



ENACTS

ENHANCING NATIONAL CLIMATE SERVICES

Why ENACTS for Health? Training Module

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ENACTS
&
HEALTH



International Research Institute
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WHY ENACTS FOR HEALTH?

1.1 Challenges of the Health Community?

Public health policymakers and practitioners are increasingly concerned about the potential impact of climate, environmental and social changes on the effectiveness of current and future vector-borne disease control and elimination programs. Yet, while climate change adaptation programs are increasing in scope and resourcing, there remains an identified gap in research and professional capacity to use climate information in decision-making. In the health sector in particular, many control programs of climate sensitive diseases (such as malaria) are not informed by grounded knowledge and information on the climate. This is because few public-health institutions or practitioners are equipped to understand or manage the effects of a changing climate, despite major advances in recent years in alerting the health community to its risks. A key challenge that has been identified is ‘market atrophy,’ a comparative lack of demand from the health sector for climate services coupled with a lack of supply of relevant, actionable information (as there is often no clear demand).

The Climate Services for Health Case Study Project (<https://public.wmo.int/en/resources/library/climate-services-health-case-studies>) profiles over 40 examples of tailored climate services used to manage health risks. It summarizes benefits and lessons learnt, presents a common framework for developing health tailored climate services, and shares good practices which can strengthen collaboration between the weather and climate community and the public health sector.

Things are also beginning to change in Tanzania with the development of a new capacity at the Tanzanian Meteorological Agency called ENACTS. ENACTS has the potential to transform the capacities of national meteorological services to respond to and invest in the research and operational interests of the health sector. You can learn more about the rationale behind ENACTS products and services here.

1.2 What is ENACTS?

The ENACTS (Enhancing National Climate Services) initiative is an ambitious effort to simultaneously improve the availability, access and use of climate information by working directly with National Meteorological and Hydrological Services (NMHS). Currently ENACTS is being implemented in 10 countries in Africa and one region. You can find out more about ENACTS activities in different countries here - iri.columbia.edu/ENACTS.

1.3 How is ENACTS Data Produced?

Availability of ENACTS climate data is generated by quality control of data from the national observation network and combining station observations with satellite estimates for rainfall, and digital elevation models and reanalysis products for temperature (Figure 1.2). Developed data and derived products are disseminated for the Meteorological agency website and through other means. The new quality assessed, spatially and temporally complete ENACTS data products allow for characterization of climate risks at a local scale, and offer a low-cost, high impact opportunity to

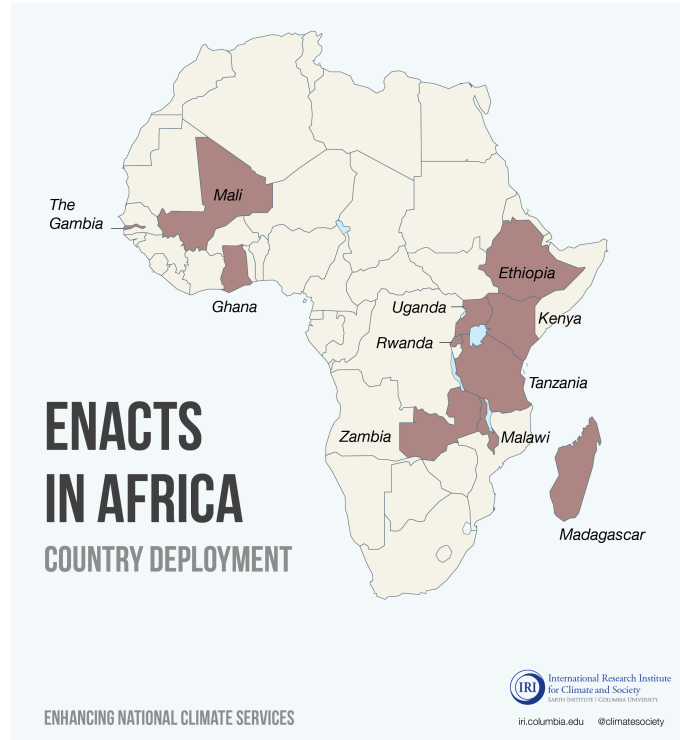


Fig. 1.1: ENACTS coverage in Africa

support applications and research. Hence the steps to produce ENACTS data are: * Assess available data * Perform quality check * Perform Merging

The approach thus combines the spatial information from the proxies with the accuracy from point station measurements. The final products are datasets with 30 or more years of rainfall and temperature time-series data for every 4km grid across a country. These quality assessed, spatially and temporally complete ENACTS data products allow for characterization of climate risks at a local scale, and offer a low-cost, high impact opportunity to support applications and research.

1.4 What is ENACTS' Contribution in the Health Community?

At the heart of ENACTS products and services are new climate (rainfall and temperature) databases that have been created from a blend of global products and local observations that are obtained, managed and curated by TMA. Access to the full suite of national observational archives and monitoring data significantly increases ENACTS data quality over global products which normally access only a fraction of the local data.

