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Climate Impact Company Season 1-3 Ahead Outlook for Australia

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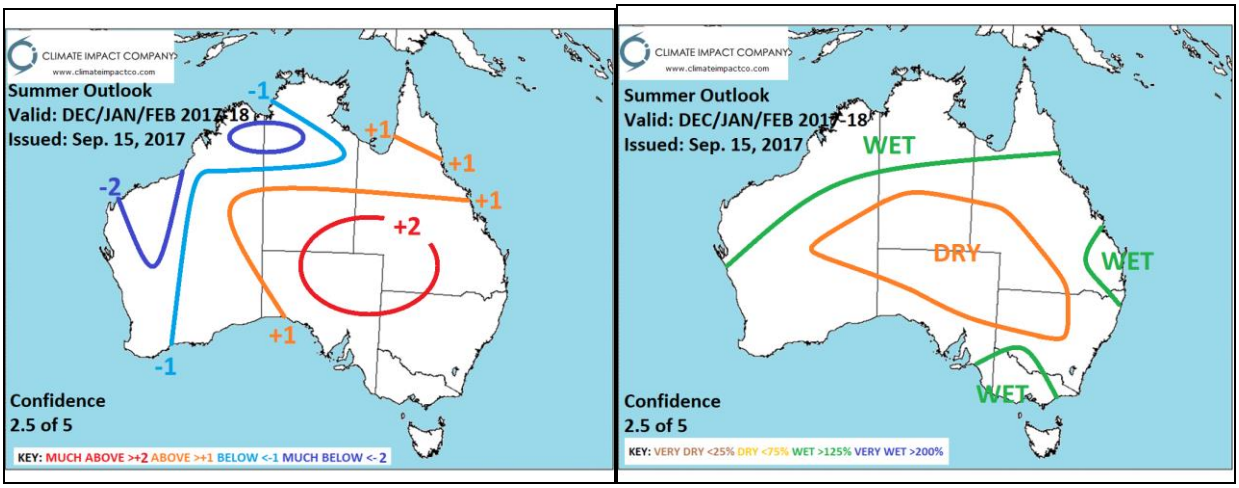
Executive Summary: A La Nina climate is forecast to develop late in 2017. Typically, La Nina brings wet weather to eastern Australia during the summer season including increased risk of tropical cyclone activity. The rainfall is needed given dry-to-drought conditions affecting much of eastern Australia. The mid-to-late spring outlook indicates above normal rainfall for parts of eastern Australia weakening the drought scenario. However, once summertime arrives precipitation is near to drier than normal with anomalous heat likely. The drought condition affecting southwest Australia whet could regenerate.

Meteorological Summer 2017-18 Outlook for Australia



Winter 2017 review: Winter 2017 was record warm nationally and mostly dry west and east portions of the continent (***Fig. 1-2***). The CIC winter outlook was much warmer than normal (***Fig. 3***) however most of the forecast warmth was in the Southeast whereas verification was warmest north/northeast Australia. The precipitation correctly forecast dryness in west and east portions of Australia (***Fig. 4***).

