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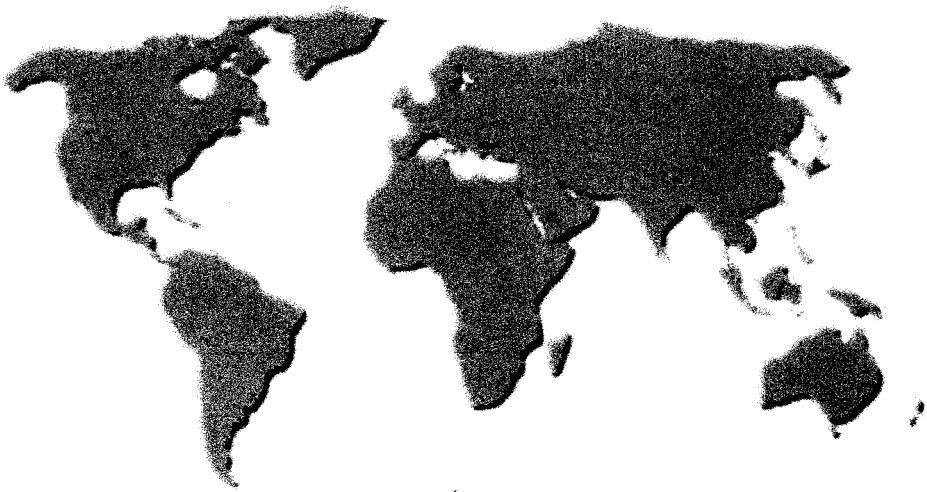

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The Role of Climatic and Bioclimatic Conditions in the Development of Health Tourism Product

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ABSTRACT
The aim of this paper is to discuss the concept of health tourism product as a competitive tourism product with a focus on Ikaria Island, Greece. The diversification of the health tourism product is explored and the study identifies key components for a successful development of a spa resort. The paper also examines the prospects for the thermal/mineral springs of Ikaria Island, taking account of the climatic and bioclimatic regimes of the area. The study concludes that there are prospects for future development if the spa product is diversified. This, in combination with the good climatic conditions of the area, can be a starting point for providing services in order to satisfy potential clients.
Keywords: Health tourism, product diversification, climatic and bio-climatic conditions, Greece.

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INTRODUCTION

Tourism's health-related components for therapeutic purposes are not new. Many people in ancient times traveled to mineral springs for their alleged curative properties and for relaxation. In Ancient Greece, Herodotus noticed spas and Hippocrates studied the diseases for which mineral waters were prescribed. During the Roman period spas were used for treatment and fun, but after the fall of the Roman Empire many of the public baths were closed or fall into disuse. In the 18th and 19th centuries spa towns thrived through offering cures. Because one could take only a certain daily amount of baths, visitors made use of spas for a short period during the day. Consequently, visitors spent much time in other activities. Spas started to provide other services irrelevant to medicine, such as theatres, libraries, operas, casinos, and so on. As a result, in the beginning of the 20th century, spas had become fashionable places which were visited by many people. There was a shift in emphasis from health to pleasure and a symbolic relationship between health and recreation could be seen in the structures of most spas (Gilbert and Van De Weerdt 1991; Winghtman 1985).

The acceptance of the value of spa treatment by the medical profession, led to the creation of smaller and more specialized spas, concentrating more on the curative characteristics of "waters". The effect was that the combination of entertainment and treatment gradually weakened. The next step in the history of spas was the willingness of social security systems and insurance schemes in European countries to reimburse the cost of spa treatment, e.g. Germany, France, Italy. As a result, spas and health resorts enjoyed the patronage of clients supported by medical insurance companies, whether private or state-run. The profile of this spa's clientele was 40 years of age, or more, with having health problems requiring treatment for specific illnesses. Nevertheless, some western European spas remained significant forces in the travel and tourism industry as focused their attention not only on the cure of several ailments but on the improvement and prolongation of health in a leisure environment.

Nowadays, the health tourism market in Europe spans two different segments: (1) those visiting spas and health resorts for primarily medical reasons, and (2) those who tend to enhance both physical and psychic well-being or search for a few days of cosseting and pampering. The response of the tourist industry to these trends was to create health resorts offering spa treatments, relaxation and activities. However, the majority of spas are actually located in rather bleak environments and hotel facilities are frequently very simple with no luxuries (Cockerell 1996).

In Greece, the evolution of hydrotherapy temporarily ceased at the end of the Byzantine times, but duly commenced again with the exploitation of the spas at the beginning of the 20th century. The first balnear stations were those of Ypati, Aidipsos, Kyllini, Loutraki and Kaiafas. Many spas, because of their proximity to the sea, became fashionable resorts which attracted not only

those who "taking the waters" but also many tourists. However, in the late past of the twentieth century, many spa towns lost custom to the emergent, livelier, seaside resorts. The prospects of a development of health tourism in Greece, by using mineral water of spas and other elements of curative quality are significant because there are many mineral springs, all over the country, with different chemical characteristics. As defined by Greek National Tourist Organization, there are currently 16 spa centers operating in Mineral Water Sources of national importance (Table 1) and 40 spa centers operating in Mineral Water Sources of local importance (Table 2). It is essential to mention that the increase of the demand is crucial for the future of the Greek health tourism. For the realization of that goal, it is necessary for a specific market to provide appropriate tourism infrastructure and to make up a complete product that includes the necessary services and activities. The differentiation and enrichment of the composition of the product can be a comparative advantage in relation to competitors of neighboring countries.

It is difficult, or challenging, to describe the 'new spa' approach that must penetrate the strategy of spa operators but the forces that affect this segment of tourism and the commercial value of natural mineral springs must be clearly

Table 1. National Mineral Springs/Spas, Greece

Name of mineral spring	Location	Department	Kind of mineral spring
Edipsos	Loutra Edipsou	Evia	Saline water spring
Elefteres	Eleftheres	Kavala	Alcaline saline water spring
Ikaria	Agios Kirykos	Samos	Radioactive super warm spring
Kaiafas	Zakharo	Ilia	Sulphurated hydrogen saline water spring
Kamena Vourla	Kamena Vourla	Fthiotida	Radioactive – saline water spring
Kythnos	Kythnos	Kyklades	Chalybeate acid water spring
Kyllini	Kyllini	Ilia	Sulphured hydrogen saline water
Lagadas	Lagadas	Thesaloniki	Akratothermi
Loutraki	Loutraki - Perachora	Korinthia	Slightly warm – saline water, hypotonic
Methana	Methna	Attiki	Sulphureous brine water spring, warm
Nigrita	Nigrita	Serres	Alcaline carbonated water spring
Platystomo	Platystomo	Fthiotida	Alcaline sulphureous spring
Smokovo	Loutropigi	Karditsa	Alcaline – sulphureous spring
Vouliagmeni	Vouliagmeni	Attiki	Saline water spring, hypertonic
Ypati	Ypati	Fthiotida	Sulphurated hydrogen saline water spring

