

Analysis of the Anomalous Atmospheric Circulation in Northern Chile During 1998

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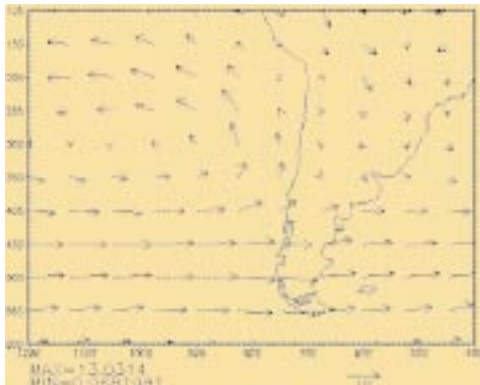


Figure 1: Circulation in 850 hPa.

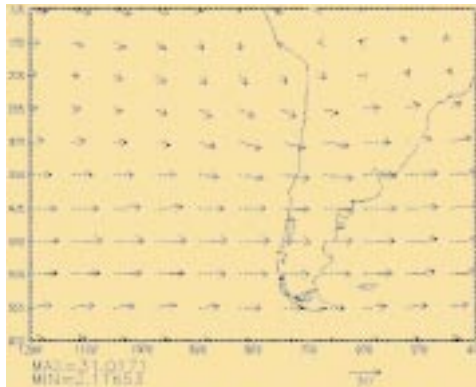


Figure 2: Circulation in 200 hPa.

In the far north of our country, wind components in the low and middle atmosphere until 700 hPa are normally from the North and from the East (Fig. 1), while above them and up to 100 hPa, West winds are normally prevailing during the whole year (Fig. 2).

It has been noticed that, during the years with La Niña or Antiniño occurrence, changes in the atmospheric circulation are of a global scale, similar to what is recorded during Niño years.

In Niña periods (as is the case since early 1998), the subtropical anticyclone of the South East Pacific which dominates the circulation in our country, becomes more intense and moves a few degrees southwards, resulting in a weakening of the high altitude (west-erlies) winds over the far north of the country. To this adds the fact that the circulation on the eastern side of the Andes, which brings air from the Atlantic, becomes more intense from the low altitudes to the high atmosphere, up to the point at which the East component of the wind starts prevailing at high altitudes. This circulation pattern may be persistent enough to be seen on the Antofagasta radio soundings and is, as previously stated, directly related to La Niña events.

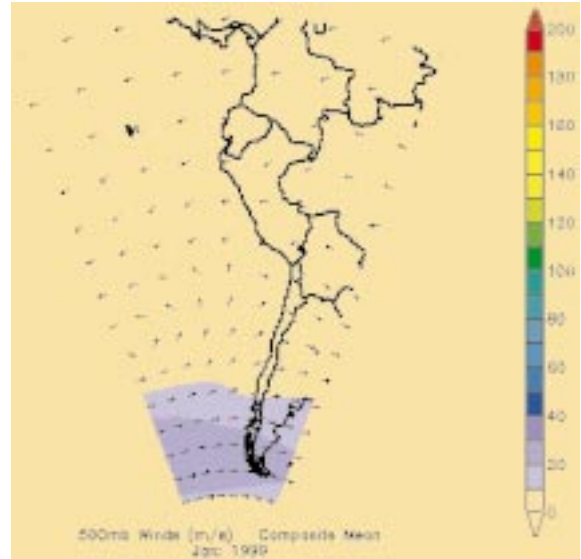


Figure 3: Circulation in 500 hPa (January 1999).

5. And What Comes Next?

Can we readily assume, looking at Figure 8 that Paranal is on its way to recover its original excellence? Hopefully yes, because although the average seeing still reflects some fairly bad events, the best 5 percentile were back into normal over the last two months, just as La Niña was vanishing...

6. Acknowledgements

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Figure 8: Seeing statistics at Paranal since UT1 first light: monthly average (red), median (black) and 5th percentile (green). The dashed lines give the respective long-term site characteristics. Seeing is reconstructed from DIMM measurements for an equivalent 20-min. exposure at 0.5 μ m and at zenith.

