ANALYSIS OF HAIL PAD DATA 2002-2006, COMPARED WITH THE RESULTS OF THE HAIL TEST PROJECT "STYRIA" ,1982-2001

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I. INTRODUCTION

Hail prevention activities in Austria were supported by the national weather service (ZAMG) from 1981 to 2001. Testing the efficiency of these weather modification activities (cloud base-seeding by aircrafts) hail pad-networks were erected. In the target area STK, Styria, 1982; there are 181 stations (HTP), a grid of 2 km, representing an area of about 730 km² northeast from the capital Graz. Hail monitoring by pads was continued during the following five years for working out hail showed decrease accidentally. Respectively due to the improvement of seeding technique and further equipment.

II. EVALUATION OF HAIL PADS AND RESULTS

In reference to the 20 year running hail pad project there were worked out for the years 2002 – 2006 statistically: the mean number of days with hail, the mean number of hit stations per hail event, a mean annual hailstone- spectrum, and the average amount of kinetic energy per hit station, yearly (season: April to September). Further the variability in time and space, as to hail frequency and hail intensity within three 5years- periods were compared: 1982-1986 (hail prevention activities by ground generators), 1997-2001 (seeding by aircraft, supported by weather radar images by Austro Control (air traffic management) and 2002-2006 (on line weather radar images and more detailed nowcasting) .

Table 1 shows the results of the mentioned parameters hailstone- spectra (ND=number of stones with a diameter of 5, 10, 15, … mm), frequency and size (HD= mean annual number of days with hail and HTP= mean number of hit stations per hail event, 1 HTP represents 4km²), and the intensity (E= the average of the amount of kinetic energy mean per hit station, Joule/m²)

ND	5mm	10mm	15mm	20mm	25mm
1982-1986	91,7	42,5	14,1	6,0	3,2
1997-2001	324,5	90,0	22,7	4,1	1,8
2002-2006	164,4	48,5	18,1	4,8	1,0

	HD	HTP	E
1982-1986	16,0	8,5	76,4
1997-2001	11,8	4,0	100,0
2002-2006	12,2	4,2	78,2

TABLE I: Hail pad average values.

Within the hailstone spectra the number of stones of the smaller sizes is increasing, of the larger sizes is decreasing. The yearly mean number of days with hail is decreasing from 16 (1982-1986) to 12 (during the last ten years). The mean number of hit stations per hail event is decreasing from 8,5 to 4,0 / 4,2 (1997-2001 / 2002-2006). The average of the amount of kinetic energy is increasing from 76 (1982-1986) to 100 (1997-2001), finally decreasing to 78 Joule/m² (2002-2006).

III. REFERENCES

Svabik O., 2006: Analysis of hail pad data, an accompanying investigation to operational hail defense companies in Austria. *ECAC2006, Lujbljana*.