



Australian Government

Bureau of Meteorology

THE MARKET

There's no greater topic of conversation than the weather. In Australia - a continent that can have drought, heatwaves, snow, flood and hurricanes across every part of its vast landmass at any given moment - it's a vital necessity to keep an eye on the weather.

As such the Bureau of Meteorology's products and services have a broad audience - from the general public to industries such as aviation, marine, agriculture, construction, mining, energy and to emergency services and the Defence Forces. All walks of life are significant stakeholders and require certain products to suit their needs and services.

Most of the Bureau's reports are delivered through third party providers such as nightly TV weather reports and newspapers and private meteorological businesses, with direct interaction being mainly through its online channels.

ACHIEVEMENTS

The Bureau's three greatest achievements are:

- Its ongoing contribution to the protection of life and property from natural hazards - particularly in the aviation and maritime and resources industries;
- Its scientific contribution to meteorology, oceanography and hydrology and associated computer modelling for Numerical Weather Prediction; and
- An invaluable climate record that spans more than a century and is available to climate researchers the world over.

Through its seasonal outlooks, forecasts and warnings the Bureau gives the community, businesses and emergency services valuable time to plan and prepare for significant natural threats such as severe weather, tropical cyclones, solar storms, volcanic ash, floods, and tsunamis.



HISTORY

The Bureau began operations from Melbourne in 1908 with a staff of 30 and several thousand volunteer weather observers, bringing together former state and Colonial meteorological services to take 'astronomical and meteorological observations' and build the national authority.

The Bureau doubled in size after the introduction of regular air services - operating 23 aerodrome offices by 1939 - and more than doubled again with the advent of World War 2.

In the late 1960s, numerical weather analysis and prediction became practical, and the staff began producing computer-generated guidance for weather forecasters.

The first three monthly outlooks for average rainfall and (later) temperature were issued in 1989 and are now issued every month.

The Bureau's Research Centre was established in 1983, and in 1997 it joined with CSIRO to establish a supercomputing centre, and in 2008 to form the Centre for Australian Weather and Climate Research.

The Bureau's public face was transformed in 1996 with the launch of its website - now the most popular Australian government website with billions of hits a year - and the continued development of graphical and interactive presentations since 2009 is further changing the way Australians access weather information.

In recent years the Bureau has been given

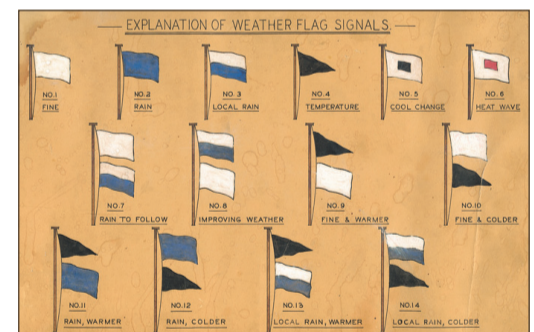
responsibilities for the National Tidal Centre (2004), an enhanced tsunami warning system (2005), the national collection, analysis and forecasting of water resources (2007) and space weather forecasting (2008).

Forecasting ocean attributes - including sea surface temperatures, currents and salinity - began in 2007.

By 2011, information was being gathered from instruments on earth, in oceans and in space. The network included 62 weather radars, 852 weather observing sites (431 of which are automatic), 7341 rainfall stations, 2810 water sites, 50 upper-air observation sites, nine solar and terrestrial radiation observing sites, five ozone watch facilities, and 17 ionosphere observing stations.

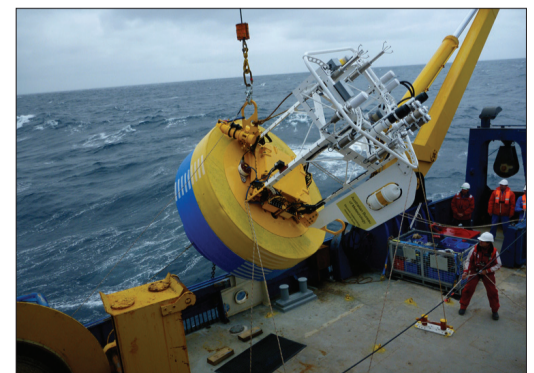
From the oceans, data was received from 22 drifting buoys, 30 wave-rider buoys, 44 sea-level and tsunami monitoring sites, and six deep-ocean tsunami-monitoring stations.

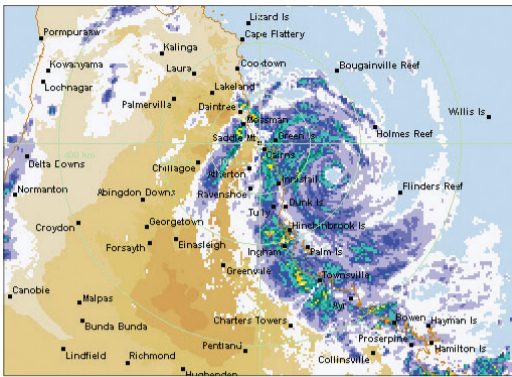
From space, the Bureau collected myriad data from weather satellites operated by meteorological agencies in Japan, the US, China and Europe.



