Climate and Health – an on the ground perspective

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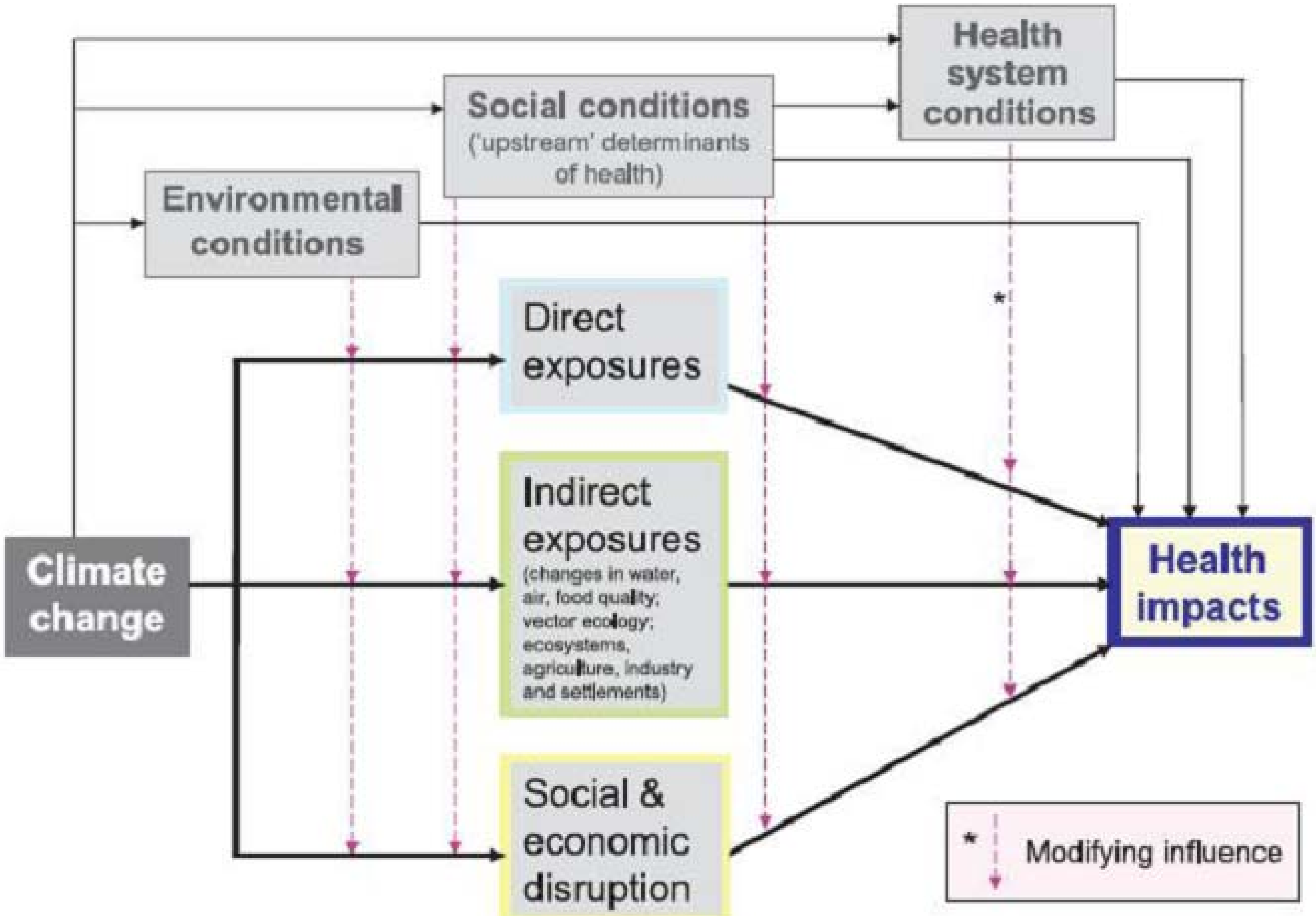
Health and the UN Millennium Development Goals

“Protecting Health from Climate Change”

“Climate change will affect, in profoundly adverse ways, some of the most fundamental determinants of health: food, air, water”.

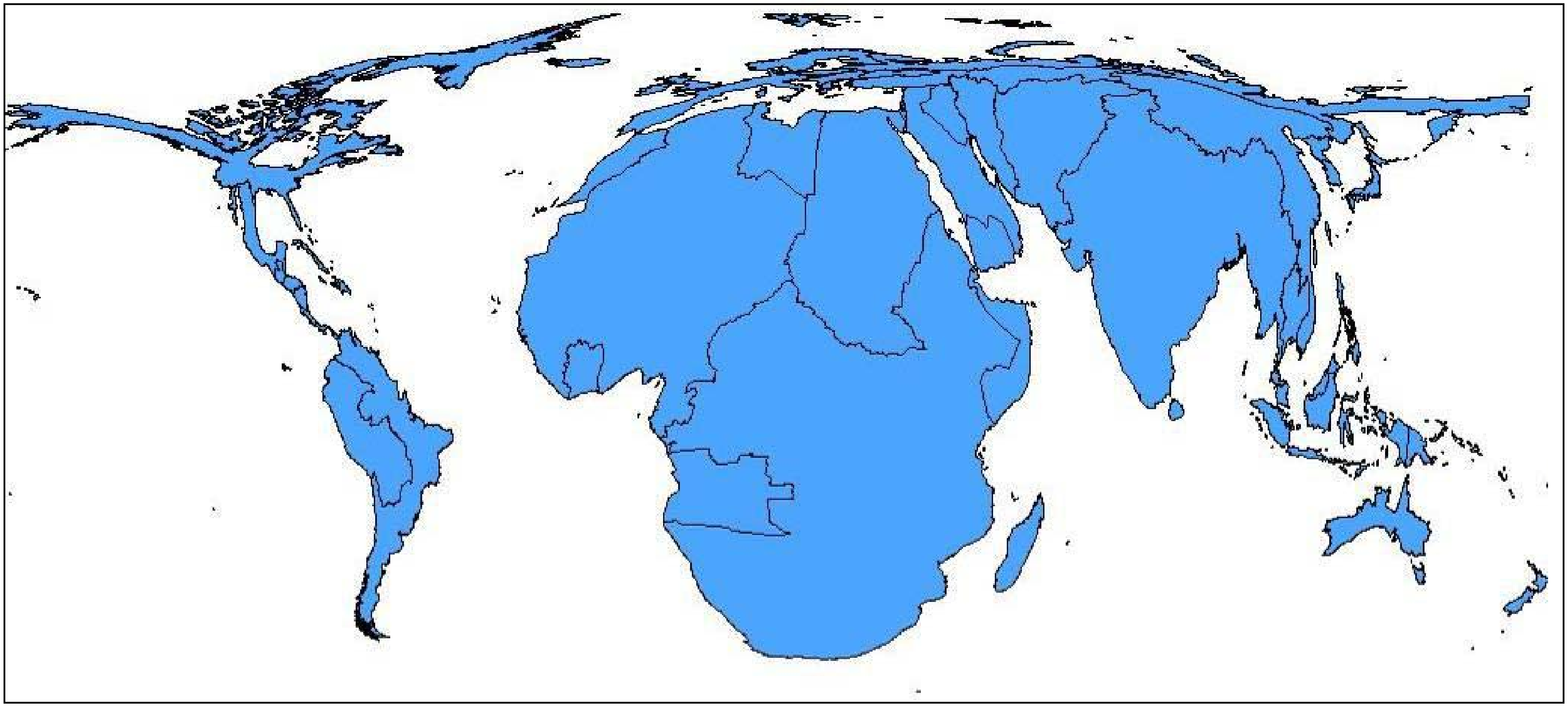
Dr. Margaret Chan
Director-General of the World Health Organization (2008)

What impacts can be expected?



