David Rogers
Health and Climate Foundation

INTEGRATING WEATHER CLIMATE AND ENVIRONMENTAL INFORMATION FOR HEALTH

Using environmental information

Weather and Climate Informed Decisions

Climate Information for Health Sector

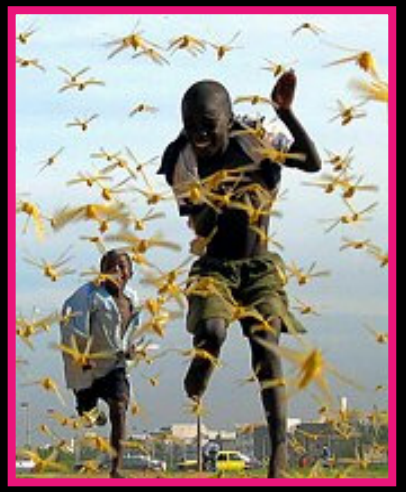
- Decisions - <10 days
  - Emergency response
  - Capacity to cope with casualties
  - Aeroallergens, heat waves, poor air quality

Climate Information for Health Sector

- Decisions – Weeks to Seasons
  - Vector-borne diseases; e.g. Malaria, dengue, hanta virus
  - "Seasonal diseases" e.g., Men A Meningitis, cholera

Climate Information for Health Sector

- Decisions – Inter-annual and longer
  - Anticipating climate threats to prerequisites for public health – food, water, shelter



Advances in Climate & Weather Prediction

- Global 5-day forecasts are as good as 2-day forecast of 25 years ago
- Greater understanding of forecast uncertainty permits more useful seasonal predictions
- Distinction between weather and climate is disappearing