THE PRODUCT

Fundamentally, the Bureau's offering is environmental intelligence - gathering and analysing information on Australia's environment, atmosphere, oceans, waterways and land. It's mission is predicting how these environmental changes will affect the country - from minutes





to years into the future – and providing warning of natural hazards such as severe storms, solar flares, exceptional tides, volcanic ash, floods, and weather likely to lead to bushfires or extremely dry or wet seasons.

Today it produces around 300,000 weather maps and graphs and 3.5 million space weather charts each year - identifying trends in rainfall, drought and El Nino/La Nina cycles, populating its website with data and animated imagery of rainfall, preparing tables of average rainfall intensity, frequency and duration to assist engineering design of gutters, roads and culverts.

In 2010-11, the Bureau produced more than 314,000 routine weather forecasts, 270,000 aviation weather forecasts, 900 flood-watch products, and 35,000 tidal predictions. Three-month stream flow forecasts were issued for 13 sites and eight major storages in the southeast Murray-Darling Basin. Each month, seasonal forecasts for temperature and rainfall help property owners decide what crops to plant, how much fertiliser to apply, what stocking rate to work to and how much fodder to have on hand.



There were also more than 6000 flood warnings and 67 initial tsunami bulletins issued, along with warnings of cyclones, bushfires, volcanic ash, and solar activity. Warnings were issued for frost, weather dangerous to young livestock and weather likely to lead to brown rot on stone fruit as well as for ultraviolet radiation, extreme heat and prolonged high temperatures.

Observations, forecasts and warnings are made available on the Bureau's website, broadcast by television and radio media, published in newspapers and other third-party information providers, distributed via radio-fax, and made available as telephone voice messages.

Its services include briefings and interviews for senior government officials, the media and industry bodies on issues such as drought, expected seasonal conditions and longer-term trends - providing more than 2700 such briefings and interviews in 2010/11 alone.

RECENT DEVELOPMENTS

Forecasting: A new digitally based Forecast and Warning System began being rolled out in 2009 and will be operating across Australia by 2015. It will enable the Bureau to produce seven-day forecasts for 650 locations across Australia. At the system's heart is the Graphical Forecast Editor, which allows a more graphical and interactive presentation of observations, forecasts and warnings.

Radar: For the past ten years the Bureau has been modernising its weather radar network around Australia - often with Doppler radars that allow severe thunderstorms, and the associated potential for flash flooding, to be identified more easily. Hobart was the latest to come on line in 2011, with Mt Isa (Queensland), and Waruwi (Northern Territory) to follow.



Water: In 2007, the Federal Government tasked the Bureau with implementing the Improving Water Information program and working with organisations across Australia to deliver a national perspective on water – a comprehensive, accurate, up-to-date and accessible view to enable government, industry and communities to better manage and mitigate water scarcity.

Super computing: The new Australian Community Climate and Earth-System Simulator is now running on the Bureau's supercomputer and is used for weather prediction, seasonal outlooks and climate change research.

Environmental information: In 2010, the Bureau began helping develop a national plan to bring together the many collections of biophysical environmental information.

PROMOTION

The Bureau builds awareness of its products and services primarily through the news media. Upgrades and product releases are announced via media releases and occasional events. Media interest in significant events such as tropical cyclones and tsunami or extended dry/wet/cold/hot weather is used to build awareness of products and services.

BRAND VALUES

The Bureau is developing its Brand strategy but it has been suggested the following values could apply:

- Authoritative – the experts, first choice provider
- Public good - Making a difference for the benefit of the Australian community
- Open – it willingly engages and exchanges ideas and information.
- Integrity - its advice, information and data can be relied upon
- Excellence – its work is valued locally and globally as world-class



CORPORATE SOCIAL RESPONSIBILITY

The Bureau works closely with a range of community groups, particularly volunteer agencies such as Surf Life Saving Australia, State Emergency Services and rural fire agencies as part its provision of weather and warnings.

Staff also work with indigenous communities that wish to share their traditional weather knowledge through the Bureau's website.

THINGS YOU DIDN'T KNOW ABOUT THE BUREAU OF METEOROLOGY

- The Bureau is an Australian Government agency established soon after Federation to bring together the then state and Colonial meteorological services.
- The Bureau checks the accuracy of its forecasts of the weather and oceans by comparing the prediction with the actual event to monitor the performance of its forecast systems and improve performance. Accuracy four days ahead is now as good as it was for one day ahead thirty years ago.
- Each day the Bureau draws on more than 300,000 observations to help produce the weather forecasts.
- There were more than 33 billion hits on the Bureau's website in 2010-11, making it the most popular government site in Australia. Some months have approached 5 billion hits.
- Approximately 170 of its scientists study areas such as climate variability and change, and numerical modelling of the atmosphere, oceans and waterways.
- In 2010, a total of 81 peer-reviewed papers and more than 106 conference papers and technical reports were published.
- The Bureau developed the Standard Emergency Warning Signal, used particularly for cyclone warnings.
- Many of the Bureau's most valued products and services are available to Australians because of long-standing agreements and relationships with meteorological services around the world. This includes the satellite images as well as the growing volume of data from Japanese, Chinese, US and European satellites.