Pathways by which climate change may impact health and concurrent direct-acting and modifying influences of environmental, social and health-system factors

Disproportionate global health impacts of Climate Change (Data from WHO 2004)



Jonathan Patz J *et al,* 2008

Climate sensitive diseases

Vector-borne

Malaria
Dengue fever
Lyme disease
Rocky Mountain spotted fever
Encephalitis: St. Louis, Murray Valley, Western Equine
Rift Valley fever
Ross River fever
Ehrlichiosis
Hantavirus pulmonary syndrome
Leishmaniasis
African trypanosomiasis
Tularemia
Plague
Onchoceriasis (river blindness)

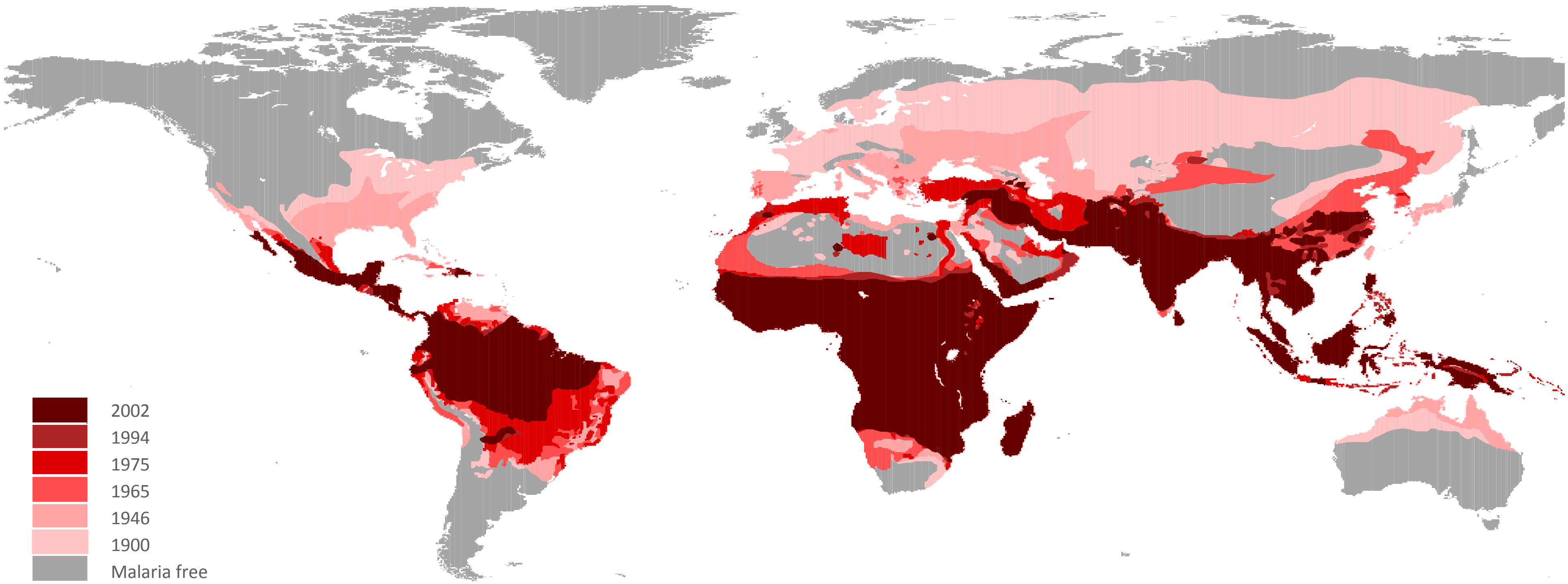
Water and Foodborne

Cholera
Other non-cholera *Vibrio* spp..(i.e., *V. vulnificus*, *V. parahaemolyticus*)
Leptospirosis
Schistosomiasis
Sea bather's eruption
Giardiasis
Cryptosporidiosis
Human enteric viruses (Enteroviruses,.Norwalk and Norwalk-like viruses)
Campylobacteriosis
Cyclospora cayetanensis
Salmonella enteritidis

Airborne (and others)

Meningococcal meningitis
Coccidioidomycosis
Respiratory syncytial virus (colds)
Legionnaires' disease
Influenza

A changing epidemiology of malaria infections and regional disease burden

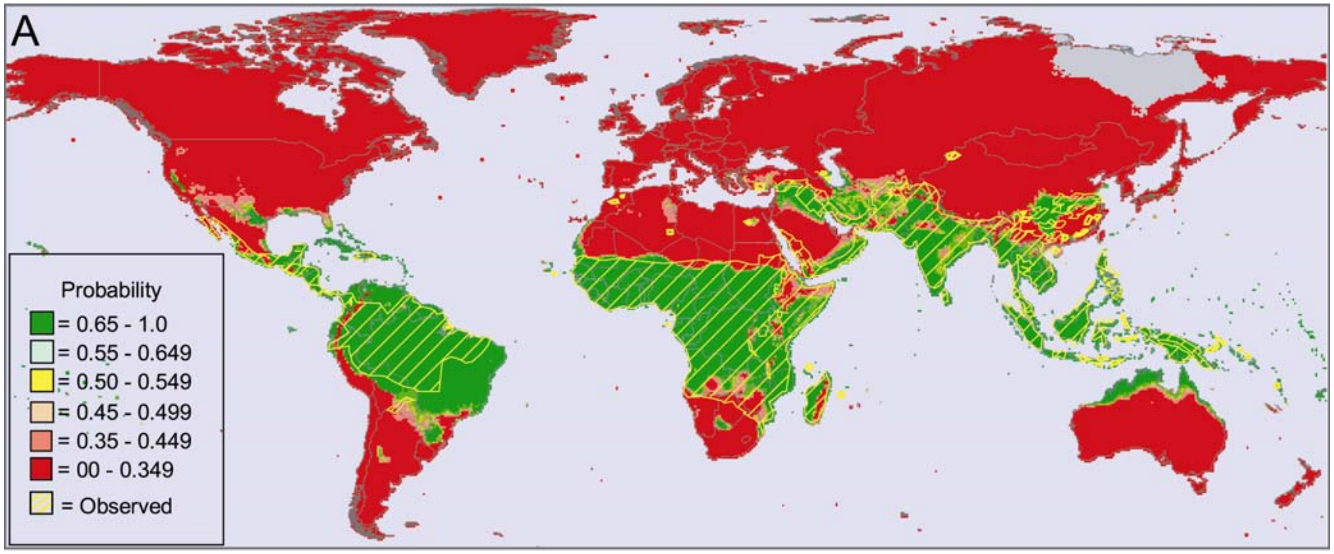


Pampana & Russel, 1955; World Health Organization, 1966; WHO, 1997; Hay *et al.*, 2004

