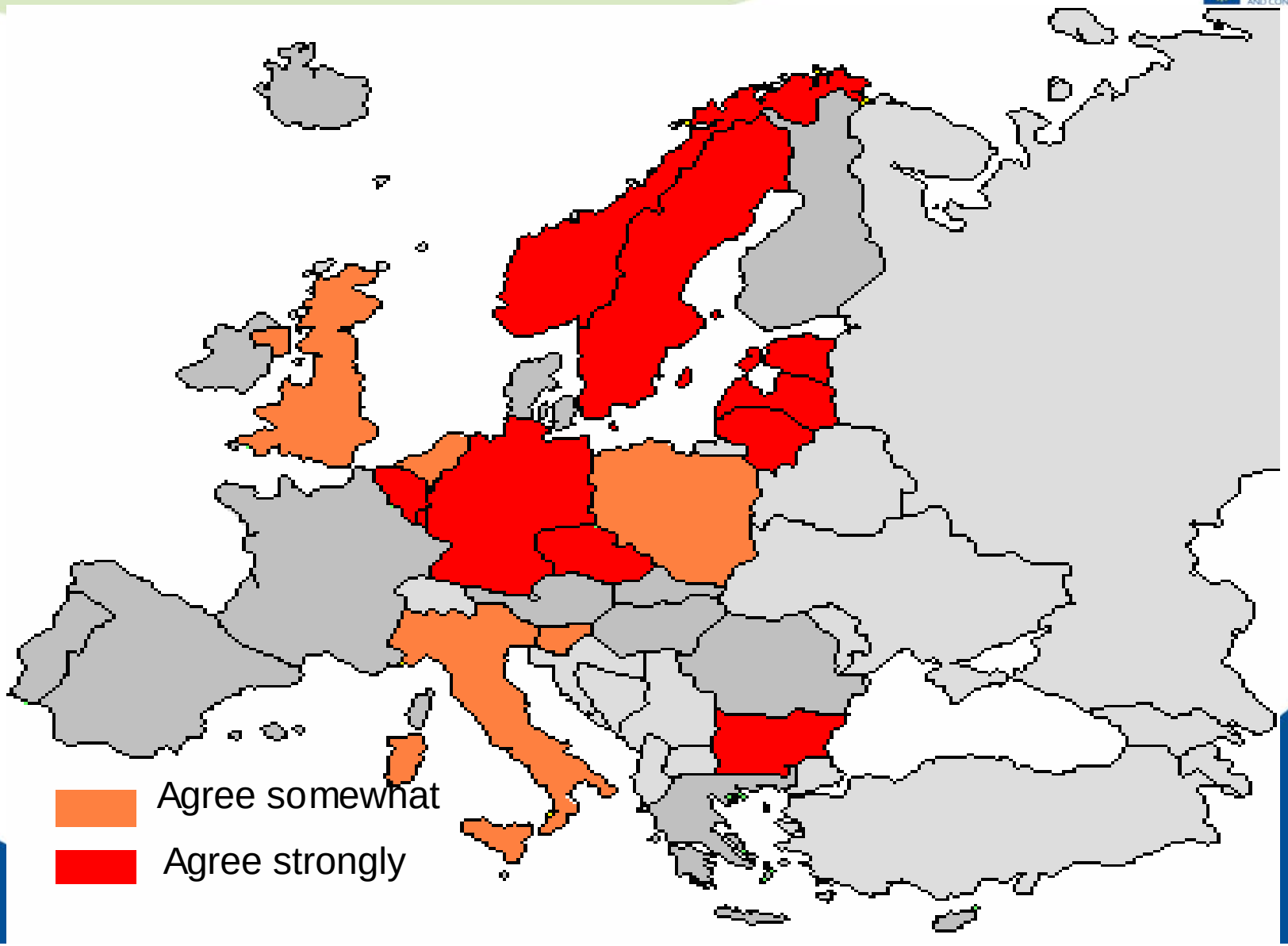
What type of infectious disease do you think will be most affected in your country ?

- 1. Vector borne diseases
- 2. Borreliosis
- 3. Tick borne Encephalitis (TBE)
- 4. Food borne infections
- 5. Water borne infections
- 6. Legionellosis
- 7. Rodent borne infections
- 8. Hanta
- 9. Leptospirosis
- 10. Parasites
- 11. West Nile Fever
- 12. Q Fever
- 13. Tularaemia
- 14. Malaria
- 15. CCHF
- 16. VHF
- 17. SARS
- 18. Cholera
- 18. Chikungunya
- 19. Dengue
- 20. Plague
- 21. Rift Valley Fever
- 22. Yellow Fever

