# THE CLIMATIC AND TOURIST POTENTIAL OF THE RESORT STÂNA DE VALE IN THE SUMMER SEASON EXPRESSED THROUGH BURNET, POULTER AND HUGHES INDICES

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**Abstract:** The paper presents the climatic - tourist potential of Stâna de Vale on the basis of daily data and meteorological observation during 1979 - 2000 in Stâna de Vale. The information was adapted by virtue of three climatic and touristic indexes all these emphasizing a high climatic and touristic potential during the summer season. The results of this scientific approach constitute a favourable pleading in sustaining the tourism's development through the infrastructure's development (mostly that of the roads) within Stâna de Vale SPA and its surroundings.

Key words: climatic turistic potential, Spa Stâna de Vale

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# **INTRODUCTION**

In the field of tourist climatology numerous indexes and methods were elaborated across time to highlight the climatic tourist resources of a region. In the present paper we have used three of the best known basic indexes applied in the tourist climatology: the spa climatic index of L. Burnet (1963), R.M. Poulter (1962) index and the one elaborated by G.H. Hughes (1967).

Placed in Vlădeasa Mountains, at an altitude of 1100 metres, on the upper river of Iadului Valley, Stâna de Vale SPA has a high natural touristic potential (figure 1). This potential is given by the existence of the oligomineral waters, by the tonic bioclimate (characterized as having a low atmospheric pressure and an intense solar radiation) and by the high air ionization. These are also the main motivators regarding the touristic traffic within this area.

Stâna de Vale SPA is recommended in medical attendance for those who suffer from the following deseases: endocrine disorders (benign hyper-tyroidism, incipient Basedov desease, following a treatment of medicaments), breathing disorders (asthenic neurosis), weakened organism, asthenias, physical and mental overstressing, children growth disorders and so on.

Among the natural touristic resources the relief has a remarkable importance both by its function of supporting the touristic activities and by various figures which represent the touristic sights. Some of these are retainable: Wonders Spring, Waterfall Vălul Miresei, Iadului Valley, Waterfall Săritoarea Iedutului, and so on (figure 2, 3, 4).



Figure 1. Main tourism and administrative units of Stana de Vale Depression



Figure 2. Wonders Spring (Photo: Alexandru Ilieş)



Figure 3. Waterfall Săritoarea Iedutului (Photo: Alexandru Ilieş)



Figure 4. Waterfall Vălul Miresei (Photo: Alexandru Ilieş)

At this moment these are poorly capitalized from the touristic point of view for various reasons of which one can remark the rundown of the infrastructure, mostly that of the roads.

The access to the SPA is possible on the European road E79 (National Road DN76 Oradea - Deva) to Beiuş, then on the county road DJ764A from Beiuş – Stâna de Vale. Stâna de Vale SPA is placed in Bihor County, at aproximately 86 kilometres far from the Oradea uptown, which is the main urban centre and an important source of tourists.

The touristic accomodation is represented by Iadolina Hotel, Wonders Spring Villa, Lilac Villa, Hera Villa and the Pension Rustical House. Among these Iadolina Hotel is remarkable offering 50 double rooms, one single room and 5 appartments (figure 5).

Stâna de Vale is a starting point for trips (to the Wonders Spring, Waterfall Săritoarea Iedutului, Bears Cave, Meziad Cave and so on), mountaineerings on 16 marked trails, open-air grill, camp fires, festive meals and symposiums. During the winter, the ski slope is equipped with teleski. Besides ski one can practice sleighing, snowbord and so on.

### DATA AND TOOLS

The paper was carried out on the basis of daily meteorological observation data since 1979-2000 from the weather station Stâna de Vale. The data were processed on the basis of the basic indexes carried out by:

a) L. Burnet (1963), who attempts to assess quality of the tourist season through the formula:

$$SCI = \frac{N}{T}$$
(1)

SCI – spa climatic index;

N – number of rainy days;

T – average air temperature.

b) R.M. Poulter (1962), who determined the quality of the tourist season according to the realtion:

$$SI = 18T + 0,167I - 0,2 P + 320,$$
(2)

SI - seasonal index ;

T - average air temperature;

I – length of sunshine totalled in the respective period;

P – sum of rainfall quantity in the analysed period;

320 - invariable.

c) G.H. Hughes (1967) who devised the formula:

$$Ih = Tx + 0.045I - 0.2 Pr, (3)$$

 $Tx-average \ of maximum \ temperatures \ registered \ in the \ respective \ period;$ 

I – length of sunshine totalled in the respective period;

Pr – number of rainy days.

#### REZULTS

#### The Monthly Tourist Clime Potential of the Resort Stâna de Vale

By analysing the monthly tourist clime potential of the bathing resort Stâna de Vale according to the climatic spa index of Burnet (1963) we can note that the most favourable month is August (when the anticyclone weather is prevalent and characterized by high temperatures and little rainfall) with an index of 1,0, followed by July with an index of 1,3, respective June and September with an index of 1,6 and respective 1,4 (table 1).

Month	Ι	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
ICB	-3,2	-3,2	-10,6	6,3	2,3	1,6	1,3	1,0	1,4	2,4	-113,3	-4,9

Table 1. Spa climatic index of Stâna de Vale (1979-2000)

The lesser clime tourist potential is conspicuous in the winter months (when the stratiformi clouds produce much rainfall and the temperatures are low), namely in November with an index of -113,3, followed by March with -10,6 and December with -4,9 (table 1).