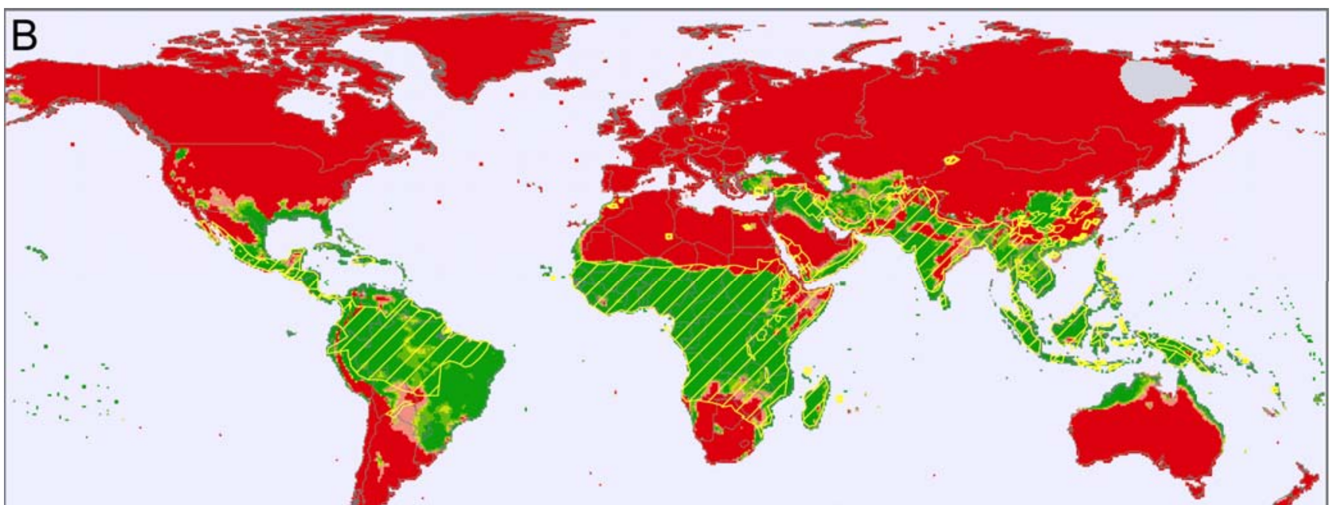
Malaria persists in the tropics and sub-tropics despite efforts to control it. Climate is a major factor in its persistence

Current and future distribution based on climatic constraints

The present-day malaria distribution is described well by contemporary climate variables (upper panel). The same variables, projected into the future, will cause relatively few changes on a global scale (lower panel), but significant local changes (next slide).



Observed (yellow) and predicted global malaria distribution, using 1960-90 climate data



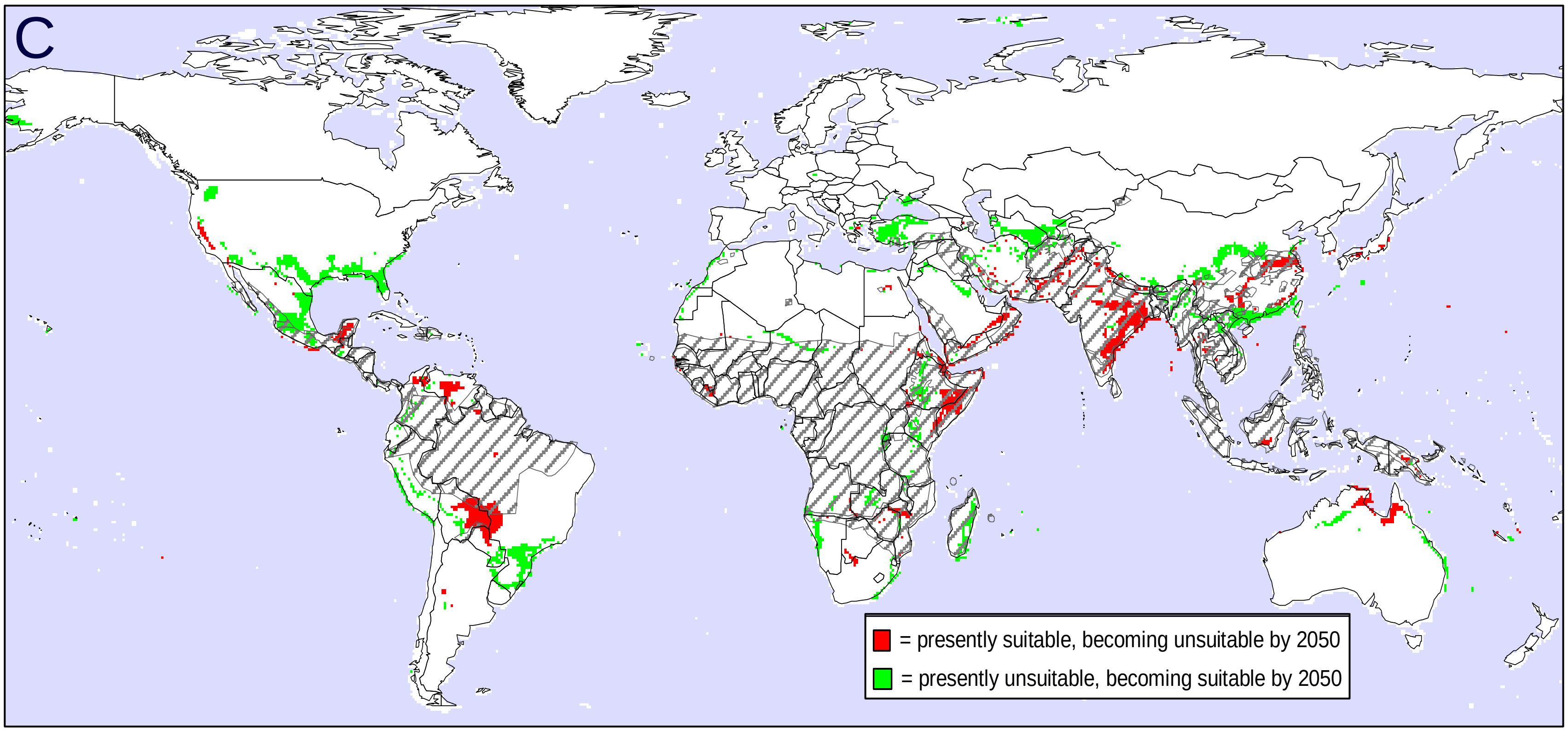
Rogers, D.J. & Randolph, S.E. (2000). Science 289, 1763-1766

