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Bioclimatic map of the Dominican Republic

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Abstract
The location of the Dominican Republic between parallels 17° and 19° north means it has a tropical macroclimate. The Dominican Republic and the Republic of Haiti belong to the island of Hispaniola, which has three bioclimates: tropical pluvial, tropical pluviseasonal and tropical xeric (Rivas-Martínez 2007). Io values are always higher than 1. The minimum Oi value is 1.1 (semiarid) in A. Sisal, at an altitude of 40 m, and the maximum Io value is 19.7 (hyperhumid) in Loma Casabito (cordillera Central) at 1,430 m. (Cano *et al*., 2009b). It/Itc values range between 187 in V. Nuevo (cordillera Central) and 799 in Jimaní (province of Independencia). If we apply the criterion of Rivas-Martínez (2007), the recorded It/Itc values merely confirm that the thermotype ranges between infratropical and mesotropical on the island of Hispaniola. The absence of weather stations above 1,500 m makes it impossible to estimate the It/Itc value. The weather station in V. Nuevo only shows data for 9 years and, consequently, the recorded It/Itc value of 187 (supratropical) is not significant. However, altitudes higher than 1,500 m are frequent, Pico Duarte, 3,175 m, being the highest peak. Winter temperatures drop below 0 °C in these mountain areas. This fact, together with the absence of moisture-laden trade winds above 2,000 m and the presence of forests of *Pinus occidentalis* have led us (Cano *et al*. (2011) to propose a tropical pluviseasonal bioclimate with a supratropical thermotype for Hispaniola.

Key words: bioclimatology, vegetation, map, Dominican Republic.

Introduction

The island of Hispaniola with an area of 76,484 km² is located between parallels 17-19 ° N. Cuba, Jamaica, Puerto Rico and Hispaniola are the largest of the Caribbean islands. The geological origin of the mountains on the island dates back to the Cretaceous, 130 million years, and the Oligocene-Miocene, 50 million years. The only exception to this general profile is the mountain valleys made up of materials deposited in Quaternary times (Mollat *et al*., 2004). In addition to these Quaternary deposits, the dominant materials are calcareous (karstic), marls and limestones. There is also a large central core of siliceous materials with serpentine inclusions (Cano *et al*., 2009a, 2010a), (Cano *et al*., 2011). The rugged orography of the island, with NW-SE parallel mountain ranges and altitudes as high as Pico Duarte (3,175 m), La Polona (3,087 m) and La Rusilla (3,038 m), the highest points in the Caribbean, lends the island its unique profile in the region.

The island of Hispaniola is affected by two kinds of dominant winds. The winds coming from the SE originate in the Atlantic tropical areas where tropical storms are born. Eventually, these tropical storms grow in strength as they move in a NW direction and become hurricanes, with wind speeds over 118 km/h. Some of the hurricanes in the 20th century, such as David (240 km/h), Emily (220 km/h), San Zenon (200 km/h) and Ines (240 km/h) hit the areas of Hispaniola facing the Caribbean Sea. However, thanks to the shielding effect of the *sierras* of Bahoruco, Neiba, Oriental, Septentrional and the large Cordillera Central, the areas to the north of the island were very little affected by the destruction wrought by these hurricanes. The mild moisture-laden winds from the N-NW, also known as trade winds, give rise to the high rainfall rates recorded on the island, which, in turn, induce a great diversity of environments (Fig. 2).

Materials and methods

This paper is based on our previous bioclimatic analysis of 88 weather stations (see Cano *et al.*, 2009b, 2010b) all over the country (Dominican Republic) and

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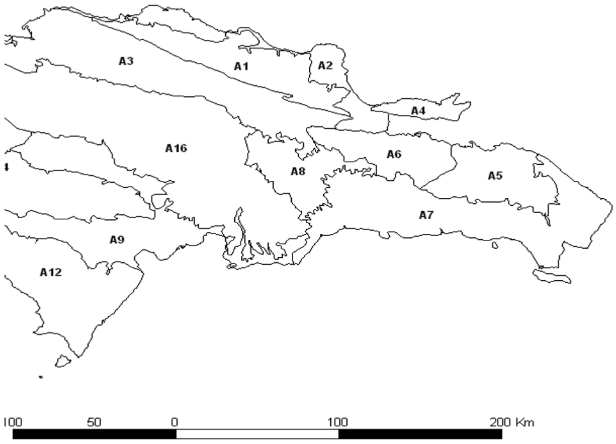


Fig. 1 - Study areas in the Dominican Republic. Biogeographical units (Cano *et al*., 2010a).

Fig. 2 - Diversity of environments in the Dominican Republic.

on our study of the vegetation based on hundreds of phytosociological relevés of different kinds of forests, shrublands, grasslands and rupicolous communities. Our biogeographical analysis is the same as the one used in previous papers (see Cano *et al.*, 2010a and Cano & Cano-Ortiz, 2011). Plant communities and their relationships with Io and It/Itc bioclimatic indexes are used as indicators. We have produced bioclimatic charts using the web www.globalbioclimatics.org (Rivas-Martínez & Rivas-Sáenz 2009) as a tool. By this means, we obtained the values of the Io, It/Itc indexes of the island. For reference, we took the values recorded in Rivas-Martínez *et al.* (1999). To plot the boundaries between areas with different ombrotypes and thermotypes, we used the values of the Io and It/Itc indexes and plant communities. For this purpose, our research also relies on the distribution of 100 samples taken from all over the country. These samples include the following data: site, altitude, sampled area, vegetation cover rate, average vegetation height, number of species per relevé, UTM, dominant species, biotype of the dominant species in the sampling area, number of endemic plants per sample and vegetation type. With this data we plotted maps of ombrotypes and thermotypes.

Reference values (Rivas-Martínez *et al.*, 1999)	**It/Itc**
Infratropical	730-890
Thermotropical	490-730
Mesotropical	320-490
Supratropical	160-320

Reference values (Rivas-Martínez *et al.*, 1999)	**Io**
Semiarid	1.0-2.0
Dry	2.0-3.6
Subhumid	3.6-7.0
Humid	7.0-14.0

Results

From Tab. 1 published by Cano *et al.* (2009b), with data and indexes from the 88 above mentioned weather stations, we can see that the average temperature (T) of the island is about 25 °C. The average value of maximum temperatures is 29.7 °C, recorded in Duverge, and the average value of minimum temperatures is 8.7 °C, recorded in V. Nuevo at 2,300 masl. However, we know that the minimum temperature in some high mountain sites can fall to 0 °C. There are no weather stations to confirm this conclusion, but the existing vegetation attests to it. Rainfall rates range from 480 mm in Temayo to 2,339 mm in Samaná. The Io and It/Itc values we have already published, the values shown in our bioclimatic charts (Fig. 4-8) and our vegetation study prove that the ombrotype in the Dominican Republic ranges from semiarid to humid-hyperhumid, and the thermotype between infratropical and supratropical standards (Tab. 1). As far as altitude levels are concerned, the infratropical thermotype goes up to 500 masl; the thermotropical to 1,200 masl; the mesotropical to 2,000 m; above 2,000 m the thermotype is supratropical. In our preliminary bioclimatic analysis carried out in previous studies, we confirmed the occurrence on the island of a tropical macroclimate, either pluvial, xeric or pluviseasonal. The first is caused by the Atlantic trade winds, the second by the shielding effect of the high mountains against these winds and the third is due to the effect of the altitude.