R.M. Poulter's formula (1962) is more complete because it also takes into account the sunshine duration and it indicates a higher climatic and tourist potential in July when the index amounts to 562,6, followed by August with 561,4, June with 525,0 and September with 476,9 points. In winter the potential is the lower and it registers only 212,0 points in January, 229,5 points in February and 232,1 in December (table 2).

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Month	Ι	II	III	IV	V	VI	VII	VIII	IX	Χ	XI	XII
IS	212,0	229,5	286,4	362,9	469,3	525,0	562,6	561,4	476,9	405,6	306,3	232,1

 Table 2. Poulter's climatic tourist index at Stâna de Vale (1986-2000)

The same features of the monthly climatic tourist potential are also indicated by G.H. Hughes's formula (1967), namely a higher potential in August with 27,1 points, followed by July with 25,6 points, June with 21,6 points and September with 19,9 points. The most unfavourable months are in winter when the index's value registers only -1,1 points in January, 0,4 points in December and 1,7 points in February (table 3).

 Table 3. Spa Climatic Index at Stâna de Vale (1986-2000)

Month	Ι	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Ih	-1,1	1,7	6,4	11,2	18,5	21,6	25,6	27,1	19,9	15,3	5,3	0,4

# THE SEASONAL CLIMATIC TOURIST POTENTIAL OF THE BATHING RESORT STÂNA DE VALE

By analysing the seasonal climatic tourist potential (June, July, August, September) it was ascertained that the bathing resort Stâna de Vale and its surroundings have an outstanding climatic resource, supported by the value of the Burnet spa climatic index lower than 3 registered in all warm seasons during 1979-2000, with a multi-annual seasonal average of 1,3. According to this index a certain area has a high climatic tourist potential if its value is lower than 3, it has a satisfying potential if the value of the index is between 3 and 8 and if its value is higher than 8 it is considered that the potential is reduced. (table 4, figure 6).

Years	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
ICB	5,8	6,4	5,4	5,1	5,2	6,2	6,0	5,1	3,8	4,0	6,7
IS	-	-	-	-	-	-	-	548,0	606,2	564,9	473,6
Ih	-	-	-	-	-	-	-	42,3	47,0	44,2	29,0

Table 4. Spa Climatic Index at Stâna de Vale (1986-2000)

Years	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
ICB	5,8	4,6	4,0	5,1	4,4	5,7	5,9	6,3	6,0	4,7	4,2
IS	543,3	535,4	605,4	554,4	619,6	499,8	471,4	479,0	467,8	589,0	609,7
Ih	40,4	43,1	51,2	42,6	47,1	38,2	31,3	32,4	34,7	37,3	44,8

The high seasonal climatic tourist potential of the bathing resort Stâna de Vale as highlighted by Poulter (IS) and Hughes (Ih) indexes, which compared to Burnet index also take into consideration the sunshine's duration. Thus according to Poulter's index the highest climatic tourist potential was registered in the summer of 1994, when the index's value amounted to 619,6 points (table 4, figure 7) duet o the high average temperature of 13,30C, the long duration of sunshine with 853,4 hours in the respective period and the low rainfall: 411,8 mm.





Other summer seasons with a high climatic-tourist potential stretched over 2000 - 1987, when Poulter's index registered 609,7 points, namely 606,2 points.

Hughes's index indicated the highest climatic-tourist potential in the season of 1992, when it reached 51,2 points (table 4, figure 8) and the maximum average temperature in that season were of 20,20C, the totalled duration of sunshine was of 907,0 hours, and the number of rainy days in that summer season was of 49 days.

Other summer seasons with a high climatic tourist potential were registered in 1994, 1987 and 2000, when Hughes's index reached values of 47,1 points, 47,0 points and 44,8 points (table 4, figure 8).

## CONCLUSIONS

a) The bathing resort Stâna de Vale and its surroundings have a high natural tourist and man-made potential obvious in the relief's configuration by the climate of the intra-mountainous depression with average climatic values, by the fashionable hotels and pensions etc.

b) The seasonal monthly and annual is very high climatic-tourist potential, as highlighted by the values of the three calculated indexes.

c) The indexes do not indicate the same year with a maximum potential (due to the different calculation formulae) but they indicate the same years with an extremely high climatic-tourist potential, namely 1987, 1988, 1992, 1994, 1999.

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#### REFERENCES

Burnet L., (1963), *Villégiature et tourisme sur les côtes de France*, Hachette, Paris, Bibliothèque des Guides Bleus, 484 p. Dragotă Carmen, Gaceu O., (2004), Le potentiel climato-touristique du littoral de la Mer Noir dans la saison d'été, XVIIe COLLOQUE INTERNATIONAL DE CLIMATOLOGIE, 285-288.

Hughes G.H., (1967), Summers in Manchester, Weather, t, XXII, 5, 199-200. Poulter R.M., (1962), The next few summers in London, Weather, t. XVII, 8, 253-257. Buskirk M., (eds), (1991), The destruction of Tilted Arc: Documents, MIT Press.

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