Community and Public Sector Union
Stephen Jones • National Secretary

Monday, 22 June 2009

Committee Secretary
Standing Committee on Industry, Science and Innovation
House of Representatives
PO Box 6021
Parliament House
Canberra ACT 2600

Email: isi.reps@aph.gov.au

Dear Madam/Sir,

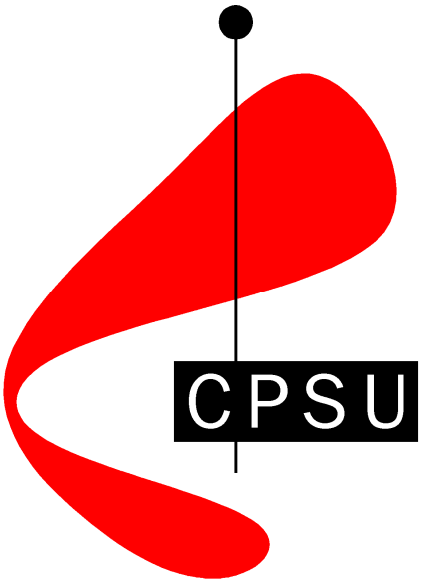
Inquiry into long-term meteorological forecasting in Australia – supplementary submission

Please find attached a supplementary submission from the Community and Public Sector Union (PSU Group) to the Inquiry into long-term meteorological forecasting.

The CPSU thanks the Committee for the opportunity to comment on these issues. If you wish to discuss this document the contact person is Alison Rahill, Parliamentary Liaison Officer CPSU alison.rahill@cpsu.org.au or mob 0438 601 497.

Yours sincerely,

Stephen Jones
CPSU National Secretary



CPSU supplementary submission to:

Inquiry into long-term meteorological forecasting in Australia

June 2009

CPSU supplementary submission to: Long-term Meteorological Forecasting Inquiry

Introduction

The Community and Public Sector Union (CPSU) is an active and progressive union committed to the promotion of a modern efficient and responsive public sector that delivers quality services and quality jobs. The CPSU represents around 60,000 members in the Australian Public Service (APS), ACT Public Service, NT Public Service, ABC and the CSIRO. We also have members in Telstra, commercial television and the telecommunications industry.

The CPSU has members in the Bureau of Meteorology (BoM) working in long-term meteorological forecasting. They have strong views on the key role of the public sector in providing a national weather service, and the importance of fully funding that service.

CPSU members are currently bargaining with Bureau management for a new collective agreement, to replace the agreement which expired on 31 December 2008. A decent outcome on pay and conditions for staff is an integral part of a fully resourced Bureau of Meteorology and vital to ensure the Bureau is properly staffed with skilled employees who can deliver the essential service that the Australian public expects.

The CPSU made an initial submission to the House Committee's inquiry on 9 April 2009. The CPSU recommended that the Committee should:

- **Address the need for BoM to be funded to maintain staffing levels that preserve efficient, effective and high standard long-term forecasting;**
- **Recognise that BoM must encourage a culture of innovation within its own organisation, by co-operating with employees to identify best practice in the delivery of quality services.**

Since the initial submission, the CPSU has continued to consult with union members in BoM and related Commonwealth agencies about issues raised by the Inquiry Terms of Reference. The CPSU is making this supplementary submission to:

- make known the views of CPSU members on the issues arising from responses to the Inquiry's Terms of Reference.
- emphasise the importance of adequate funding and staffing levels, for the Bureau of Meteorology.

The CPSU thanks the Committee for the opportunity to make this supplementary submission. The CPSU supports the submission made by the CSIRO Staff Association, particularly its statement that *'services provided by meteorological prediction and forecasting represent clear, useful and essential benefits for Australia and its society, and that future benefits will accrue from ongoing services and from enhancement by further innovation and investment in the public sector including research.'*[1] The CPSU also notes that other submissions to the Inquiry have raised issues similar to those of CPSU members regarding the need to fully resource forecasting activity.

