



Multiple varied index of the severe hailstorm in Mendoza (Argentina) using on the ground meteorology & C band radar data: DCPIM (Deep Convection Process Identification Model).

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The more complete and popular meteorological data source is the one arises from the registers of the forecast service bases. Its information was used in order to correlate these data with the hail process in Mendoza; with them, we can obtain a multiple varied index that is useful in order to have a new tool to support the traditional forecast system. The model will also be a good consultation instrument in anti-hail operation systems decisions.

With the registered data during two years, all day, every hour; it was possible to compile a sample with almost 5000 elements, and from its process with the Statgraphics software we get a definitive index; which had an excellent statistical adjust (P-value = 0), and its describe completely the wished situation.

The index obtained was:

$$\text{DCPIM} = 3,(-0,0012.p + 0,037.R + 0,057.T - 0,055.UV)$$

CONCLUSIONS

Its validation during this year gave the follows conclusions:

1. There is a good correlation of the process type with the atmospheric pressure on surface (p), but its dependence is inverse, on the other hand, when the ground pressure is bigger, the severe convection process probability decrease and vice versa.

2. Exist the inverse correlation with the ultraviolet radiation index (UV), may be explaining the storm apparition hours in Mendoza, because the genesis hours occur in the afternoon, when the UV is low or moderate, after sun had warmed the upper atmospheric air and begin its cooling.
3. The DCPIM index presents a big correlation with the dew point (R) and temperature on surface (T) among the. There were not severe storms when dew point had a value bigger than 12° C.
4. The validation had explained the interesting process about of the genesis condition and development of storm cells.
5. The results obtained with the model shows that the severe convective process that produces a big damage on surface, process type (TP) 4 o 5 appears when the dew point is bigger than 12° C and the temperature on the ground is higher than 31° C.