AN APPROACH TO STORM CLIMATOLOGY IN MENDOZA (ARGENTINA)

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(Dated: April 20, 2007)

1. ABSTRACT

The high frequency of severe weather events in South America, especially in the subtropics and the mid-latitudes, has attracted the attention of many research projects to this part of the world. The mid-latitudes to the east of the Andes Mountain Range are affected by severe convective storms with intense precipitation, large hailstones, damaging winds, and, occasionally, tornados (e.g. De la Torre et al., 2004). Brooks et al. (2003) and Brooks and Anderson (2004) developed a global climatology of atmospheric environments favoring severe weather between 1997 and 1999, demonstrating that the subtropics and mid-latitudes to the east of the Andes present conditions that enhance the formation of severe storms.

Since 1994 the convective activity Mendoza (Argentina) has been observed and registered by two MRL5 S-band radars. These are installed in San Martín (at 33.1º S and 68.5º W) and San Rafael (at 34.64º S and 68.02º W). Both radars were set up to observe storms that occur far from the Andes.

Radar data confirm that severe convective storms occur mainly between October and April, with an increased intensity in December and January. According to a database provided by the Department of Agriculture and Risk Prevention of the Regional Government of Mendoza, in the past 15 years a trend has been observed with respect to the duration of storm events (in number of hours) during the data-gathering campaigns in the areas covered by the radars: a considerable increase in the duration of these storms has been detected. In the past 5 years this duration has been of over 1,200 hours, whereas at the beginning of the 90s it was of 600 – 800 hours.

The number of days with severe storms between October and March in the past few years is of over 70, which illustrates the intensity of convective activity in this zone.

An additional peculiarity may be noted here: storms occur equally often during the day and during the night. To conclude, the region of Mendoza presents an intense convective activity and it is very likely that nearby zones show similar features.

From a synoptic perspective, most of the storm days in Mendoza occur in prefrontal conditions, but it is undoubtedly the presence of the Andes that has a very strong influence on the mesoscale, contributing to explain the peculiarity of this region.

2. ACKNOWLEDGEMENTS

The study was supported by the CICYT through the grant REN (CGL2006-13372-C02-01, SEVERUS) and Gobierno de Mendoza

3. REFERENCES

Brooks, H.E.; Lee, J.W. and J.P. Graven, 2003: The spatial distribution of severe thunderstorm and tornado environements from global reanalysis data. *Atmos. Res*., **67-68**, 73-94.

Brooks, H. E. and A.R. Anderson, 2004: Climatological aspects of convective parameters from the NCAR/NCEP reanalysis. Preprints, 22nd Conf. Severe Local Storms. Amer. Met. Soc. Hyannis, EEUU.

De la Torre, A., Daniel, V., Tailleux, R., and Teitelbaum, H., 2004 : A deep convection event above the Tunuyán Valley near the Andes Mountains. *Mon. Wea. Rev.*, **132**, 2259-2267.