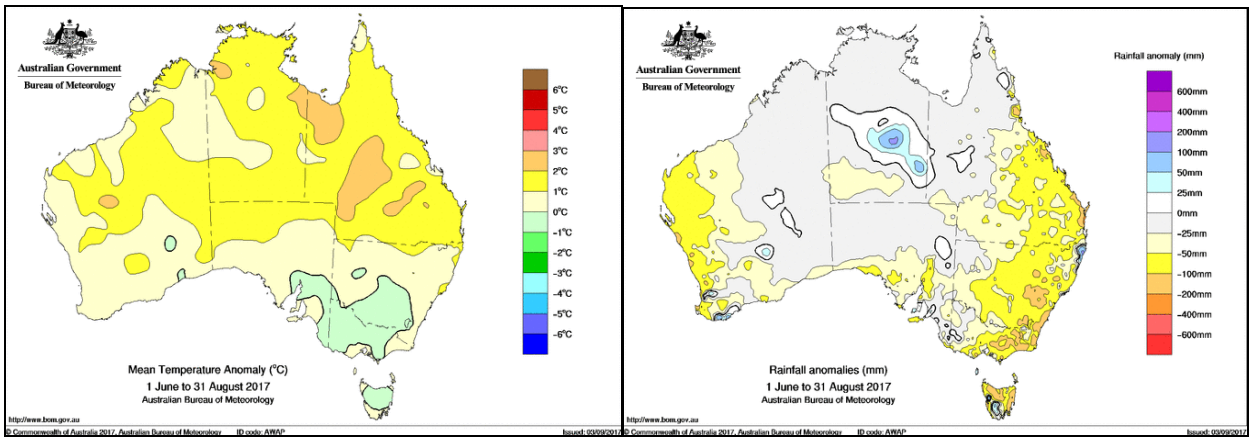


Fig. 1-2: *Winter 2017 temperature and precipitation anomalies are indicated.*

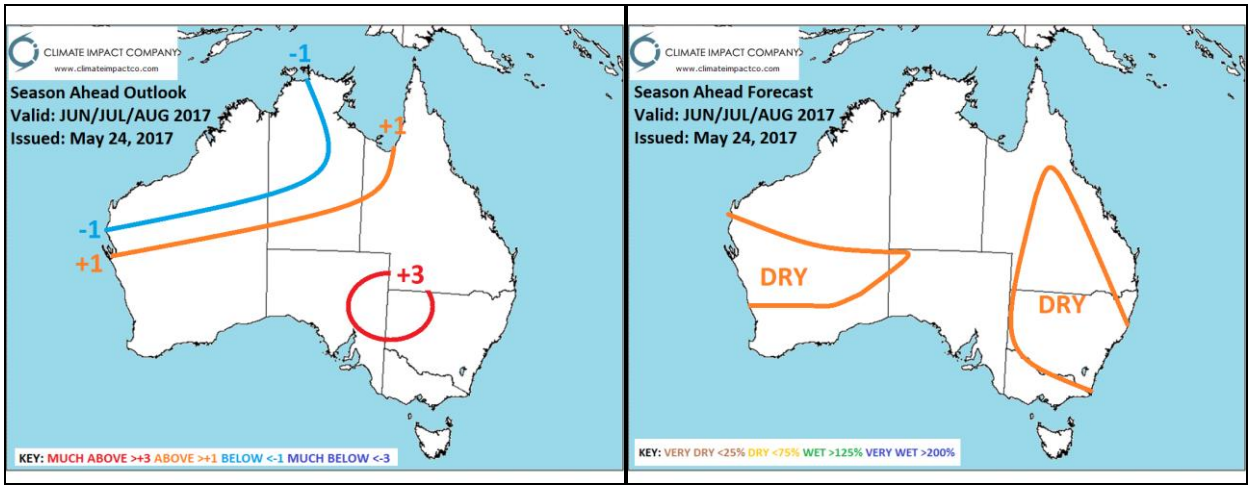


Fig. 3-4: *The Climate Impact Company JUN/JUL/AUG 2017 temperature and precipitation anomaly forecast across Australia is indicated.*

Forecast process for the next 3 seasons: The 3 season ahead outlook is based on a constructed analog. A constructed analog takes into consideration many aspects of climate besides ENSO with regression to indicate JUN/JUL/AUG 2017 similarities before carrying the forecast process forward through autumn 2018. The constructed analog is based on similar 500 MB anomaly patterns flipped into temperature and precipitation anomalies for the forecast.

The winter 2017 prevailing upper air featured an intense upper ridge over northeast Australia causing a record warm winter season (***Fig. 5***). The best fit analog years from the current 1995-2016 global climate cycle is 2005 and 2010 which combined produce a much weaker ridge in eastern Australia however a well-amplified ridge pattern southeast of Australia (***Fig. 6***). The analog years indicate a transition to a weak to moderate La Nina is ahead for summer 2017-18 (***Fig. 7***). Typically, a La Nina summer is wetter than normal across parts of eastern Australia.