Predicted global malaria distribution, HadCM2 2050 High scenario

CLIMATE INFORMATION FOR PUBLIC HEALTH SUMMER INSTITUTE 2009

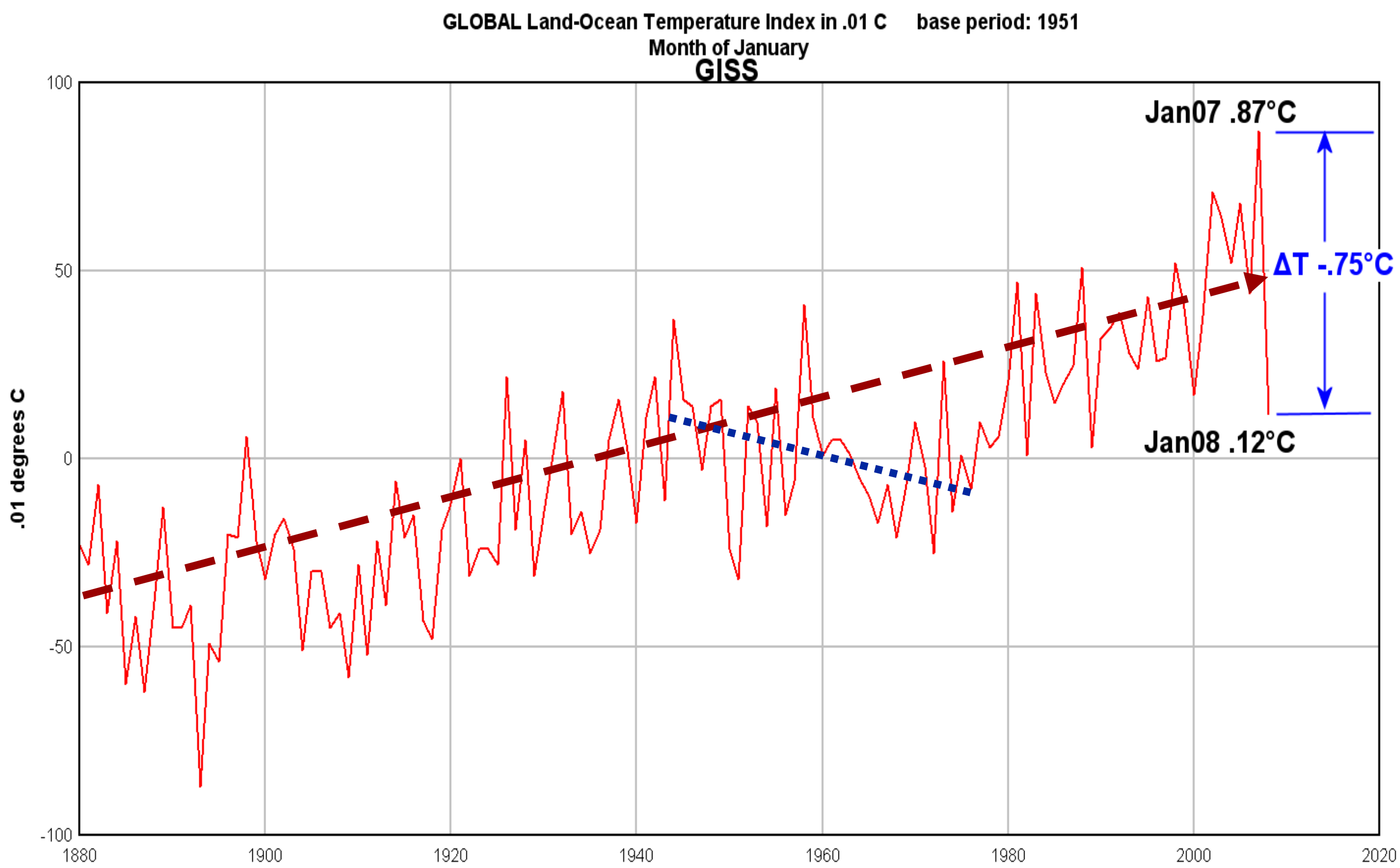
Predicted shift in global malaria by 2050

This map shows the future changes in the global malaria situation by 2050. Malaria disappears from the red areas (which in general become too hot and dry) but newly appears in the green areas. A total of c. 800 million people live in these areas. Malaria in previously unexposed adults is particularly severe.



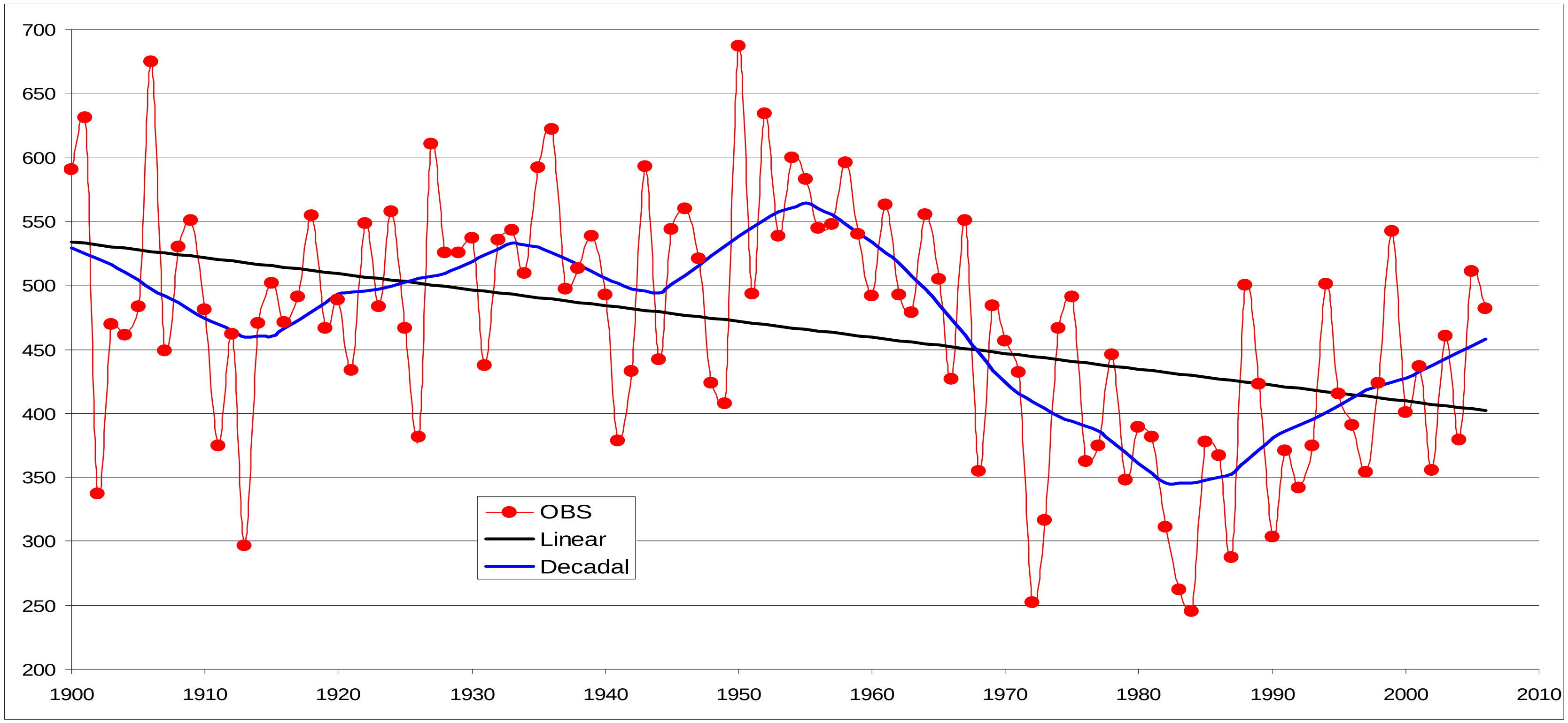
Rogers, D.J. & Randolph, S.E. (2000). Science 289, 1763-1766

Trends in Global January Land-Ocean Temperature Index (1880-2008)



Variability in different time scales needs to be incorporated in decision making for climate-sensitive diseases.

