

HAIL CHARACTERISTICS OF DIFFERENT REGIONS IN CONTINENTAL PART OF CROATIA BASED ON INFLUENCE OF OROGRAPHY

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I. INTRODUCTION

Settled in the mid latitudes of the Northern Hemisphere, Croatia is exposed to the frequent occurrence of severe thunderstorms, especially in the continental part between Sava, Drava and Mura rivers. In the 1960s, aiming to protect agricultural production and reduce damage from hail, a hail suppression system was introduced in that area. The mountain relief starts in the neighbouring Slovenia and extend in the western part of Croatia. Middle part is low land and in the eastern part are some greater mountains. A radar monitoring of the Cb movement shows that Cb in the short distance from the front of the mountain stagnate, begins to grow and the intensity of hailfall increase (Curic, 2001; Pocakal, 1999). This paper investigates orography influence on Cb clouds movement and connected with it, spatial distribution and other hail characteristics in different regions of continental part of Croatia.

II. DATA AND METHODS

During hail season, in the period 1981-2006, about 11000 reports of hail were collected from main meteorological and hail suppression stations. Radar data collected for the same period show that more than 66 % come from western directions (W, NW and SW), with average speed. For better comparison of data, the whole area is divided into quadrants (9 x 9 km), in such a way that in every quadrant there is at least one station (Pocakal 2003). During the 2001 year a hail pad were installed on all stations in this area, and in 2002 hail pad polygon is installed in the middle of western hilly part. Hail pad data collected in period 2001-2006 are also used in this analysis.

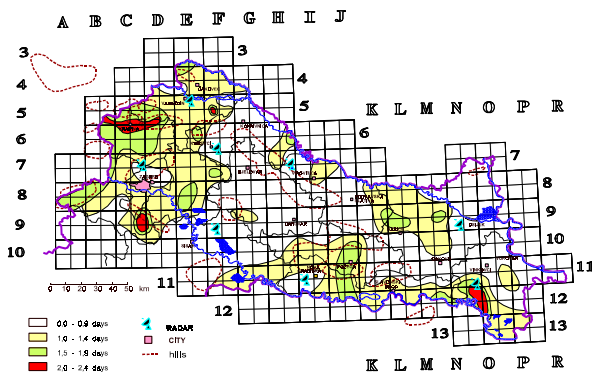


FIG. 1: Mean number of days with hail per season in continental part of Croatia (1981-2006).

III. RESULTS AND CONCLUSIONS

Spatial analysis of mean number of days with hail shows three different areas. Western (hilly) part is area with the greatest number of days with hail, specially are visible areas (Zagorje) with average more than two days per season. Middle flat area has mostly minimum days with hail, and the values ranges from 0,1 to 0,9 days (Fig.1). Eastern part is combination of these two above mentioned parts. Areas with low mountains have greater number of days with hail then parts that are completely flat (Pocakal, 2006). For all quadrants is calculated average duration of hail fall, using data from all stations. Analysis of spatial distribution (Fig.2) shows mostly longer average duration of hail fall in front of the mountain.

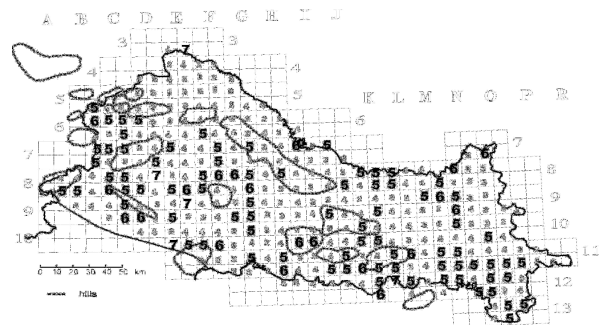


FIG. 2: Spatial distribution of average duration of hail fall (min.) in continental part of Croatia (1981-2006).

The analysis shows influence of orography, especially in the western part with some greater mountains, and this influence is seen primary in a greater number of days with hail and a longer duration (5-7 min.) of hail in front of the mountain.

IV. REFERENCES

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