

Experiences in the use of climate information and its communication from the perspective of 'QCCA'

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The Queensland Centre for Climate Applications (QCCA) is a joint project between the Queensland Departments of Primary Industries (DPI) and Natural Resources and Mines (DNR&M). The clients of 'QCCA' include the entire rural community (growers, producers, fishing industry) rural 'lobby groups' (e.g. Agforce, Qld Farmers Federation, Qld Fruit and Vegetable Growers, etc) industry-government working groups (e.g. Fisheries Industries Development Council; Industry-Government Drought Working Group, Queensland Food and Fibre Science Innovation Council; Urban Water Drought Task Force, and many others), and, especially, State Ministers'. Additionally, policy sections of both Queensland departments are provided targeted information for their needs.

'QCCA', through its parent Business Units (Predictive and Precision Systems in DPI or Climate Information and Natural Resource Systems in DNR&M) has a responsibility to improve risk management for rural industry and government. Therefore, our focus is not simply 'forecasting' but, rather, in identifying key decision-points in rural management and providing appropriate methods and systems that provide scenarios and outcomes that can improve those decisions. This means that an understanding of the probabilistic nature of climate forecasting and climate applications output is paramount to the uptake of QCCA's information systems and research and development activity.

Web-based output of rainfall and yield probabilistic forecasts provide the bulk of the 'public output' from QCCA. This includes the ('award winning') web-site 'The Long Paddock' (through DNR&M) and the 'DPI Climate Page'. Additionally, numerous rural newspaper articles, email broadcasts, and news-sheets are provided, many on a weekly basis (e.g. 'The Rural Weekly'). An important aspect in provision of

these outputs to the general public is in the educational aspect of the output. This approach aims to provide an understanding by the rural community of the probabilistic nature of climate forecasts and other output as well as an understanding of the drivers of climate variability in Australia.

QCCA regards model output from institutions such as the US Climate Prediction Centre (CPC), The Hadley Centre, or from the Australian Bureau of Meteorology Research Centre (BMRC) (the 'POAMA' model) and National Climate Centre (NCC) as very useful background information in climate forecast-based risk management systems. However, we do not regard this type of output as necessarily providing the type of definitive information needed for operational management decision-making. (Additionally, there is yet little capability for coupled ocean-atmosphere model output to be integrated with our crop and pasture yield models). Rather, we have developed an approach that appraises sub-surface and sea-surface temperature and near-surface wind analysis provided by BMRC and CPC, together with ocean/atmosphere model output as providing an **alert mechanism** for the potential for onset of El Niño or near El Niño conditions, or otherwise.

In late 2001, information relating to the possible onset of a 'warm event' ('El Niño') in 2002, especially information relating to 'westerly wind bursts' that was being provided by CPC, was considered particularly useful. This type of information provided the first stage of a risk-management alert warning system that we provided to the Queensland Government, especially to the Minister for Primary Industries and Rural Communities and to the Queensland Treasury. This type of information was particularly valuable in providing a 'safety-first' approach in the provision of future budget

allocation for drought aid and water management in Queensland.

However, during the 2002/03 drought more definitive information was routinely provided on a monthly basis through use of our statistical climate forecast models and integrated climate-yield production models (wheat, barley, sugar, cotton, pastures) or streamflow models.

An important point is that during the core drought period of 2002/03 reference to 'mature El Niño states' or to CGCM output was NOT made by QCCA in any substantive manner. Rather, a more conservative or circumspect approach was applied. Because of the complex social and economic issues that pervade rural communities and in industry during 'drought', especially careful attention is made to the language chosen to describe the potential 'end to drought'. High rainfall is not described as more likely to occur unless there is remarkably clear evidence this will occur – i.e. high probability values of receiving rain in the upper quartile or similar, often not known until the end of May. This type of cautious approach has been DPI/QCCA/APSRU policy for the past 11 years. Additionally, a similar circumspect approach to the content of climate forecast output, especially that pertaining to 'drought' is applied throughout the austral autumn when it is known that lesser skill is available in many climate forecast models.

Whereas 'QCCA' is no longer strongly involved in climate-forecast *extension* activities (except as a necessary component of R&D projects), other officers from Queensland DPI and NR&M facilitate workshops and meetings in rural centres across the State. The best known examples of this approach are the 'Managing for Climate and Weather Workshops' in which 'QCCA' scientists link with Australian Bureau of Meteorology (BoM) scientists to provide 'guest lecturer' input to these workshops. This and similar activity, that has continued for over 10 years, has been particularly effective in providing ownership to

rural industry of climate forecast/management systems. This means that climate forecast and risk management output now routinely provided by our departments (BoM and DPI/NR&M) is generally readily understood and acted upon by a major segment of the rural population in Queensland. Over 400 such workshops have now been conducted in Queensland.

A common issue and problem encountered in the provision of timely climate related risk management information over the past 13 years (and in 2002/03) has been in ensuring appropriate advice is provided to and by the media. Some recent examples of problem in this area are:

- maps of rainfall probability values have been completely altered by graphics specialists in television stations prior to broadcast,
- headlines in rural newspapers have been completely at variance with the article that has been written for that newspaper,
- press releases issued by organisations overseas have been inappropriately mixed by journalists in Australia with the statistical forecast output issued by our departments,
- untested/un-published climate forecast model outputs have been used by journalists as a counter argument to the tested/published model outputs provided by our various departments.

However, despite some problems encountered in the delivery of some outputs in the 'mass-media', it is suggested our overall approach in QCCA in the provision of more targeted climate forecast information and integrated climate-yield or streamflow systems has served rural and other industry well over the past 13 years, especially during the 2002/03 'warm event'. This approach has also meant our Government Ministers have been able to initiate a pro-active approach to drought management.