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The North American Drought Monitor: A Continental Approach

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The North American Drought Monitor: A Continental Approach

**Mark Svoboda, Climatologist
Monitoring Program Area Leader
National Drought Mitigation Center
University of Nebraska-Lincoln**

**GEOSS Drought Workshop XL: Monitoring through Earth Observations
Sydney, Australia, April 10, 2011**

The U.S. Drought Monitor

Since 1999, NOAA (CPC and NCDC), USDA, and the NDMC have produced a weekly composite drought map -- the U.S. Drought Monitor -- with input from numerous federal and non-federal partners

August 3, 1999
Experimental U.S. Drought Monitor

U.S. Drought Monitor April 16, 2002
Valid 8 a.m. EDT

History of the North American Drought Monitor (NADM)

- The concept for the NADM was developed and discussed in 2002
- The first NADM map was released in March 2003
- The first NADM map in all three languages (English, Spanish, and French) was released in October 2003

History of the NADM

- **The United States started off as the only country to author and organize the map**
- **Canada began authoring in January 2006**
- **Mexico began authoring in October 2008**

North American Drought Monitor Partners

➤ Canada

- Agriculture and AgriFood Canada
- Environment Canada
- Meteorological Service of Canada

➤ Mexico

- National Meteorological Service of Mexico (SMN-Servicio Meteorologico Nacional)
- CONAGUA (Comision Nacional del Agua)

➤ United States

- National Drought Mitigation Center
- National Climatic Data Center
- Climate Prediction Center
- United States Department of Agriculture

Agriculture and
Agri-Food Canada
Environment
Canada

Agriculture et
Agroalimentaire Canada
Environnement
Canada

North American Drought Monitor

February 28, 2011

Released: Friday March 18, 2011

<http://www.ncdc.noaa.gov/nadm.html>

Analysts:

Canada - Trevor Hadwen
Dwayne Chobanik
Richard Rieger
Mexico - Fernando Romero
Reynaldo Pascual
Adelina Albanil
U.S.A. - Mark Svoboda*
Laura Edwards

How do we get there ???

D5 Drought - Extreme
D4 Drought - Exceptional

Drought Impact Types:

~ Delineates dominant impacts

A = Agriculture

H = Hydrological (Water)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text for a general summary.

Regions in northern Canada may not be as accurate as other regions due to limited information.

Percentile Ranking Approach

U.S. Drought Monitor

September 1, 2009
Valid 8 a.m. EDT

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>

Released Thursday, September 3, 2009
Author: Brad Rippey, U.S. Department of Agriculture

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ion Center

U.S. Drought Monitor

March 1, 2011

Valid 7 a.m. EST

Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

- Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>

Released Thursday, March 3, 2011

Author: Laura Edwards, Western Regional Climate Center

NA-DM Worksheet for February 28, 2011 (Used for Canadian Interpretation)

- D0 - Abnormally Dry
- D1 - Moderate Drought
- D2 - Severe Drought
- D3 - Extreme Drought
- D4 - Exceptional Drought
- Drought Impacts
- Area Not Analyzed
- Extent of Ag Land
- Lakes
- Rivers

Can-DM final assessment for February with USDM Shapefiles for February 22, 2011.

Projection:
 North American Lambert Conformal Conic
 Central Meridian: -107.00
 Standard Parallel 1: 49.00
 Standard Parallel 2: 77.00

Datum:
 GCS - North American 1983

1:14,072,468

(when printed on 11" x 17" paper)

0 275 550 825 1,100 Kilometers

Sources:
<http://drought.unl.edu/na/shapefiles/2009/>

Disclaimer:
 User assumes all responsibility for use,
 interpretation, and application of information
 contained on this map.

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Prepared by Agriculture and Agri-Food Canada's National Agriculture Information Service (NAIS)

Canada

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 National Drought Mitigation Center

North American Drought Monitor

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U.S. Drought Monitor

March 1, 2011
Valid 7 a.m. EST

Released Thursday, March 3, 2011

Author: Laura Edwards, Western Regional Climate Center

The Drought Monitor focuses on broad-scale conditions. Local

All 3 Countries merged together using ArcGIS shapefiles

NOAA Satellite and Information Service
National Environmental Satellite, Data, and Information Service (NESDIS)

National Climatic
Data Center
U.S. Department of Commerce

Updates to most datasets on our ftp site will be delayed until later this week.

[DOC](#) > [NOAA](#) > [NESDIS](#) > [NCDC](#)

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North American Drought Monitor

National Oceanic and Atmospheric Administration
National Climatic Data Center

- [NADM Overview](#)
- [NADM maps](#)
- [NADM maps \(limited access\)](#)
- [ArcGIS Archive \(limited access\)](#)
- [Drought Monitoring Indices and Data](#)
- [Other Drought Monitoring Indices](#)
 - [NESDIS Satellite VHI](#)
 - [CPC Modeled Soil Moisture](#)
 - [U.S. NWS Precipitation Analysis](#)
- [Geographical Reference Maps](#)
- [Climatology Maps](#)
- [Associated Links](#)

North American Drought Monitor Overview

The North America Drought Monitor (NADM) is a cooperative effort between drought experts in Canada, Mexico and the United States to monitor drought across the continent on an ongoing basis. The program was initiated at a [three-day workshop](#) in late April 2002 and is part of a larger effort to improve the monitoring of climate extremes on the continent. The NADM (Lawrimore et al. 2002) is based on the highly successful U.S. Drought Monitor (USDM), and as such, is being developed to provide an ongoing comprehensive and integrated assessment of drought throughout all three countries.

<http://www.ncdc.noaa.gov/oa/climate/monitoring/drought/nadm/>

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Percent of Long-Term Average Precipitation, 1-Month March 2011

Percent of Long-Term Average Precipitation, 1-Month March 2011

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6-Month Standardized Precipitation Index October 2010 – March 2011

**SPI: 1, 3, 6, 9,
12 and 24-month**

12-Month Standardized Precipitation Index April 2010 – March 2011

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Palmer Drought Index March 2011

- PDSI
- PDHI
- Z

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Calculated Soil Moisture Ranking Percentile
MAR 2011

Ensemble-Mean - Current Total Column Soil Moisture Anomaly (mm)
NCEP NLDAS Products Valid: APR 03, 2011

VIC Soil Moisture Percentiles (wrt/ 1916-2004)
20110407

Role of Remote Sensing?

Vegetation Drought Response Index
Complete

April 4, 2011

Vegetation Condition

Extreme Drought	Unusually Moist
Severe Drought	Very Moist
Moderate Drought	Extremely Moist
Pre-Drought	Out of Season
Near Normal	Water

Any Questions ?

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