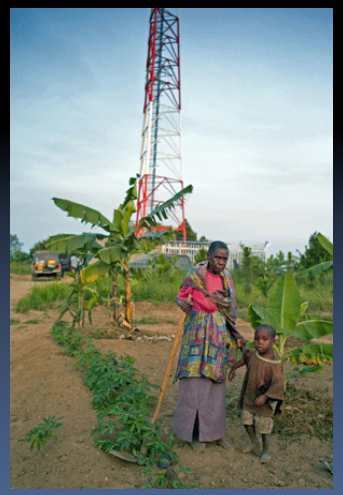
Satellite and in situ data

Satellite data

- Assimilation of advanced satellite observations

In situ data

- Access to in situ environmental and health observations and information

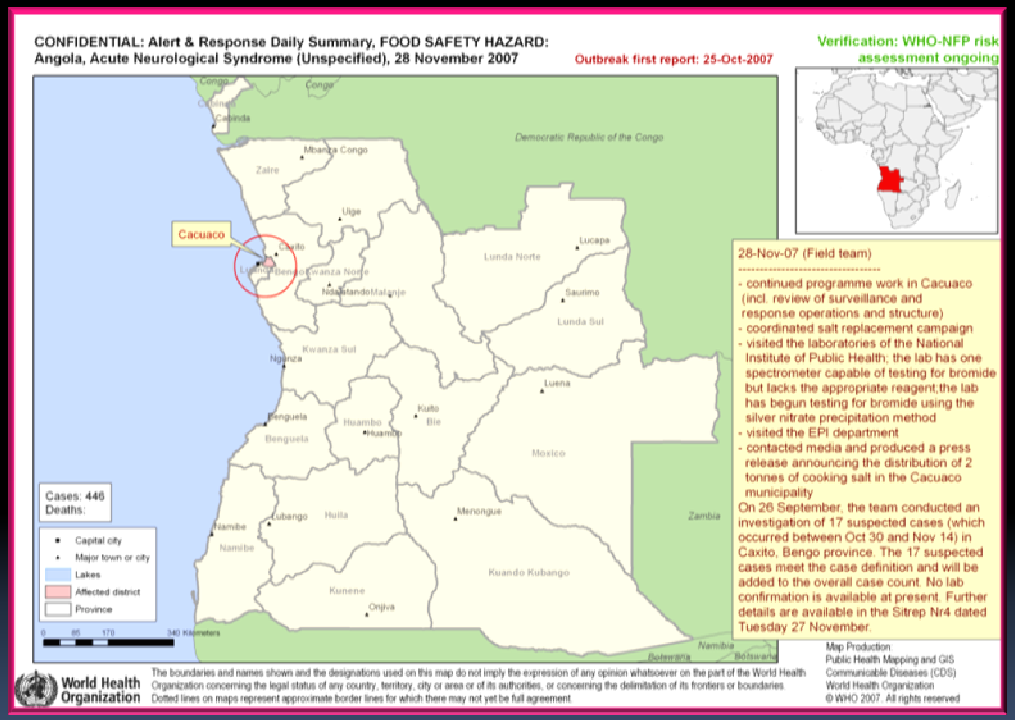


Early Warning Systems

Advances in Health Forecasting

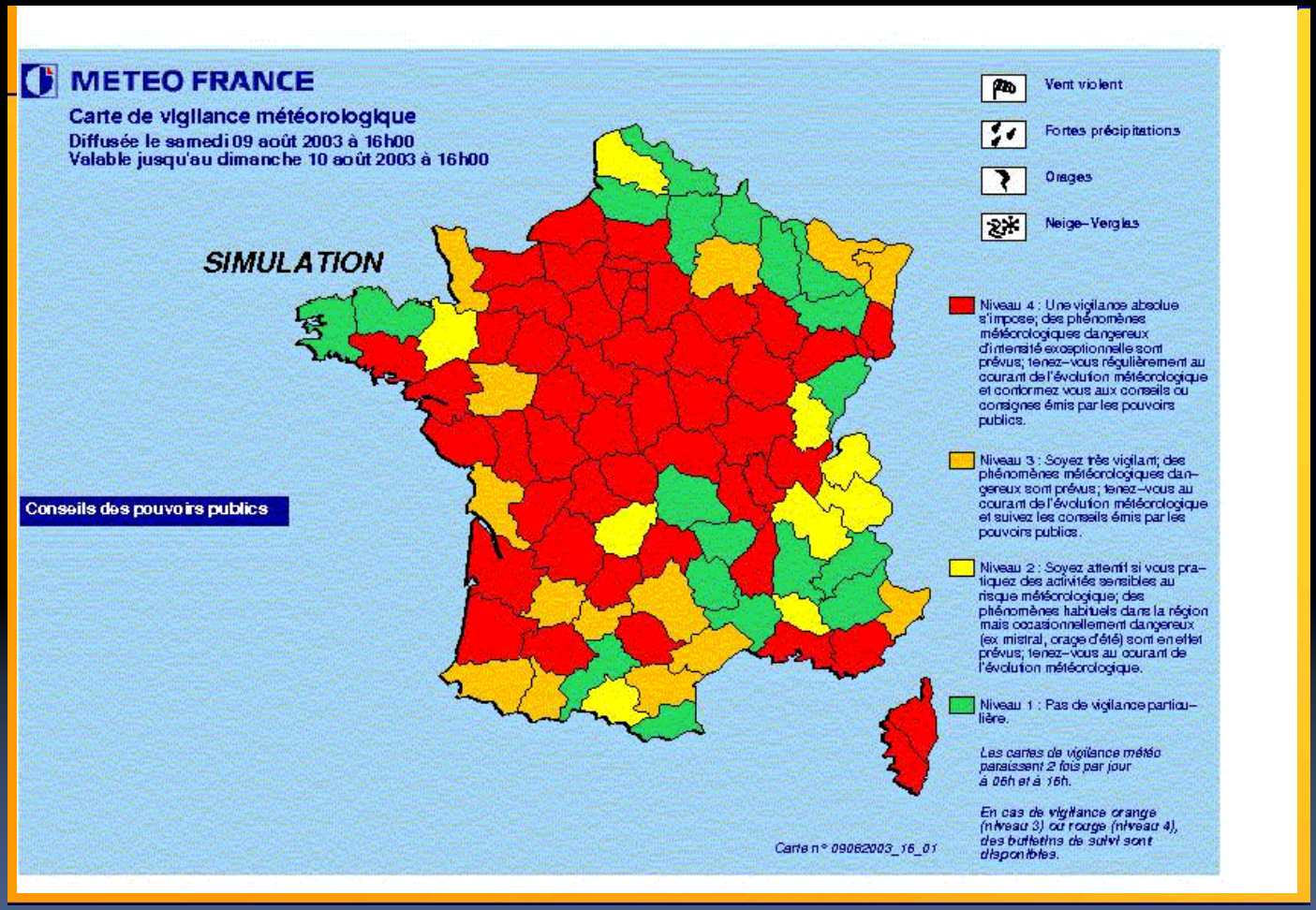
Key Steps to Improving Health Early Warning Systems