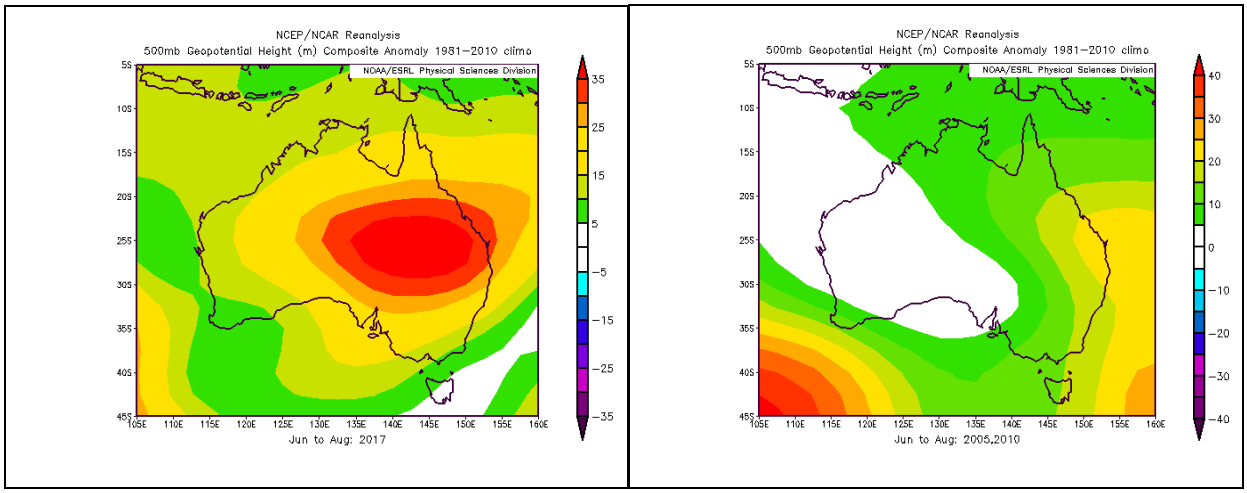


Fig. 5-6: *The 500 MB anomalies for winter 2017 (left) and constructed analog pattern for the same time period (right). The analog is not quite as strong as observed.*

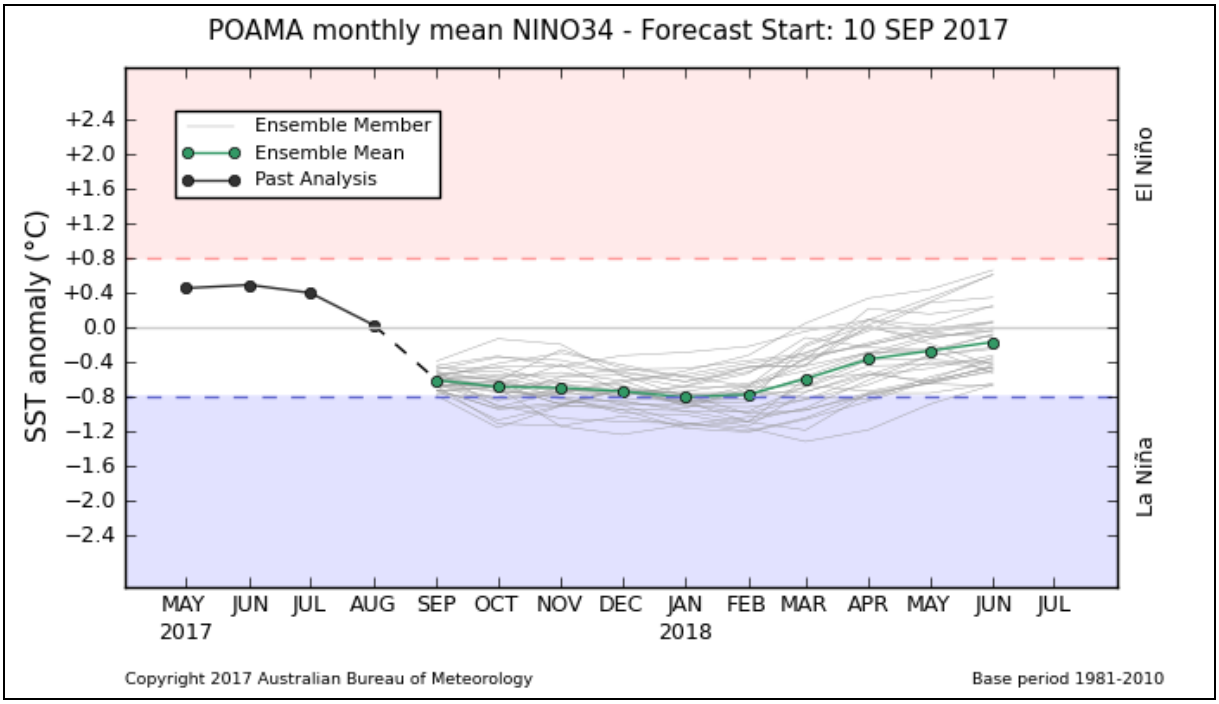


Fig. 7: *Bureau of Meteorology/Australia ENSO forecast indicates weak La Nina ahead.*

Climate forecast: The outlooks are generated by the constructed analog and valid for OCT/NOV 2017, DEC/JAN/FEB 2017-18 and MAR/APR/MAY 2018.