The different ombrotypes and thermotypes of the island determine the distribution of the vegetation which is taken as an indicator of them. In order to make a study of the ombrotypes and thermotypes we plotted a number of large areas according to rainfall rates and temperatures. These areas can be described as dry, subhumid, humid-hyperhumid and cold high

Weather stations	Years	Altitude	It/itc	Ic	Io	Macrobioclimate	Thermotype	Ombrotype
Constanza	69	1164	507	3.1	4.61	Tropical pluviseasonal	Upper thermotropical	Lower subhumid
Jarabacoa	69	529	598	4.6	9.32	Tropical pluvial	Upper thermotropical	Upper humid
V. Nuevo*	9	2300	187	5.9	9.57	Tropical pluvial	Upper supratropical	Upper humid
S.F. Macoris	38	110	716	4.2	4.60	Tropical pluvial	Upper infratropical	Lower subhumid
Yamasá	25	69	747	2.1	6.46	Tropical pluviseasonal	Upper infratropical	Lower humid
H. Mayor	21	102	757	3.8	4.84	Tropical pluviseasonal	Upper infratropical	Subupper humid
Samaná	38	7	751	3.8	7.36	Tropical pluvial	Upper infratropical	Lower humid
La Romana	40	23	751	3.4	3.43	Tropical xeric	Upper infratropical	Upper dry
P. Plata*	14	24	704	4.2	5.97	Tropical pluvial	Lower thermotropical	Subupper humid
V. Altagracia	23	156	693	4.7	7.92	Tropical pluvial	Lower thermotropical	Lower humid
Ázua	37	76	776	3.3	2.10	Tropical xeric (bixeric)	Upper infratropical	Lower dry
Sisal*	9	40	747	2.1	1.20	Tropical xeric (pluviserotin)	Upper infratropical	Lower semiarid
Jimani	23	31	799	3.6	2.10	Tropical xeric (bixeric)	Upper infratropical	Lower dry
Monte Cristi	37	7	746	4.4	2.10	Tropical xeric (bixeric)	Upper infratropical	Lower dry
Barahona	20	10	759	3.2	3.20	Tropical xeric	Upper infratropical	Upper dry
San Juan	21	415	697	3.8	3.10	Tropical xeric	Lower thermotropical	Upper dry

Tab. 1- Bioclimatic analysis of some of the weather stations under study.

Fig. 3 - Distribution of some of the weather stations under study.

mountain areas as published in Cano *et al.* (2009a, b). Our bioclimatic analysis reveals the presence in Hispaniola of several macrobioclimates: tropical xeric, tropical pluviseasonal and tropical pluvial. These macrobioclimates give rise to different vegetation units: dry forest, humid broad-leaved forest, cloud forest and high mountain forest (pine tree forests) (Tab. 2).

Dry areas present a tropical xeric macroclimate. From a physiognomical point of view, the vegetation is very similar in all the semiarid and dry areas, and belongs to the phytosociological classes: *Cercidi-Cereetea* Knapp (1964) Bohridi 1991 and *Coccothrinaceto-Plumerietea* Knapp (1964) Borhidi 1991. This last class includes not only copses and evergreen sclerophyllous shrubs, usually known as dry forest, but also hemicryptophytic grasslands which are rich in chamaephytes and nanophanerophytes and grow on eroded limestones and crumbly marls near the coast. The life cycle of these communities is conditioned by a seasonal, bixeric climate with 7 to 9 months of drought and rainfall rates under 800 mm. This vegetation is dominated by plants belonging to the families *Agavaceae* and *Cactaceae* among others, such as *Lemaireocereus hystrix* (Haw.) B.&R., *Cylindropuntia caribae* (B.&R,) Kunth, *Consolea moniliformis* (L.) Haw., *Leptochloopsis virgata* (Poir.) Griseb., *Pilosocereus polygonus* (Lam.) B.& R., *Opuntia dillenii* (Fer.- Gawl) Haw., *Leptocereus weingartianus* (Hartm.) Britt. & Rose, *Acacia skleroxyla* Tuss., *Agave antillarum* Descourt., *Pithecellobium unguis-cati* (L.) Mart. In the SW of the island there are two kinds of dry forest. The forest of Pedernales-Ceitillan (Procurrente de Barahona) grows on dog-tooth limestone substrates and exhibits some endemic plants, such as *Melocactus pedernalensis* (Ait.) M. Mejía & R. García, *Galactia dictyophylla* Urb., *Coccoloba incrassata* Urb., *Caesalpinia domingensis* Urb. and *Guettarda stenophylla* Urb. By contrast, the dry forest of Azua, Bani, Lago Enriquillo and Valle de San Juan, with an Io = 2.7 shows a slightly lower endemicity rate. Here the most important endemic plants not found in the dry forest of Pedernales, are *Melocactus lemairei* (Monv.) Miq. *Neoabbottia paniculata* (Lam.) Britt. & Rose, *Coccotrinax spissa* Bailey. In the Cibao Valley, in the NW of the island, there is a dry forest, different from the two already mentioned because of the presence of a group of endemic plants such as *Salvia montecristina* Urb. & Ekm., *Mosiera urbaniana* Borhidi, *Croton poitaei* Urb., *Croton sidaefolius* Lam., *Guettarda tortuensis* Urb. & Ekm. and *Coccoloba buchii* Urb. The plant communities most representative of the dry areas belong to the following endemic habitats: *Lepotogono buchii-Leptochloopsietum virgatae* Cano, Veloz & Cano-Ortiz 2010, which is included in the serpentinicolous endemic alliance *Tetramicro*

