

DROUGHT MONITORING ACTIVITIES: CASE STUDIES

Extract from WMO publication, 'Drought Monitoring and Early Warning: concepts, progress and future challenges', (WMO-No. 1006).

<http://www.wamis.org/agm/pubs/brochures/WMO1006e.pdf>

AUSTRALIA

The island continent of Australia straddles the southern subtropical zone, with its mainland extending from around 11°S across the "Top End" to 39°S in the south-east. The northern regions are seasonally tropical while the eastern, south-eastern and south-western coasts and near inland regions are generally well watered but prone to high interannual and seasonal variability in their rainfall. The more inland regions range from arid to semi-arid. Droughts, sometimes covering vast tracts of the continent, are a recurring feature of Australia's climate. Many of the more severe and widespread droughts are associated with El Niño events.

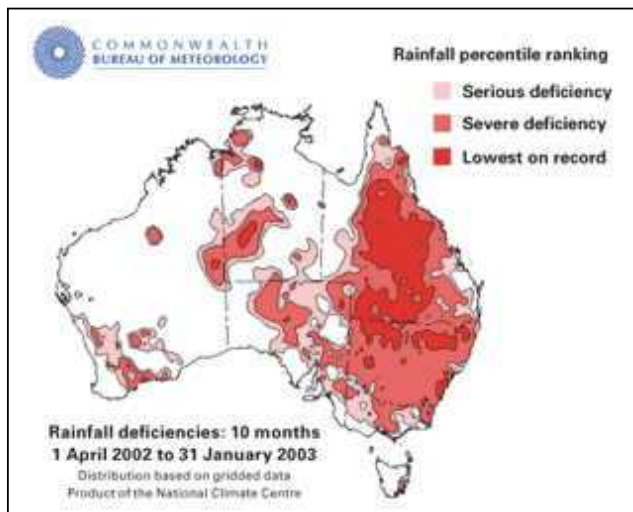


Figure 19. The extent of serious or worst rainfall deficiencies at the peak of the El Niño-related drought in 2002 and 2003. (Source: Australian Bureau of Meteorology)

Given that rainfall is by far the dominant factor determining the success or failure of the growing season across Australia, drought monitoring has for many years been synonymous with the monitoring of rainfall deficiencies. The Australian Bureau of Meteorology's Drought Watch Service, in operation since 1965, has used accumulated rainfall percentiles over successive months to identify regions of rainfall deficit and excess. Areas with rainfall accumulations below the 10th or 5th percentile for periods of three months or more are referred to as being seriously or

severely in deficit, respectively. Figure 19 shows the extent of serious or worse rainfall deficiencies at the peak of the last El Niño-related drought during 2002–2003.

Although an extended period of rainfall deficiency in any area is virtually a prerequisite for drought, there is widespread recognition in Australia that the formal declaration of a drought is a more complex issue. It involves consideration not only of the rainwater supply but also the subsequent uses for that rainfall once it has fallen onto farmlands, runs into streams and rivers, is stored in dams, is used to drive hydroelectric power stations and is supplied to cities and towns across the nation. Furthermore, given the size and geographical location of Australia, it is unusual for there not to be one or more areas of varying size at any given time experiencing serious or severe rainfall deficiencies. Whether or not such areas are

declared drought stricken and then whether the drought is of sufficient intensity, duration and extent for those affected to be eligible for government relief involves a complex series of assessments by national and state authorities.

The recognition that drought is a "normal" feature of Australia's natural, economic, and social environments has led the national and state governments to agree that climate-sensitive industries and enterprises must learn to manage drought risk, along with all the other attendant and ongoing risks that they face. Nonetheless, the governments do recognize that, from time to time, some droughts become so severe, chronic or widespread that there is a need to offer support to those worst affected. Such occurrences in Australia are called "exceptional circumstances".

In 2002–2003 Australia experienced an especially severe and widespread drought, accompanied by record high temperatures in many regions. At the peak of the drought, 57 per cent of the Australian mainland had registered 10 months or more of serious to severe cumulative rainfall deficits, and 90 per cent, below the median (Figure 19). With the experience of the drought fresh in mind, and also recognizing the need for a more objective,

fair and transparent process underpinning the declaration of exceptional circumstances, the Primary Industries Ministerial Council of Australia in 2005 commissioned the establishment of the National Agricultural Monitoring System (NAMS).

NAMS was developed over the next 12 months under

the leadership of the Bureau of Rural Sciences in collaboration with the Bureau of Meteorology and the Commonwealth Scientific and Industrial Research Organization (CSIRO). The outcome is a freely accessible website containing current maps, graphs and reports on the state of the climate system across Australia, and information on production for major dryland broad-acre agricultural systems. As well as current data, NAMS also contains historical information on measured and modelled production, financial impacts, remote-sensing indices and climate.

The NAMS website presents information on screen and in the form of printable reports, providing general background, current climatic conditions and production and resource statistics for regions that can be specified by the user. Regions can range in size from the entire country to individual local government areas or the statistical local areas used for summarizing Australian census data.

Collectively, NAMS information shows the status of current conditions for the major agricultural production systems and production prospects for the upcoming growing season. NAMS is initially directed at monitoring and supplying data for dryland broad-acre industries, with plans to extend the system to cover the extensive irrigated regions of Australia and also for more intensive industries such as horticulture.

As NAMS draws on a common information database for the entire country, it will facilitate a more consistent approach to the drought declaration process through the use of the following:

- A common template and language for describing drought in terms of probabilities;
- A common set of declaration criteria;
- A common process for the subjective “on-ground” assessment of drought impacts.

The NAMS website is at <http://www.nams.gov.au>. Detailed information on Australia’s national drought assistance measures, including the declaration of exceptional circumstances, can be found at <http://www.daff.gov.au/droughtassist>,

while information on the rainfall deficiency monitoring system can be found at <http://www.bom.gov.au/climate/drought/drought.shtml>.