CHARACTERISATION OF THE EVOLUTION OF CONVECTIVE PROCESSES IN THE EBRO BASIN

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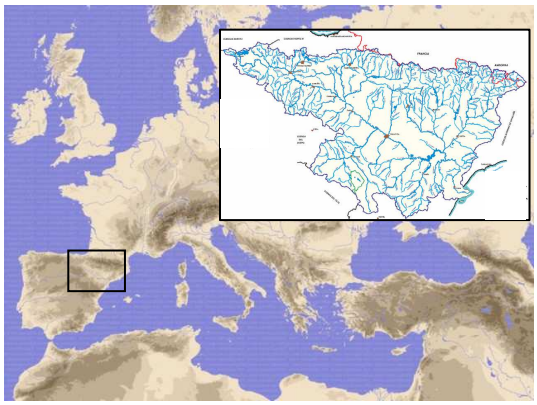
I. INTRODUCTION

The Ebro Basin covers 17% of the Iberian Peninsula total surface and is located at its northeast. It is a Mediterranean Basin limited by the Pyrenees to the north, the mountain systems bordering the Central Plateau to the southwest and the Mediterranean mountain ranges to the east. This isolated nature provided by the high mountains, its peaks ranging from 2000 to 3400 m, along with its location between the Bay of Biscay and the Western Mediterranean Sea, give the convective processes in the basin most peculiar characteristics.



The Ebro Basin is the area of Spain registering more lightning strokes a year (Álvarez, 2001), where forms of severe weather such as heavy rainfall, large-sized hail and even tornadoes reaching F3 category use to happen annually (Espejo *et al.*, 2001, Homar *et al.*, 2003.)

II. PRESENTATION OF RESEARCH

In this paper we shall try to establish a conceptual model for different kinds of convection in the Ebro Basin through the characterisation of the ingredients (Doswell *et al.*, 1996) needed for the occurrence of convective processes and the possible ways for their evolution in terms of severity and distribution over the different parts of the basin. The tools used will vary from surface and upper-air observations to numerical model outputs, lightning maps, radar or satellite images.

III. RESULTS AND CONCLUSIONS

We have found two major ways for convection in the Ebro Basin. Usually, these processes begin by low level orographic-aided convergence of Mediterranean and Atlantic winds. The first way happens when, in the absence of synoptic forcing at higher levels, aided only by the summertime Iberian thermal depression of solar-heat origin, air-mass type thunderstorms are produced. They have a stationary nature, normally much linked to the terrain configuration, and with a limited degree of severity. The second and much more relevant way, takes place when troughs pass aloft this low level convergence. Then severe convective phenomena appear, the south-western flow associated to the front part of the trough acting as a trigger for deep convection, with a high degree of mobility in paths with a normally well-established direction.

IV. ACKNOWLEDGEMENTS

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