

Regional Drought Management System for Middle East and North Africa



Drought in Morocco in March 2016

Thematic Area: Climate Change Impacts and Management

Purpose: To empower decision-makers to plan for and manage the impacts of droughts on food and water security under current and future climate conditions

Geographic Scope: Middle East and North Africa (Jordan, Lebanon, Tunisia and Morocco)

Timeline: 2009 - present

Partners:

- United States Agency for International Development (USAID)
- National Drought Mitigation Center (NDMC),
- University of Nebraska-Lincoln: Center for Advanced Land Management Information Technologies (CALMIT) and Daugherty Water for Food Institute (DWFI),
- (FAO) regional office for the Near East and North Africa,
- National Oceanic and Atmospheric Administration (NOAA),

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Periodic drought is a threat to food and water security in the Middle East and North Africa (MENA) region. The region already faces challenges from the limited water supply, political instability, and desertification. So droughts bring unwanted additional pressures on natural resources, impacting economic and social development.

The effects of recent droughts reveal the gaps and limitations in drought management in the region. Drought conditions in Morocco and Tunisia in 2016, and the southern Levant in 2014 emphasize the urgent need to support the governments and people of these countries in developing multi-level policies/programs to manage the impacts of these extreme events. Data technology can be harnessed alongside policy and practical water and crop solutions to help mitigate the impacts of these extreme events. This need is further heightened by any analysis of future climate conditions in the region. The Global Climate Model (GCM) highlights the likely future increase in temperatures, decrease in rainfall and increase in extreme events, particularly drought. New climate change data at the regional and country scale generated by ICBA scientists have shown that future droughts are likely to be more frequent and intense.

The Regional Drought Management System for the Middle East and North Africa (MENA RDMS) project focuses on drought risk management through the development of monitoring and early warning systems preparedness, and mitigation measures. The mission of the MENA RDMS is to serve as a catalyst to improve the region's drought early-warning capabilities and create an environment of proactive drought risk management. It aims to establish state-of-the-art systems to monitor regional drought conditions, assist with drought planning and coordination activities, and assist officials who are tasked with relief efforts by providing "value-added" information during drought events. During the project, the MENA RDMS team provided stakeholders with capacity building and training in the operation of monitoring and early warning systems, developed communications and information delivery technology, and conducted stakeholder engagement activities. The work is undertaken for two geographic scales:

- Regional: The Middle East and North Africa
- National: Four countries to serve as a proof-of-concept in this proposal: Jordan, Lebanon, Morocco and Tunisia, selected because their ministers or key decision-makers have expressly requested help in establishing a system to help them manage drought communications and delivery technology, and conducting stakeholder engagement activities.

The project brings in the combined expertise from international and regional partners to deliver new insights, management plans and drought resilience strategies at the national and local levels that will reduce drought impacts on the food supply and on the quantity and safety of the water supply in vulnerable communities.

Activities and Outcomes

The project approach builds on the framework of the internationally agreed Integrated Drought Management Programme (<http://www.droughtmanagement.info/>). The key element of risk-based drought management planning includes three essential pillars which are adopted in the MENA RDMS project.

The three pillars are:

- Establishment of drought monitoring and early warning system and associated information delivery systems in each country to support countries under current and future climate conditions;
- Assessment of drought vulnerabilities and impacts so that these can be targeted; and
- An agreed plan of actions and measures to mitigate and respond to drought impacts.

Activity 1. Engaging stakeholders: Needs and opportunities analysis

An extensive scoping exercise took place in the first phase of the project to understand the needs of the end-users and to identify the existing systems for alerting, managing and responding to drought for each country. This ensured the activities of the project were embedded in the institutional systems already in place helping to support the centers and institutions already tasked with drought management.

Activity 2. Establishing and operationalizing a drought monitoring, early warning and information delivery system

This work involved extensive collaboration and engagement throughout the region. The basis of this work will be MENA Composite Drought Index (MCDI) with the prototype developed in the early stages of the project and trialed with the country partners. The MCDI product is based on satellite-based and modeled anomaly data for soil moisture, vegetation stress, precipitation, temperature, and evapotranspiration stress which give good indications of drought conditions. Climate change downscaling and modeling activities are also part of this activity so that the nature of future droughts relative to extreme events today and the likely impacts on water and food systems can be understood.

Activity 3. Conducting drought vulnerability and impact assessments and developing management plans

This involves extensive work with partners and other countries in the region to conduct vulnerability and impact assessments. Once this is completed and the most vulnerable sectors, regions and population groups are identified, the next step will be to identify and implement actions which lessen these vulnerabilities. The ministries or other entities responsible for the implementation of these actions are also identified through this process.

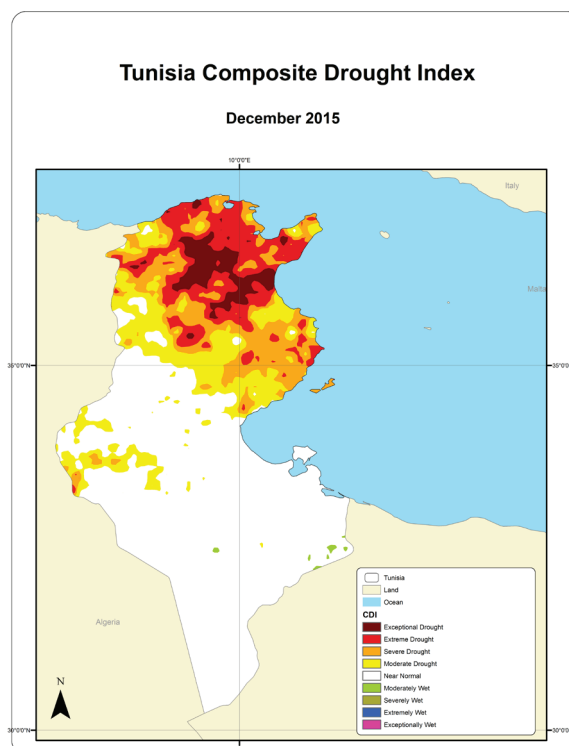
Activity 4. Operational support and training for drought monitoring and early warning system

Extensive training will be provided in the development and use of drought monitoring and early warning systems, and in information development and delivery technology. Capacity building in each of the four countries will focus on:

- The technical side of developing a drought monitoring and early warning system, from explaining data needs and data sources, to how to generate derivative indices, maps and other products, enabling technology transfer to the country-based institutions;
- Approaches to assessing regional disaster risk management plans; and
- Developing and delivering stakeholder engagement activities including technology transfer and skills development

Future Directions

Many more countries require enhanced drought management. Therefore, ICBA plans to build on the success and MENA experience of the current project, and continue to develop the local capabilities in monitoring/early warning systems, policy planning and practical implementation. It is hoped that this work will contribute to climate change adaptation and mitigation in countries most likely to suffer from climate change-related effects. There are also planned activities in helping policy makers embed drought within water policy frameworks so that these extreme events are managed proactively.



Drought index showcasing the severity of drought in December 2015