- Surveillance systems
- Use of GIS tools
- Assess the predictive accuracy of the system
- Measure all relevant factors for which information is available
- Include health policy makers in all stages of system design and implementation
- Early warning system implementation should be based on cost-effectiveness of including climate and non-climate information



Kuhn, K., D. Campbell-Lendrum, A. Haines, and J. Cox, 2004

The French HHWWS : Weather Warnings and Public Health Response : « Plan National Canicule »



Operational since summer 2004,
Météo France / Ministry of Health

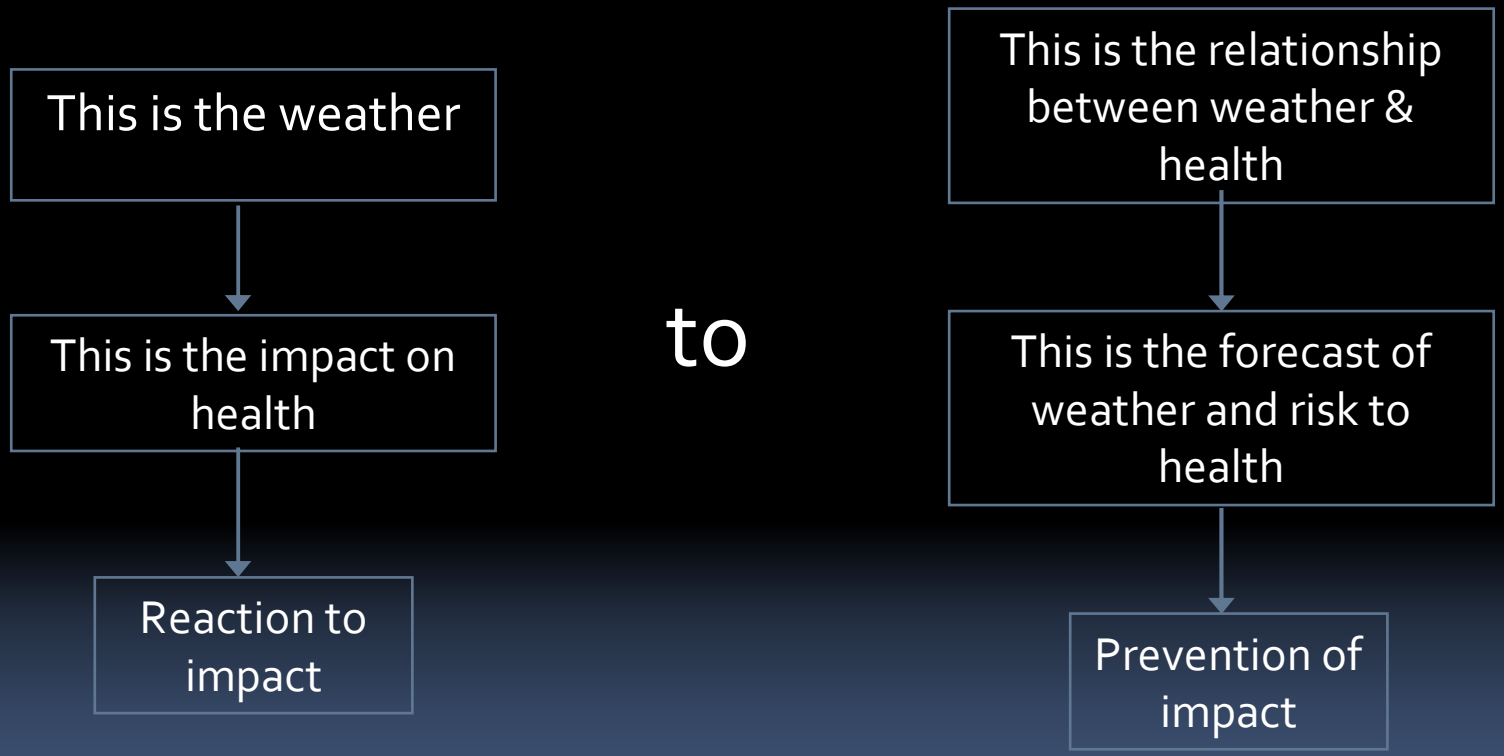
Predictive Modeling of Health

- Motivation
  - Policy makers need to understand future changes to the environment and the impact of these changes;
  - Healthcare systems need to be more effective and efficient, particularly against the backdrop of the rising cost of healthcare provision;
  - Inform and therefore better protect populations from the impacts of the environment;
  - The prospect of a rapidly changing climate.