Trends in African rainfall (1900-2010)



Rainfall over the Sahel region from the last century to present.

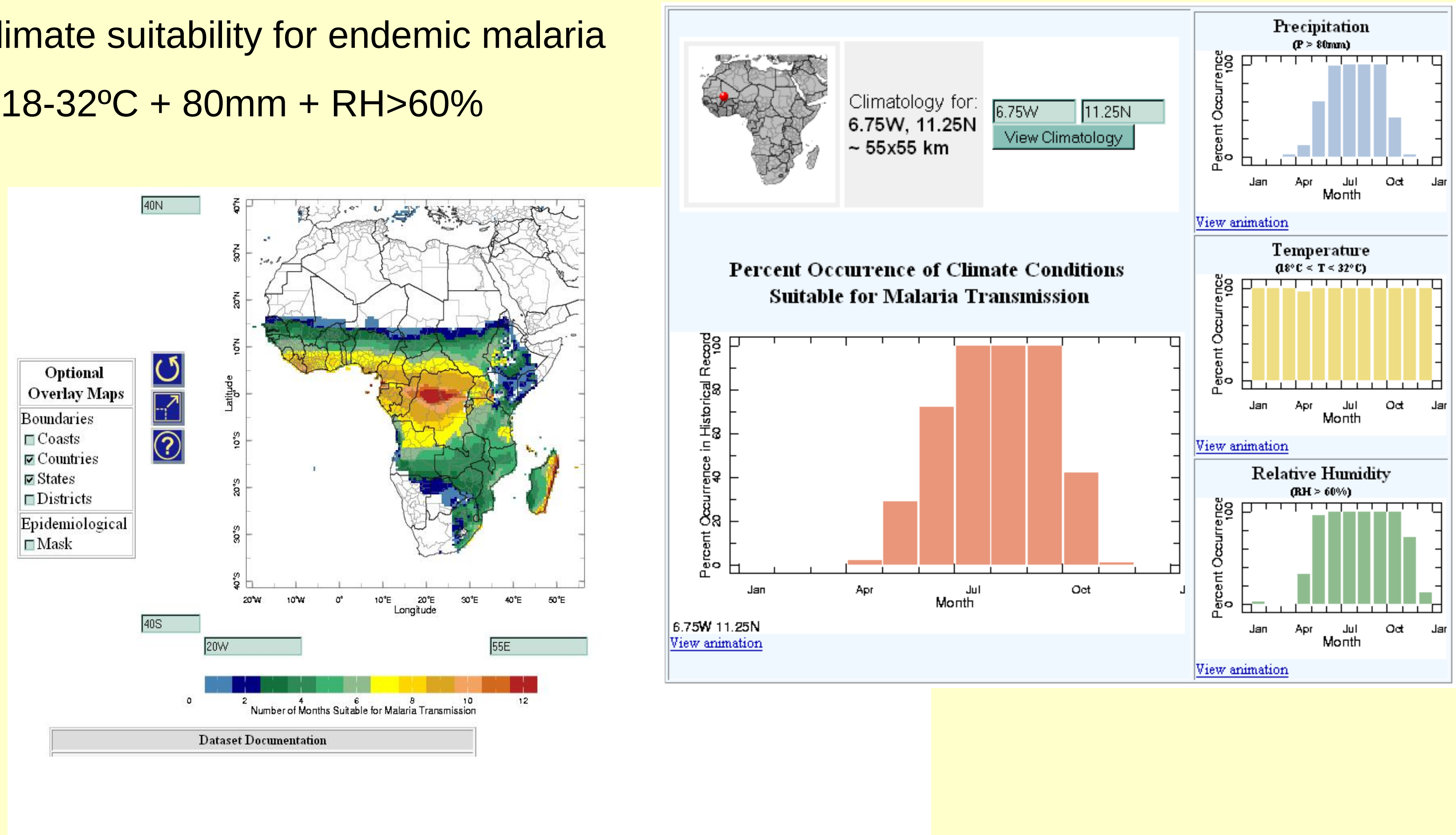
Climate variability poses a different set of challenges to creating effective health sector responses

- Spatial risk of disease
- Seasonality
- Year to year variability
- Trends
- Assessment of the impacts of interventions