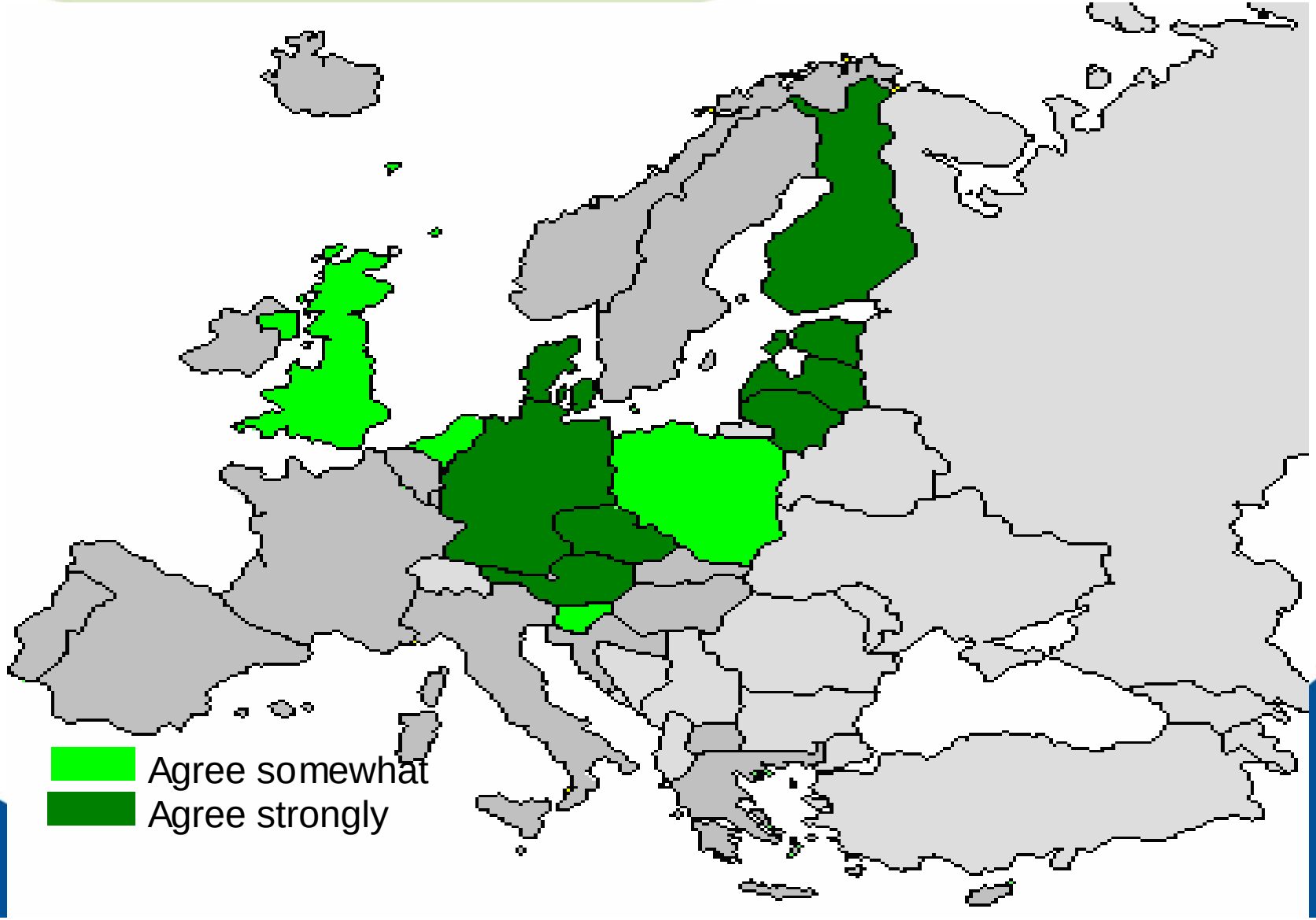
Vector borne diseases



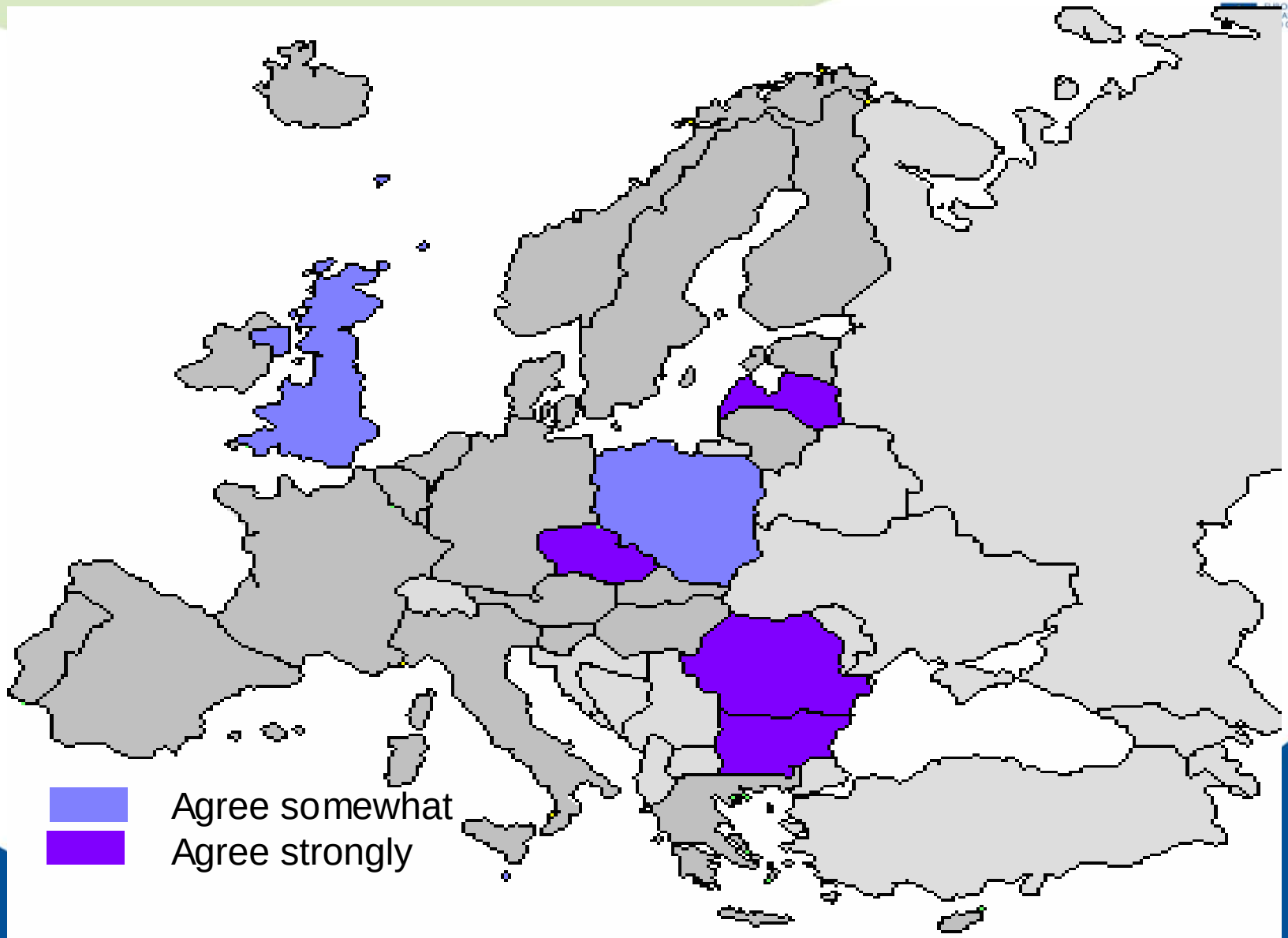
Borreliosis



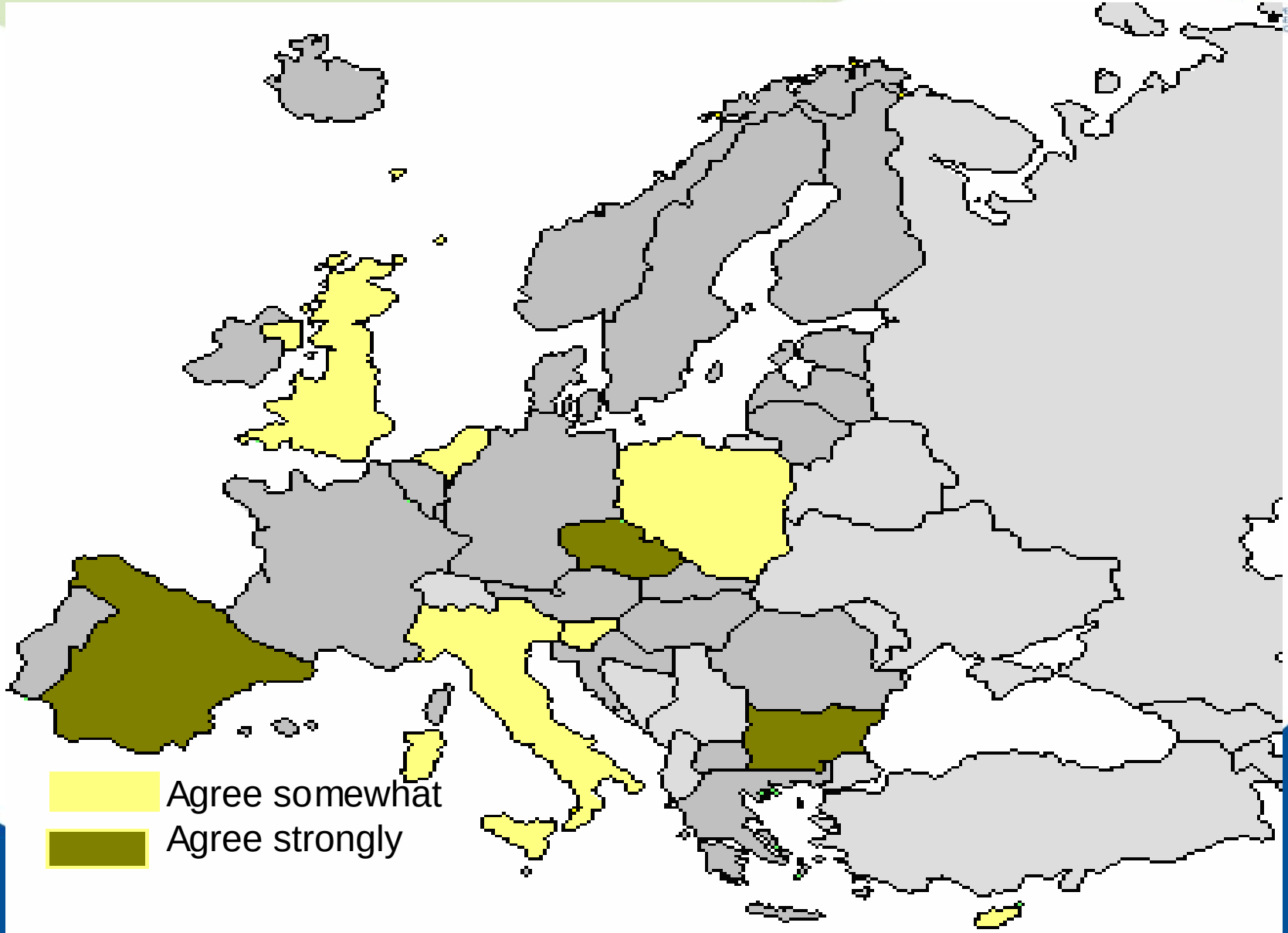
Tick borne Encephalitis (TBE)



Food borne Infections



Water borne disease



How can the challenges of environmental and climatic changes be addressed by the public health community?

Monitoring and surveillance	28	93%	Regulations and law enforcement	15	50%
Policy development and interventions	27	90%	Research and evaluation	29	97%

What intervention strategies exist in your country to reduce the consequences of climate variability and change?

Mandatory disease surveillance	29	97%
Non-diagnosis surveillance (real-time)	8	27%
Emergency room surveillance	7	23%
Syndromic surveillance system	11	37%
On-line surveillance	6	20%
Sentinel surveillance	16	53%
Other (specify)	1	3%

Outbreak preparedness plans	24	80%
Heat/cold response plans	14	47%
Emergency response plans	19	63%
Technological advances	8	27%
Multi-sector coordination	19	63%
Socioeconomic development	12	40%
Adaptive capacity	8	27%