Tab. 2 - General table of the sites and plant formations under study

1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	4	2005	Casabito (Cordillera Central)	2000	1481	100	15	39	19Q0340280/2105321	*Didymopanax tremulus*	A	15	Fog forest
2	5	2005	Casabito (Cordillera Central)	1000	1474	90	15	34	19Q0340299/2105967	*Magnolia pallescens*	A	16	Fog forest
3	6	2005	Río Jatubei (Cordillera Central)	2000	1097	100	20	12	19Q0341984/2105891	*Prestoea montana*	A	15	Fog forest (manaclar)
4	7	2005	Arroyazo (Cordillera Central)	1000	1160	100	6	25	19Q0337625/2105337	*Gynerium sagittatum*	H	16	Reed community (reedbed)
5	8	2005	El Arroyazo (Cordillera Central)	1000	1100	100	4	33	19Q0337625/2105337	*Gleychenia bifida*	H	7	Fern community (calimetal)
6	9	2005	El Arroyazo (Cordillera Central)	1000	1180	100	4	44	19Q0337882/2105750	*Gleychenia bifida*	H	8	Fern community (calimetal)
7	10	2005	Casabito (Évano Verde, Cordillera Central)	2000	1473	100	10	37	19Q0340283/2106095	*Magnolia pallescens*	A	16	Fog forest
8	11	2005	Casabito (Évano Verde, Cordillera Central)	500	1441	100	4	33	19Q0340288/2106283	*Polygala fuertesii*	Ar	13	Shrub
9	12	2005	Casabito-Palmerito (Ébano Verde, Cordillera Central)	2000	1465	100	20	36	19Q0340165/2106429	*Didymopanax tremulus*	A	16	Fog forest
10	13	2005	El Arroyazo (Cordillera Central)	500	1373	100	9	38	19Q0339971/2105962	*Myrcia splendens*	Ar	7	Shrub
11	14	2005	Going down from Casabito to Centro Fernándo Dominguez (Cordillera Central)	1000	1377	100	9	35	19Q0339590/2105699	*Cestrum inclusum*	Ar	9	Shrub
12	15	2005	Casabito-Arroyazo (Ébano Verde, Cordillera Central)	1000	1251	100	15	33	19Q0339203/2105784	*Prestoea montana*	A	11	Fog forest (manaclar)
13	17	2005	Tributary of the Arroyazo (Ébano Verde, Cordillera Central)	500	1200	100	7	30	19Q0339590/2105699	*Myrcia splendens*	Ar	9	Shrub
14	18	2005	El Castillo. Parque Nacional Valle Nuevo (Constanza, Cordillera Central)	1000	2058	100	12	25	19Q0321806/2082834	*Pinus occidentalis*	A	13	High mountain forest (pine tree forest)
15	19	2005	Roca Gigante. Near Valle Nuevo (Constanza, Cordillera Central)	1000	2336	75	8	16	19Q0325399/2078286	*Pinus occidentalis*	A	9	High mountain forest (pine tree forest)
16	20	2005	Valle Nuevo. Camino de la Pirámide (Constanza, Cordillera Central)	1000	2290	90	15	15	19Q0326681/2076397	*Pinus occidentalis*	A	9	High mountain forest (pine tree forest)
17	21	2005	La Pirámide. Between Ocoa and Constanza (Cordillera Central)	1000	2383	100	15	23	19Q0331098/2069273	*Pinus occidentalis*	A	9	High mountain forest (pine tree forest)
18	22	2005	La Pirámide. Between Ocoa and Constanza (Cordillera Central)	300	2383	90	1	14	19Q0331098/2069723	*Danthonia domingensis*	H	3	High mountain hemicryptophytic grassland
19	23	2005	El Cahote (Sierra de Bahoruco)	2000	1207	100	25	48	19Q0267592/2002124	*Magnolia hamorii*	A	11	Fog forest
20	24	2005	El Cachote. Near Centro de Visitantes (Sierra de Bahoruco)	2000	1239	100	25	55	19Q0268161/2002764	*Didymopanax tremulus*	A	19	Fog forest
21	25	2005	El Cachote. Near Centro de Visitantes (Sierra de Bahoruco)	2000	1233	100	20	46	19Q0268152/2002964	*Hyeronima domingensis*	A	16	Fog forest
22	26	2005	3 km from the village of El Cachote (Sierra de Bahoruco)	2000	1140	100	15	42	19Q0268736/2000217	*Brunellia comocladifolia*	A	10	Fog forest
23	27	2005	Caseta Hoyo del Pelempito (Sierra de Bahoruco)	2000	1358	80	15	34	19Q0229587/2006325	*Pinus occidentalis*	A	18	High mountain forest (pine tree forest)
24	28	2005	2 km from Caseta Hoyo del Pelempito (Sierra de Bahoruco)	2000	1343	85	15	37	19Q0229143/2006087	*Pinus occidentalis*	A	20	High mountain forest (pine tree forest)
25	29	2005	4 km from Caseta Hoyo del Pelempito (Sierra de Bahoruco)	2000	1286	85	15	30	19Q0227793/2005430	*Pinus occidentalis*	A	20	High mountain forest (pine tree forest)
26	30	2005	31 km from Cabo Rojo. Parque Nacional Sierra de Bahoruco	2000	1203	85	15	29	19Q0225980/2005665	*Pinus occidentalis*	A	22	High mountain forest (pine tree forest)
27	31	2005	km 13 road to Ceitillan	500	144	60	6	49	19Q0219951/1995921	*Consolea moniliformis*	SA	18	Dry forest
28	32	2005	km 10 road to Ceitillan	500	104	50	6	40	19Q0219738/1993286	*Pilosocereus polygonus*	SA	16	Dry forest
29	33	2005	Road to Ceitillan. Near the crossroads of Pedernales	600	15	50	8	40	19Q0219323/1990191	*Lamaireocereus hystrix*	SA	17	Dry forest
30	41	2005	3 km from the crossroads of Vicente Noble	600	160	60	5	35	19Q0283638/2043825	*Neoabbottia paniculata*	SA	9	Dry forest
31	42	2005	Near Fondonegro	1000	209	80	4	25	19Q0275855/2035891	*Pilosocereus polygonus*	SA	6	Dry forest
32	43	2005	Road from Azua a Bani (municipal are of Azua)	1000	218	90	10	36	19Q0340420/2031565	*Guaiacum officinale*	A	6	Dry forest
33	44	2005	Calabaza (Bani)	1000	118	85	7	30	19Q0353122/2025661	*Lamaireocereus hystrix*	SA	8	Dry forest
34	45	2005	Near Puente de Cumayaza (San Pedro de Macoris)	1000	38	100	9	52	19Q0489790/2039255	*Metopium toxiferum*	A	3	Subhumid edaphoxeric forest
35	46	2005	Near the village of Cumayaza (San Pedro de Macoris)	1000	39	100	6	42	19Q0490159/2037558	*Exostema caribaeum*	Ar	4	Shrub
36	47	2005	Near the Cumayaza river (San Pedro de Macoris)	1000	36	100	5	32	19Q0490586/2038122	*Exostema caribaeum*	Ar	3	Shrub
37	48	2005	4 km from the village of Bayahibe	2000	42	95	15	51	19Q0516942/2032979	*Sideroxylon foetidissimum*	A	7	Subhumid edaphoxeric forest
38	49	2005	Crossroads of Dominicus hotel and Bayahibe	2000	8	90	3	37	19Q0517849/2031060	*Zamia debilis*	Ar	2	Shrub
39	50	2005	Crossroads of Dominicus hotel and Bayahibe	2000	8	100	18	42	19Q0517877/2031096	*Bucida buceras*	A	1	Subhumid edaphoxeric forest
40	52	2005	Caccana. Punta Cana	2000	14	100	18	41	19Q0565493/2050559	*Sideroxylon salicifolium*	A	1	Subhumid forest
41	53	2005	Caccana. Punta Cana	2000	12	100	20	39	19Q0564945/2051672	*Sideroxylon salicifolium*	A	1	Subhumid forest
42	55	2005	Doña Antonia. 47 km to Monte Cristi	1000	84	60	4	24	19Q0267385/2176805	*Lamaireocereus hystrix*	SA	2	Dry forest
43	56	2005	10 km from Monte Cristi	1000	16	90	6	27	19Q0228891/2192923	*Caesalpinia coriaria*	A	4	Dry forest
44	59	2005	Monte Cristi	2000	7	90	5	21	19Q0220785/2188049	*Lamaireocereus hystrix*	SA	2	Dry forest
45	63	2005	El Papayo de Guayubin (near Ensenada)	200	115	100	10	27	19Q0265130/2191059	*Swietenia mahagoni*	A	1	Broad-leaved forest