Source: Greek National Tourist Organization

Table 2. Mineral Water Sources of Local Importance

Mineral Spring	Location
ADAMAS	Community of Adamas- Milos
AGIASMATA	Community of Leptopoda - Volissos - Hios
AG. FOKAS	Municipality of Kos – Kos
AG. IOANNIS	Community of Lisvori - Mytilini
AG. NIKOLAOS	Community of Ag. Paraskevi - Halkidiki
AG. VARVAROS	Community of Tryphos - Etoloakarnania
AMARANDOS	Community of Amarandos - Ioannina
AMMOUDARA	Community of Ammoudara - Kastoria
ARACHOVITIKA	Community of Arachovitika - Patra
DRANITSA	Community of Ktimeni - Makryrachi - Karditsa
ECHINOS	Community of Thermae - Xanthi
EFTHALOU	Community of Mithymna - Lesvos
GENISSEA	Community of Nea Kessani - Xanthi
GIALTRA	Community of Gialtra - Evia Zip
HANOPOULOS	Arta
HELOVA -BANIOTI	Municipality of Angelokastro - Messolonghi
IREA	Municipality of Irea - Arkadia
KAVASSILA	Community of Konitsa - Ioannina
KOKKINO STEFANI	Community of Myrtia – Agrinio
KOLPOS GERAS	Municipality of Mytilini - Lesvos
KREMASTA	Community of Alevrada - Agrinio
KRINIDES	Municipality of Krinides - Kavala
LOUTRAKI (PELLA)	Community of Loutraki - Aridea - Pella
MANDRAKI	Municipality of Nissyros
MOURSTIANOS	Community of Lysimachia - Messolonghi
N. APOLLONIA	Community of Nea Apollonia - Thessaloniki
PALEOVRACHA	Community of Paleovracha - Spercheiada
PIKROLIMNI	Kilkis
POLYCHNITOS	Municipality of Polychnitos - Lesvos
PREVEZA	Municipality of Preveza
PSAROTHERMA	Municipality of Samothraki
THERMI THESSALONIKIS	Venizelou 45 - Thessaloniki
SELIANITIKA	Community of Selianitika - Eghio
SIDEROKASTRO	Siderokastro - Serres
SOUVALA	Community of Vathi - Egina
STACHTI -PORIARI	Municipality of Pyllini - Nafpaktos
THERMI -KALYMNOS	Municipality of Kalymnos
THERMI - LESVOS	Municipality of Thermi - Lesvos
TRAIANOUPOLIS	Municipality of Alexandroupolis
XYLOKERA	Pyrgos

Source: Greek National Tourist Organization

stated. Thus, the objective of the study is to discuss the concept of health tourism product, to identify the necessary presuppositions for the development of a health tourism product competitive both in national and international level and to provide an overview of spa tourism in Greece, especially in Ikaria Island. As climate is one of the natural factors that one give great attention for his choice of the most suitable hydrotherapy center, the role of climatic characteristics pertaining to Ikaria's spa tourism, shows a particular interest.

DEFINING HEALTH TOURISM PRODUCT

Medicine or tourism? The answer to this question is very difficult. Health tourism lies between a continuum medical, therapeutic type of health facility, to a much more leisure oriented diversified product. It is not easy to develop a firm definition of what spa is. The term in many cases is used to describe a range of health-oriented vacation opportunities especially in the US. In Europe, for the main part, it is a combination of soaking up the curative powers of mineral waters combined vacation with pleasure. Goodrich and Goodrich (1991) define health tourism as an attempt on the part of a tourist facility or destination to attract tourists by deliberately promoting its health-care services and facilities, in addition to its regular tourist amenities. These health-care services may include medical exams, hydrotherapy, special diet, etc (Goodrich and Goodrich 1991). Countries with health-care tourism facilities are Japan, the US, Germany, Italy, France, Switzerland and Austria (Bywater 1990; Lund 1996). Although having spa centers and a health resort industry, such countries as Spain, Portugal and Greece are mainly geared to the home market and not towards an international clientele (Gilbert 1991). Many of the health tourism facilities have grown up around mineral/thermal springs (Goodrich 1994).

With today's growing enthusiasm for health and fitness, health tourism services have expanded to permit spas, thalassotherapy centers and health resorts to tap a potentially receptive market (Cockerell 1996). The previous generation of visitors to spas used to stay in relatively spartan surroundings, but today for the development of this specialist tourism sector, diversification of, and improvements in the given product is demanded. A high quality and competitive product must not only cover the needs of those who receive therapeutic treatment but also the needs of those who attend sports programs and exercise classes, search a few days of cosseting and pampering, try to renew their psychic and spiritual self as well as physical well-being, receive a treatment in the context of a health holiday, and preventively receive a treatment (Hall 2003).

A modern spa has to offer unique environments for exercise and treatment. The more sophisticated resorts ought to have advanced features so one can cater for treatment at the one part of the resort while in the other part there is something for everyone. Complementary activities increase visitor satisfaction. The attractiveness of a health spa could be improved by performance of

pleasure activities, as cultural, sporting and special events. For the success of this diversified health tourism product, German experience suggests taking account such key components as a pleasant, varied and well organized stay, high standard of spa treatment from professional staff, suitable diets of good quality with many tasting choices, variety of exercising programs (open air exercise in attractive parks or woodlands or exercise classes at fitness room), good accommodation facilities and good service, and ancillary facilities as a "mix" of recreation and hydrotherapy help in the revival of the person (Low 1989; Cooper and Fletcher and Westlake 1995).

The interest for health resorts is growing. The management and marketers must recognize the needs of the specific tourism segment and to identify visitor profiles and expectations. Devising a competitive strategy a focal point must be the demonstration of the reasons which make a spa different and the better spa destination. The local occurrence of natural resources is an important determinant of the destination image, the easy accessibility through normal means of transportation as well. A survey among spa operators in the US identified the following factors that generally influence a consumer's spa choice: ambience of the destination, location and access, spa programs and facilities, and characteristics of the visitors to this destination, e.g. average age of the visitors (Stein, Dev and Tabacchi 1990).

Services provided at a spa/health resort that uses mineral/thermal water, emanate from the chemical characteristics of water and the geographical position of mineral spring. The chemical characteristics of water are of major importance for those who would like to follow a treatment for each type of ailment because one must "take water" with specific characteristics. The geographical position of mineral springs determines the auxiliary facilities offered. The presence of auxiliary facilities (pools, physiotherapy, exercise or movement, natural therapeutics agents (muds), beauty center, etc) are now having a major respect in the preferences of the visitors, and as a result of this, are important elements for the future development of a spa (Meler, Ruzic and Kovacevic 1996).

