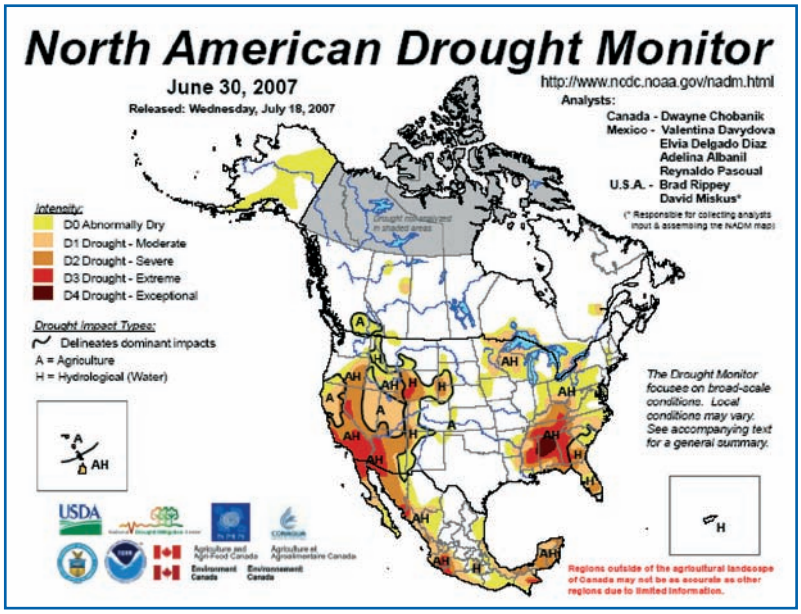
The North American Drought Monitor, A GEO Achievement and the Beginning of a Global Drought Early Warning System

Description

The U.S., Canada, and Mexico established the North American Drought Monitor (NADM) program in 2002 to provide information on drought conditions across the North American continent on an ongoing basis, and in so doing, have helped achieve the GEO vision of a future wherein decisions and actions for the benefit of humankind are informed via coordinated, comprehensive and sustained Earth observations and information.



The centerpiece of the NADM is a group of drought experts and database specialists from across the continent working together in an ongoing operational capacity to carefully compile and analyze disparate climate observations at multiple scales. With its indistinct temporal and spatial boundaries, a convergence of evidence is needed to define the boundaries of drought and produce a depiction of drought severity that can be used for decision-making by a diverse group of decision-makers. This evidence is based on great quantities of environmental observations collected across the continent from a myriad of land and space-based observing systems. Many of these systems are unique to each country, but the data collected from each are openly shared among the three countries and are essential to filling critical gaps in knowledge. When brought together and analyzed by experts familiar with the unique physical aspects of drought within their country, a cohesive picture of drought is produced within and across the borders of each country. This product serves the needs of user communities within sectors as diverse as agriculture and forestry, water resource management, energy markets, and health.

Added Value

GEOSS principles and functional components formed the basis for development of the NADM program. Close coordination among government leaders and scientists in each country provided the means for identifying critical gaps in existing programs and in establishing methods for addressing deficiencies. Processes were established to facilitate the open exchange of data and information across borders, and the transfer of scientific expertise and data management principles between countries was a key element of building the capacity to monitor drought conditions on an ongoing basis across the continent.

While this effort was successful in improving the delivery of drought information to end users, it also established a precedent for how nations, when working together within a GEOSS framework, can turn disparate observing systems and limited individual resources into an integrated program to enhance decision-making.

Relevance to GEO

The NADM program directly serves the transverse area of User Engagement under Task US-07-03, Environmental Risk Management. Specifically, this program has established an improved environmental information system for decision-makers and has demonstrated how Earth observations can be used to benefit key societal areas that include disasters, water resources, climate, health, ecosystem management, and agriculture.

Participants

Participants include :

- the National Meteorological Service of Mexico
- NOAA's National Climatic Data Center
- NOAA's Climate Prediction Center
- United States Department of Agriculture's (USDA) Joint Agricultural Weather Facility
- US National Drought Mitigation Center
- Agriculture and Agrifood Canada
- Meteorological Service of Canada

Current Status and Next Steps

The North American Drought Monitor is produced operationally on a monthly basis by the participating organizations and made available online at:
http://www.ncdc.noaa.gov/oa/climate/monitoring/drought/nadm/index.html.

The U.S., Canada, and Mexico are working toward new enhancements that include increasing the frequency of the NADM analyses from monthly to weekly. Efforts are also underway to leverage the experiences of the NADM and identify ways in which similar collaborative efforts could aid in establishing a global drought early warning system to meet the wider needs of the world community in addressing the growing threat of drought and water scarcity.

A global drought early warning system will ultimately expand upon drought monitoring capabilities by including other critical aspects of an effective early warning system such as drought forecasting, drought impacts, research, and planning and education. This system of systems will be developed to support data and information sharing, communication, and capacity building activities that are essential to effectively take on the growing threat of drought.

A first step toward reaching this ultimate goal is an expansion of the NADM throughout the Western Hemisphere. This expansion would enable drought experts and leaders across the hemisphere to begin the process of interacting and sharing of data and technical expertise necessary for initiating the process of building an effective drought early warning system for the Western Hemisphere and the world.