46	64	2005	Sabana de los Javieles. Los Mogotes	1000	113	100	8	41	19Q0265196/2191003	*Coccoloba diversidfolia*	A	4 Fog forest
47	65	2005	Pilancón. Near Los Haitises	1000	222	100	15	53	19Q0434068/2089075	*Coccoloba diversidfolia*	A	5 Fog forest
48	66	2005	2 km from Pilancón. Los Haitises	2000	247	100	8	54	19Q0437325/2090636	*Coccoloba diversidfolia*	A	6 Fog forest
49	68	2005	Between Vialla Jaragua and los Ríos	1000	12	100	5	35	19Q0233257/2046743	*Lamaireocereus hystrix*	SA	9 Dry forest
50	1	2006	Hoja Ancha. Pedregal. Sierra de Yamasá	2000	300	100	10	61	19Q0343898/4302285	*Sideroxylon cubense*	A	17 Subhumid forest
51	2	2006	Hoja Ancha. Pedregal. Sierra de Yamasá	1000	300	80	3	61	19Q0343898/4302285	*Randia aculeata*	Ar	8 Shrub
52	3	2006	La Estancia	2000	182	100	10	54	19Q0384190/2058733	*Coccoloba pubescens*	A	11 Subhumid forest
53	4	2006	Hatoviejo to Gualey	2000	140	90	4	37	19Q0392342/2068910	*Randia aculeata*	Ar	11 Shrub
54	7	2006	Boca Cumayaza	2000	15	95	5	38	19Q0490285/2834062	*Eugenia rhombea*	Ar	5 Shrub
55	8	2006	Cumayaza	2000	8	90	5	44	19Q0489200/2034829	*Exostema caribaeum*	Ar	3 Shrub
56	9	2006	Cumayaza	2000	24	100	6	45	10Q0490488/2037546	*Exostema caribaeum*	Ar	3 Shrub
57	10	2006	On the way to Beyahibe	1000	69	100	12	56	19Q0516924/2033776	*Guaiacum sanctum*	A	7 Subhumid edaphoxeric forest
58	11	2006	Near the entrance to Parque Nacional del Este	1000	4	100	5	35	19Q0519492/2027853	*Eugenia maleolens*	Ar	4 Shrub
59	12	2006	Road to Beyahibe	500	29	60	5	38	19Q0517200/2000026	Zamia debilis	Ar	6 Shrub
60	13	2006	El Trece. Cordillera Oriental	2000	519	70	12	50	19Q0489524/2092418	*Cecropia schreberiana*	A	1 Fog forest
61	14	2006	El Trece. Cordillera Oriental	300	519	100	1	16	19Q0489524/2092418	*Nephrolepis biserrata*	H	1 Fern community (calimetal)
62	15	2006	Dieciseis de Mitche	2000	541	100	12	21	19Q0486735/2092513	*Alchornea latifolia*	A	2 Fog forest (manaclar)
63	16	2006	Near Dieciseis de Mitche	1000	558	100	1	16	19Q0486736/2092514	*Gleychenia bifida*	H	1 Fern community (calimetal)
64	17	2006	Camino Campo Militar. Sierra Prieta	500	109	100	6	47	19Q0398581/2061827	*Leptogonum buchii*	A	11 Subhumid forest
65	18	2006	Sierra Prieta	500	102	90	5	50	19Q0398246/2062093	*Calliandra haematomma*	Ar	13 Shrub
66	19	2006	1 km from the firing range. Sierra Prieta	500	110	100	5	56	19Q0397232/2062450	*Calliandra haematomma*	Ar	17 Shrub
67	20	2006	Near the market. Sierra Prieta	500	106	100	5	51	19Q0397231/2062447	*Calliandra haematomma*	Ar	16 Shrub
68	21	2006	Quarry of Sierra Prieta. Yamasá	500	113	100	4	43	19Q0398451/2063175	*Croton impressus*	Ar	14 Shrub
69	22	2006	Jaibon. Near Valverde de Mao	500	47	70	6	21	19Q0272603/2176209	*Lemairocereus histrix*	SA	1 Dry forest
70	23	2006	Jaibon. Near Valverde de Mao	500	83	80	5	29	19Q0273593/2176232	*Lemairocereus histrix*	SA	3 Dry forest
71	24	2006	2 km from the road from Santiago to Montecristi. Jaibon (Valverde de Mao)	500	139	40	5	24	19Q0273241/2177242	*Lemairocereus histrix*	SA	3 Dry forest
72	25	2006	Jaibon. Valverde de Mao. 4 km from the road from Santiago to Montecristi	500	163	70	5	21	19Q0273458/2178554	*Lemairocereus histrix*	SA	1 Dry forest
73	26	2006	Doña Antonia. Province of Montecristi	500	166	85	6	16	19Q0267694/2177030	*Lemairocereus histrix*	SA	1 Dry forest
74	27	2006	La Guajaca. Doña Antonia. Province of Montecristi	500	160	75	6	19	19Q0265559/2177065	*Lemairocereus histrix*	SA	2 Dry forest
75	28	2006	La Guajaca. Doña Antonia. Province of Montecristi	500	162	100	6	17	19Q0265579/2177120	*Lemairocereus histrix*	SA	3 Dry forest
76	29	2006	Road to Punta Rusia km 4	500	94	70	6	26	19Q0262945/2180708	*Lemairocereus histrix*	SA	3 Dry forest
77	30	2006	Road to Punta Rusia km 6. Cordillera Septentrional	500	121	65	7	38	19Q0262882/2181400	*Phyllostylon brassiliensis*	A	5 Dry forest
78	31	2006	Morro Montecristi	500	16	60	3	38	19Q0222565/2200698	*Erythroxylum rotundifolium*	Ar	7 Shrub
79	32	2006	Morro Montecristi	500	3	70	3	37	19Q0222610/2200836	*Erythroxylum rotundifolium*	Ar	7 Shrub
80	33	2006	Morro Montecristi	300	26	90	1	10	19Q0222986/2200769	*Leptochloopsis virgata*	H	1 Dry hemicryptophytic grassland
81	34	2006	Morro Montecristi	300	20	100	1	15	19Q0223544/2201480	*Leptochloopsis virgata*	H	3 Dry hemicryptophytic grassland
82	35	2006	Morro Montecristi	800	21	80	4	38	19Q0223543/2201543	*Antirhea montecristina*	Ar	8 Shrub
83	36	2006	Morro Montecristi	300	25	100	1	17	19Q0223546/2201547	*Leptochloopsis virgata*	H	3 Dry hemicryptophytic grassland
84	37	2006	Old road to Montecristi-Puerto Plata. Cordillera Septentrional	1000	169	90	7	38	19Q0243245/2197512	*Thouinia trifoliata*	Ar	8 Shrub
85	38	2006	Punta Mangle. Cordillera Septentrional	500	27	80	5	46	19Q0238370/2202751	*Caesalpinia buchii*	Ar	9 Dry forest
86	39	2006	Old road to Montecristi-Puerto Plata. Cordillera Septentrional	500	70	80	5	39	19Q0235750/2201393	*Senna angustisiliqua*	Ar	5 Dry forest
87	40	2006	Old road to Montecristi-Puerto Plata	500	53	80	4	36	19Q0234500/2201316	*Senna angustisiliqua*	Ar	4 Dry forest
88	41	2006	Old road to Montecristi-Puerto Plata	300	71	80	1	23	19Q0234505/2201316	*Leptochloopsis virgata*	H	3 Dry hemicryptophytic grassland
89	42	2006	Old road to Montecristi-Puerto Plata	500	58	75	3	25	19Q0232308/2200191	*Crossopetalum decussatum*	Ar	8 Shrub
90	43	2006	Old road to Montecristi-Puerto Plata	500	8	70	8	27	19Q0228383/2200317	*Caesalpinia coriaria*	A	6 Dry forest
91	44	2006	Between Santiago de la Cruz and Partido. Pinar Claro. Province of Dajabón	1000	200	80	8	38	19Q0225402/2156162	*Pinus occidentalis*	A	8 Dry forest (pine tree forest)
92	45	2006	Piedra Blanca. Province of Dajabón	1000	250	70	10	41	19Q0226716/2157562	*Pinus occidentalis*	A	9 Dry forest (pine tree forest)
93	46	2006	Piedra Blanca. Road to Partido de Dajabón	1000	172	60	8	39	19Q0229337/2158209	*Pinus occidentalis*	A	7 Dry forest (pine tree forest)