PLANNING AND DEVELOPING A SPA

Spas today can have many forms and emphasize certain treatments. This is a necessity as spa visitors look for a wide range of different activities or treatments designed to satisfy different needs. These should be carefully planned for a successful development. Lund (2000) suggests that a spa plan must have the following: vision, mission, goals, objectives and strategies. Every strategy ought to have an overall objective for who it wants to attract. Any spa must adopt a conceptual framework for translating its vision into a set of performance indicators distributed among the four perspectives of management: finance, customers, internal processes and learning and growing. All of the four perspectives are made operational by defining goals, measurements, target numbers and initiatives. Dimensions that are part of a spa and should, for

the most part, be incorporated into its development are natural factors (water quality, climate), efficient medical equipment, specialized doctors, professional staff, comfortable accommodation, dietary food, unspoiled environment (needed for the achievement of harmony), spare time activities, variety of sports activities, and lifestyle patterns or rhythms (Lund 2000; Ogorlec and Snoj 1998).

Prevention must represent an important percentage of all the activity (cure) one undertakes. The medical control have to be present but discreet. The parameter that also is of great importance is the environment. The environmental care is a marketing potential for spa resorts. Next to the price and quality offered, consumers tend more and more to consider the environmental effort as a determination choice. In order to manage the growth of spa tourism in such a way as to ensure that it can be commercially successful through a quality development, the pattern that will be established must avoid environmental degradation. The success of a spa is not accidental. Among processes that a spa manager can follow include understanding of visitors, profile definition, comfortable facilities, proper functioning system, continually training for special programs and hydrotherapy services, adjustment to new trends, andsuitable promotion to offer spa packages that group several spa services is an effective merchandising technique (Monteson and Singer 1992).

The marketing and promotion of health care tourism product is necessary because health tourism is geared toward particular market segment. Surveys should be conducted to recognize visitor needs concerning different health resort programs. A person traveling to a spa wants an environment that focuses totally on the spa experience. Professional staff, educated and trained is an important enhances the visitors' experience. Furthermore, because so much of tourism is down to ephemerals, such as expectations, experience, feelings, emotions, it is important to concentrate on developing an appropriate image of the place that will help to encapsulate some of these senses and so increase the overall appeal of the spa.

Health tourism facilities may function 12 months a year providing services such as medical examinations, hydrotherapy (e.g. bathing, inhalations, nose rinsings), pools, physiotherapy, exercise or movement, natural therapeutics agents (muds), beauty center, etc. Treatment facilities can be used not only for spa treatments and cures but also for programs that refresh and revitalize the body and mind. Those programs refer to reducing weight, quitting smoking and drinking, eliminating or reducing stress, skin treatment, muscle development, etc. If there are constraints in creating and operating a spa that will provide all services (treatment, accommodation and ancillary facilities), it is preferable to operate a hydrotherapy center. In this case, hydrotherapy centers must be adjusted to the demands of contemporary clients and their needs.

Diversifying the product is not the only parameter for a successful development. For many people spa and hydrotherapy centers are places for the ill. As image has been shown to be an important influence in the selection of vaca-

tion destinations, this image of the spa must change in order to attract and keep new market segments. The image concept has generally been considered as an attitudinal construct consisting of an individual's mental representation of knowledge (beliefs), feelings, and global impression about a destination (Baloglu and McCleary 1999).

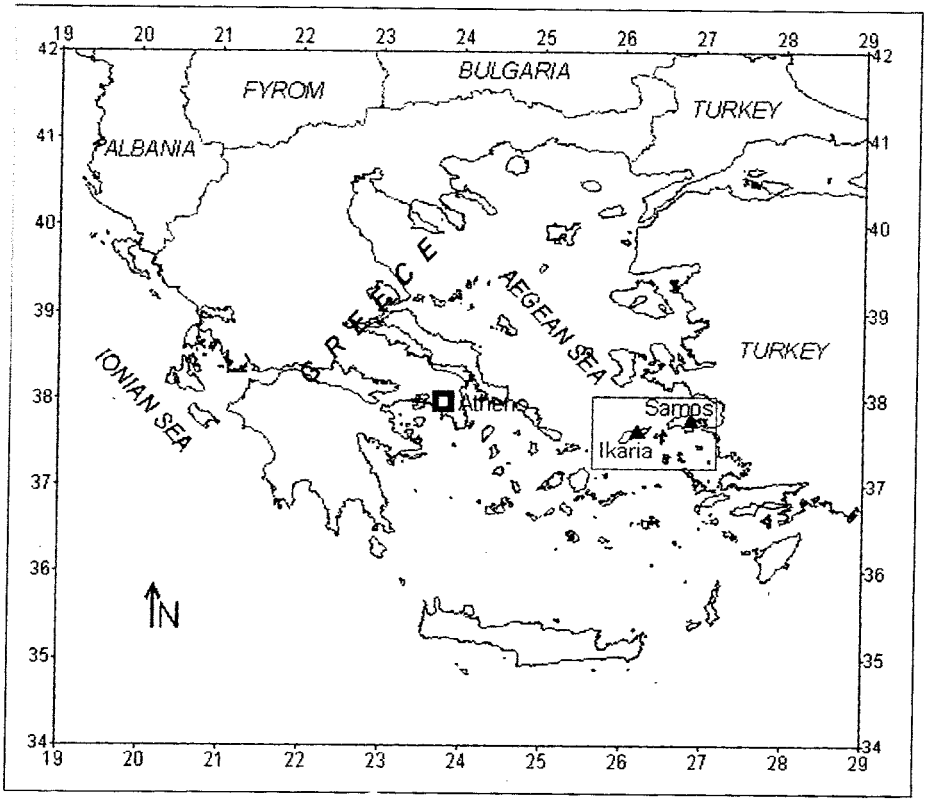
In any tourism policy relating to future health tourism products, it is essential to reinforce quality as a crucial function. Quality elements of the provided product include prime attractions and built environment (e.g. condition of the physical layout, facilities according to the type of services provided, diversity of facilities, resort location), supporting supply services (e.g. accommodation, catering and refreshment, medical and other programs, entertainment, recreation), personnel (e.g. staff appearance, professional skills, reliability of services, recognition of the visitors' needs) and other attributes (e.g. destination image, safety and security) (De Keyser 1997; Ogorlec and Snoj 1998). Quality is the most important enabler for customer satisfaction and therefore should be dealt with in a proper manner. A quality service both satisfies and delights spa visitors. To match their expectation is a necessary prerequisite for the financial standing of any spa center. The quality approach has one major goal: profit and revenue growth obtained through satisfied customers.

