

Drought – National Drought Mitigation Center

Drought Network News (1994-2001)

University of Nebraska - Lincoln

Year 1998

China's Drought Climate Monitoring System

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In China, about 50% of the country is in arid and semiarid regions. Drought is the most severe climate disaster to affect China, and it causes significant reductions in grain yields. The area affected annually by drought has been estimated at about 20 million ha, which accounts for 59% of the total area affected by disasters. When severe droughts occur, they can affect as much as 33 million ha.

To monitor the occurrence and development of droughts efficiently and provide information on the strength and range of droughts and floods, the China Drought–Flood Climate Monitoring System was developed by the National Climate Center (NCC) in June 1995. The system can monitor the occurrence and development of droughts and floods and analyze disasters comprehensively. Since July 1996, directors of the China Meteorological Administration have been able to obtain information on national drought/flood occurrence on a daily basis through a computer network using the system. The system provides a scientific basis for the government to take measures to prevent drought/flood disasters and safeguard lives and property. The system is also used to study and forecast drought/flood climate.

The main products of the system include publications such as China Drought and Flood Climate Bulletin, Brief Report on Drought and Flood Monitoring, Advisory Report on Climate, and Service Report on Drought and Flood Disasters.

System Structure

The program of this system was written in Fortran, Borland, and FoxPro 2.5 languages. All functions are controlled by menu; the operational interface is user-friendly and convenient. It consists of five subsystems:

1. *Receiving and processing real-time data.* Its function is to receive real-time data, examine data quality, and categorize data.
2. *Statistical information and automatic transmission.* This subsystem can calculate precipitation amounts, percentage of precipitation departure, rainfall days, no-rainfall days, degree of drought/flood, and ranks for any time period; it then automatically transmits the results through the computer network to users.
3. *Data base and its management.* This subsystem includes the data base (precipitation, temperature, drought/flood index, real-time drought/flood information, etc.) and data base management (transferring, adding, calculating, browsing, inquiring data, mapping, printing and outputting figures and tables, etc.).
4. *Drought/flood early warning.* The function of this subsystem is:
 - monitoring the grade of droughts and floods at any station and the evolution of other meteorological elements by using histogram and curve diagrams;
 - consecutively monitoring drought/flood development at the regional and national scale, clearly displaying the characteristics of droughts and floods at various time periods;
 - displaying drought/flood distributions over the country and determining, as soon as possible, the geographical positions (longitude and latitude) and station names where droughts and floods are occurring;
 - comparing and ranking the severity, duration, and extent of drought/flood disasters;
 - monitoring precipitation over the country automatically and continuously, giving early warning when or before droughts and floods occur; and
 - printing drought/flood monitoring figures and tables.

5. *Management of operational products and advisory service.* This subsystem receives, disseminates, catalogs, and registers products published by the main system and other units, so that various kinds of products, information, and reports can be retrieved and used to provide advisory service for users.

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Quarterly Report Provides Assessment of Western Water Supply Indicators

A new quarterly report, *Western Climate and Water Status*, provides decision makers in the western United States with a comprehensive assessment of water supply indicators that can give early warning of emerging droughts. A product of the Western Drought Coordination Council, the report is an important new connection between scientists and policy makers.

It is based on analysis of more than 75 data sources each quarter and is actually produced in two different forms, both of which are available on the World Wide Web at <http://enso.unl.edu/wdcc/quarterly>:

- The *comprehensive version* is likely to be of interest to water resource planners and others who need a detailed overview of water supply in the western states.
- The *briefing version* is a two-page executive summary with wet and dry areas highlighted on the first page, and relevant water supply maps on the back. It's in Adobe's portable document format, which preserves the layout, but to access it your web browser needs the Adobe Acrobat Reader

plug-in, available free from www.adobe.com. The maps are generally U.S. government data products that are produced only in color, so the document is far more effective when printed out in color.

The Council, co-chaired by New Mexico Governor Gary Johnson and U.S. Secretary of Agriculture Daniel Glickman, is producing the report to help states anticipate drought and shift their attention from crisis management to preparedness and mitigation. The drought that gripped the Southwest in 1996 demonstrated that significant opportunities exist for states to reduce economic losses and other effects of drought.

Western Climate and Water Status is based on data through March 31, June 30, September 30, and December 31, so it is ready about two weeks after each quarter's end. It's posted to the web, to achieve the fastest distribution, and can also be sent via e-mail. If you'd like to be added to the list of people to receive the executive summary via e-mail as soon as it's available, please contact Kelly Smith, khsmith@enso.unl.edu.