Area Forecast Discussion: Punta Arenas and Resistencia
Date: Tuesday 07 March 2019
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Big Picture Perspective

The Antarctic Oscillation (AAO) trends positive for the forecast period after being consistently negative. Low height anomalies at 500-hPa are forecasted over Antarctic and the previously active wave pattern becomes more zonal. By end the period height anomalies over the Antarctic hint towards becoming positive, this is consistent with some ensemble members calling for a positive AAO, potentially causing a more active jet pattern for South America. Anticyclonic wave breaking occurs creating a weak cut off low associated with cold and low height anomalies. This wave breaking is consistent between the model runs when analyzing d(prog)/dt, the location of the cut-off is trending towards southern Argentina tracking northeastward. The location of this feature will determine temperature forecasts in the short range. As the low reaches the northern extent of Argentina, moisture from the Amazon gets steered to the east, keeping convective storms to the north and east of the region. Clipper systems become the dominant source of precipitation for the southern tip as troughs fail to dig any deeper.

Extended Range: Day 7-10

Large uncertainty exists within the extended range and with the MJO forecasted to weaken significantly during the period some predictability is lost. At the start of the extended period a shortwave trough propagates northeastward brings the possibility of cold air advection as well as enhanced precipitation in Northern Argentina. This feature however is not consistent between model runs but will heavily influence the weather for this region. If the shortwave trough does not develop a weak surface low and precipitation are unlikely due to higher pressure. Another high pressure system in the Eastern Pacific as the possibility of advecting warm moist tropical air into the southern region of the continent. Recent model runs trend toward this possibility with more agreement.

Medium Range: Day 4-6

In the beginning of the period, the trough approaching during the southern tip will deepen as it moves over South America due to strong cold air advection on the upstream side. The trough will be followed by a more zonal ridge with a 55 knot jet streak at 700 mb, bringing some water vapor from the east pacific onto the southern tip.

This vapor transport towards the southern tip will allow widespread light precipitation despite high surface pressure moving in. Resistencia will start off the period with some precipitation due to the northerly winds bringing moisture from the amazon and cyclonic vorticity advection from the weakening cyclone. Some more precipitation will come at the end of the period forced by low level frontogenesis. Puntas Arenas will have experience light precipitation throughout much of the period with anomalous cold in the beginning of the period.

Short Range: Day 0-3

Southern South America is dominated by anticyclones just off either coast associated with the ridge while a cutoff low stagnates over northern Argentina. During this period, the cutoff low will continue to develop and move northward due to the southerly winds immediately to the west. Most of the precipitation associated with the cyclone will be to the northeast of the surface low because of the warm air advection and precipitable water being pulled from the north by the anticyclone south of Brazil. The southern tip will start off the period with slightly anomalous high pressure but will switch to climatological values midway through the period when some skinny shortwave troughs move into the area. The anticyclone to the west will bring high theta-e air to the southern tip via a north westerly jet. This warmer moist air will be lifted by cyclonic vorticity advection to bring periods of rain to the southern tip for the second half of the period. Resistencia will stay near climatological temperatures and mostly dry other than some rain towards the end of the period. Puntas Arenas will stay slightly warmer than normal with dry conditions in the first half and precipitation during the second half.

Probabilistic Forecast

Punta Arenas, Chile:

Day 0-3:

Max Temp:	12ºC (10th),	14ºC (50th),	17ºC (90th)
Min Temp:	7ºC (10th),	8ºC (50th),	9ºC (90th)
Precip:	5 mm (10th),	10 mm (50th),	20 mm (90th)

Day 4-6:

Max Temp:	11ºC (10th),	12ºC (50th),	13ºC (90th)
Min Temp:	4ºC (10th),	6ºC (50th),	8ºC (90th)
Precip:	3 mm (10th),	5 mm (50th),	12 mm (90th)

Day 7-10:

Max Temp:	11ºC (10th),	12ºC (50th),	14ºC (90th)

Min Temp: 5ºC (10th), 6ºC (50th), 7ºC (90th)
Precip: 4 mm (10th), 8 mm (50th), 10mm (90th)

Resistencia, Argentina:
Day 0-3:
Max Temp: 26ºC (10th), 27ºC (50th), 28ºC (90th)
Min Temp: 18ºC (10th), 19ºC (50th), 20ºC (90th)
Precip: 15 mm(10th),25 mm (50th),40 mm (90th)

Day 4-6:
Max Temp: 24ºC (10th), 25ºC (50th), 29ºC (90th)
Min Temp: 18ºC (10th), 20ºC (50th), 21ºC (90th)
Precip: 10 mm (10th), 15 mm (50th), 25 mm (90th)

Day 7-10:
Max Temp: 26ºC (10th), 28ºC (50th), 29ºC (90th)
Min Temp: 18ºC (10th), 19ºC (50th), 20ºC (90th)
Precip: 8 mm (10th), 15 mm (50th), 20 mm (90th)