Outbreak of Chikungunya Fever in Italy

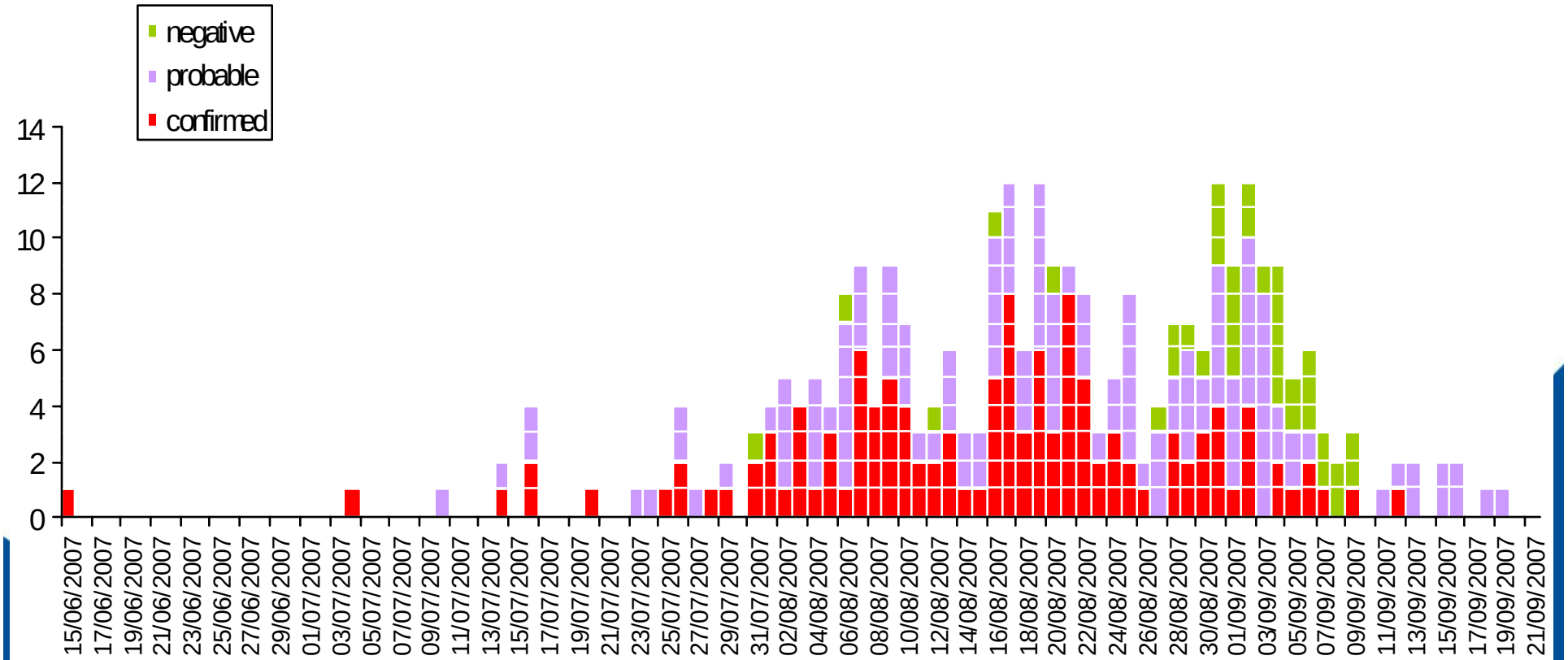
- Chikungunya (Makonde word meaning "that which bends up“) fever is a viral disease transmitted mosquitoes:
  - *Aedes aegypti*
  - *Aedes albopictus*.

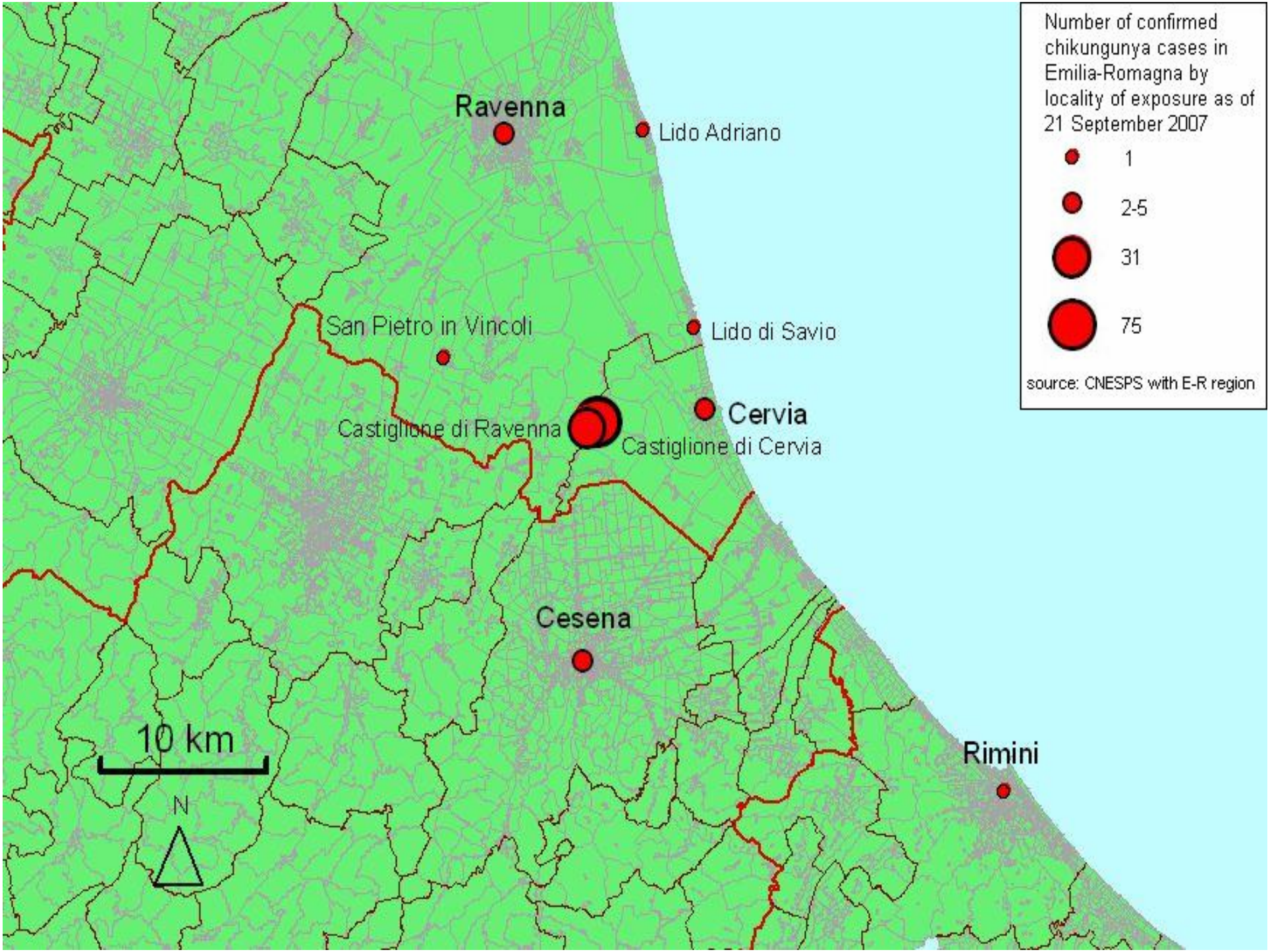
Chikungunya: a Tropical Disease?