Season Smart-understanding interactions and targeting interventions

Climate suitability for endemic malaria

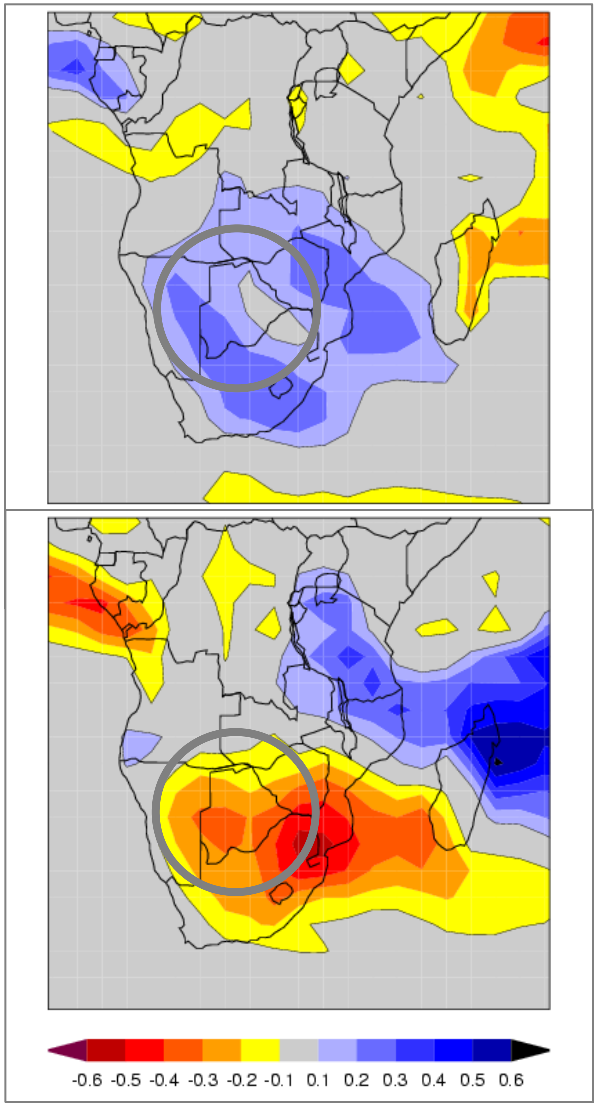
= 18-32ºC + 80mm + RH>60%



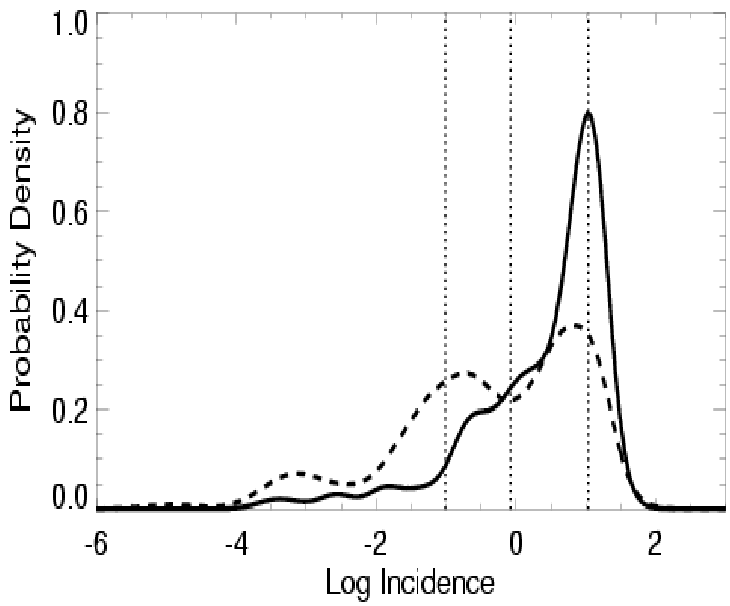
http://www.malariajournal.com/content/5/1/38

Inter-annual variability – intervention impact assessments

DEMETER Forecasts

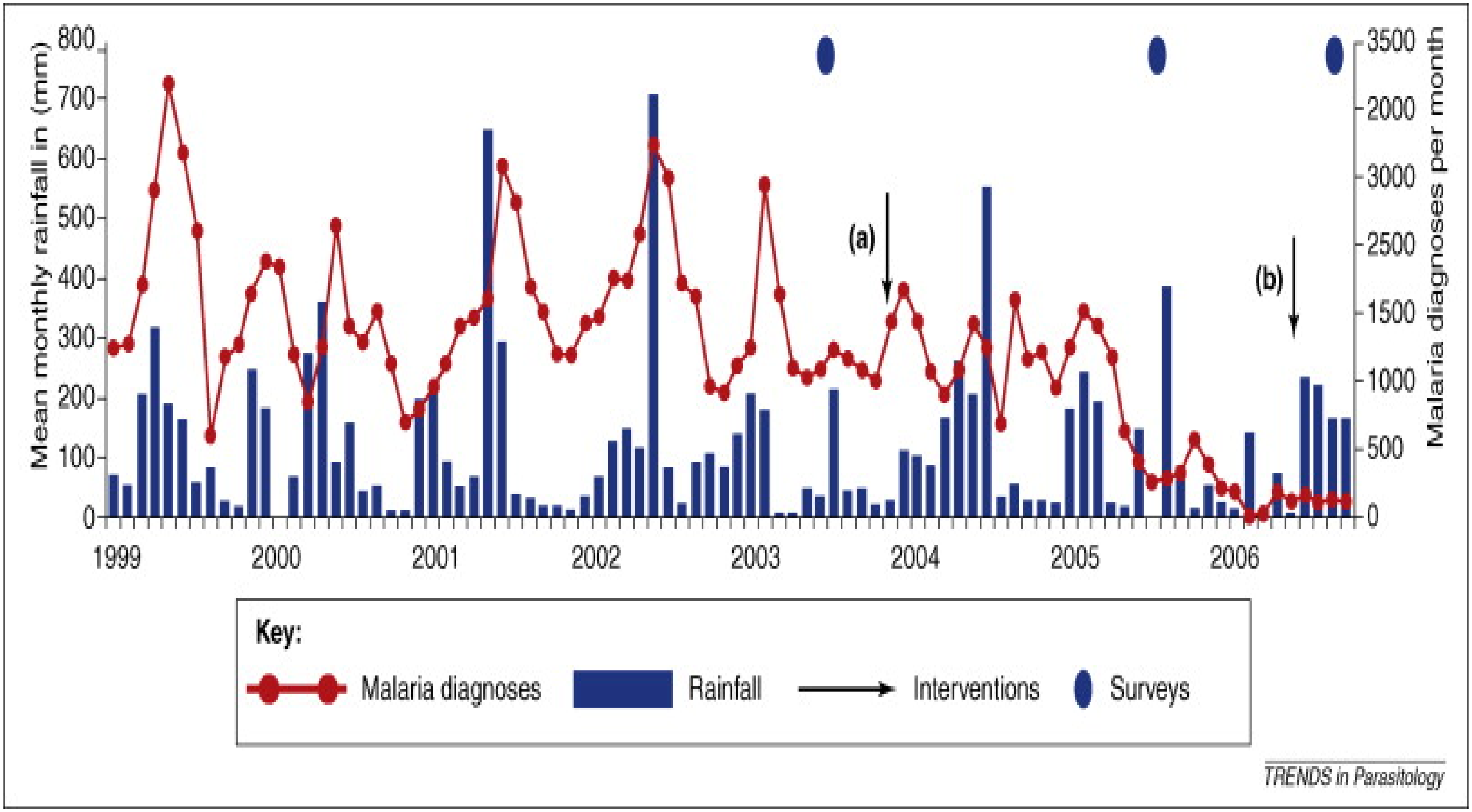


Probability distribution of high and low malaria years in Botswana



Thomson *et al.*, 2006

Accounting for rainfall in assessment of the impact of interventions against malaria



Trends

Short term

- Methodologies and tools to assess near-term climate change 2-10 years are critical