94	47	2006	Between Piedra Blanca and Pinar Claro	1000	245	60	10	39	19Q0227746/2158156	*Pinus occidentalis*	A	8	Dry forest (pine tree forest)
95	48	2006	Cofresi (Puerto Plata)	500	41	80	6	34	19Q0318408/2192458	*Leptogonum buchii*	A	12	Subhumid forest
96	49	2006	Cofresi (Puerto Plata)	1000	95	85	7	32	19Q0318034/2192804	*Sideroxylon cubense*	A	7	Subhumid forest
97	50	2006	Cofresi (Puerto Plata)	300	100	90	1	19	19Q0318034/2192804	*Leptochloopsis virgata*	H	5	Dry hemicryptophytic grassland
98	51	2006	Cofresi (Puerto Plata)	1000	69	70	3	36	19Q0318198/2192601	*Zombia antillarum*	Ar	9	Shrub
99	52	2006	Puerto Plata	1000	18	80	5	30	19Q0318595/2192785	*Tabebuia polyantha*	A	8	Subhumid forest
100	53	2006	Gaspar Hernández	1000	64	85	4	31	19Q0367683/2171293	*Eugenia crenulata*	Ar	3	Shrub
101	54	2006	Río Piedra. Gaspar Hernández	1000	89	60	4	34	19Q0367771/2171272	*Rhondeletia christii*	Ar	6	Shrub
102	55	2006	Gaspar Hernández. Province of Espaillat	1000	12	65	6	39	19Q0367336/2172128	*Buchenavia tetraphylla*	A	4	Subhumid forest
103	56	2006	Río Piedra. Gaspar Hernández	1000	15	75	4	27	19Q0368174/2172212	*Randia aculeata*	Ar	5	Shrub
104	57	2006	5-6 km from Cabo de Samaná	500	31	45	7	19	19Q0481397/2129511	*Bursera simaruba*	A	3	Subhumid edaphoxeric forest
105	58	2006	Near Cabo de Samaná	500	18	70	7	20	19Q0482276/2129906	*Bursera simaruba*	A	3	Subhumid edaphoxeric forest
106	59	2006	Cabo de Samaná	500	40	60	7	23	19Q0482611/2130197	*Bursera simaruba*	A	4	Subhumid edaphoxeric forest
107	60	2006	Los Cacaos (Samaná)	500	25	50	5	18	19Q0482718/2130308	*Bursera simaruba*	A	4	Subhumid edaphoxeric forest

1. Order no. - 2. Field relevé no. - 3. Sample year. - 4. Site. - 5. Sampled area. - 6. Altitude in m. - 7. Vegetation cover rate. - 8. Average vegetation height. - 9. Number of species per relevé. - 10. UTM. - 11. Dominant species in the relevé. - 12. Biotype of the dominant species. - 13. No. of endemic species per relevé. - 14. Dominant vegetation.

canaliculatae-Leptochloopsion virgatae Cano, Veloz & Cano-Ortiz 2010, *Crotono astrophori-Leptochloopsietum virgatae* Cano, Veloz & Cano-Ortiz 2010, *Melocacto pedernalensi-Leptochloopsietum virgatae* Cano, Veloz & Cano-Ortiz 2010, *Solano microphylli-Leptochloopsietum virgatae* Cano, Veloz & Cano-Ortiz 2010, which are included in the endemic alliance *Crotono poitaei-Leptochloopsion virgatae* Cano, Veloz & Cano-Ortiz 2010 and which we had already included (see Cano *et al*., 2010b) in the classes *Phyllantho-Neobracetea valenzuelanae* Borhidi & Muñiz in Borhidi et al. 1979 and *Coccothrinaceto-Plumerietea* Knapp (1964) Borhidi 1991.

We include the pine tree forests of *Leptogono buchii-Pinetum occidentalis* Cano, Veloz & Cano-Ortiz 2011 growing on serpentines in the endemic alliance *Phyllario mummularioidi-Leptogonion buchi* Cano, Veloz, & Cano-Ortiz 2011, included in the class *Byrsonimo-Pinetea caribaeae* Samek and Borhidi in Borhidi et al. 1979 (Cano *et al.*, 2011), together with still little known plant formations of the SW and the Cibao Valley belonging to the class *Cercidi-Prosopidetea* Knapp (1964) Borhidi 1991, which represents spinose, deciduous, spinescent copses, usually made up of *Mimosaceas* and *Caesalpinaceas* which are widespread in Central America and Antilles (Fig.4).

Most of Hispaniola presents a tropical pluviseasonal macroclimate where a subhumid ombrotype is dominant. Rainfall rates range from 1,000 to 2,000 mm and the ombrothermic index values (Io) are as follows: 3.7 to 4.3 in Parque Nacional del Este; 4.0 (in El Seibo); 6.2 (in Miches); 5.4 (in Jarabacoa); 5.9 (in Mayaguana); and 3.4 (in la Romana). In these areas the dominant vegetation is made up of a humid, broad-leaved forest where the dry season lasts from December to April. Water stress explains why this forest has some deciduous tree species such as *Bursera simaruba* (L.) Sarg., *Swietenia mahagoni* (L.) Jacq., together with other species such as *Metopium toxiferum* (L.) Krug & Urb., *Krugidendron ferreum* (Vahl) Urb., *Acacia macracantha* H. & B. ex Willd., *Coccoloba diversifolia* Jacq. and *Bucida buceras* L. These formations include significant endemic taxa, such as the climbing plant *Aristolochia bilobata* L., the tree-like *Melicoccus jimenezii* (Alain) Acev. Rodr. or shrub species such as *Lonchocarpus neurophyllus* Benth., together with other shrub formations which become dominant and act as dynamic substitution stages. This is the case of *Zamia debilis* L., for example, which co-occurs with the endemic *Pereskia quisqueyana* Alain and *Goetzea ekmanii* O.E. Schulz.

When these subhumid forests occur on reef perforated limestones soil xericity increases and behaves like dry soil because of the heavy water loss. Here we can find *P. polygonus, P. unguis-cati, L.*

BIOCLIMATIC INDEX AND DIAGNOSIS

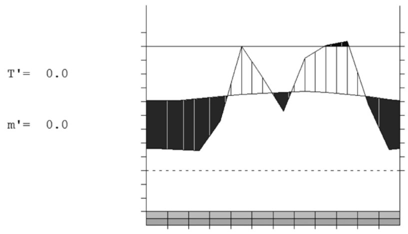
Thermicity index	(It)	776
Compensated thermicity index	(Itc)	776
Simple continentality index	(Ic)	3.3
Diurnality index	(Id)	0.0
Annual ombrothermic index	(Io)	2.10
Bimonthly dry ombrothermic index	(Iod2)	0.61
Threemonthly dry ombrothermic index	(Iod3)	0.59
Fourmonthly dry ombrothermic index	(Iod4)	0.59
Annual ombro-evaporation index	(Ioe)	0.41
Annual aridity index	(Iar)	2.5
Annual positive temperature	(Tp)	3240
Annual negative temperature	(Tn)	0
Dry station temperature	(Td)	769
Positive precipitation	(Pp)	680

Nº of	P>4T	P:2T-4T	PT-2T	P<T	T<0º
Months	1	4	3	4	0

Continentality-Latitudinal Belt: Extremely Hyperoceanic - Eutropical
Bioclimate(Variant): TROPICAL XERIC (PLUVISEROTIN)
Bioclimatic belt...: UPPER INFRATROPICAL LOW DRY

AZUA (DOMINICAN REPUBLIC) 76 m.