SPA TOURISM IN IKARIA ISLAND, GREECE

Ikaria Island is a small Island in Aegean Pelagos (Figure 1) with a significant asset of thermal/mineral springs. This resource can be developed in such a way so as to contribute to the financial development of Ikaria. To make any assessments of the optimum level of utilization of the springs, a study was needed for estimating several factors such as infrastructure, facilities, surrounding attractions, the transportation and communication system, existing and future management systems. To define the characteristics of Ikaria's health tourism market, secondary and primary data sources were collected. Secondary data consist of information about hot springs, individuals using the springs, bathing or other hydrotherapy offered. Primary data collection was made through a survey questionnaire, to visitors of the springs. The research was conducted in August 2000 by collecting 109 questionnaires from spa visitors.

All spas in Ikaria are listed according to their temperatures as middle-temperatured (35-50 °C) and over-temperatured (>50 °C), when relating to their chemical structure in radioactive sodium-chloride springs. These variables are shown in Table 3. The waters of Ikaria are recommended for arthrosis and bone disorders, nervous complaints, gynecological disorders, endocrinological disorders, rheumatism, and arthritis. At this point, it is necessary to point out that the use of "water" is considered to be supplementary to other medical and, when taking the "waters" as part of a holistic approach to physical and mental well-being.

Figure 1. Geographical positions of Ikaria and Samos Islands



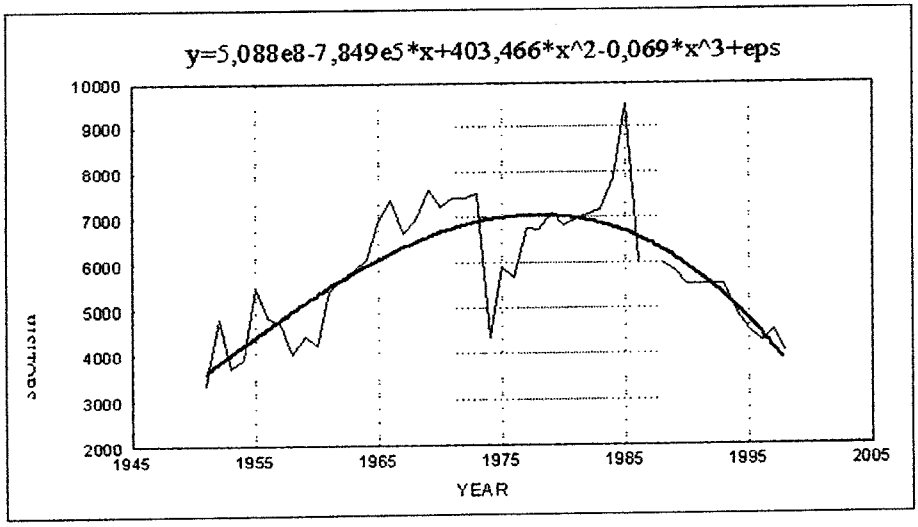
Statistical data of Ikaria's mineral springs are concerned about individuals using the spring, bathings or other hydrotherapy for the period to 1951 to 1998 (Table 4). Analysis of the data (Figure 2 and 3) indicated a trend of decline, indicating a need to tap a new receptive market. To achieve this

Table 3. Mineral Springs of Ikaria Island

Name of mineral spring	Place	Temprature (°C)	Radiocativity (Mache)
Apollon	Therma	45,4	557
Artemis	Therma	50,4	754
Kratsa	Therma	46,8	240
Pamphili	Therma	52,4	80
Spilaion	Therma	52,8	65
Moustapha	Agios Kyrikos	43	350
Agia-Kyriaki	Pharos	40,3	54
Thermo	Thermo Lefkados	58,7	9
Chlio-Thermo	Thermo Lefkados	33,5	32

Source: Greek National Tourist Organization

Figure 2. Individuals Using the Springs of Ikaria's Island within 1951-1998 and the Polyonemic Trend



requires improvements in facilities, equipment and a need to develop ancillary services that could appeal to other than those simple seeking a cure for physical disabilities.

The research findings showed that 94% of the visitors are over the age of 50, and that 84% stayed for more than 14 days. This percentage combined with

Figure 3. Bathings or other Hydrotherapy Effected at Mineral Springs of Ikaria's Island within 1951 and 1998 and the Polyonemic Trend

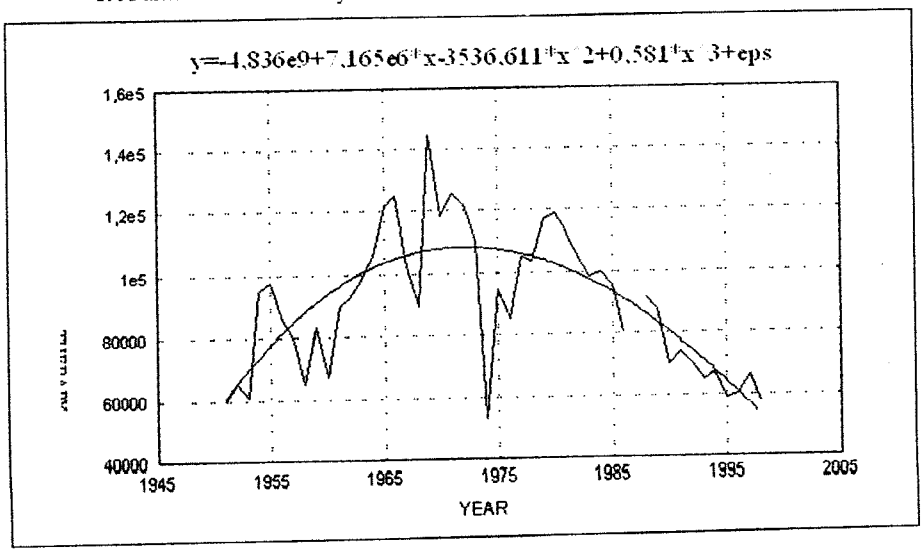


Table 4. Individuals Using the Springs of Ikaria Island, and Bathings or other Hydrotherapy (1951-1998)

	Year	Individuals using the springs	Bathing etc. affected		Year	Individuals using the springs	Bathing etc. affected
1.	1951	3339	60046	25.	1975	5896	95000
2.	1952	4808	65502	26.	1976	5672	85200
3.	1953	3672	60946	27.	1977	6730	105400
4.	1954	3894	94967	28.	1978	6717	104000
5.	1955	5481	97686	29.	1979	7075	116800
6.	1956	4832	85655	30.	1980	6810	118300
7.	1957	4662	79280	31.	1981	6949	112400
8.	1958	4003	64997	32.	1982	7051	105200
9.	1959	4414	83574	33.	1983	7149	98600
10.	1960	4191	67599	34.	1984	7855	100000
11.	1961	5367	89425	35.	1985	9500	96000
12.	1962	5668	92562	36.	1986	6000	80000
13.	1963	5838	98200	37.	1987		
14.	1964	6099	105800	38.	1988	6000	91500
15.	1965	6915	121200	39.	1989	5800	87500
16.	1966	7377	125200	40.	1990	5500	70300
17.	1967	6623	102400	41.	1991	5500	74000
18.	1968	6911	89779	42.	1992	5500	70000
19.	1969	7610	145037	43.	1993	5500	65200
20.	1970	7227	118052	44.	1994	4850	67300
21.	1971	7404	125549	45.	1995	4500	59000
22.	1972	7411	121660	46.	1996	4250	60200
23.	1973	7517	110666	47.	1997	4500	66400
24.	1974	4334	52953	48.	1998	4000	57600