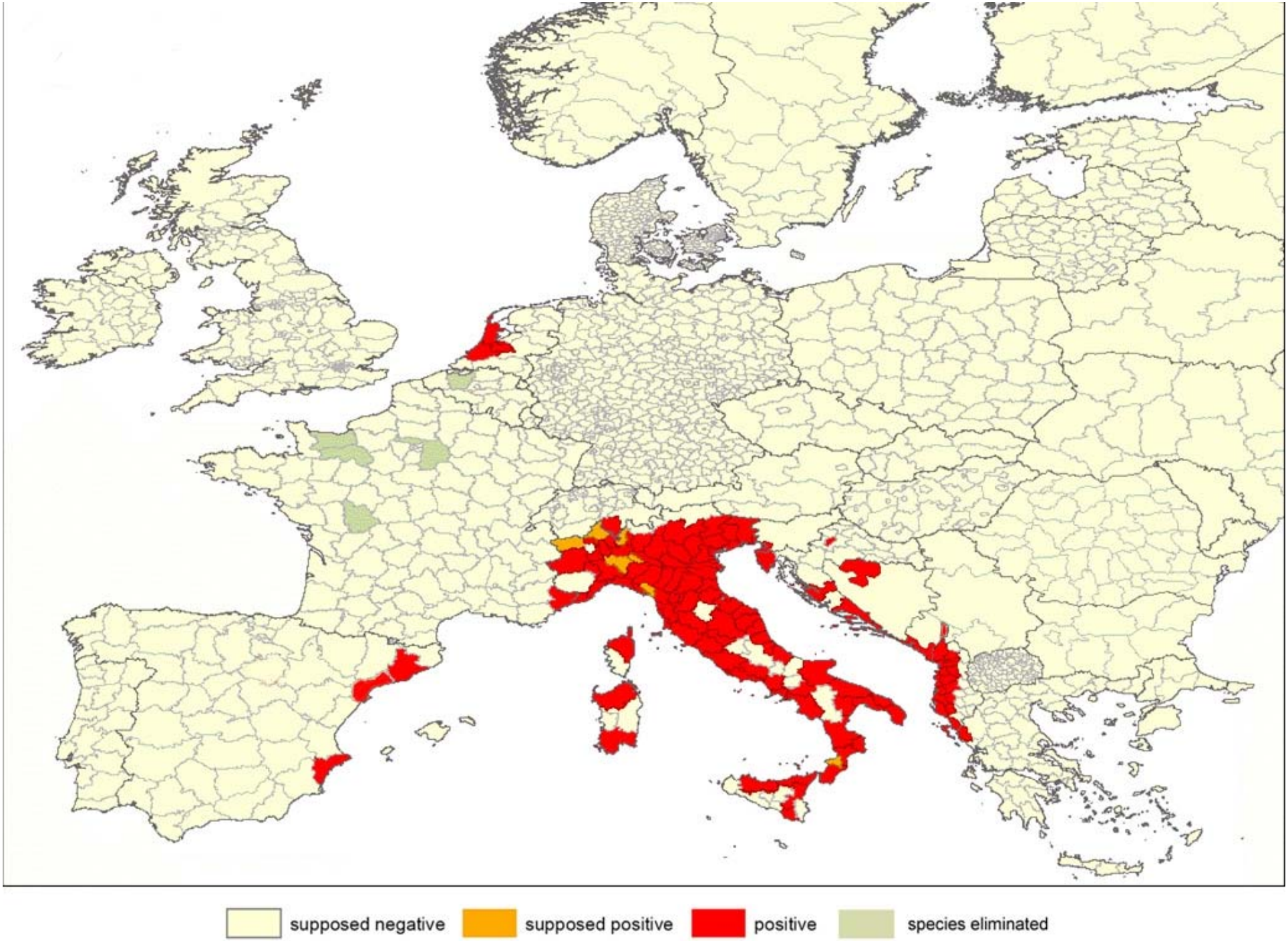
- Chikungunya is generally not fatal.
- Fever which can reach 39°C, (102.2°F).
- Rash usually involving the limbs and trunk.
- Arthritis affecting multiple joints which can be debilitating.
- The infection is endemic in parts of Africa, South-east Asia and on the Indian sub-continent.