P= 680 18º16'N 70º26'W 37/37
T= 27 Ic= 3.3 Tp= 3240 Tn= 0
m= 25.3 M= 25.3 Itc= 776 Io= 2.1



TROPICAL XERIC (PLUVISEROTIN)
UPPER INFRATROPICAL LOW DRY

Fig. 4 - Weather station of Azua. (Biogeographical unit A9). Tropical, xeric (bixeric) macroclimate. Upper infratropical, lower dry.

BIOCLIMATIC INDEX AND DIAGNOSIS

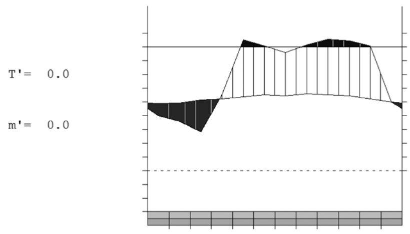
Thermicity index	(It)	750
Compensated thermicity index	(Itc)	751
Simple continentality index	(Ic)	3.4
Diurnality index	(Id)	0.0
Annual ombrothermic index	(Io)	3.43
Bimonthly dry ombrothermic index	(Iod2)	1.27
Threemonthly dry ombrothermic index	(Iod3)	1.56
Fourmonthly dry ombrothermic index	(Iod4)	1.58
Annual ombro-evaporation index	(Ioe)	0.69
Annual aridity index	(Iar)	1.5
Annual positive temperature	(Tp)	3155
Annual negative temperature	(Tn)	0
Dry station temperature	(Td)	761
Positive precipitation	(Pp)	1082

Nº of	P>4T	P:2T-4T	PT-2T	P<T	T<0º
Months	5	3	4	0	0

Continentality-Latitudinal Belt: Extremely Hyperoceanic - Eutropical
Bioclimate(Variant): TROPICAL XERIC (PLUVISEROTIN)
Bioclimatic belt...: UPPER INFRATROPICAL UPPER DRY

LA ROMANA (DOMINICAN REPUBLIC) 23 m.

P= 1082 18º15'N 68º34'W 40/40
T= 26 Ic= 3.4 Tp= 3155 Tn= 0
m= 24.4 M= 24.4 Itc= 750 Io= 3.4



TROPICAL XERIC (PLUVISEROTIN)
UPPER INFRATROPICAL UPPER DRY

Fig. 5 - Weather station of La Romana. (Biogeographical unit A7). Tropical, xeric macroclimate (Pluviserotin). Upper infratropical, upper dry.

weingartianus and *Hylocereus undatus* (Haw.) Britt. & Rose, plant formations which make contact with the dry forest in the SW of the island. Due to water stress, these habitats tend to exhibit deciduous species and correspond to associations we have recently proposed (see Cano & Veloz, 2011), *Chrysophyllo oliviformi-Sideroxyletum salicifolii* Cano & Veloz unpubl. and *Zamio debilis-Metopietum toxiferi* Cano & Veloz unpubl., which we have included in the class *Coccotrinacetho-Plumerietea* Knapp (1964) Borhidi 1991.

In dry and subhumid areas the serpentinicolous vegetation is of great interest. Well represented in the *sierras* of Yamasá and Prieta, this vegetation belongs to the phytosociological classes *Tabebuio-Bureserea* Knapp (1964) Borihidi 1991 and *Phyllantho-Neobracetea valenzuelanae* Borhidi & Muñiz in Borhidi *et al*. 1979.

The cloud forest belongs to the class *Occoteo-Magnolietea* Borhidi & Muñiz in Borhidi, Muñiz & Del Risco 1979. This forest grows in the tropical pluvial bioclimate peculiar to the rainy mountains of the Caribbean Sea and Mexico and is always characterized by tree-like ferns (*Cyathea*) with abundant epiphytes. These submountainous forests present 2 or 3 strata of perennial, sometimes deciduous trees, often accompanied by abundant epiphytes, such as *Lentibulariaceae*, *Pinguicula casabitoana* J. Jiménez (May, 2007) and (Mejía *et al*., 2000). The forest tends to develop in rainy areas with rainfall rates over 2,000 mm and one or no months of drought. The broad-leaved forest belongs to the class *Swietenio-Brosimetea* Knapp (1964) Borhidi 1991 (Borhidi, 1991).

In humid areas the macrobioclimate exhibits tropical pluvial standards. Consequently, there is no dry season and rainfall rates are over 2,000 mm. Usually, these humid areas are located in mountain ranges, such as Cordillera Septentrional, Cordillera Central, Sierra de Bahoruco, Cordillera Oriental, Los Haitises and Península de Samaná. Ombrophilous forests with variable physiognomical profiles tend to occur in these areas. In Loma la Herradura (Cordillera Oriental) the dominant plants are *Sloanea berteriana* Choisy, *Ormosia krugii* Urb., *Didymopanax morototoni* (Aubl.) Dcne. & Planch. and *Oreopanax capitatus* (Jacq.) Dcne. & Planch. In the beds of streams the *manaclar* of *Prestoea montana* (Grah.) Nichol occurs accompanied by *Guarea guidonia* (L.) Sleumer, *D. morototoni, Alchornea latifolia* Sw. and *Eugenia domingensis* Berg (Höner & Jiménez 1994).

In the Cordillera Central the ombrophilous forest is dominated by species of the genus *Magnolia* endemic to the island, such as *Magnolia pallescens* Urb. & Ekm. and *Magnolia domingensis* Urb. These appear together with the wind tree *Didymopanax tremulus* Krug & Urb., *Ocotea leucoxylon* (Sw.) Lanessan, *Persea oblongifolia* Kopp, *Cyrilla racemiflora* L., *Cecropia*

BIOCLIMATIC INDEX AND DIAGNOSIS

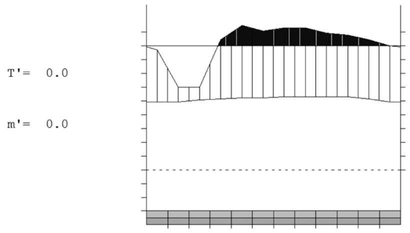
Thermicity index	(It)	747
Compensated thermicity index	(Itc)	747
Simple continentality index	(Ic)	2.1
Diurnality index	(Id)	0.0
Annual ombrothermic index	(Io)	6.46
Bimonthly dry ombrothermic index	(Iod2)	2.40
Threemonthly dry ombrothermic index	(Iod3)	3.50
Fourmonthly dry ombrothermic index	(Iod4)	4.02
Annual ombro-evaporation index	(Ioe)	1.33
Annual aridity index	(Iar)	0.8
Annual positive temperature	(Tp)	3084
Annual negative temperature	(Tn)	0
Dry station temperature	(Td)	738
Positive precipitation	(Pp)	1992

N° of	P>4T	P:2T-4T	PT-2T	P<T	T<0°
Months	9	3	0	0	0

Continentality-Latitudinal Belt: Extremely Hyperoceanic - Eutropical
Bioclimate.........: TROPICAL PLUVISEASONAL
Bioclimatic belt...: UPPER INFRATROPICAL LOW HUMID

YAMASA (DOMINICAN REPUBLIC) 69 m.