Experience tells us that climate information has the potential to inform a wide range of health decisions and improve our understanding of the following:

- Mechanisms of Disease Transmission: to help identify new opportunities for intervention
- Spatial Risk: to help identify populations at risk for better targeting of interventions
- Seasonal Risk: to inform the timing of routine interventions
- Sub-seasonal and Year-to-Year Changes in Risk: to identify when changes in epidemic risk are likely to occur to initiate appropriate prevention and response strategies

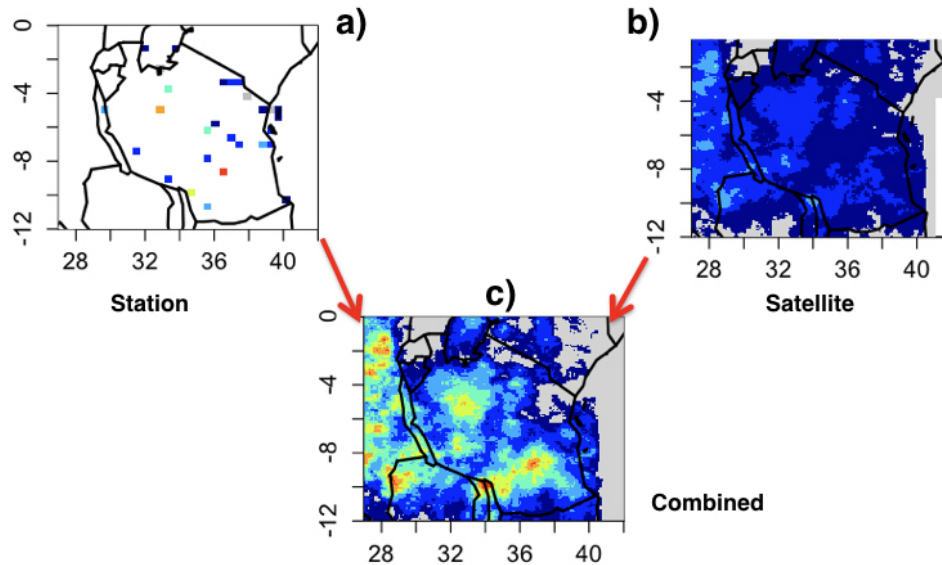


Fig. 1.2: Tanzania data merging concept a) Station data: available from Tanzania Meteorological Agency (TMA), b) Satellite data c) incorporated/combined into archived ENACTS data and disseminated by TMA

- Trends in Risk: to identify long-term drivers of disease occurrence (including changes in the climate) to plan for and support future prevention and response strategies
- Assessment of the Impacts of Interventions: to evaluate the role of climate as it enables or limits disease transmission.

You can actually do quite a lot of analysis of climate data that may be relevant for your health programme online using the ENACTS Maproom interface. Understanding how to access, manipulate and use these Maproom tools can provide you with a lot of information that may be of direct relevance to your programme of work – whether its assessing the impact of a climate sensitive intervention or improving the planning of health related activities according to the seasonal calendar of rainfall. A particularly exciting feature of the Forecast Maproom is that it allows you to explore the impact of ENSO and the Indian Ocean Dipole on rainfall and temperature across the country.

1.5 Access Interpretation

The ENACTS approach makes access to climate information products easier by making information products available online. This is accomplished by customizing and installing the very powerful IRI Data Library (<http://iridl.ideo.columbia.edu>) (Blumenthal et al. 2014) at the NMHS and developing an online mapping service that provides user-friendly tools for the analysis, visualization, and download of climate information products. The online tool currently includes “Maprooms,” one each for climate analysis, climate monitoring, climate forecast and Climate and Health.

1.6 Access

When available, the ENACTS Maprooms can be accessed through the following links:

- Ethiopia: <http://www.ethiometmaprooms.gov.et:8082/maproom/>
- Ghana: <http://maps.meteo.gov.gh:89/maproom/>

- ICPAC: <http://digilib.icpac.net/maproom/>
- Kenya: <http://kmddl.meteo.go.ke:8081/maproom/>
- Madagascar: <http://map.meteomadagascar.mg/maproom/>
- Mali: <http://197.155.140.164/maproom/>
- Rwanda: <http://maproom.meteorwanda.gov.rw/maproom/>
- Tanzania: <http://www.ethiometmaprooms.gov.et:8082/maproom/>
- Zambia: <http://41.72.104.142/maproom/>

The links to the Maprooms can also be found on the IRI ENACTS website: <http://iri.columbia.edu/resources/enacts/>