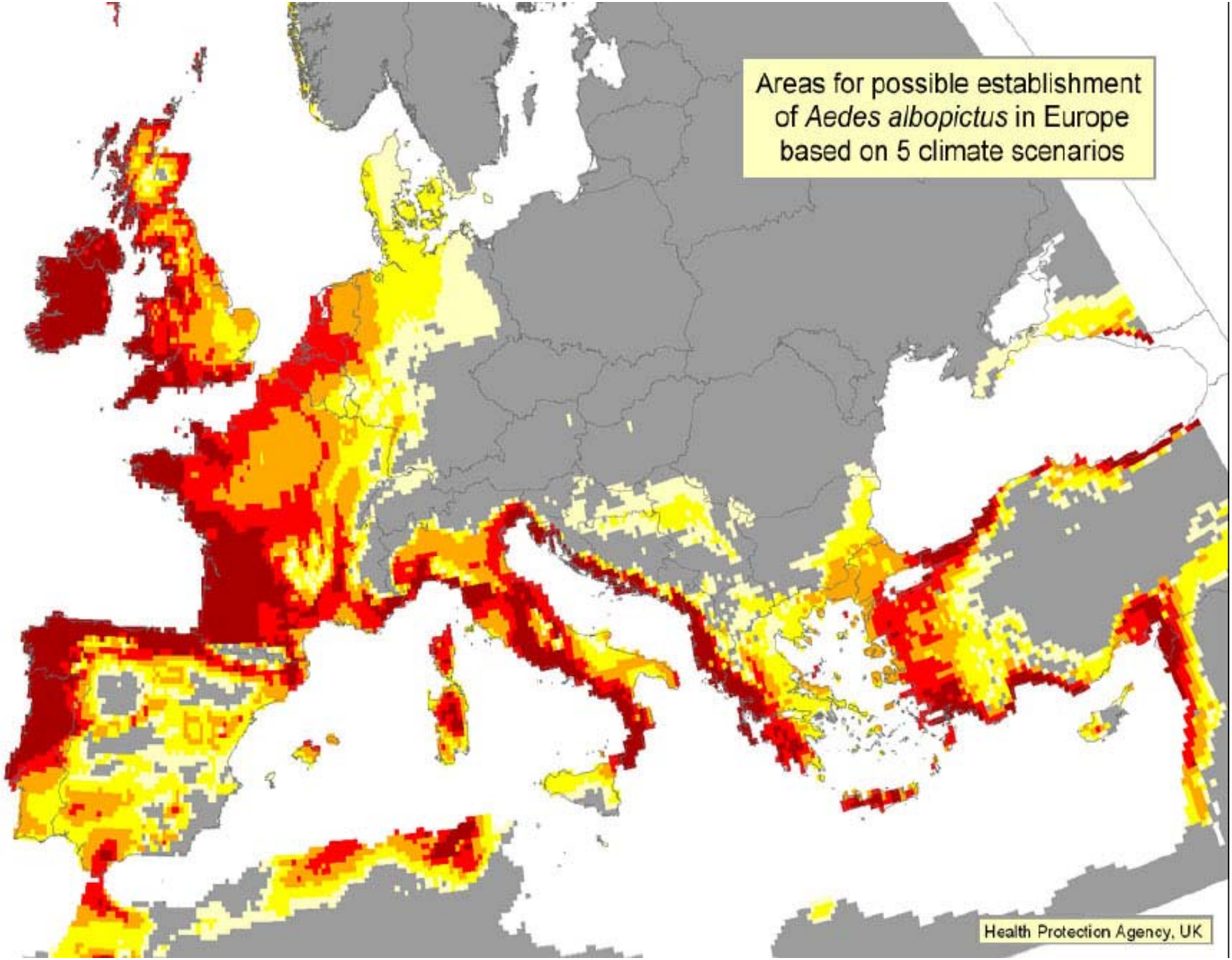
Outbreak of Chikungunya Fever in Italy

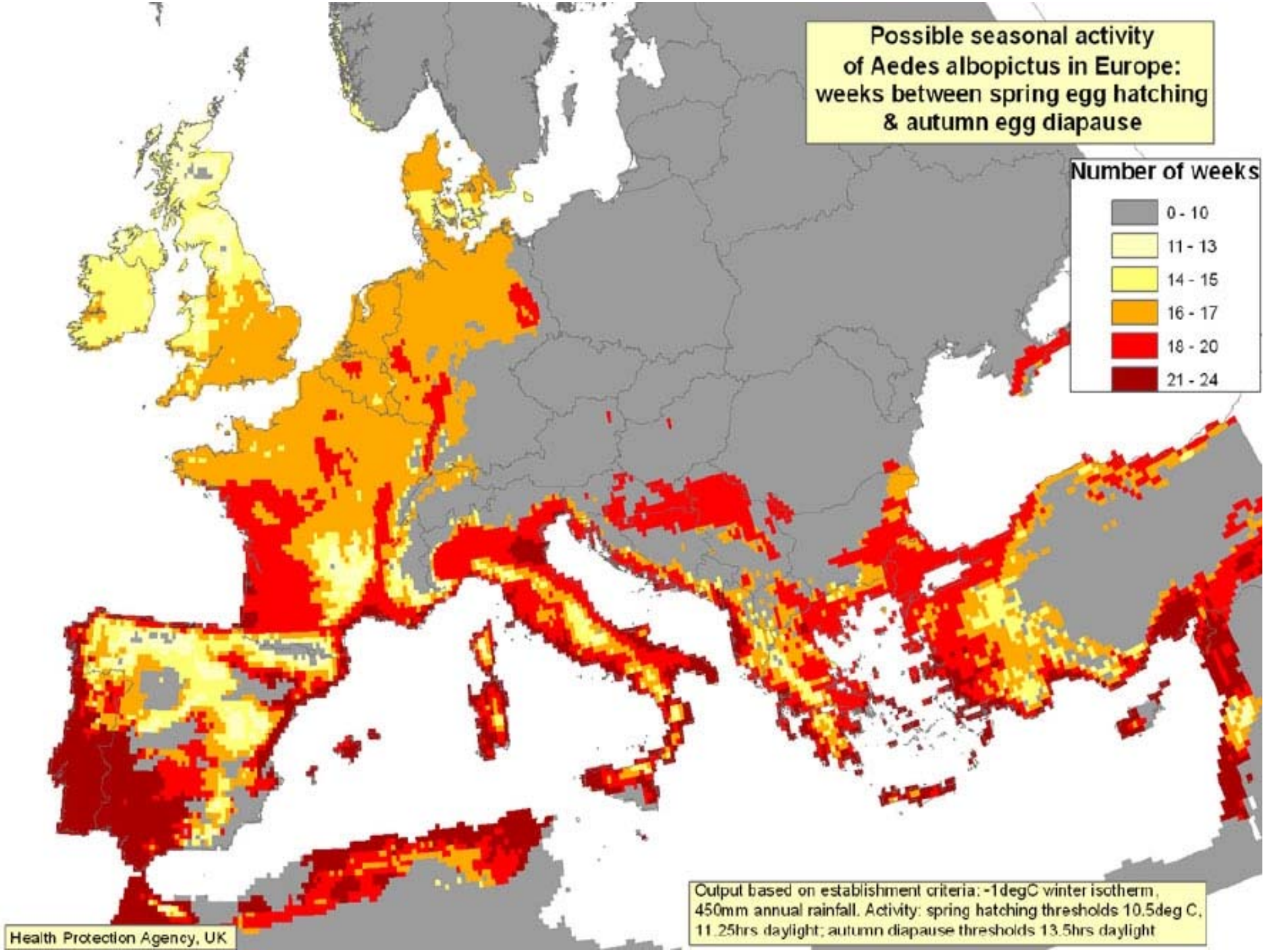
Suspected Chikungunya cases by day of onset
Emilia Romagna
15 June - 21 September 2007



