FOG WATER COLLECTION IN CROATIA

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Abstract: Zavizan, the highest meteorological station in Croatia (1594 m) is equipped with instrument for collecting fog water. Fog water collection started with the Grunow type collector in 1954. In the summer of 2000., on Zavizan was installed a standard fog collector (SFC). This paper discusses the the daily fog water amounts collected with this new collector of the years periods 2000.-2004. during the warm part of the years. The highest daily collection rate was 27.8 l /m² on Octobar 8, 2003. The collected fog water in days without rain was 19.0 l/ m² on Octobar 16, 2000. The highest amounts of fog water were collected when the synoptic situation were characterised by west or southwest upper air current with the advection of moist air.

Keywords: *fog, fog water, Zavižan*

1. INTRODUCTION

The Velebit Mountain is spreading 150 km along the Croatian eastern Adriatic coast. It is the natural boundary between two climates: the maritime climate on the Adriatic, and the continental one on the landside.

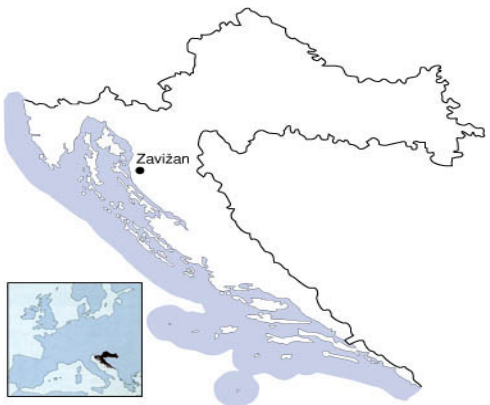

Figure 1. Geographical position of Zavižan in Croatia

In this distant places with a severe climate was located the highest mountain meteorological station in Croatia, Zavižan. The results of meteorological data from Zavižan included fog water and detailed discussion on the problem of measurements were presented, recently in a meteorological monograph (2003), celebrating the 50th anniversary of the weather station. The measurements of fog water in Croatia using Grunow type fog collector (for the 30 years period) and using the standard fog collector SFC were presented by Mileta (1998, 2003). This paper presents the results of fog water collection by SFC for the year period 2000-2004 during the warm part of the year.

2. OBSERVATION SITE AND DATA

The weather station equipped with SFC was located at the foot of Vucjak Hill on Northern Velebitt, 1694 m above sea level (45°49' N, 14°59' E). According to the distribution of wind direction, as shown in Figure 3, east and west are the most frequent winds direction at Zavižan. The collection of fog water by SFC began on Zavižan in summer 2000.

The methodology used has been described in Schemenauer and Cereceda (1994) and is based on the use of a standard fog collector (SFC) of 1 m.² of polypropylene mesh. The results presented here are the daily fog water amounts collected during different long periods in the warm part of 4 years (2000-2004). The data were obtained between July 27 and November 10 in 2000, May 16 and September 27 in 2001, June 26 and October 24 in 2002, July 3 and October 10 in 2003 and during June and September in 2004.

