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CLIMATE DATA RESCUE IN EAST AFRICA

Over a seven month period in 2016, the TMA DARE pilot rescued rainfall and temperature data from 96 stations, which means that over 17,000 climate records were digitized.

PHOTO: PREPARED/ TEDDY CHENYA

TMA Data Clerk scanning the climate records

BACKGROUND

Climate data rescue (DARE) involves organizing, preserving and digitizing climate data at risk of being lost due to deterioration, destruction, neglect, technical obsolescence or dispersion of climate data assets over time. Climate data rescue is critically important to ensure that future generations of scientists and other data users have access to the information necessary for assessing climate variability and change, as well as providing a range of climate services (WMO, 2016)[1].

The United States Agency International Development (USAID) Kenya and East Africa (KEA) Planning for Resilience in East Africa through Policy, Adaptation, Research and Economic Development (PREPARED) Program worked with the World Meteorological Organization (WMO) and the Tanzania Meteorological Agency (TMA) to rescue temperature and rainfall data from stations around the Lake Victoria Basin.

Over a seven month period in 2016, the TMA DARE pilot rescued rainfall and temperature data from 96 stations, which means that over 17,000 climate records were digitized. The newly digitized climate records have been integrated into historical datasets, which has strengthened climate modeling and forecasting on the national, regional and global levels. The work in Tanzania has all been used to inform DARE best practices, lessons learned and EAC regional recommendations.

1 https://library.wmo.int/opac/doc_num.php?explnum_id=3318

DATA RESCUE PROCESS AND BEST PRACTICES

Climate data rescue involves organizing and preserving recorded instrument observations and climate data at risk of being lost. The DARE pilot in Tanzania was carried out in five phases:

1. ***Inception activities***: the purpose of this step is define and agree upon the scope, timeframe and resources necessary to implement the DARE activity. DARE activities are most successfully when senior management is committed to the effort and data clerks and management understand their roles and responsibilities. It is helpful to sign a memorandum of understanding so all contributors are on the same page.

2. ***Procurement of required equipment***. Prior to beginning the DARE exercise an equipment needs assessment should be conducted. While, DARE requires a minimum amount of equipment (digital cameras with stands, extra camera batteries, computers, server and protected equipment), each of these pieces are crucial to ensuring data is carried out efficiently and effectively. If the correct equipment is not procured or available, it can cause disruptions in the work flow.

3. ***Build the capacity of the DARE team.*** It is critical that those implementing the DARE process understand the purpose and have the capacity to carry out the processes before engaging in the task. Targeted, hands-on training to data entry clerks and data managers is helpful to instill a broader understanding DARE and build the skills necessary to implement the DARE Program. Training can also create or increase the interest, motivation, and a sense of ownership of the DARE process within the institution.

4. ***DARE implementation process***. Once a trained, dedicated DARE team is established the data rescue process can begin. The process is highly detailed oriented and a times physically laborious, it is important the supervisors keep the team motivated and the equipment functioning well.

   i. Identify data to be rescued through standardized criteria, such as parameters, station location and timeframe;

   ii. Sort the data by the pre-defined criteria established in step one;

   iii. Image the data by copying the data from physical to electronic media using digital cameras[2] . The images should be indexed in database that can be cross referenced by the Climate Data Management System (CDMS)

   iv. Digitize the data by entering it into the institutions CDMS;

   v. Quality control (proofreading) of the data by verifying the record entered in the CDMS matches the physical records. This is a crucial step to ensuring the accuracy of the data; and

   vi. Archive the rescued data onto the server and ensure physical records are filed appropriately.

5. ***Monitoring and technical support***. Continuous monitoring and evaluation of the DARE process helps identify and address challenges early, especially around the use of equipment and digitizing in the CDMS. Monitoring progress and sharing outputs contributes to improved staff motivation and enhanced skills of the DARE implementing team.

2 TMA found that it was more efficient to image records using digital camera rather than scanners.

REGIONAL RECOMMENDATIONS

The overall goal of the DARE initiative is to support EAC member states to establish sustainable operational systems for the data gathering, rescuing, preserving, quality controlling, digitizing, archiving, analysis, and dissemination in East Africa.

Based on the success and value of the DARE pilot with TMA, the PREPARED Program recommends that the climate data rescue effort be continued and expanded in the East African Community (EAC). These efforts should be led by IGAD Climate Prediction Center (ICPAC) in consultation with WMO. More robust DARE efforts will enhance the capacity of the region on climate forecasting and early warning systems.

In addition, it is important that National Hydrological Meteorological Services in the EAC to explore the harmonization of meteorological data management by standardizing the CDMSs used in the region. Harmonized systems would facilitate the sharing data and the generation of climate information products in a cost-effective manner.