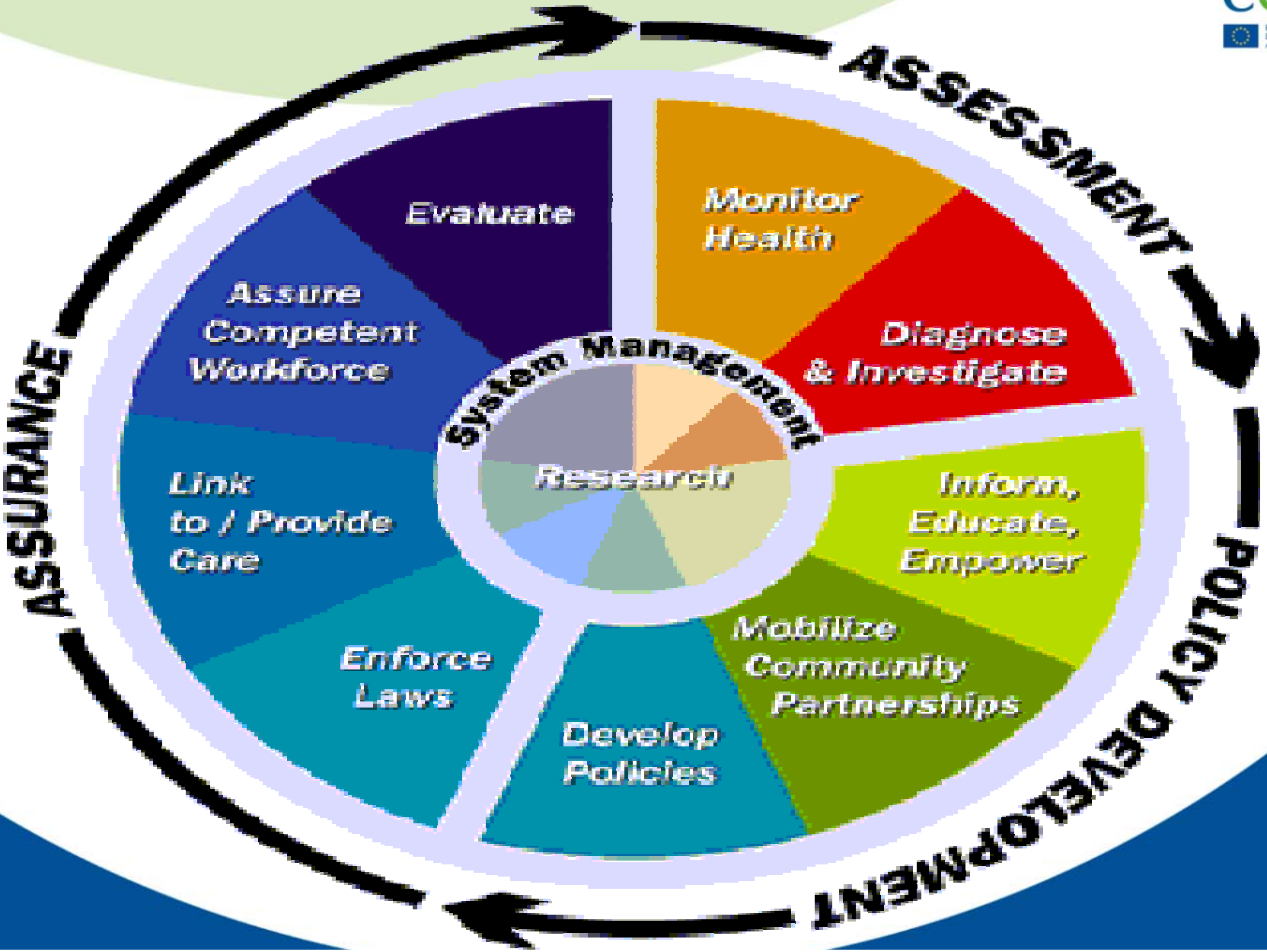








Public Health Competencies



Public Health Competencies

- Strengthening capacities to deal with climate change infectious disease threats can therefore be seen as a way of strengthening public health more broadly:

  - Assessment
  - Policy
  - Assurance
  - Research

Assessment

- Surveillance of new and emerging infectious diseases
- Monitoring of health status of high risk populations
- Investigation of health problems (outbreak investigations)
- Identification of exposure pathways
- Assess possibilities for tracking and linking capacity of surveillance systems
- 'Novel' surveillance systems
  - Syndromic
  - Real-time
  - Pharmacy-based
  - Sentinel: e.g. Borreliosis, Tick-borne encephalitis (TBE), Rodent-borne infections (e.g.Hanta), Leishmaniasis

Surveillance: Criteria

- Epidemic potential
- Case fatality rate
- Incidence
- Severity of illness
- Preventability/Available Interventions
- DALYS
- Mode of transmission – spread
- Curability