[1] CSIRO Staff Association Submission, p.2
http://www.aph.gov.au/house/committee/isi/weather/subs/sub9.pdf

***Powering Ideas* and the May Budget**

The Federal government's policy innovation agenda outlined in the May 2009 *Powering Ideas*: *An Innovation Agenda for the 21st Century* has recognised the need for a culture of innovation within workplaces. *Powering Ideas* states that innovation means '*creating workplaces that are open to change, new ideas, and continuous innovation in day-to-day decision-making'.*[2]

The need for proper funding and staffing levels to deliver this agenda was in part recognised in the May 2009-10 Budget.[3] The CPSU welcomes the additional funding for BoM and other publicly funded science agencies, and the increase in the average staffing level (ASL) estimate for BoM of 25 was another positive development.[4] However more work needs to be done and more consideration of funding levels is required to provide the level of service expected by the Australian public at a time when climate change is high on the national and international agenda.

Forecasting: an Essential Service and a valuable return on Investment

Australian government agencies utilising the Bureau's forecasts to meet the challenges of climate change and extreme weather events include the Departments of Environment, Agriculture, Climate Change, Science and Innovation, and Treasury. BoM has increased both the range and quality of its services to these agencies and to the Australian public over recent years.

The CPSU has an ongoing campaign to ensure that the public sector is fully funded to deliver high quality, efficient and effective essential services. CPSU welcomes the steps that the Australian government has taken so far to improve the services provided by the Bureau. However, feedback from our members, and the information and recommendations contained in other submissions to the inquiry, suggest that the demands on BoM's long-term meteorological forecasting capacity will continue to increase. This will require an ongoing commitment to fully fund, and adequately staff, the Bureau for its services.

Such funding should prove a worthwhile investment of public funds. One CPSU member pointed to a recent study of the UK Met Office which showed that, in monetary terms, a National Weather Service benefits the nation far more than it costs. The 2007 study specifically examined the Met Office's Public Weather Service (PWS) which is responsible for weather forecasting and climate prediction. The total PWS budget of £UK83.2 million was contrasted to the 'public value' of £UK353.2 million which the service generates. The PWS saves lives and delivers financial benefits while serving ten different government departments, over 600 different agencies, and the UK public. The study set the accuracy of forecasts at around 80 per cent, and argued that

> *Should the accuracy of the forecasts be improved through greater investment, more departments and agencies would use the forecast in their planning processes, and potentially even more lives would be saved, property damage avoided and efficiency savings delivered.*[5]

---

[2] *Powering Ideas: An Innovation Agenda for the 21st Century*, p.40 http://www.innovation.gov.au/innovationreview/Documents/PoweringIdeas_fullreport.pdf

[3] *Budget Measures*, Budget Paper No.2, pp.192-3.

[4] *Budget Strategy and Outlook*, Budget Paper No.1, Statement 6, p.68.

[5] *How valuable is the Met Office?*, pp.1-2 http://www.metoffice.gov.uk/corporate/verification/valuable.html

CPSU members have supported the UK approach to valuing the service provided by their government forecaster. In the words of member who is also a Climatologist:

> *'To some degree, dynamical climate forecasting in the Bureau exists on a shoestring. Achieving a critical mass of people and expertise in this area, even if it only improves outlooks marginally, will return such investment many times over …'*

Comments by CPSU members on the Inquiry Terms of Reference

The efficacy of current climate modelling methods and techniques and long-term meteorological prediction systems

CPSU members said that the efficacy of current modelling and prediction systems were satisfactory or good. However members also noted the need for more resources to maintain and improve standards of modelling and meteorological prediction.