1.7 Resources on ENACTS

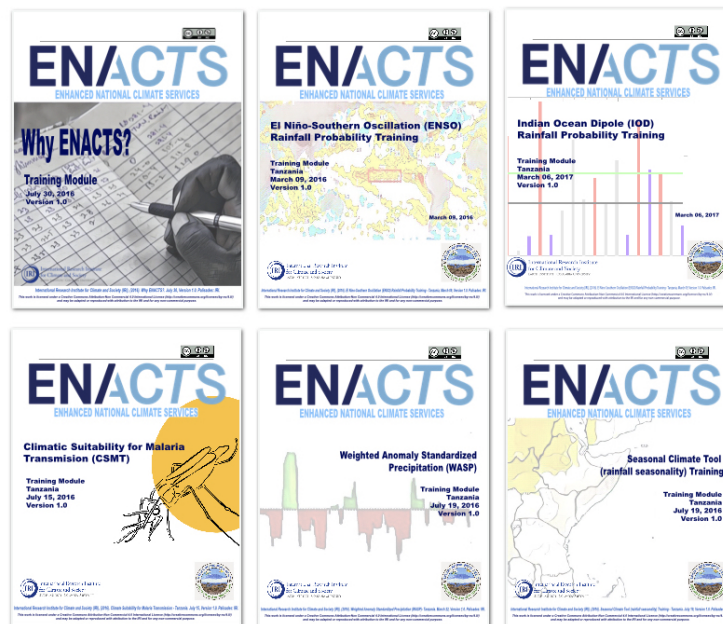


Fig. 1.3: Some ENACTS training manuals for Tanzania

We have created a series of Training manuals to get you started (Figure 3):

- **Why ENACTS?:** This module was developed to give an overview of ENACTS products and services, its different features, including Maprooms, and its uses.
- **Rainfall Seasonality:** This module allows the user to navigate through the “climate analysis” Maproom and access and analyse seasonality data of the country or up to district level rainfall data dates from 1981-2014. This Maproom can be used to explore seasonal disease risk.
- **ENSO rainfall:** This module shows on how the user can access the historical probability (given in percentile) of seasonal average monthly rainfall product conditioned on ENSO state on a desired season (3 month period), either throughout the country or up to a district level based on historical data from 1983 - 2014. This Maproom can be used to explore historical ENSO rainfall impacts on disease events.
- **ENSO Temperature:** This module shows on how the user can access the historical probability (given in percentile) of seasonal average monthly minimum or maximum temperature of the 1981-2014 historical

distribution given the state of ENSO. The data can be obtained and analyzed on either country level or up to a district level. This Maproom can be used to explore historical ENSO temperature impacts on disease events.

- IOD Rainfall: This module shows on how the user can access the historical probability of seasonal average monthly rainfall product conditioned on Positive IOD Tercile during a specific season for data from 1983-2014 . The data can be obtained and analyzed on either country level or up to a district level. This Maproom can be used to explore historical IOD rainfall impacts on disease events.
- CSMT (Climate Suitability for Malaria Transmission): This module shows on how the user can access data of where the CSMT map shows the number of months suitable for malaria transmission, based on climatological averages. Suitability is defined as the coincidence of monthly precipitation accumulation greater than 80 mm, monthly mean temperature between 18°C and 32°C, and monthly relative humidity greater than 60%. This Maproom can be used for various health reasons as well as impact assessment.
- WASP (Weighted Anomaly Standardized Precipitation): This Module allows the user to set a baseline year/s in which the WASP can then plot a graph, indicating conditions that are wetter than the average for the baseline period as well as conditions that are drier than the average. Allowing the impact of climate variability on health outcomes to be factored in to intervention impact assessments

These training manuals can be accessed through the following link: <http://iri.columbia.edu/resources/enacts/enacts-training-materials/> In addition, the underlying climate databases may be made available to users on request. Please contact massam.victor@gmail.com at TMA for further information. New modules are being created, if you have a suggestion for new module please contact enacts@iri.columbia.edu.

1.7.1 Conclusion

ENACTS products have generated a great deal of interest in the health community. As a result, strengthening and replicating ENACTS in other countries is a key priority. To do this, it will be necessary to both strengthen current ENACTS networks while expanding ENACTS to other countries.

1.7.2 Summary

Climate information must play a crucial role in national development planning. High quality climate data allows decision makers to better manage risks and maximize opportunities from a changing climate. Availability of decision-relevant information about the past climate, recent trends, likely future trajectories, and associated impacts is thus a prerequisite for climate-informed decision making. However, the declining availability of observation data in African countries threatens the quality of climate science and information products at all scales from local to national, regional to global. In particular for the health community ENACTS can help decision makers, researchers and other interested parties get access to climate data that can help better understand climate sensitive diseases as well as make impact assessment on previous steps taken to prevent or alleviate climate sensitive diseases. As a result of the climate data they can strengthen their decision-making processes.

1.8 Quiz

Please answer the following questions:

Q1. What does ENACTS stand for?

Q2. What is the key challenge that the health community faces in utilizing climate information?

Q3. In which areas can ENACTS help in the better understanding of health?

1.8.1 Quiz - Responses

A1. Enhancing National Climate Services

A2. The key challenge is ‘market atrophy’, which is a comparative lack of demand from the health sector for climate services coupled with a lack of supply of relevant, actionable information.

A3.

- Mechanisms of Disease Transmission
- Spatial Risk
- Seasonal Risk
- Sub-seasonal and Year-to-Year Changes in Risk
- Trends in Risk
- Assessment of the Impacts of Interventions

1.9 References

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