

CITIES AND WATER

DASARATH JAYASURIYA

Australian Bureau of Meteorology, Melbourne

The Bureau of Meteorology, Australia's national weather, climate and water information agency, plays a key role in the face of challenges due to climate change impacts contributing to all aspects of intelligence needs of disaster management – planning, preparation, response assessment and recovery. The Bureau's environmental intelligence role, building on its core expertise and skills developed through delivering meteorological services for more than 100 years, has extended to address water information needs of Australia providing regular reports on the status of Australia's water resources, patterns of intake and usage of those resources.

No doubt climate change and drought conditions faced in the last decades have changed the level of water availability and the patterns of sourcing and usage. Climate predictions indicated, on average Victoria will be drier over the next several decades when compared with the 20th century. The climate change impacts on urban Victoria include rising sea levels, heat waves, bushfires, floods and droughts and decreasing rainfall. The decrease in rainfall and the resulting runoff have significant effects on water availability for urban water supplies, environmental flows and agricultural needs. Annual inflow into Melbourne's four major reservoirs was lower by almost 40% in the period 1997–2011 compared with the previous 80 years.

Bureau's water information roles and products are providing information needs for climate change impact assessments, planning for the adaptation and in the assessment of the adaptation strategies and measures impact. For example; the Water Storage website provides a national coverage of accessible water in storage (total of 285 major storages with capacity over 1GL) facilitating analysis based on state, capital city, drainage division and major water supply system. The National Water Account produced annually by the Bureau contains a set of water accounting reports for eight nationally significant water management regions and discloses

all key water resource stores and main flux terms, the rights to abstract water. The Water Restrictions website provides information on urban water use restrictions – a climate change adaptation measure in place. The Australian Water Resources Assessment reports include scientifically robust analysis and interpretation of changes in Australia's water availability and use, and provide information vital to assess climate change impacts and adaptation. For example, analysis shows a drop of about 22 per cent of the total volume of water used by residential, commercial, municipal and industrial consumers in Melbourne from 2005–06 to 2010–11, in response to climate change adaptation measures e.g. water restrictions in place, indicating a net saving of 95 GL.

Some fast facts on key findings in the 2010 Assessment report

- Australian rainfall in 2009–10 was 13% above the long-term average;
- Australian evapotranspiration was 4% above the long-term average and
- Australian landscape water yield was 40 %above the long-term average.
- Deep soil moisture stores increased in the northeast and southeast of the country, but decreased in the west.
- The accessible volume of water in major surface storages increased from 46% to 52%, driven primarily by increases in the Murray–Darling Basin, Tasmania and North East Coast regions.
- Urban water use declined by 4.5% on the previous year. Residential water consumption accounted for 68 per cent of urban use in 2009–10.
- Agricultural irrigation water use in Australia increased marginally on the preceding year.
- A number of rainfall records were broken during a widespread heavy rainfall event from 22 Feb to 3 March which caused significant flooding in the Lake Eyre Basin region, in the south of the North East Coast region and in the far north of the Murray–Darling Basin region.