A Forecaster commented that

> *General staffing levels need to be increased in all areas of the Bureau, especially operational forecasting areas. Money must be invested in research into long term forecasting, including the application of numerical weather prediction.*

Australia is well placed to lead in these fields. One Climatologist pointed out that while the Bureau is *'heading down the right path*' with dynamical seasonal outlook modelling *'clearly more resources need to be committed to the problem to enable us to be world leaders in this area; something we are well capable of. Climate change will force our hand to produce better seasonal outlooks.*'

Innovation in long-term meteorological forecasting methods and technology

CPSU members were enthusiastic about the opportunities for innovation in their areas of work. One manager observed that

> *We have some talented research scientists here in Australia who are capable of providing great innovation to help improve long-term forecasting methods and technology. They can only do this if they are given a stable job and sufficient resources to do the work.*

Australia will not be a world leader and may lose the current level of international respect it has achieved if sufficient resources are not available to attract, retain and train properly qualified staff, along with the funds to invest in research and innovation.

A number of members noted that focussing on innovative methods and techniques by themselves was not sufficient. There is also a need to ensure that predictions and research produced by BoM are available in a user friendly format. One Climatologist noted that producing model data is only one aspect of improved prediction:

> *Delivering outlooks to the decision makers and public in readily digestible and accessible forms, with people to discuss and explain and analyse information*

> *(i.e., provide a service) is the best, and some would say only, way to deliver the information to users.*

Another commented that:

> *Better understanding of the climate system and services offered by our users would also improve things - communication is key to anything we do.*

Modelling information and communication should go hand in hand, however they will require *'Increased funding for staffing to improve climate modelling and also for RFCs* [Regional Forecasting Centres] *who use and explain this information through the media.*'

The impact of accurate measurement of inter-seasonal climate variability on decision-making processes for agricultural production and other sectors such as tourism

CPSU members highlighted the importance of accurate measurement of inter-seasonal climate variability for Australia's agricultural and tourism sectors. According to one Climatologist *'many scientific papers have highlighted the dollar value of having an accurate forecasting scheme as one of the risk management tools to use in agribusiness and other industries'*.

Another who works in marine and agricultural weather services pointed out the benefits to agriculture and tourism. *'Longer term forecasts will enable users to make better informed planning decisions, which will enhance their efficiency, productivity and profitability.'*

However, members expressed concerns about the long-term impact of under-funding on the Bureau's services in this area and the potential impact on Australia's economic performance:

> *A degraded observation network (which is what will happen if the Bureau continues to be under funded) will result in inaccurate measurement of inter-seasonal climate variability, and will have negative feed-on effects to all sectors of the community.*

Potential benefits and applications for emergency response to natural disasters, such as bushfire, flood, cyclone, hail, and tsunami, in Australia and in neighbouring countries

Australia and its neighbours have experienced significant natural disasters in recent years. Proper forecasting tools provide an important source of information to predict and hence mitigate the effects of such extreme events. A CPSU member from an agency that utilises BoM's services said that *'BoM work to date appears to be contributing significantly to an increased ability to predict and manage risks from "natural disasters"'.*

However, CPSU members were concerned that these predictive tools may be impacted by a lack of adequate funding. One BoM Forecaster pointed out that greater long-term forecasting guidance provides *'much more scope for early warning systems, which is especially important for neighbouring developing countries who need longer lead-times for evacuation and disaster preparedness activities'.* However, staffing levels, particularly in the NT, are dangerously low. *'We are putting*

severe weather warning services, and therefore the community, at risk by understaffing key service-providing parts of the Bureau.'

Strategies, systems and research overseas that could contribute to Australia's innovation in this area

CPSU members noted that national meteorological services from the northern hemisphere provided useful sources of innovation in the Australian context. One member noted that the UK Met Office *provides an excellent example of the way in which long term forecasting has been successfully integrated into the modus operandi of the organisation.'*

Another pointed out that *'European meteorological and Hydrological services regularly forecast out to 10 days and provide monthly and seasonal outlooks. We provide at best, 7 day forecasts (for a very limited set of locations) and a 3 month outlook, with no month by month break down.'*

Members clearly saw the benefit of international collaboration and study and looked forward to *'Further collaborative research with other national Meteorological and Hydrological organisations [that] will enhance our abilities to provide longer term forecasts.'*

However Australia's ability to participate equally in these international collaborative exercises is being affected by the downgrading of our data collection as a result of funding constraints. One member noted that:

> *'Our observations base has been seriously eroded and that affects the climate record and the amount of data available for weather and climate models to diagnose weather. … Other nations have much denser networks for surface based, upper air and climate data collection.*

Forecasting as a Fully Funded, Essential Public Service

Forecasting and the Public Sector

The public sector plays and must continue to play a central role in meteorological forecasting. One Forecaster emphasised the 'critical role' of the public sector, saying *'there are many reasons why long range forecast production and research should stay in the govt arena, not the least of which is the impartiality this affords'.*

CPSU members stressed the importance of this role being broad and the results being freely accessible in a number of formats:

> *'The Bureau of Meteorology contributes to the entire observations network of Australia, including rainfall, upper air data and Radar. The Bureau provides the vast majority of fundamental weather services to the Australian community, and it provides it cost free.'*

CPSU members were concerned about the potentially corrosive role of other organisations trying to compete with the Bureau's services – particularly in the long-term forecasting area.

> *'The Bureau is seen as the pre-eminent organisation for providing weather information in the short term, but NOT in the long term. We are being sidelined by inferior direct model output products from overseas organisations*

> *(often NOT a national Meteorological and Hydrological organisation), which provide misleading, contradictory and not well verified information.'*

Of particular concern is the *'proliferation of private weather companies providing misleading material to the public'*. According to a Senior Meteorologist, the best specific day computer models have accuracy rates of only 60% or less when forecasting events such as rain seven days ahead. However '*some companies'* are exceeding what is possible with current computer modelling and *'providing specific day forecasts for weeks even months ahead at specific locations. … I believe many farmers are being misled by some of the long range products provided by the private sector.'*

Given the reliance of the agricultural and tourism sectors on this information and the negative impact incorrect predictions may have on Australia's economic performance, there is a need to maintain high standards. The private sector cannot be relied upon to do this work.

Forecasting and Funding: staff reductions and the 'efficiency dividend'

CPSU members noted that the 'efficiency dividend' approach to public sector funding is having a debilitating impact on the Bureau's long-term forecasting resources. While the dividend has been reduced from 3.25% to 1.25% in the 2009/10 Budget, its effects have been severe. One Forecaster said that BoM *'has been impacted by the long term presence of the efficiency dividend and the most recent increase to this has hit both short and long term forecasting hard'.* Another Forecaster commented that:

> *'Observation stations which are vital for the climate record are being destaffed, threatening the ongoing quality of those station's data. The "efficiency dividend" threatens the future of research advances that might improve forecasting.*

In 2008, the Joint Committee of Public Accounts and Audit reported on the impact of the efficiency dividend on small public sector agencies. While not directly concerned with long-term forecasting, it noted a submission by the Australian Meteorological and Oceanographic Society (AMOS) which reported that BoM *'has reduced the number of daily radiosonde observations (used for forecast accuracy and monitoring climate change) it makes, and has been unable to properly maintain automatic weather stations in remote locations to a high standard'.*[6]

Over the past 20 years, successive federal funding cuts have reduced the size of the Bureau of Meteorology 'by 45 per cent' according to its former research chief Professor Neville Nicholls.[7] A Senior Forecaster noted that:

> *'The Bureau does a remarkable job of forecasting considering we have only about 40% of the staff per capita that we had in the mid 80's. We rely fairly heavily on overseas weather models ….*

---

[6] JCPAA, *The efficiency dividend and small agencies: Size does matter*, December 2008, p.85

[7] Rosslyn Beeby, 'Cutbacks hurt Climate monitoring', *The Canberra Times* 10 May 2008; We note that Professor Nicholls has also made a submission to this Inquiry, http://www.aph.gov.au/house/committee/isi/weather/subs/sub12.pdf

Funding for adequate staffing levels includes funding for staff in Observation stations. Human Observers are particularly important to provide data for climate models. One CPSU member pointed out that:

> *'The models used to produce long-term forecasts rely on good observations as a starting point for their computations and for verification of the model, after the season has past. Despite this important role, the number of human observers in the Bureau is decreasing and there were no new observers at all coming into the Bureau in 2007/08 (there was no observer training course in 2008). Funding needs to be made available to support full-time ongoing positions in the climate forecasting area and the observer area.'*

