Area Forecast Discussion: Albany and Adelaide
Date: Tuesday 20 February 2019
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Big Picture Perspective

We are currently in a period of a weak El Niño event with high probability (70%) of remaining in this current phase through the end of S. Hemisphere fall. With anomalously warm SST's in the East Pacific the walker circulation will be weaker compared to the mean state. Ultimately this is causing drier than average conditions and suppressed convection in the Western Pacific and Australia. A typical response to an El Niño episode for Australia is warmer and drier conditions due to the changes in the walker circulation. We can see this response in Australia as indicated by widespread drought conditions. The month of January saw below average precipitation and the current month to date is continuing to see dry anomalies with the exception of Northeast Australia due to an active MJO that is prompting flooding. Throughout the forecast period and particularly in the beginning a heat wave takes over Southern Australia as negative OLR anomalies are prevalent.

Extended Range: Day 7-10

Another thin trough will approach the south coast of Australia, this time digging northward to reach Australia over the Great Australian Bight. Discontinuous trough regression will keep southern Australia under the bases of the troughs for the majority of the period. Albany will stay dry throughout the period thanks to a anticyclone to the southwest stretching into southwestern Australia. The temperatures will start the period anomalously warm but will switch to anomalously cold temperatures by the end of the period as the second trough moves in. Adelaide will begin the period slightly warmer than normal before becoming anonymously cold during the passages of the two distinct troughs. The second trough will bring some light precipitation to Adelaide associated with onshore flow from the Great Australian Bight and cyclonic vorticity advection in the base of the trough.

Medium Range: Day 4-6

The beginning of the period brings a lifting trough in the polar jet stream to the southern coast of Australia, which will stay under the trough for about a day due to trough regression from a mini PV streamer making its way North on the upstream side of the

trough. The much weaker subtropical jet stream has a shallow trough over eastern Australia, creating a weak cyclonic circulation aloft with little to no effect on the surface pressure. Anticyclonic wave breaking will leave a weak cutoff low aloft off the west coast of Australia and will leave a very zonal polar jet streak off the coast for the remainder of the period. The initial negative two sigma surface pressure anomalies associated with the trough in the beginning of the period will quickly make way for near climatological high surface pressure to crawl along the southern coast throughout the remainder of the period. Albany will stay dry with clear skies and slightly colder than normal temperatures at the beginning of the period and slightly warmer than normal temperatures by the end. Adelaide will stay dry for the majority of the period because of the trough lifting to the south before reaching Adelaide's longitude. The 850 temperature will start out the period with a positive anomaly of over 10 degrees which will weaken throughout the period.

Short Range: Day 0-3

A heat wave is the main feature during the short range forecast as warm temperature anomalies at 850-hPa reach 2 to 3 sigma across the continent. This warming can be attributed to two main features, the absence of the monsoon and anticyclonic wave breaking near 130E. In Northern Australia, the monsoon region is dominated by anomalously dry conditions and is forecasted to remain this way according to the CFSv2. Due to the weakened monsoon there are also positive OLR values indicating it is less cloudy. With low amounts of clouds the surface is able to heat more efficiently and cause more scorching temperatures especially with the higher potential temperatures at dynamic tropopause being fed further south. The chance of precipitation continues to be low due to higher pressure built over the continent. A trough deepens (3 to 4 sigma anomalous low heights at 500-hPa) into the end of the period due to CVA and CAA but only skims the Australian coast keeping most of the precip to the south.

Probabilistic Forecast

Albany, Australia:
Day 0-3:
Max Temp: 20ºC (10th), 21ºC (50th), 23ºC (90th)
Min Temp: 16ºC (10th), 17ºC (50th), 18ºC (90th)
Precip: 1 mm (10th), 3 mm (50th), 5 mm (90th)

Day 4-6:
Max Temp: 20ºC (10th), 21ºC (50th), 22ºC (90th)
Min Temp: 11ºC (10th), 14ºC (50th), 15ºC (90th)
Precip: 1 mm (10th), 2 mm (50th), 4 mm (90th)

Day 7-10:
Max Temp: 21ºC (10th), 22ºC (50th), 23ºC (90th)
Min Temp: 13ºC (10th), 14ºC (50th), 15ºC (90th)
Precip: 1 mm (10th), 3 mm (50th), 5mm (90th)

Adelaine, Australia:
Day 0-3:
Max Temp: 22ºC (10th), 35ºC (50th), 37ºC (90th)
Min Temp: 22ºC (10th), 24ºC (50th), 26ºC (90th)
Precip: 0 mm (10th), 1 mm (50th), 2 mm (90th)

Day 4-6:
Max Temp: 27ºC (10th), 28ºC (50th), 29ºC (90th)
Min Temp: 20ºC (10th), 21ºC (50th), 22ºC (90th)
Precip: 0 mm (10th), 1 mm (50th), 2 mm (90th)

Day 7-10:
Max Temp: 22ºC (10th), 23ºC (50th), 24ºC (90th)
Min Temp: 15ºC (10th), 16ºC (50th), 17ºC (90th)
Precip: 0 mm (10th), 1 mm (50th), 2 mm (90th)