Alex Mitchell and Tyler Leicht 3 March- Punte Arenas and Resistencia

Big Picture

Because of the regime shift mentioned last week with the wave breaking event over Antarctica, the southern hemisphere is still highly amplified and looks to continue throughout the forecast period. With that, it looks as though the southern tip of South America will experience fairly quick moving upper level systems. A trough centered on day 0 over the southern tip of South America, along with an atmospheric river from the central Pacific, will persist through to day 3, when a +2 sigma ridge moves in from the northwest. This ridge formation is aided by anticyclonic wave breaking off the east coast of Argentina, which leaves a PV streamer across the continent that eventually forms a cutoff low near central Chile. With the wave breaking, upper level flow looks to help advect in Amazonian moisture into northern Argentina, Paraguay, and Uruguay on days 3 and 4, setting the stage for heavy rainfall and potential flooding risks. With the cutoff low situated over the broad ridge, a weak Rex block setup is present for the end of the forecast period. This begins to diminish as an upstream diffluent pattern forms, setting the stage for a second AR event into the same areas as before. Further north, the cutoff low will begin to diminish and without other large-scale forcing, temperature will remain slightly below average and little to no precipitation to the north.

Day 7-10

Locally, the pattern across South America calms down from the earlier part of the forecast period. The upper-level flow pattern becomes much more zonal with few disturbances to the jet. An elongated atmospheric river is forecasted to make landfall on the very southern tip of Chile and Argentina on day 7 and persist through the forecast period. This zonal pattern will act to moderate temperatures across the entire region and bring them back closer to climatology. Further upstream, it looks as though wave breaking to the south of Australia and New Zealand will help to make the flow much more amplified. While too far out to be sure, the extratropical transition of now named Cyclone Haleh will have a big impact on the waveguide across the southern hemisphere, something that may become more clear by Thursday's forecast.

Day 4-6 (March 9th-11th)

Anomalously colder air creates an ideal environment for elevated convection to occur by the beginning of the period for areas east of the cold air damming regime along the Andes Mountains induced by a 1030mb surface high centered over the Pacific and east of Argentina. By day 5, the potential for mesoscale convective systems to develop increases and creates the potential for severe flooding for areas extending from Bolivia to Uruguay. As the shortwave on the coast of Chile acts to bring in drier air aloft from

the west and deflected southerly winds advect cold air into Argentina, moisture only resides in the low levels as easterly winds at the 850mb levels override cold, dense air due to the presence of a coastal high south of Uruguay. Further south in Punte Arenas, a passing polar cyclone will aid in initiating a strong westerly flow in the region providing favorability orographically enhanced precipitation, though a relatively stable, moist layer in the low- to mid-levels should only provide light precipitation for the region.

Day 0-3 (March 5th-8th)

The period begins with an upper-level trough centered over southern Argentina and Chile. Upstream, a low level cyclone forms west of the southern region of Chile aiding to produce upsloping precipitation along the Andes Mountains. Additionally a downstream surface cyclone east of the Falkland Islands ahead of the trough where ascent is favorable allows an associative cold front to move through much of Argentina and Chile. As high pressure begins taking effect onto South America by day 3, regions north of 30S will experience organized convective systems due to the favorability of considerable vertical shear, moist adiabatic lapse rates promoting conditional stability, ascent associated with an upper level jet, and low-level advection of Amazonian moisture from the North promoting sufficient surface-based CAPE.

Probabilistic Forecasts for the period

Punte Arenas, Chile

Day 0-3

 High Temperature 10th: 46°F
 50th: 48°F
 90th: 51°F

 Low Temperature 10th: 41°F
 50th: 43°F
 90th: 45°F

 Precipitation
 10th: 0.20"
 50th: 0.30"
 90th: 0.50"

Day 4-6

High Temperature 10th: 55°F50th: 57°F90th: 60°FLow Temperature 10th: 46°F50th: 49°F90th: 51°FPrecipitation10th: 0.00"50th: 0.15"90th: 0.25"

Day 7-10

High Temperature 10th: 51°F50th: 53°F90th: 55°FLow Temperature 10th: 43°F50th: 45°F90th: 47°FPrecipitation10th: 0.25"50th: 0.50"90th: 0.75"

Resistencia, Argentina

Day 0-3

 High Temperature 10th: 85°F
 50th: 87°F
 90th: 92°F

 Low Temperature 10th: 71°F
 50th: 73°F
 90th: 75°F

 Precipitation
 10th: 1.0"
 50th: 3.0"
 90th: 6.0"

Day 4-6

 High Temperature 10th: 75°F
 50th: 77°F
 90th: 80°F

 Low Temperature 10th: 65°F
 50th: 66°F
 90th: 67°F

 Precipitation
 10th: 0.10"
 50th: 0.35"
 90th: 0.60"

Day 7-10

 High Temperature 10th: 82°F
 50th: 84°F
 90th: 86°F

 Low Temperature 10th: 63°F
 50th: 65°F
 90th: 67°F

 Precipitation
 10th: 0.20"
 50th: 0.40"
 90th: 0.60"