P= 1992 18°27'N 70°12'W 25/25
T= 26 Ic= 2.1 Tp= 3084 Tn= 0
m= 24.5 M= 24.5 Itc= 747 Io= 6.5



TROPICAL PLUVISEASONAL
UPPER INFRATROPICAL LOW HUMID

Fig. 6 - Weather station of Yamasá. (Biogeographical unit A8). Tropical pluviseasonal macrobioclimate. Upper infratropical, lower humid.

schreberiana Miq. and *Dendropanax arboreus* (L.) Decne. & Planch. The endemic species of this forest are *Myrsine nubicola* A. Liogier, *Odontadenia polyneura* (Urb.) Woods, *Marcgravia rubra* A. Liogier, *Pinguicula casabitoana* J. Jiménez and *Tabebuia vinosa* A. Gentry. As happens in Loma La Herradura, the *manaclar* of *P. montana* seeks refuge in the wettest gullies. When these plant communities are altered and their cover rate decreases, a fern community or *calimetal* of *Dicranopteris pectinata* (Willd.) Underw. and *Gleychenia bifida* (Willd.) Spreng. (May 2000) very soon appears.

When compared, the relevés carried out in the Cordillera Central and in the Sierra de Bahoruco reveal not only different substrates but also some clear differences in the two different cloud forests. While in the Cordillera Central the forest is made up of *M. pallescens* and *M. domingensis*, in the Sierra Bahoruco *Magnolia hamorii* Howard is the dominant species. The forest of *M. hamorii* and *D. tremulus* is associated with a large number of endemic taxa, such as *Lasianthus bahorucanus* Zanoni, *Psychotria guadalupensis* (DC.) Howard, *H. domingensis* Urb., *Mecranium ovatum* Cog. (endemismo local), *Vriesea tuercheimii* (Mez.) L.B. Smith, *Macrocarpaea domingensis* Urb., *Cestrum daphnoides* Griseb., *Hypolepis hispaniolica* Maxon, *Columnea domingensis* (Urb.) Wiehler and *Ilex tuerckheimii* Loes. This vegetation was included by Cano *et al.* (2009 a) in the classes *Ocoteo-Magnolietea* Borhidi & Muñiz in Borhidi, Muñiz & Del Risco 1979 and in *Weinmannio-Cyrilletea* Knapp 1964 (Fig. 7).

From a physiognomical point of view, high mountain areas present very similar plant formations. However, the flora is different because of the different soil profiles. In Sierra de Bahoruco substrates are calcareous. In the Cordillera Central substrates are siliceous. These plant formations are made up of pine tree forests of *Pinus occidentalis* Sw. The territories involved show lower rainfall rates: the sea of clouds coming from the trade winds which induces the broad-leaved forest never reaches these altitudes. In winter time temperatures may fall to 0 °C. As a result of the high mountain xericity values and low temperatures, a pine tree forest of *P. occidentalis* emerges. However, the bioclimatic chart (Fig. 8) does not show these xericity values because we do not have data for a sufficient number of years. In the Cordillera Central these forests grow on siliceous substrates and are home to a large number of endemic taxa. This is the case, for example, of *I. tuerckheimii* Loes., *Ilex fuertesiana* (Loes.) Loes., *Garrya fadyenii* Hooker, *Mikania barahonensis* Urb., *Myrica picardae* Krug & Urb., *Rubus eggersii* Rydberb., *Tetrazygia urbaniana* (Cogn. in Urb.) Croizat ex Moscoso and *Fuchsia pringsheimii* Urb. Parasite, endemic and specific species of *P. occidentalis*, *Dendropemon pycnophyllus* Krug & Urb. and *Dendropemon constantiae* Krug & Urb. play an important role in this forest. In the underbrush of this pine tree forest the gramineae *Isachne rigidifolia* (Poir.) Urb. is particularly abundant. When the pine tree forest becomes sparser, it is replaced by a formation of bunched gramineae dominated by *Danthonia domingensis* Hack. & Pilg. which covers extensive areas over 1,800 masl in the Cordillera Central. The pine tree forest of *P. occidentalis* growing on limestones in Sierra de Bahoruco exhibits a different kind of flora. The endemic taxa *Coccotrinax scoparia* Becc., *Agave intermixta* Trel., *Senecio barahonensis* Urb., *Cestrum brevifolium* Urb., *Eupatorium gabbii* Urb., *Lyonia truncatula* Urb., *Sideroxylon repens* (Urb. & Ekm.) T. Pennigton, *Cordia selleana* Urb., *Narvalina domingensis* Cass. and *Galactia rudolphiodes* (Griseb.) Benth. & Hook. *var. haitiensis* Urb. are particularly interesting here. There are also other endemic grasses of great interest, such as *Pilea spathulifolia* Groult, *Tetramicra ekmanii* Mansf., *Artemisia domingensis* Urb., *Gnaphalium eggersii* Urban and *Polygala crucianelloides* DC. We have depicted these high mountain pine forests as endemic habitats in Hispaniola (Cano *et al.,* 2011): *Dendropemom phycnophylli-Pinetum occidentalis* Cano, Veloz & Cano-Ortiz 2011 and *Cocotrino scopari-Pinetum occidentalis* Cano, Veloz & Cano-Ortiz 2011.

BIOCLIMATIC INDEX AND DIAGNOSIS

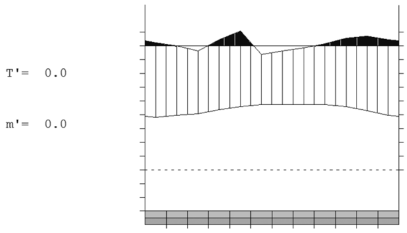
Thermicity index	(It)	611
Compensated thermicity index	(Itc)	611
Simple continentality index	(Ic)	4.6
Diurnality index	(Id)	10.2
Annual ombrothermic index	(Io)	5.87
Bimonthly dry ombrothermic index	(Iod2)	3.85
Threemonthly dry ombrothermic index	(Iod3)	3.94
Fourmonthly dry ombrothermic index	(Iod4)	5.29
Annual ombro-evaporation index	(Ioe)	1.46
Annual aridity index	(Iar)	0.7
Annual positive temperature	(Tp)	2616
Annual negative temperature	(Tn)	0
Dry station temperature	(Td)	704
Positive precipitation	(Pp)	1536

Nº of	P>4T	P:2T-4T	PT-2T	P<T	T<0°
Months	10	2	0	0	0

Continentality-Latitudinal Belt: Euhyperoceanic - Eutropical
Bioclimate.........: TROPICAL PLUVIAL
Bioclimatic belt...: LOW THERMOTROPICAL UPPER SUBHUMID

JARABACOA (DOMINICAN REPUBLIC) 529 m.

P= 1536	19°7'N	70°37'W	70/70
T= 22	Ic= 4.6	Tp= 2616	Tn= 0
m= 14.1	M= 25.2	Itc= 611	Io= 5.9



TROPICAL PLUVIAL
LOW THERMOTROPICAL UPPER SUBHUMID

Fig. 7 - Weather station of Jarabacoa. (Biogeographical unit A16). Tropical pluvial macroclimate. Upper thermotropical, upper humid.

