



Environmental health: bridging the gap between traditional health concerns in a changing climate

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Climate change implications for environmental health

- Heat stress
- Sea level rise
- Drowning
- Water and soil salinization
- Ecosystem and economic disruption
- Food, water supply shortages and food-borne infections
- Malnutrition
- Vector-borne diseases
- Mass population movements, environmental refugees
- Mental health issues and respiratory disease caused by extreme weather events
- Increased air pollution concentrations – climate change may alter exposure to air pollution by affecting the weather and emissions



Gaps in our Knowledge

- Health status, heat extremes and mortality
 - Need to determine from our health information services, the number of deaths that may be attributed to climate change.
- Environmental refugees and potential conflict
- Urbanization and / or population increase and associated social problems
- Impacts of mitigation strategies on human health, especially long-term effects
- Strengthening of the public health systems to better cope with excess burden of disease associated with climate change
- Multidisciplinary research and models



Gaps in our Knowledge

- Climate change, agriculture and malnutrition impacts on vulnerable communities
- Climate change, air quality and impacts on morbidity and mortality rates
- Guidelines with specific tasks and actions for local government to carry out to best protect communities from the adverse health effects of climate change



Case study: Malaria

- Specific questions:
 - How will the incidence and distribution patterns of malaria change in a changing climate in South Africa?
 - How will we provide for optimal modelling of such effects while ensuring that we can differentiate between climate change and other important factors?
 - What data already exists in the country that can be used as a base for further studies?





Information required

- We need to know:
 - Temperature minimum and maximum
 - Rainfall quantity, seasonality and its effects on vegetation
 - Quality of water bodies
- To solve current and future problems for adaptation, we need to know:
 - Human behavioural patterns
 - New technologies
 - Socio-economic information, e.g. habitat and livelihoods



For example, in Limpopo

- The Objectives of this case study were;
 - To collate 10 Year Malaria cases data in Limpopo,
 - To collate climate change /variability and other environmental data/information for the same period,
 - Perform timeline assessments of Malaria incidences with climate/environmental data,
 - To identify and map malaria risk areas/ populations in terms of climatic/environmental factors at provincial/district/municipal levels using current climate,
 - Model the current Malaria/climate relationship and provide future Malaria risk maps for south Africa.





Limpopo Case Study

- Potential CC problems include:
 - Limited knowledge of climate change and malaria relationship in communities,
 - Shortage of Malaria data to cover at least 30 Years,
 - Lack of a consistent, comprehensive and relatively accurate model built on local conditions to incorporate many factors in addition to climate variability and change,
 - Weak socio-economic and awareness level to give Climate change the urgency it needs.



Climate Change Data Application of the Atlas

- Data we need for this case study to plan for adaptation and mitigation
 - Incidence of malaria
 - Temperature, rainfall, water bodies quality
 - Human behavioural patterns,
 - Socio-economic data including migration
- By extracting these data and use a model that incorporates climatic, social and economic factors the problem may be explored for any province in South Africa





Conclusions

- Environmental health considers health outcomes framed within an environmental context
- One major area of concern is increases and changing patterns of vector-borne diseases, especially malaria
- Data and information collated in the Atlas will be applied to existing models to evaluate current situations but also to predict for the future under changing climatic conditions