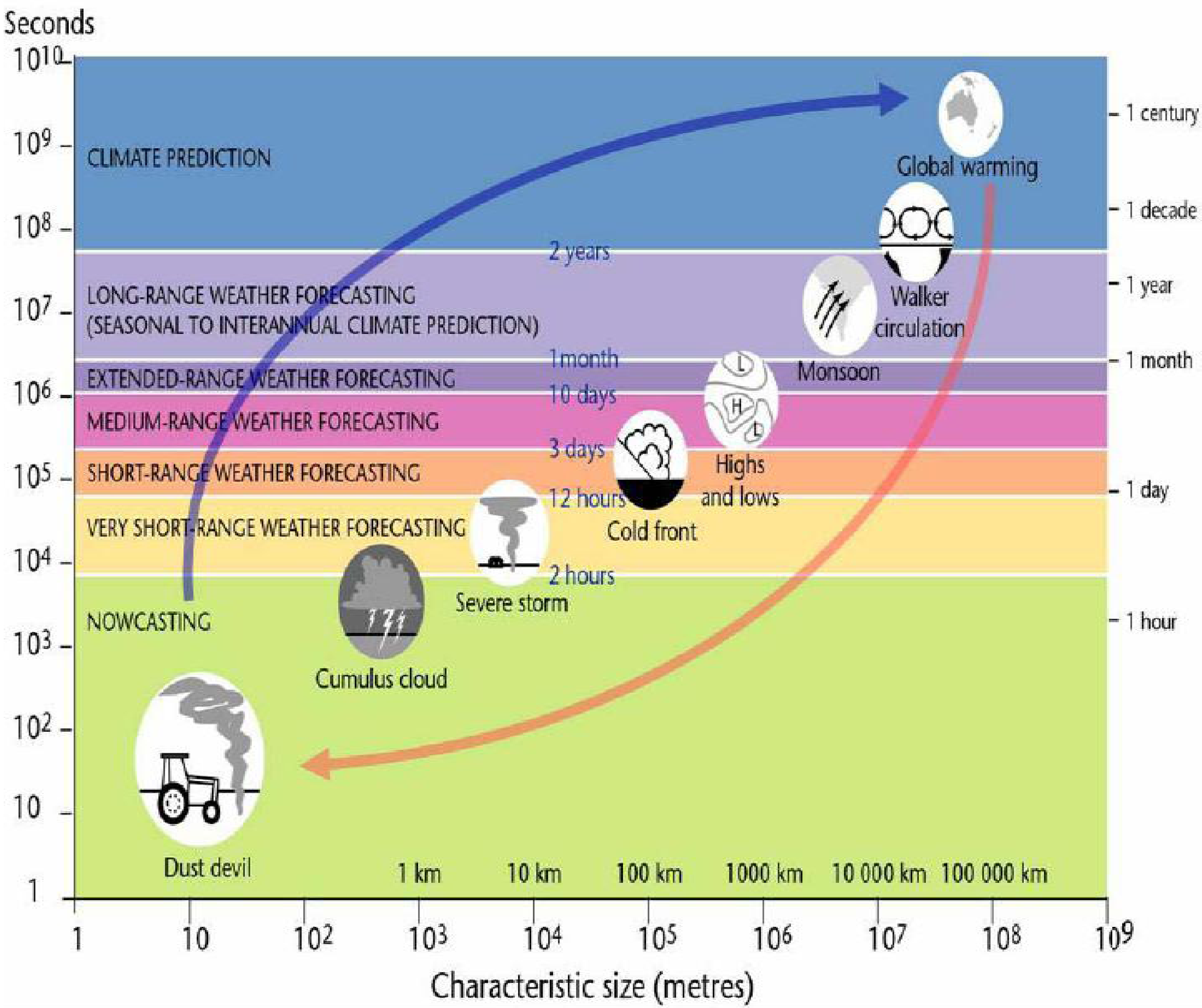
Long term:

- Longer timeframes may be outside the decision-making and policy environment.

Filling the data gap

- Surveillance systems to track key indicators of both exposure and health
- Expanded empirical research to better understand climate-health mechanisms
- Expanded research to link climate change scenarios to health outcome models

Gaps in climate data in space and time?



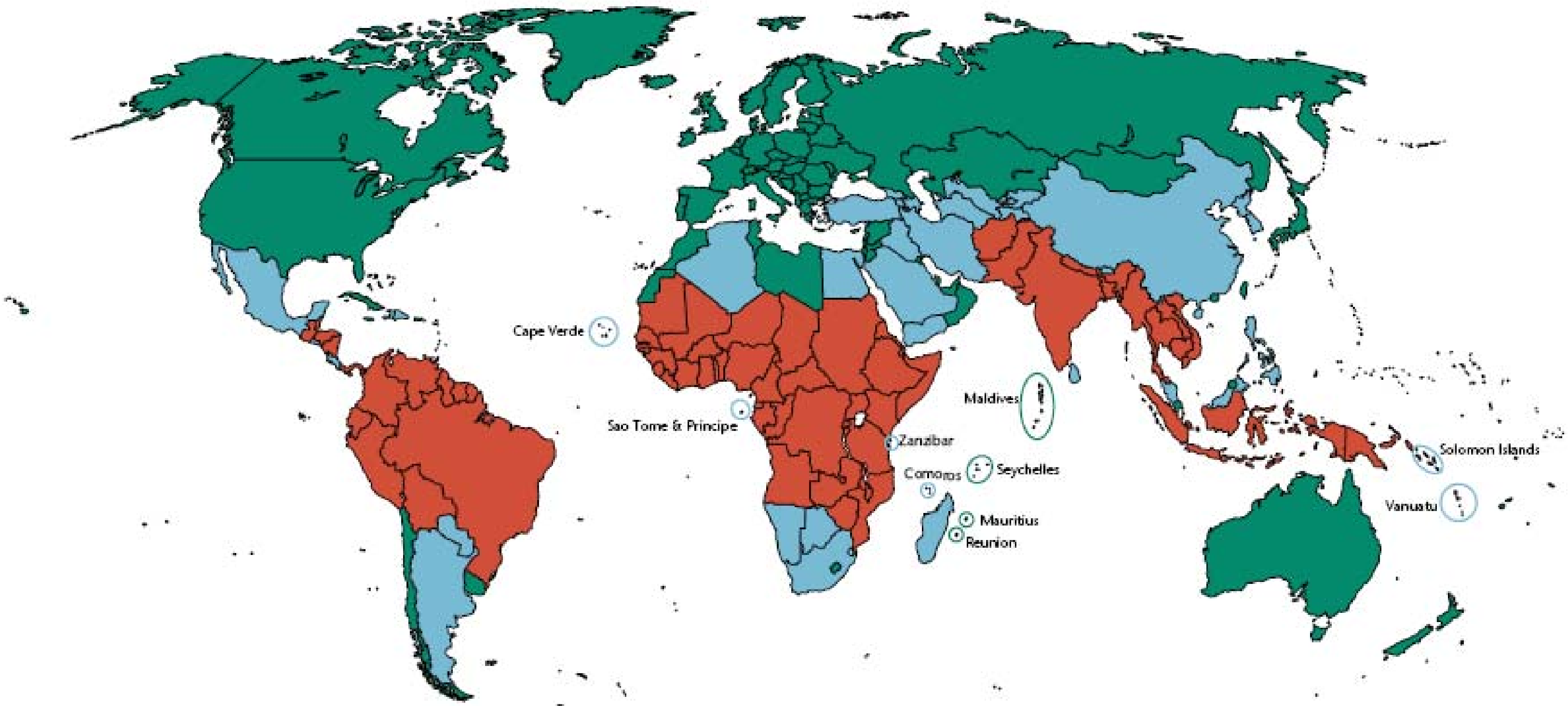
Linking data needs to goals for disease control

Elimination - interruption of transmission to create local zero incidence.

Eradication - permanent reduction of incidence to zero.