BIOCLIMATIC INDEX AND DIAGNOSIS

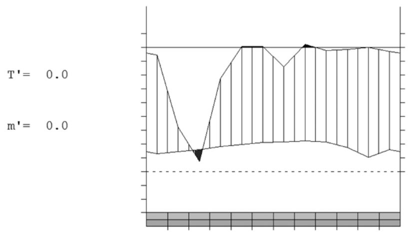
Thermicity index	(It)	186
Compensated thermicity index	(Itc)	187
Simple continentality index	(Ic)	5.9
Diurnality index	(Id)	0.0
Annual ombrothermic index	(Io)	9.57
Bimonthly dry ombrothermic index	(Iod2)	2.57
Threemonthly dry ombrothermic index	(Iod3)	4.40
Fourmonthly dry ombrothermic index	(Iod4)	6.36
Annual ombro-evaporation index	(Ioe)	1.72
Annual aridity index	(Iar)	0.6
Annual positive temperature	(Tp)	1041
Annual negative temperature	(Tn)	0
Dry station temperature	(Td)	241
Positive precipitation	(Pp)	996

Nº of	P>4T	P:2T-4T	PT-2T	P<T	T<0°
Months	11	0	0	1	0

Continentality-Latitudinal Belt: Euhyperoceanic - Eutropical
Bioclimate.........: TROPICAL PLUVIAL
Bioclimatic belt...: UPPER SUPRATROPICAL UPPER HUMID

V. NUEVO (DOMINICAN REPUBLIC) 2300 m.

P= 996	18°0'N	70°24'W	5/5
T= 9	Ic= 5.9	Tp= 1041	Tn= 0
m= 5.0	M= 5.0	Itc= 186	Io= 9.6



TROPICAL PLUVIAL
UPPER SUPRATROPICAL UPPER HUMID

Fig. 8 - Weather station V. Nuevo. (Biogeographical unit A16). Tropical pluvial macroclimate. Upper supratropical, upper humid.

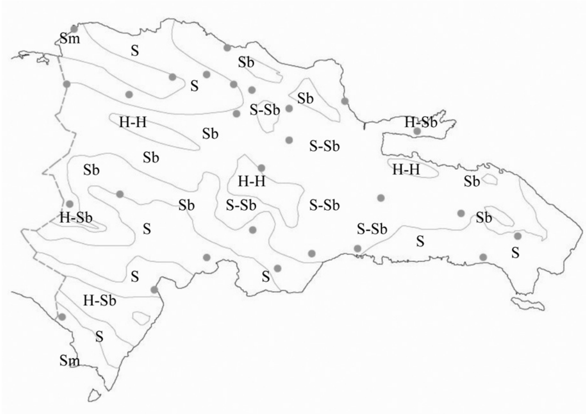


Fig. 9 - Map of ombrotypes of the Dominican Republic. (Sm) Semiarid, (S) Dry, (S-Sb) Dry-Subhumid, (Sb) Subhmid, (H-Sb) Humid-Submid, H-H Humid-Hyperhumid.

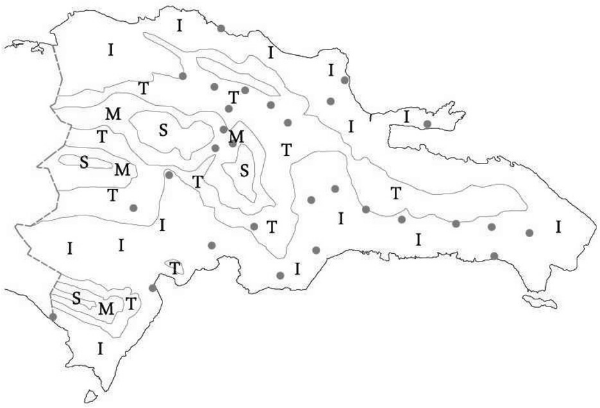


Fig. 10 - Map of thermotypes of the Dominican Republic. (I) Infratropical, (T) Thermotropical, (M) Mesotropical, (S) Supratropical.

Contributions

This work has contributed D. Francisco Javier Quiros Higueras in the design and arrangement of maps. Architect.

References

Borhidi A., 1991. Phytogeography and vegetation ecology of Cuba. Ed. Académiai/Kiado, Budapest.. 858 pp.

Cano E., Veloz A., Cano-Ortiz A. & Esteban Ruiz J.F., 2009a. Distribution of Central American Melastomataceae: biogeographical analysis of the Caribbean islands. Acta Botanica Gallica 156 (4): 527-557.

Cano E., Veloz A., Cano-Ortiz A. & Esteban Ruiz J.F., 2009b. Analysis of the Pterocarpus officinalis forests in the Gran Estero (Dominican Republic). Acta Botanica Gallica 156 (4): 559-570.

Cano E., Veloz A. & Cano-Ortiz A., 2010a. Contribution to the biogeography of Hispaniola (Dominican Republic. Haiti). Acta Botanica Gallica 157 (4): 581-598.

Cano E., Veloz A. & Cano-Ortiz A., 2010b. The habitats of *Leptochloopsis virgata* in the Dominican Republic. Acta Botanica Gallica 157 (4): 645-658

Cano E., Veloz A. & Cano-Ortiz A., 2011. Phytosociological study of the *Pinus occidentalis* forests in the Dominican Republic. Plant Biosystems 142 (2): 286-297.

Cano E. & Veloz A., 2011. Contribution to the knowledge of the plant communities of the Caribbean-Cibensean Sector in the Dominican Republic. Acta Botanica Gallica (in press.)

Cano E. & Cano-Ortiz A., 2012. Establishment of Biogeographic areas by endemic flora and habitats Distributing (Dominican Republic, Haiti R.) in Global Advances in Biogeography. INTECH Ed. 99-118. Croatia

Höner D & Jiménez F., 1994. Flora vascular y vegetación de la Loma la Herradura (Cordillera Oriental, República Dominicana). Moscosoa 8: 65-85

Liogier A.H., 1996-2000. La Flora de la Española. I-IX. Jardín Botánico Nacional Dr. Rafael Ma. Moscoso. Santo Domingo.

Liogier A.H.. 2000. Diccionario Botánico de nombres vulgares de la Española. Jardín Botánico Nacional Dr. Rafael Ma. Moscoso. Santo Domingo 598 pp.

May Th., 2000. Respuesta de la vegetación en un calimetal de Dicranopteris pectinata después de un fuego, en la parte oriental de la Cordillera Central. República Dominicana. Moscosoa 13: 113-132

May Th., 2007. Composición, estructura y diversidad en los Bosques nublados latifoliados de la Reserva Científica de Ebano Verde (Cordillera Central, República Dominicana). Moscosoa 15: 156-176

Mejia M., 2006. Flora de la Española: conocimiento actual y estado de conservación. Actas IX Congreso Latinoamericano de Botánica p. 11-12.

Mejía M., García R. & Jiménez R., 2000. Subregión fitogeográfica Barbacoa-Casabito: Riqueza florística y su importancia en la conservación de la flora de la isla Española. Moscosoa 11: 57-106

Mollat H., Wagner B.M., Cepek P. & Weiss W., 2004. Mapa geológico de la República Dominicana 1: 250.000. Geologisches Jahrbuch. Hannover 99 p.

Peguero B. & Veloz A., 1997. Algunas plantas amenazadas de la Península de Samaná. 1er Simposium internacional sobre Extinción. Santo Domingo. República Dominicana 19 pp.

Rivas-Martínez S., 2004. Sinopsis biogeográfica, bioclimática y vegetacional de América del Norte. Fitosociología 41: 19-52.

Rivas-Martínez S., 2005. Notions on dynamic-catenal phytosociology as a basis of landscape science. Plant Biosystems 139 (2): 135-144.

Rivas-Martínez S. & Loidi J., 1999. Bioclimatology of the Iberian Peninsula. Itinera Geobotanica 13:41-47.

Rivas-Martínez S & Rivas-Sáenz S., 2009. www.globalbioclimatics.org. University Complutense of Madrid and Phytosociological Research.

Rivas-Martínez S., Sánchez Mata D. & Costa M., 1999. North American boreal and western temperate forest vegetation. Syntaxonomical synopsis of the potential natural plant communities of North America. II. Itinera Geobotanica 12: 5-326.

Salazar J., Peguero B. & Veloz A., 1997. Flora de la Península de Samaná. República Dominicana. Moscossoa 9: 133-188.