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**7 March- Punta Arenas and Resistencia**

**Big Picture**

Much of the same features as discussed on Tuesday are still in the forecast. A initial trough over the southern tip of South America will be replaced with more zonal flow during day 1 as an upper level ridge and surface anticyclone develop to the northeast. This anticyclone will act to bring northwesterly flow to much of the region, a strong downsloping signature. In addition, this type of flow allows for a connection to Amazonian moisture along with a low-level jet along the edge of the Andes in Bolivia and northern Argentina on days 0 and 1. This moisture transport, coupled with convergence at 850 hPa, will pose the threat of flooding across northern Argentina, especially if the low-level jet begins to interact with any meridional excursions of the upper-level jet. Along with that anticyclone, AWB leads to a PV streamer extending from the central coast of Chile to the Antarctic peninsula. This forms a cutoff low on the coast of Chile, a persistent feature in this region. By day 5, cyclonic wave breaking from a cyclone on the coast of Antarctica helps to develop a more localized cyclone to the southeast of South America. This brings in anomalously cold air to much of Argentina with the greatest anomalies focused in the north of the country. By day 7, sensible features become much more climatological and the entire region remains mostly dry, with cool anomalies to the north and warm anomalies over Patagonia.

**Day 7-10**

As stated on Tuesday, the flow returns to a slightly more zonal pattern, with a positively-tilted ridge across the southern tip of the continent induced by further AWB over the eastern Pacific. With the trough offshore, southwesterly flow into central and northern Argentina will bring the cold anomalies as expected. This pattern remains in place for much of the period, with little in the way of precipitation for the area except for the western coast of Chile and Argentina where onshore flow can lead to orographically-driven rainfall. With TC Haleh now named in the Indian Ocean, any disruption to the waveguide comes not from a bombing out during ET but rather double AWB as Haleh approaches the jet stream over the Indian Ocean. How exactly this pans out will add some variability to the forecast, especially past our forecast period with potentially increased meridional excursion as observed after major wave breaking in mid-February.

**Day 4-6**

The shortwave centered west of Chile begins moving eastward over central Argentina, providing favorable ascent due to cyclonic vorticity advection. This combination of upper-level cooling and convection in the low levels will aid in providing unstable conditions for the region. However, dry air aloft, moist adiabatic lapse rates and lack of

shear for some areas will hinder the potential for organized convection, though heavy precipitation may transpire for areas in Uruguay, southern Brazil, and eastern Argentina. Consequently, left over anomalous cold air and the presence of an eastward moving upper-level shortwave provides enough low-level baroclinicity to generate a surface cyclone in Uruguay by the end of the period. Additionally, a shortwave moves into the southern end of the continent by the end of the period, increasing the chances for light precipitation for Punta Arenas coupled with a southwesterly flow regime advecting Arctic air into the region coupled with downsloping.

### **Day 0-3**

The period begins with a positively tilted upper-level trough centered over southern Argentina and Chile, indicative of equatorward cold air advection. A cutoff cyclone becomes detached from the upper-level flow by day 1 and centers over central Chile throughout the rest of the period. At 250-hPa, two separate polar jets upstream and downstream of the aforementioned 500-hPa upper-level trough act to provide favorable ascent for northern Argentina and surrounding countries and subsidence in the southern end of the Patagonia region. Two eastward moving surface high pressure systems centered west of southern Chile and east of the Continent along 40S will advect tropical theta-e air into both regions of interest, providing the high potential for precipitation to occur. From day 1-2, overrunning flow of northerly Amazonian tropical air and southerly arctic air blocked by terrain to the west will create favorable conditions for heavy precipitation along the frontal boundary extending from Bolivia to Uruguay. Further south, Punta Arenas will experience strong westerly flow in the region invoking orographically enhanced precipitation given the available moisture advected into the region from the Tropics.

### **Probabilistic Forecasts for the period**

#### **Punta Arenas, Chile**

##### **Day 0-3**

High Temperature	10th: 50°F	50th: 53°F	90th: 56°F
Low Temperature	10th: 44°F	50th: 47°F	90th: 50°F
Precipitation	10th: 0.20"	50th: 0.30"	90th: 0.50"

##### **Day 4-6**

High Temperature	10th: 48°F	50th: 51°F	90th: 54°F
Low Temperature	10th: 43°F	50th: 45°F	90th: 48°F

Precipitation      10th: 0.25" 50th: 0.40" 90th: 0.70"

Day 7-10

High Temperature 10th: 50°F 50th: 52°F 90th: 55°F

Low Temperature 10th: 45°F 50th: 47°F 90th: 49°F

Precipitation      10th: 0.50" 50th: 0.60" 90th: 0.85"

## **Resistencia, Argentina**

Day 0-3

High Temperature 10th: 76°F 50th: 78°F 90th: 80°F

Low Temperature 10th: 69°F 50th: 69°F 90th: 71°F

Precipitation      10th: 1.00" 50th: 2.50" 90th: 4.00"

Day 4-6

High Temperature 10th: 79°F 50th: 81°F 90th: 82°F

Low Temperature 10th: 65°F 50th: 67°F 90th: 68°F

Precipitation      10th: 0.00" 50th: 0.30" 90th: 1.00"

Day 7-10

High Temperature 10th: 78°F 50th: 80°F 90th: 82°F

Low Temperature 10th: 60°F 50th: 61°F 90th: 63°F

Precipitation      10th: 0.00" 50th: 0.15" 90th: 0.30"