Predictive Modeling of Health

- Emerging Capabilities
  - Detailed health information, such as GP records, hospital admissions
  - Technologies to deliver information at the right time to the right people
  - Customized approach to health care
  - Downscaling of weather and climate prediction to local scales

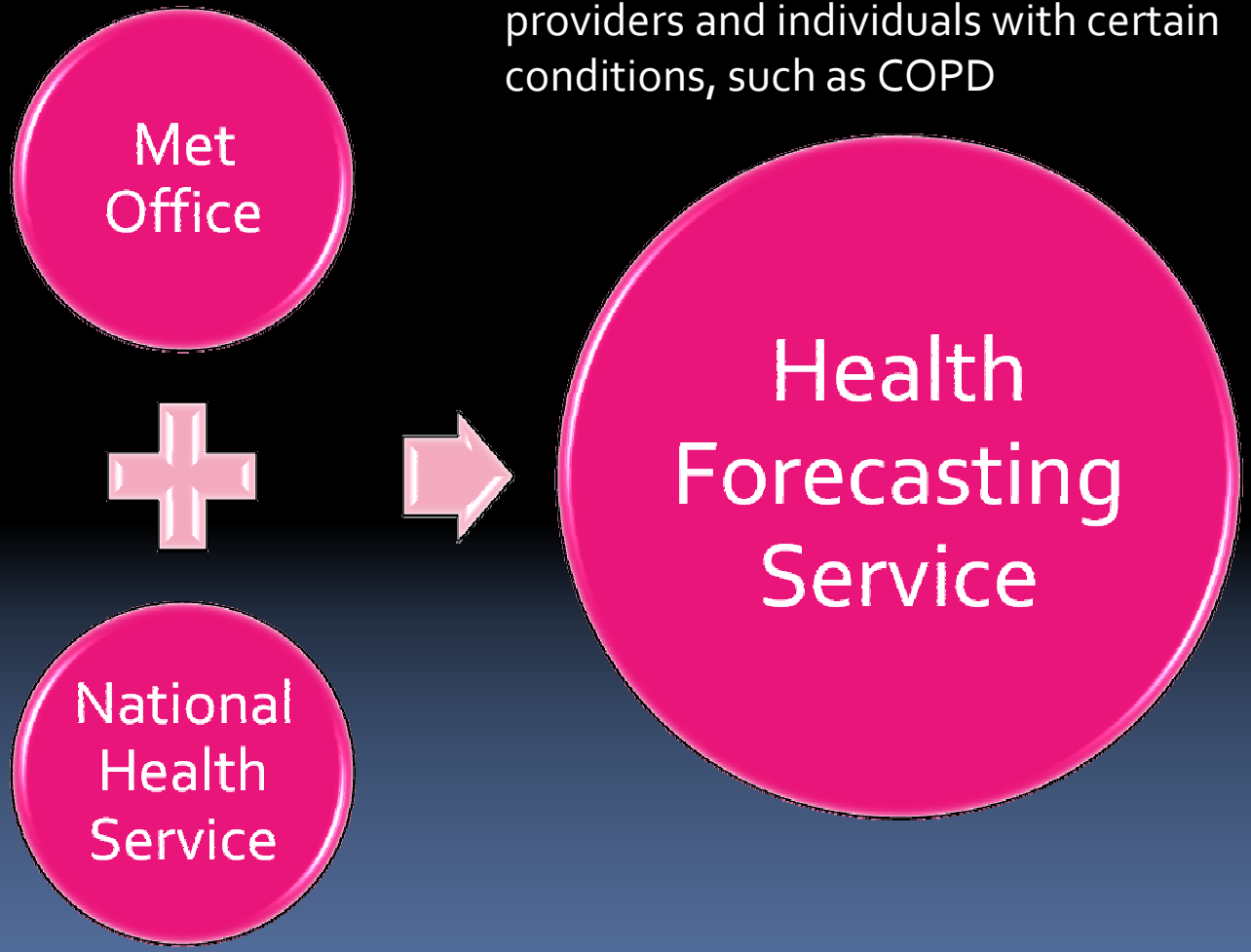
Health forecasting is about moving from…



Courtesy of Met Office

Predictive Modeling of Health

Provides services to Health care providers and individuals with certain conditions, such as COPD