Control - to achieve low transmission and mortality in high burden countries.

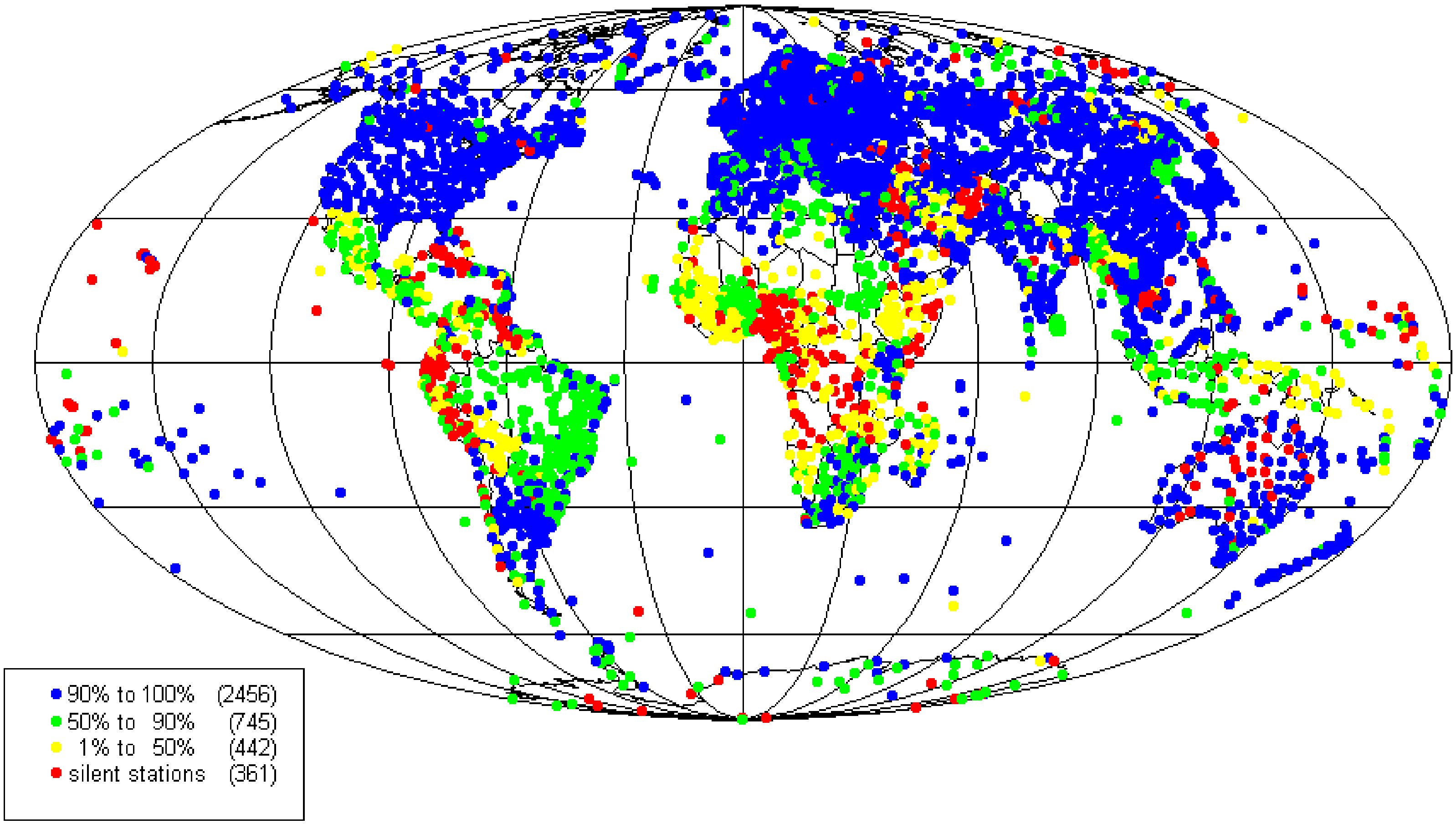
Target countries for eradication, elimination or control



- No malaria transmission
- Eliminating malaria, nationally or subnationally
- Controlling malaria

Feachem R.G.A. and the Malaria Elimination Group

Silent stations – improving the observing systems for poorly represented areas



ClimDev-Africa - African Union initiative sponsored jointly by the African Development Bank, African Union Commission and the UN Economic Commission for Africa (APF, 2007).

Recommended actions

1. Invest in the observations
2. Focus on relevant timeframes for decision-making (emphasis on days to decades, including seasonal and inter-annual variability, but also including long-term climate change).
3. Strengthen health surveillance and response systems.
4. Use knowledge management systems to facilitate the capture and sharing of climate risk management knowledge to the concerned communities.
5. Create a public service platform within WMO member institutions to encourage cross-sectoral interaction

Developing a "Climate Smart" health sector


CLIMATE INFORMATION FOR PUBLIC HEALTH

SUMMER INSTITUTE 2008

Now that the world's attention is increasingly focused on climate-change adaptation, it is essential for the health community to better understand the role that climate plays in driving disease burdens and affecting human health.

The International Research Institute for Climate and Society (IRI), in partnership with the Center for International Earth Science Information Network (CIESIN) and the Mailman School of Public Health, is pleased to announce the Summer Institute 2008 course on Climate Information and Public Health. The training course offers public-health decision makers and their partners the opportunity to learn practical methods for integrating climate knowledge into decision-making processes through expert lectures, special seminars, focused discussions and practical exercises.

The IRI is the premier global research and capacity building institution focused on the use of climate information in public health decision-making. It is a collaborating Centre with WHO-PAHO on climate sensitive diseases and has active international partnerships concerning malaria, meningococcal meningitis, Rift Valley Fever and other diseases. The institute also has an interest in dengue, diarrheal

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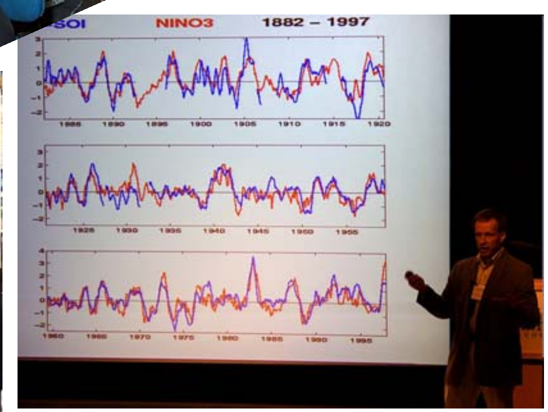
Course Dates
June 2–14, 2008
June 16–20 2008 (optional week dedicated to the analysis of participant's data)

Venue
The summer institute will be held at the IRI, which is located at the Earth Institute's Lamont Campus in Palisades, New York,

Deadline
Application deadline is March 31, 2008.
The course will be limited to 12 participants
Early registration is recommended.

The International Research Institute for Climate and Society



……….and a climate community that an active participant in public health processes.

Kenya CHWG Dec 08

Ethiopia CHWG
Sep 2008

Madagascar CHWG Oct 08