OCT/NOV 2017: During mid-to-late spring an upper ridge patter is forecast to evolve over a warm SSTA region west of Australia. Meanwhile a mean trough develops east-southeast of Australia during OCT/NOV across cooling SSTA. The

projected pattern is opposite of just-ended winter. Coupled with an ENSO pattern toward La Nina the climate pattern reverses cooler (***Fig. 8***) and wetter (***Fig. 9***). Cool anomalies affect most of central Australia while far southeast Australia crop areas are likely warmer than normal. The precipitation outlook is wetter than normal across eastern New South Wales and eastern Queensland while western and south-central Australia are drier than normal.

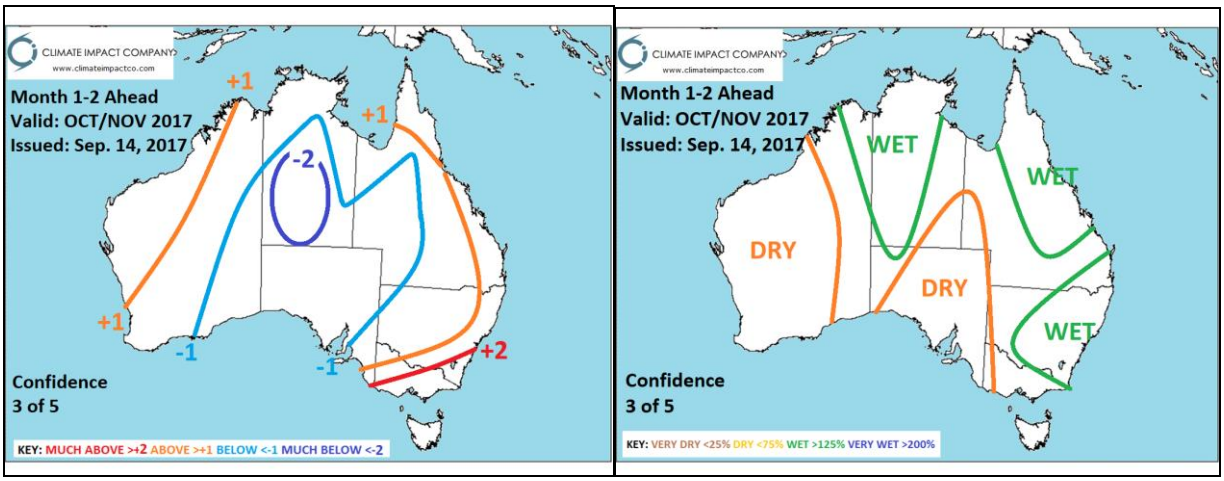


Fig. 8-9: *The Climate Impact Company OCT/NOV 2017 temperature and precipitation anomaly forecast for Australia.*

DEC/JAN/FEB 2017-18: The projected 500 MB anomaly pattern across Australia for meteorological summer features a strong ridge pattern southeast of Australia. The climate outlook indicates hotter than normal conditions across central and eastern Australia while the west coast and coastal northwest is cooler than normal. Wet climate is forecast across all of the northwest to north continent with patchy wet zones east and southeast sections. The central and interior southeast portion of Australia is drier than normal. The dry conditions currently observed across southeast Australia wheat areas are not likely to lose their drought status despite some borderline beneficial spring rains as summer is generally drier and hotter than normal. Southwest Australia wheat also is likely to remain dry for summer.