Source: National Statistical Service of Greece

the number of repetitive years for which these people visited springs illustrates a serious problem (Table 5). The area of the springs (Therma-Ag. Kyrikos) is an area with the least tourism development on Ikaria and if springs are not properly developed offering a diversified product, Ikaria's health tourism will diminish as a traditional clientele is gradually being lost as they age. An important percentage of visitors (24%) are not subsided visitors. This shows a historic belief in the value of spa treatments. Moreover, a very important part of them (62%) was found to be willing to pay extra money to have better services. Of the visitors, 96% are not resident in Ikaria. The survey also found criticisms of sea and air transport, but also 40% were in favour of more fully serviced packages. To sum up, for the auxiliary facilities, the number of people searching for beauty services is moderate and closely connected with the average age of visitors, which is 67.5 years (Figure 4).

Table 5. Visiting Years and Duration of Visit

	Days of Stay					
Visiting Years	**1-7**	**8-14**	**15-21**	**>21**	**No answer**	
1-9	6	3	27	3	1	40
10-15		1	29	5		35
16-20			15		1	16
>20			11	1		12

The creation of modern spa or hydrotherapy centers, in combination with other natural factors (location, climate, and sea), may help regional development. To permit conclusions about the future prospects of health/spa tourism on Ikaria, the climatic and bioclimatic characteristics of this area must also be examined. The only meteorological data available are from Samo's metereological station and consist of monthly data of precipitation, days of precipitation, air temperature and humidity, for the period 1960-1996.

In an assessment of the climatic regime of Samos (and of course of Ikaria island), the mean monthly data were estimated. In the process the annual variation of air temperature and precipitation along with a polynomial fitting curve is presented in Figure 4. It is obvious that both the air temperature and the precipitation follow a simple variation. The air temperature reaches its peak (27.5 °C) in July while the precipitation reaches a minimum (1.9 mm) in August. The simultaneous variation of air temperature and precipitation presented in Figure 5 reveals the duration of dry periods. Hence, the annual variation of air temperature, when above the annual variation of precipitation, determines the dry period, from May to September.

Figure 4. Available Services at Spas

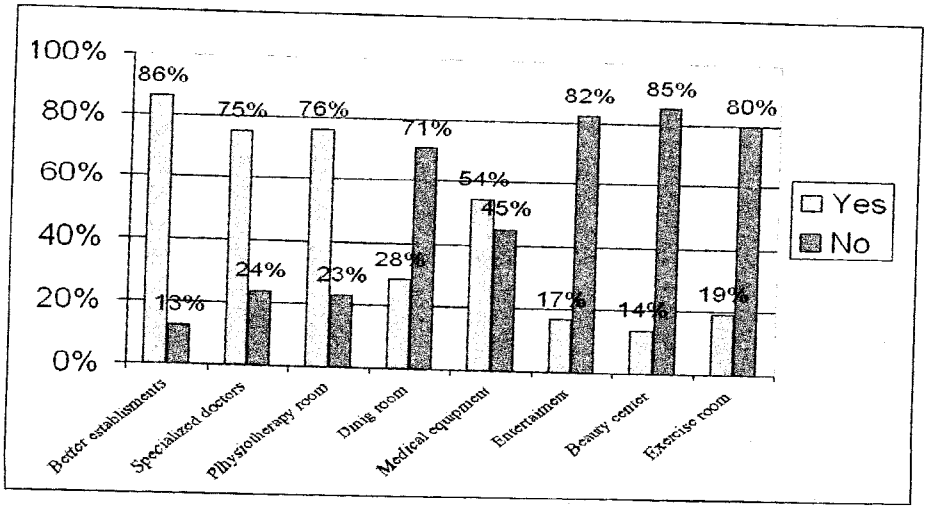
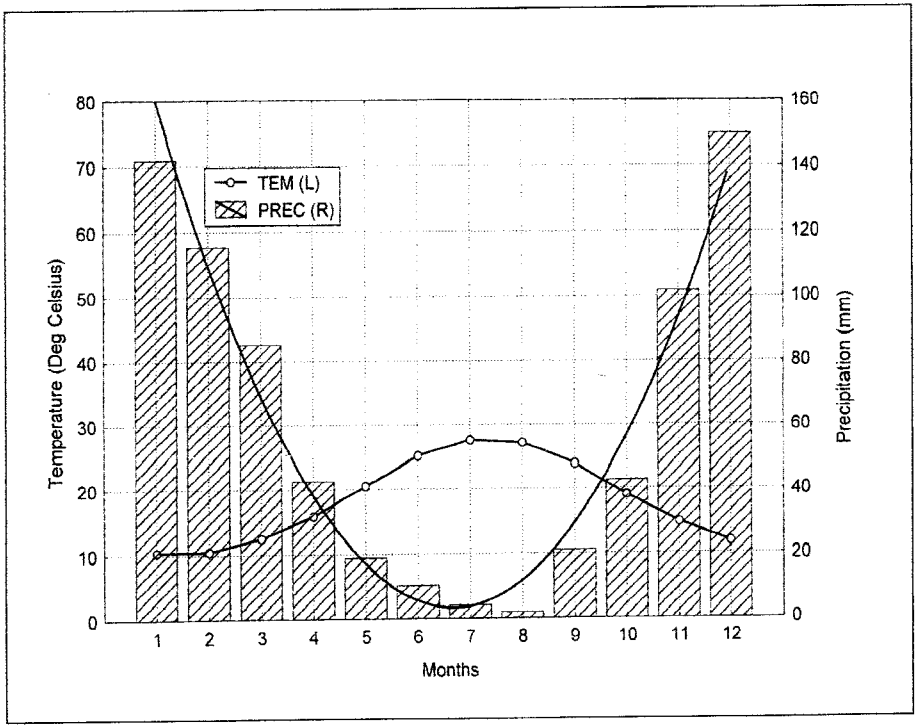


Figure 5. Annual Variation of Air Temperature and Precipitation (Along with a Polynomial Fitting Curve), for Samos Island



The climogram which is the most common method for the study of the combination of the mean monthly air temperature and the mean monthly precipitation is used in order to find out and describe the climatic regime for each month. This is introduced by G. Taylor (Berry and Bollay and Beers 1945; Conrad and Pollak 1950). The climogram is a graph, in which the unit in the vertical axis (precipitation) is twice the unit in the horizontal axis (temperature), that is, 2 mm of precipitation in the vertical axis correspond to 1 °C of temperature in the horizontal axis (UNESCO-FAO 1963). The most simple and common relation for the determination of a dry month is that proposed by Gaussen, who defines a month as dry, if the relation $P < 2T$ exists, where P the mean monthly precipitation (mm) and T the mean monthly air temperature (°C). Table 6 presents the climatic patterns according to the variations of the precipitation and temperature.