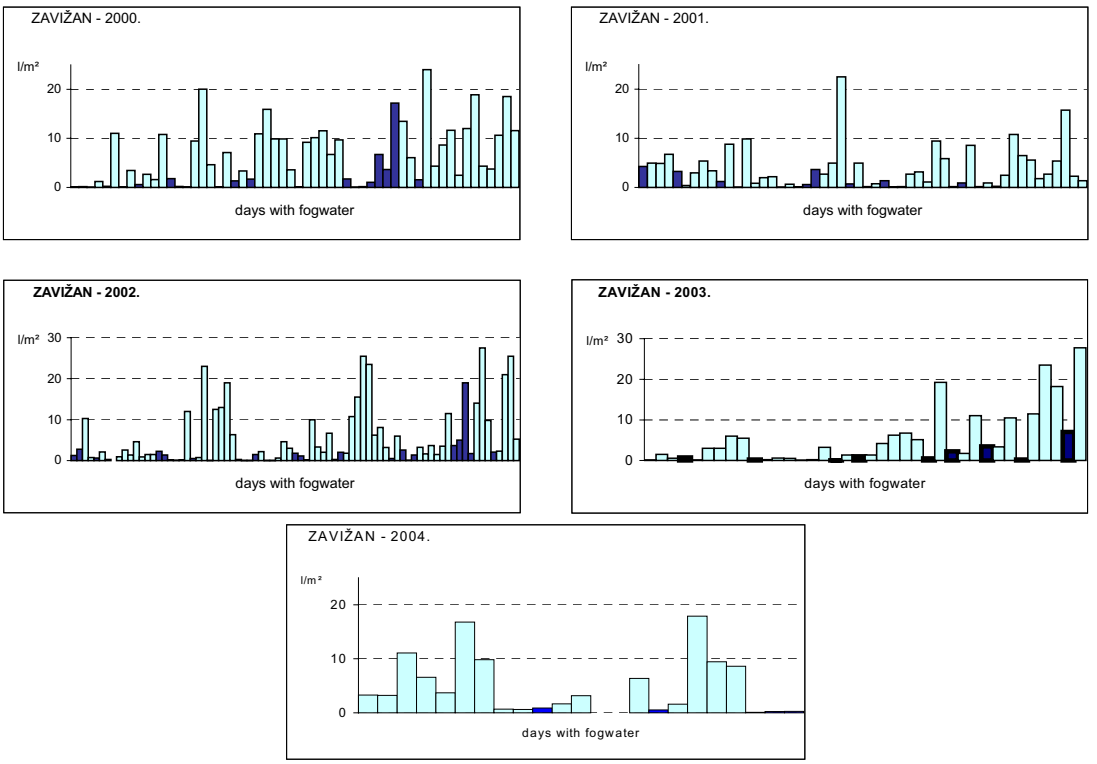

Figure 2. The daily amounts of fog water collected during the study periods of 5 years (2000-2005)

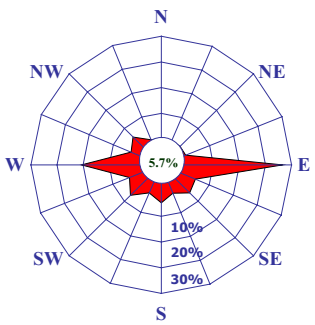

Figure 3. Distribution of wind direction at Zavižan

3. RESULTS

Daily collection of fog water during the study periods of 5 years are presented on Figure 2. The amount of fog water in days without rain has been shown with dark columns. Maximum daily collected fog water was in the end October and November, months with maximum days with fog (data in 2001 and 2003). The maximum one-day value was 27.8 l/m² on October 8, 2003 (in 2000 was 24.0 l/m², in 2001 was 22.5 l/m² and in 2002 27.5 l/m²).The highest daily collection rate in days without rain was 19.0 l/m² on October 16, 2002.

The wind direction in observed days with high daily amount of fog water as on October 7, 2003 and on October 16, 2002 were prevailing westerly. Synoptic situation on October 7, 2003 (Fig. 4) was characterised by west upper air current with advection of moist air from Atlantic and on October 16, 2002 (Fig.5.) was southwest upper current with advection of moist air from Mediterranean.

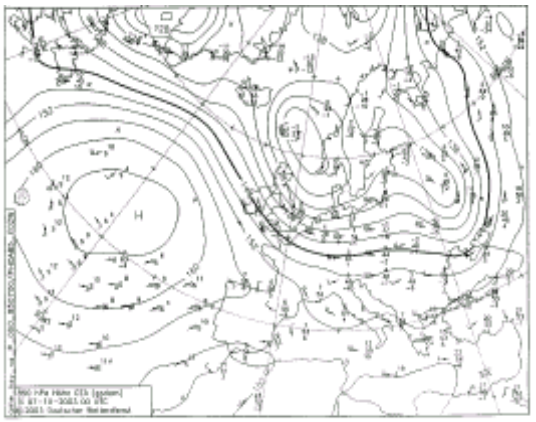

Figure 4. Synoptic situation on 7 October 2003

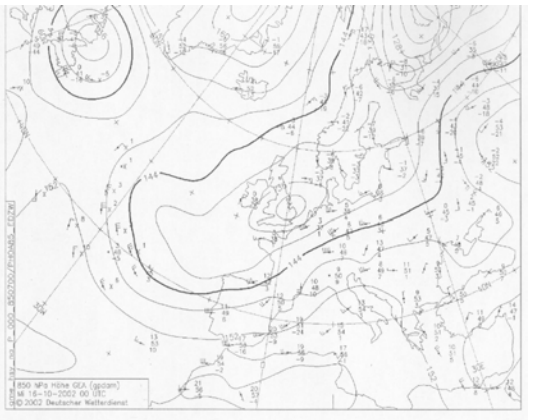

Figure.5 Synoptic situation (850 hPa) on 16 October 2002

4. CONCLUSION

The fog water collection on the mountain Velebit shows that there is a great potential of atmospheric water resource. These promising results on the mountain near the Adriatic cost represent opportunities to obtain a new water resource as an input for the restoration of the degraded vegetation after a forest fire. Some of these areas have suffered during many forest fires. Except watering of plants and irrigation fog water can be intercepted in order to supply water for domestic needs as on the meteorological station Zavižan located in the Northern Velebit National park where many visitors come every year.

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