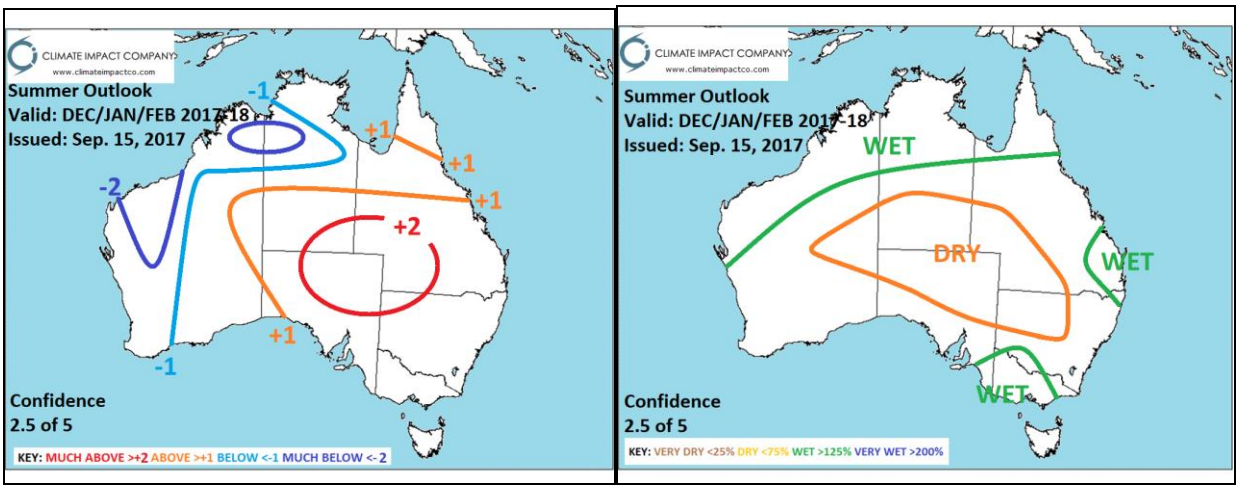


Fig. 10-11: *The Climate Impact Company DEC/JAN/FEB 2017-18 temperature and precipitation anomaly forecast for Australia.*

MAR/APR/MAY 2018: The outlook for autumn 2018 is made with below average forecast confidence. The outlook indicates a bold cooler than normal pattern affecting most of the continent. Cooler than normal SSTA surrounding Australia is the catalyst. Northern Australia is potentially quite wet.

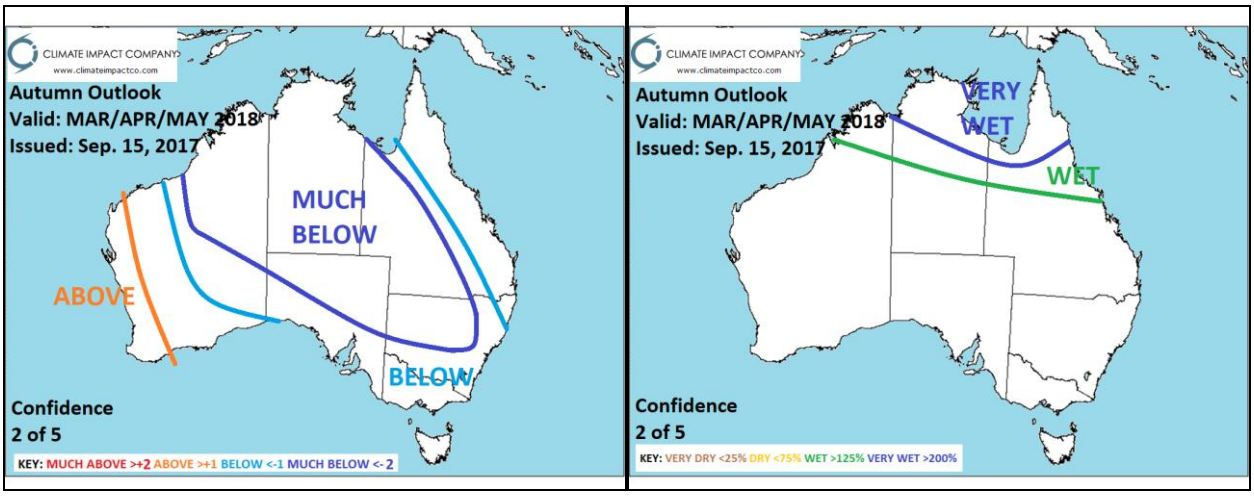


Fig. 12-13: *The Climate Impact Company MAR/APR/MAY 2018 temperature and precipitation anomaly forecast for Australia.*