The application of the method on the mean monthly data of Samos shows that in the greater vicinity of the island, the climatic regime is mild and wet from November to March, mild and dry for April and October, while it is moderately warm and dry for the warm period of the year from May to September (Figure 6). In Figure 7, the annual variations of the relative humidity

Table 6. Climatic Patterns

Type	Monthly precipitation height P (mm)	Mean monthly temperature T (°C)	Determination of grid box
A1	0 – 25.0	-10 – 0	Cold and Dry
A2	25.1 – 75.0	-10 – 0	Cold and Wet
A3	> 75.0	-10 – 0	Cold and very Wet
B1	0 – 25.0	0 – 10	Moderately Cold and Dry
B2	25.1 – 125.0	0 – 10	Moderately Cold and Wet
B3	> 125.0	0 – 10	Moderately Cold and very Wet
C1	0 – 50.0	10 – 20	Mild and Dry
C2	50.1 – 200.0	10 – 20	Mild and Wet
C3	> 200.0	10 – 20	Mild and very Wet
D1	0 – 75.0	20 – 30	Moderately Warm and Dry
D2	75.1 – 300.0	20 – 30	Moderately Warm and Wet
D3	> 300.0	20 - 30	Moderately Warm and very Wet

and of the precipitation days have been plotted. The relative humidity follows an inverse variation than the respective one of the air temperature and reaches its minimum (49.3 %) in July. As far as the precipitation days are concerned, the pattern during the year is similar to the respective precipitation one. In the process, the wind flow is described regarding the winter and summer season. During winter the most frequent wind components are of the south section (SE-SW) and partly of the west one, while the winds of the northern direction appear less frequently. This is due to that the wide area of Samos exists at the leeward regions of the Minor Asia coasts, regarding the northern winds. In addition, the increase of the winds of the south section occurs because of the depressions having tracks through the southeastern region of Greece.

During summer, the Etesians regime (periodical winds of the north section) is established in Greece and especially in Aegean sea, when a north Atlantic anticyclone extended over Europe covering the Balkans, is combined with the Indian low over Minor Asia and the Eastern Mediterranean Sea. Thereafter the predominate direction is that of northwest component. That phenomenon is obvious mainly at the east and southeast regions of south Aegean sea and is due to the distribution of the isobars of the expansion of Indian Low. Generally speaking, the south Aegean sea during summer and especially during the last two months of summer is a mostly windy region with the wind force taking relatively high values (Katsoulis 1970).

In Figure 8, the rose diagrams of Samos island is presented (Katsoulis 1970), for January, April, July, October and for the year. More specific, in January, the wind blows mostly from the South and SouthWest directions and less from North and NorthEast ones, because this region is protected from the North winds by the Minor Asia coasts. The increase of the South section winds is due to the trough passage from Greece. In April, the frequencies of

Figure 6. Climogram for Samos Island

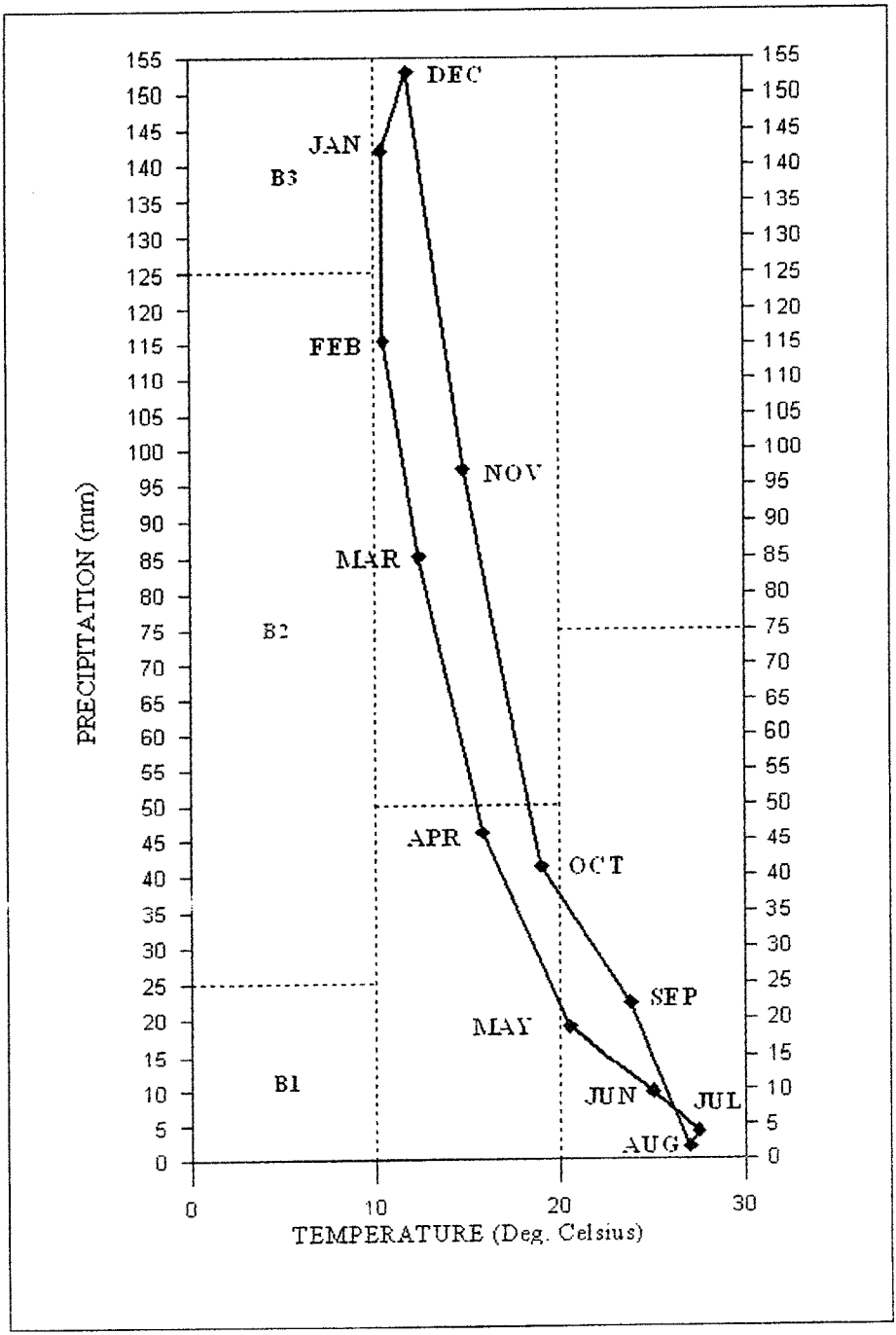


Figure 7. Annual Variation of the Relative Humidity (Upper Panel) and Precipitation Days (Lower Panel)

