

Multiple regression model between meteorological data in surface and the convective process in Mendoza (Argentina).

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The fight systems against meteorological risk are based on its daily forecast. If the severe phenomena that they want to modify in a beneficial way occurs, several hours after the sounding was made, from an operative point of view, turns them into not upgrade and confident data to make an operative decisions. There the reasons why it is necessity to develop new methodology of early warning, with more useful and efficient operative information 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 theses data with the hail process in Mendoza; with them, we can obtain a multiple regression model 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 five months, all day, every hour; it was possible to compile a sample with 1698 elements, and from its process with the Statgraphics software we get a definitive multiple regression model; which had an excellent statistical adjust (P-value = 0), and its describe completely the wished situation. The model obtained was:

$$TP = 3*(-0,00118887*p + 0,0372169*R + 0,057063*T - 0,0546601*UV)$$

CONCLUSIONS

1. There is a good correlation of the process type (TP) with the atmospheric pressure on surface (p), but its dependence is low and inverse, on the other hand, when the pressure is bigger, the severe convection process probability decrease.
2. The 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 low or moderate, after sun had warmed the atmospheric air.
3. The model presents a big correlation among the TP and the dew point (R) and temperature on surface (T).
4. 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 surface is higher than 31°C.