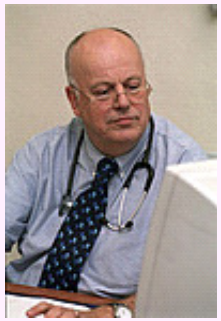


Courtesy of Met Office

Met Office forecaster

Health Forecasts

NHS Network



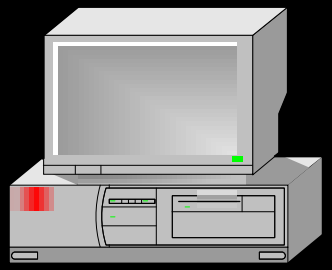
GP practice

Call logs

Patient name and tel no, changes to patient status

Medixine software on NHS Server

Monitoring



Medixine administrator

Telephone numbers

Patient responses

Person with COPD

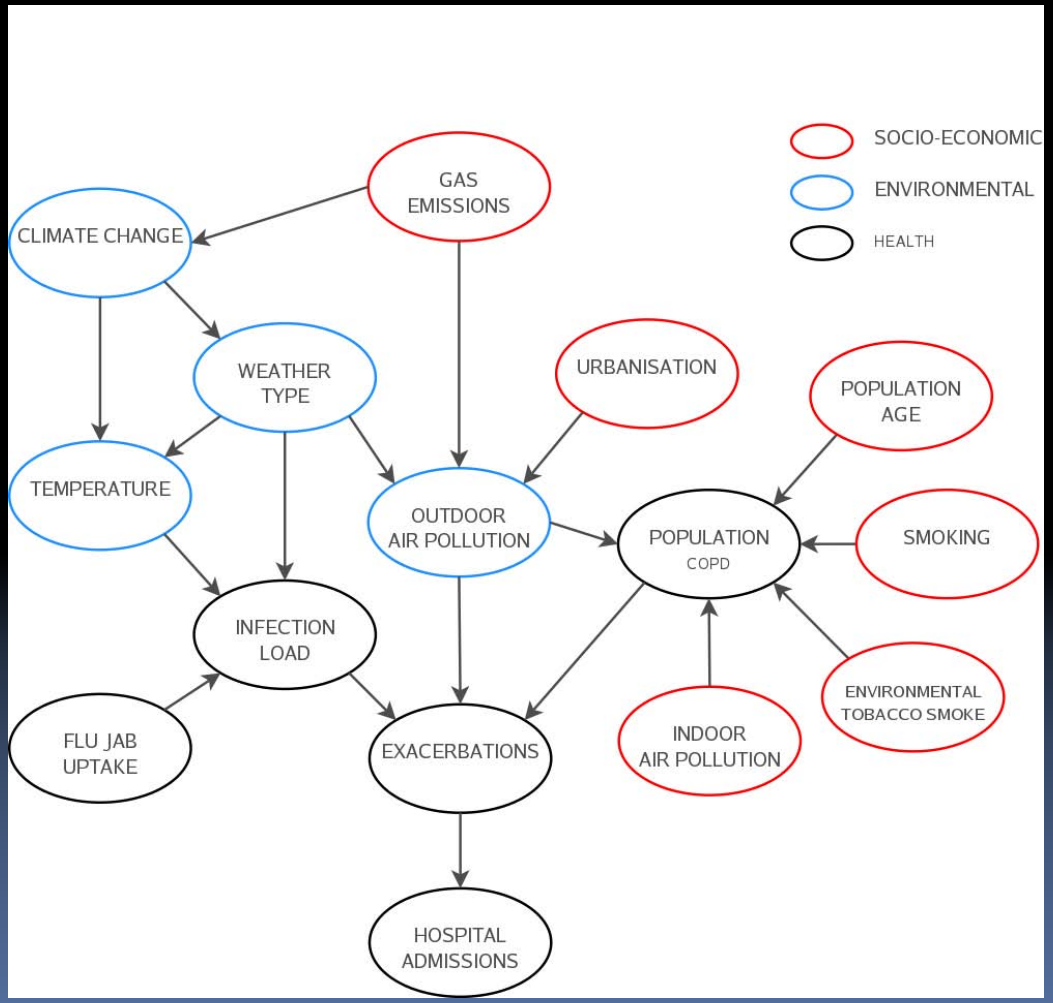
Automated telephone call

Patient responses

interactive voice response system

Predictive Modeling of Health

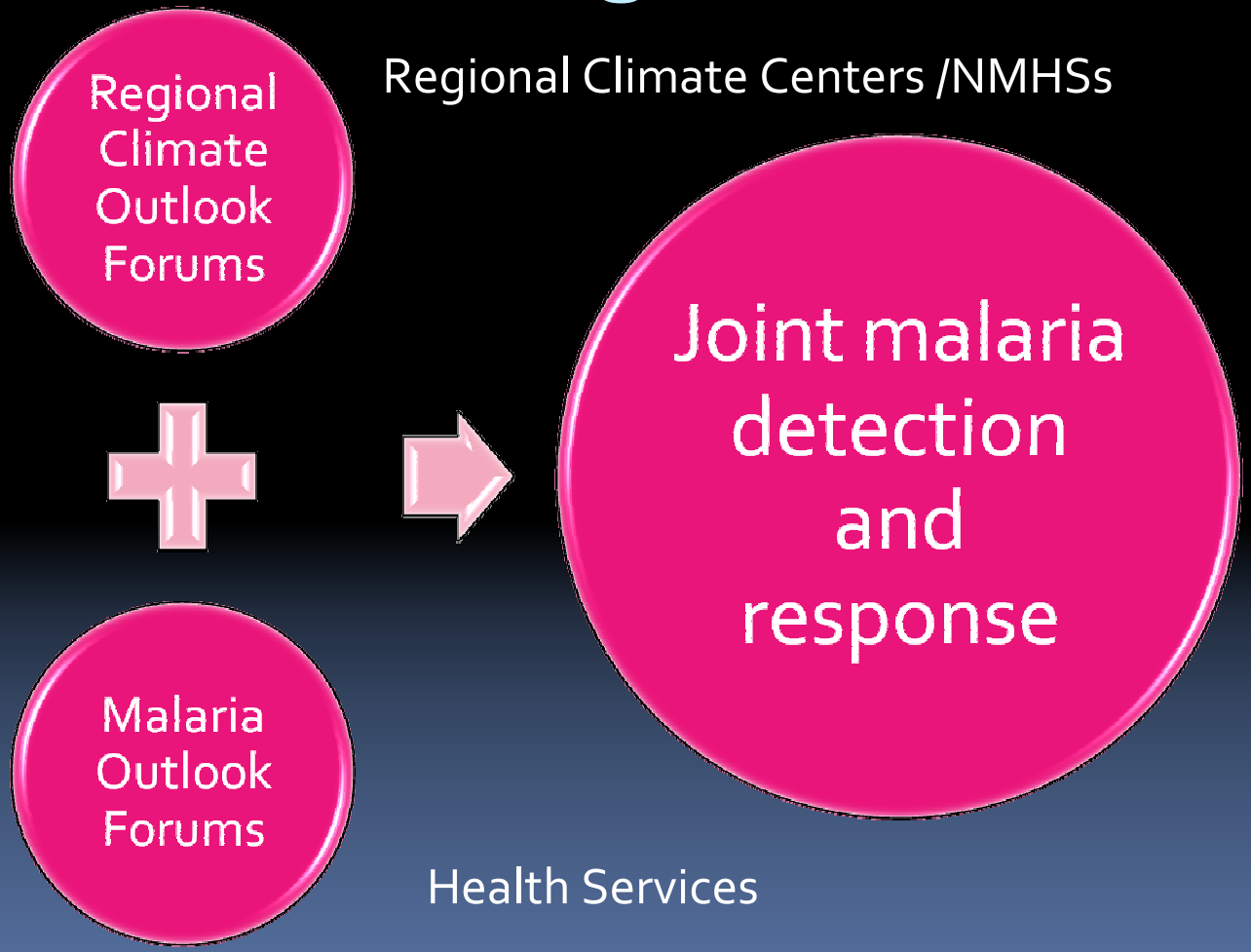
- Factors influencing COPD – Bayesian network allows testing of the relative importance of each factor as well as predictions of the health implications of the changes in any factor



Can this approach work in Dev Countries?

Malaria Eradication Strategy

From Climate Outlooks to Health Warnings



Global Malaria Action PLan

Opportunity for greater cooperation between health, climate and satellite communities to enhance surveillance and early warning

Malaria elimination

- Strengthening health systems
- Cross-border collaboration
- Rigorous surveillance

Prevention of reintroduction

- Surveillance needed to monitor areas with high potential for malaria
  - behaviours, activities, migration, climate variability and climate change

Summary

Key points

- Integration of satellite and in situ environmental and health information – make it easier to exchange data
- Shift from reaction to impact to prevention of impact
- Transfer capability from developed to developing countries