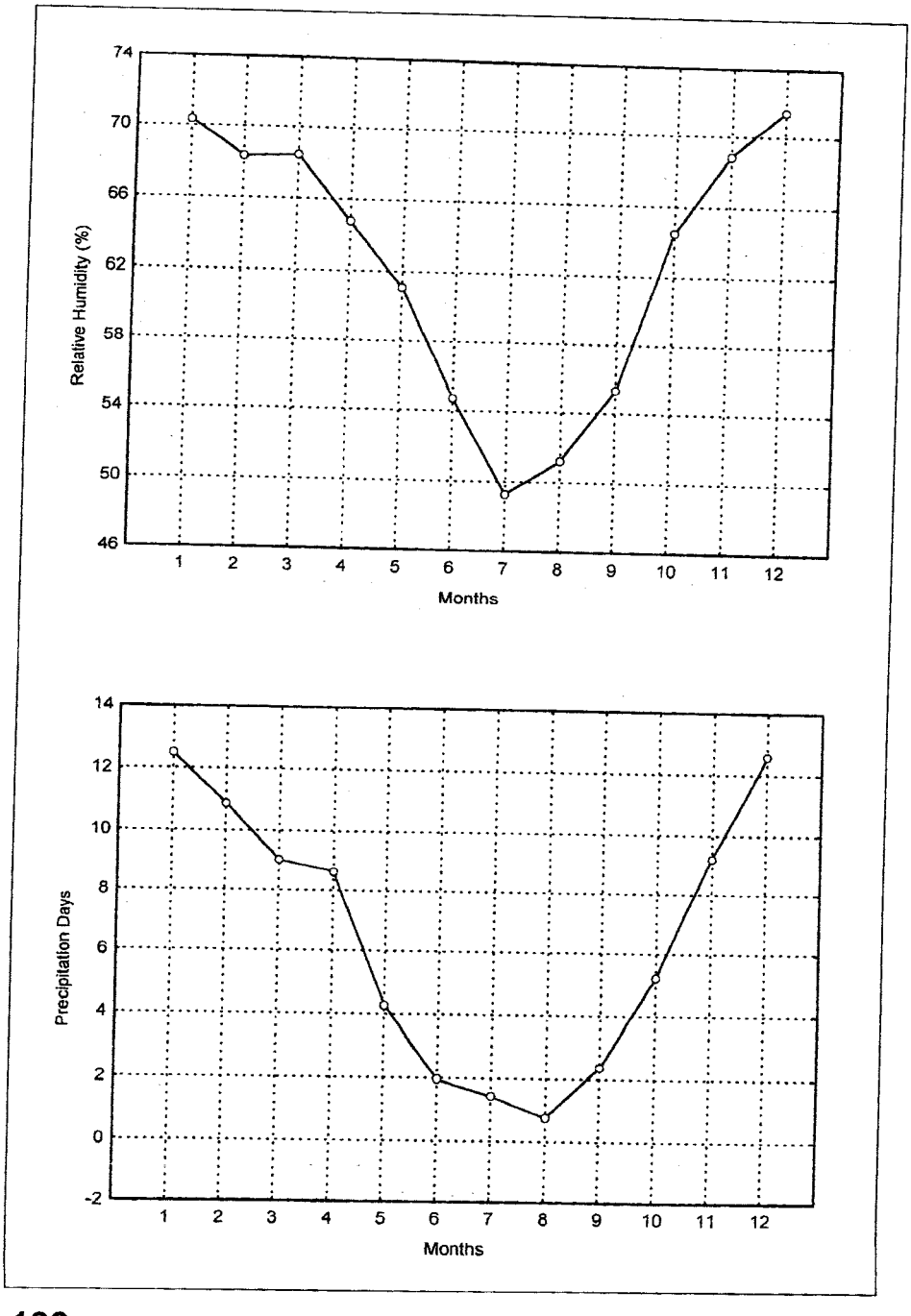
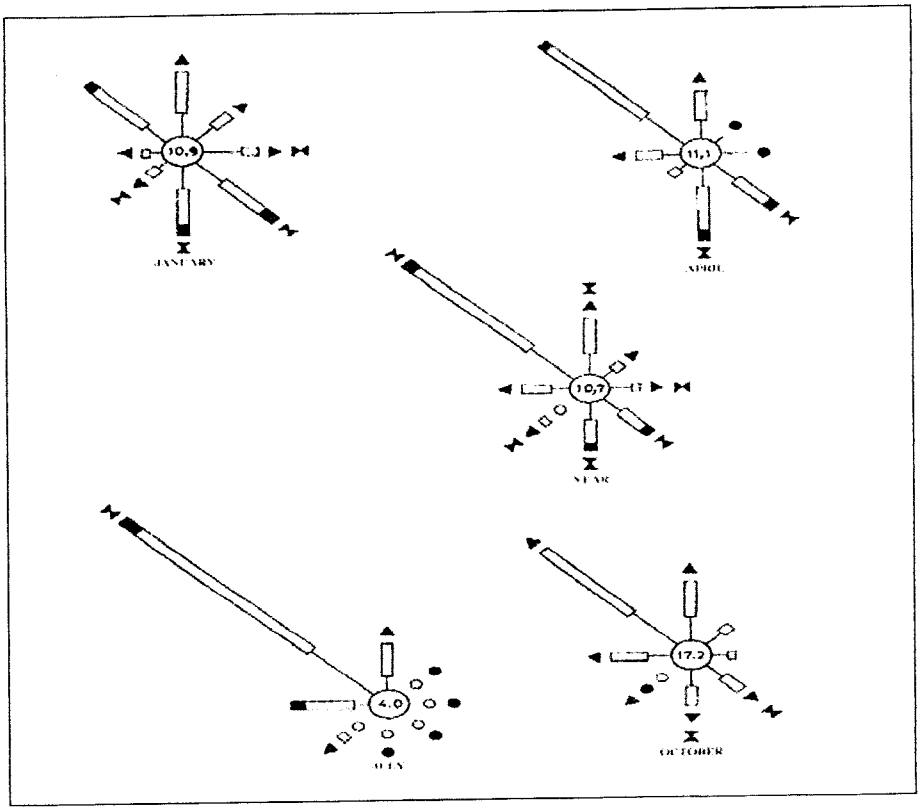


Figure 8. Rose Diagrams for Samos Island (after Katsoulis,1970)



the South winds decrease as the depression activity decreases and the prevailing wind is of the NorthWest direction. In July, the regime of the Etesians winds (Meltemi) is well established, resulting in the NorthWest direction of the winds. In October and during the year the prevailing direction of the wind is the NorthWest one.