BoM itself drew attention to the problems arising from the Commonwealth government's public sector funding models in its 2008 submission to the Senate Inquiry on Climate Change and the Australian Agricultural Sector:

> *Despite the best efforts of the Bureau to rationalise its basic monitoring networks and to continue to improve efficiency through the introduction of the latest technology, the relentless pressure of "productivity dividends" will inevitably place the integrity and future continuity of Australia's climate record in jeopardy.*[8]

Future demands for adequately funded long-term forecasting

It is not just Bureau staff and union members who are asking that the Inquiry recommend more resources be allocated to long-term meteorological forecasting. The Inquiry has received a number of submissions which either urge, or make recommendations that will require, more resourcing of this area. Examples include:

From the **CSIRO's** official submission:

> *Australia's Southern Hemisphere location demands locally tuned and managed versions of [dynamic seasonal forecasting technologies]. Development of these tools will provide significant advances in seasonal forecasting skill and resolution but will require significant further investment in supercomputing infrastructure, observation acquisition and assimilation and scientific expertise.*[9]

From the **SA Department of Environment and Heritage (DEH)** submission:

> *Long-term meteorological forecasting plays a critical role in assisting land managers and emergency service agencies alike to meet the challenges of a changing environment.*
>
> *…*
>
> *As such it is critical the Bureau is adequately resourced into the future in support of [bushfire prevention] requirements with a sense of urgency.*[10]

From the **Federal Department of Agriculture, Fisheries and Forestry (DAFF)** submission:

---

[8] Submission by the Australian Bureau of Meteorology, p.8
http://www.aph.gov.au/Senate/committee/rrat_ctte/climate_change/submissions/sub07.pdf

[9] CSIRO Submission, p.16
http://www.aph.gov.au/house/committee/isi/weather/subs/sub16.pdf

[10] SA DEH Submission, p.1
http://www.aph.gov.au/house/committee/isi/weather/subs/sub20.pdf

> *There is significant public investment required to [channel expertise and computing capacity into] long term meteorological forecasts and to make these forecasts relevant to industries such as agriculture.*[11]

From the **Fire and Emergency Services Authority of WA (FESA)** submission:

> *FESA supports the expansion of the observational network including a program of increasing the use and distribution of automated weather stations to improve data collection. This would also improve the capacity for improved research and forecasting of a variety of climatic conditions and weather events including tornados in WA.*[12]

Conclusion

CPSU welcomes the recent funding increases for BoM. It also welcomes the recognition by *Powering Ideas* of the need to promote innovation in the workplace.

However CPSU members in BoM are concerned that the Bureau will still struggle to maintain its high standard of work into the future, particularly as the demand for long-term forecasting increases.

Effective and efficient long-term meteorological forecasting in Australia cannot be separated from the issue of public sector funding. The efficacy and accuracy of climate modelling needs a public commitment to properly resource the people carrying out this important work. The private sector cannot be relied upon to provide a service which is vital to many aspects of the Australian economy and society. The level of innovation that is required in this sector will not occur without adequate funds, or proper staffing levels.

The government has taken some welcome first steps in the 2009/10 Budget, but it needs to build and improve on them. Long-term meteorological forecasting should be funded 'long-term', and agencies such as the Bureau of Meteorology need to properly consult with Bureau staff and the CPSU as their representative, and provide a workplace environment that supplies a sustainable service as well as fostering innovation.

The CPSU recommends that the Committee's final report should

- **Address the need for BoM to be funded to maintain staffing levels that preserve efficient, effective and high standard long-term forecasting;**
- **Recognise that BoM must encourage a culture of innovation within its own organisation, by co-operating with employees to identify best practice in the delivery of quality services.**

[11] DAFF Submission p.7 http://www.aph.gov.au/house/committee/isi/weather/subs/sub27.pdf
[12] FESA Submission, p.8 http://www.aph.gov.au/house/committee/isi/weather/subs/sub29.pdf