Research: Gaps

- Indicators of climate change related infectious diseases.
- Data Requirements (e.g. long-term data)
- Relevant health outcomes
- Unreported/unknown infectious diseases
- Vulnerability and how best to assess it (young and old, pre-disposing illnesses: e.g. respiratory, CVD)
- Not just human health impact but economic, environmental, etc
- National preparedness plans

Assurance

- International Health Regulations, will require mandatory reporting of certain health data (June 2007)
- Interagency working: e.g. meteorological, environmental & public health collaborations
- Laboratory/ clinical services:
  - clinical competence (for disease reporting)
  - standard methods, e.g. specific serology
- Policy development
  - mitigation, reporting, vaccination policy
- Training
  - Awareness training for CC; laboratory testing, emergency response; multi-sectorial collaborations
- Evaluation
  - Assessment of interventions/strategies

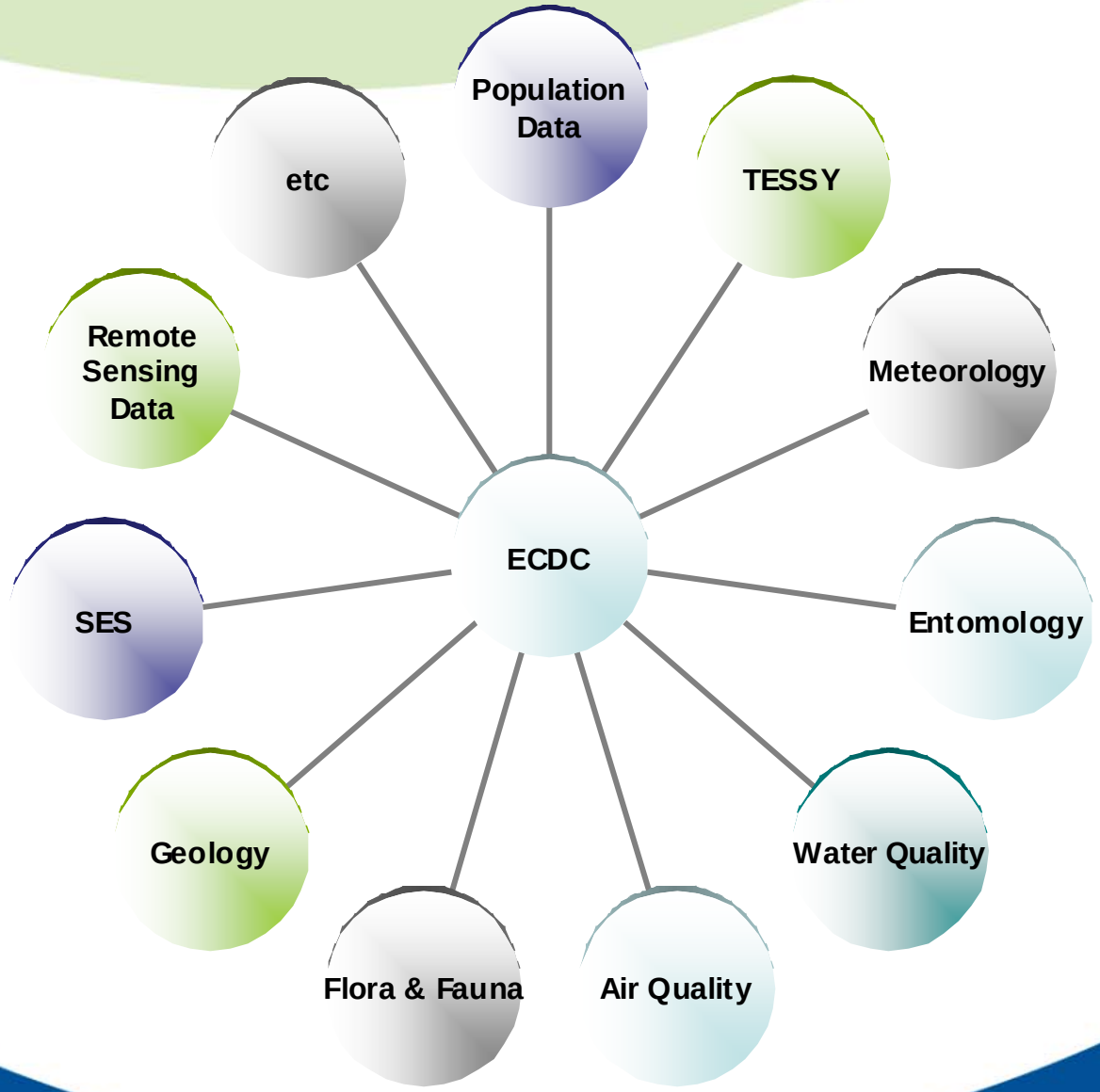
Policy

- ***Build on existing initiatives and capacities***
  - International Health Regulations (IHR 2005) and water protocol (United Nations Economic Commission for Europe (UNECE) Convention on the Protection and Use of Trans-boundary Watercourses and International Lakes)
- ***Build inter-sectoral collaborations***
- ***Build upon the diversity of Region***
  - Arctic areas, mountain regions, coastal zones, wetlands and the Mediterranean region
- ***Consider country perspectives***
- ***Explore a variety of surveillance approaches***
  - disease-, vector-, risk-based and sentinel-centered

Policy

- ***Horizon scanning risk strategy***
  - *Document evidence of changes, and link with diseases*
- ***Professional educational programs***
  - E.g. training for entomologists
- ***Strengthen communication capacities***
  - Raise public awareness and better communicate risks, particularly around appropriate behaviours

An European Network for Environmental and Epidemiologic Data



Conclusion

- Several considerable challenges remain for an effective public health response to climate change in the area of:
  - Assessment
  - Policy
  - Assurance
  - Research
- However a European Network for Environmental and Epidemiologic Data might be able to respond to some of these challenges.

Thank you

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