As everyone expects, health tourism in combination with optimum bioclimatic conditions at an area would be of great importance and interest by the travelers. Thus, in the process, the sensation caused in the human body by the atmospheric environment is assessed. For that purpose, the evaluation of the environmental conditions was performed by the application of a special environmental index that incorporates mean air temperature and relative humidity. The mathematical formulae of the Discomfort Index (DI), suggested by E. C. Thom (1959), is given by Giles, Balafoutis and Maheras (1990):

$$DI. = Ta - 0.55*(1 - 0.01\ RH)*(Ta - 14.5)$$

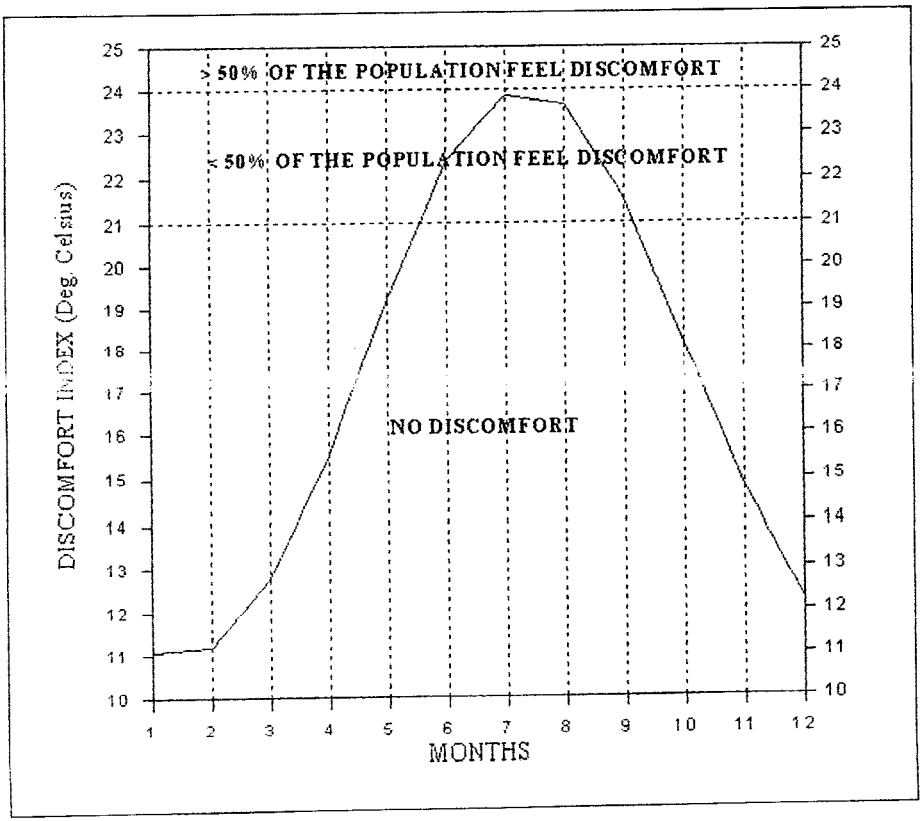
where Ta = mean monthly dry-bulb air temperature in °C, RH = mean monthly relative humidity as a percentage. The applied index has been suggested as

a "good" measure of discomfort feeling (Thom 1959). Regarding its classification in the population, there is no discomfort when T.H.I. < 21 °C, less than 50% of the total population feels discomfort when 21 °C £ T.H.I. < 24 °C, more than 50% of the total population feels discomfort when 24 °C £ T.H.I. < 27 °C, most of the population suffers discomfort when 27 °C £ T.H.I. < 29 °C, the discomfort is very strong and dangerous when 29 °C £ DI < 32 °C; then must prescribe state of medical emergency. The mean annual variation of DI, for Samos island is shown in Figure 9. During the warm period of the year (May to September) less than 50% of the population feels discomfort while no discomfort appears for the rest of months.

CONCLUSIONS

This paper has attempted to provide an overview of the new approach (improvement of health and appearance, getting away from stresses, refreshing and revitalizing body and mind) for health tourism and the key points for a diversified and competitive spa product. Special interest was being paid to

Figure 9. Annual Variation of the Discomfort Index



spa tourism of Ikaria Island, Greece. Primary and secondary data was collected. Secondary data give information about hot springs, individuals using the springs, bathing or other hydrotherapy offered. A survey was held to the visitors of the springs to mark out for qualitative characteristics of the visitors. The climatic and bioclimatic condition of the area was also examined as climate seem to have an effect on the development of health tourism. Climate is a prominent criteria for choosing a destination.

Tourism in Greece has been growing significantly in certain areas such as Rodos, Crete, Corfu and Myconos. As the environmental impact is very important, an attempt to control mass tourism in needed so as to preserve the environments upon which tourism thrives. This implies that more extensive forms of tourism, like health tourism, are also increasing. Spa and health resorts, particularly those with indoor facilities, are key products for promoting off-peak season tourism, a way of reducing pressure on the environment. The development of health tourism contributes in the improvement and competitiveness of Greek tourism because it can tap the needs of new parts of tourism market. This new market is looking for services that offer e.g. medical examinations, physiotherapy, hydrotherapy treatments, gymnasium, thermal swimming pools (indoor and outdoor), body massages, beauty treatments such as facials, vegetarian or special diets, saunas, fango packs (mud), herbal wraps and herbal teas, special programs such as stop-smoking, sports facilities such as tennis, cultural events.

A well-designed marketing plan is essential for the future development of health tourism in order to attract a large number of visitors to the areas as there are two crucial points: the visitors satisfaction and destination image. Spa and health resorts must conduct surveys to identify the needs of their present and potential clients and to use research findings in the development of health tourism product to satisfy this segment of tourism market. To gain more new clients, spa and health resorts must not only diversify their product, but also to create a new image as the most believe that spa and health resorts are a place for those with various ailments. This image is a critical element which influence in many cases individual's not to visit a place with hot/mineral springs.

In Ikaria, the number of visitors decline constantly as a result of not diversifying its spa product. The survey showed that there are prospects for future development, as the visitors are willing to pay more money for better services. This in combination with the good climatic conditions can be a starting point for offering services in order to satisfy potential clients. Exploitation of Ikaria's "water" for providing health tourism services is also a good example of rational development that takes account of the local potential (protection of natural resources, creation of new jobs, achievement of social serenity and financial stability).

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