

2.2. Greece



2.2.1. Greece - geography

The Greek Peninsula is located at Europe's southeastern end. It stretches between the 34th and 41st parallel and borders Albania (NW), Bulgaria and FYROM (N), Turkey (NE), the Aegean Sea to the east, the Mediterranean to the south and the Ionian Sea to the west.

Greece has an area of 131,944 square kilometres from which 106,777 form the continental part and 25,167 the insular area. It consists of mainland Greece (Attica, the Peloponnesse, Sterea Ellada, Thessaly, Epirus, Macedonia and Thrace) and the islands of the Aegean and Ionian seas.

Administratively, Greece is divided in 51 Prefects and its population is about 10.3 million inhabitants according to 1991 census.

Variety surely is the hallmark of the Greek landscape. Mountains cover almost 80% of the continental area forming a backbone that runs along the whole Greek territory,



from the Albanian border to cape Tainaro, and in projection, to Crete Island. The main mountain range, Pindos, is a succession of the Albanian mountains, which in their turn are the succession of the Dinaric Alps starting from Yugoslavia and coming all the way to the south. Mount Olympus is the highest peak in Greece at an altitude of 2,917 meters. Other peaks include Smolikas (2,637 m), Voras (2,524 m), Grammos (2,520 m), Ghiona (2,510 m), etc.

Valley areas are substantially less, covering about 20% of the Greek territory. In geographical terms they are mainly situated at central and northern Greece and the main ones are the valleys of west Thessaly (1,267 square km), Ghiannitsa (1,180 square km), Thessaloniki, Serres, Larissa, Komotini, etc.

The Greek coastline is impressive in terms of both length (13,676 km) and complexity, leading to numerous gulfs and bays, peninsulas, capes and straits. The insular area of Greece consists of about 2,000 islands in groups like the islands of the northeast Aegean, the Sporades, the Cyclades, the Dodecanesse, Crete, Evia and the Ionian islands.

Vegetation is dependent on geographical regions. The multiplicity of plants is exceptional with some 6,000 indigenous species having been recorded so far. This impressive abundance of flora and fauna arises from Greece's unique geographical location between Europe and Africa.

Greece is surrounded by seven seas: the Ionian, Aegean, Thracian, Myrtoon, Ikarion, Carpathian and Cretan. The Aegean Sea is the most important in terms of navigation and national economy. It is a closed, shallow sea connecting the Mediterranean to the Black Sea. The Ionian is the second more important sea. It is deeper than the Aegean, open to the south, and characterised by strong currents.

The rivers of Greece are relatively few, the most important being Aliakmonas (320 km), Acheloos (220 km), Pinios (205 km), Strymonas (118 km), Thiamis (115 km), Arachthos (110 km), etc. The bigger ones are those that have their sources outside Greece, such as Evros (Greek part 204 km of 530 km) and Nestos (Greek part 130 km of 234 km). Dams are installed at many of the rivers for reasons of irrigation and electricity generation.

Lakes in Greece are natural and artificial. Most of the naturally formed lakes are at the west of the country, such as Trichonida, Amvrakia, Pamvotis, Volvi, Vegoritis, Prespa and Kastoria Lake. Artificial lakes have been created by restricting the flow of rivers, such as the lakes at Kastraki and Kremasta. A few lakes were dried out in the past (Kopaida, Karla) in order to increase arable ground, but given the associated adverse environmental impacts plans are underway to recreate them.



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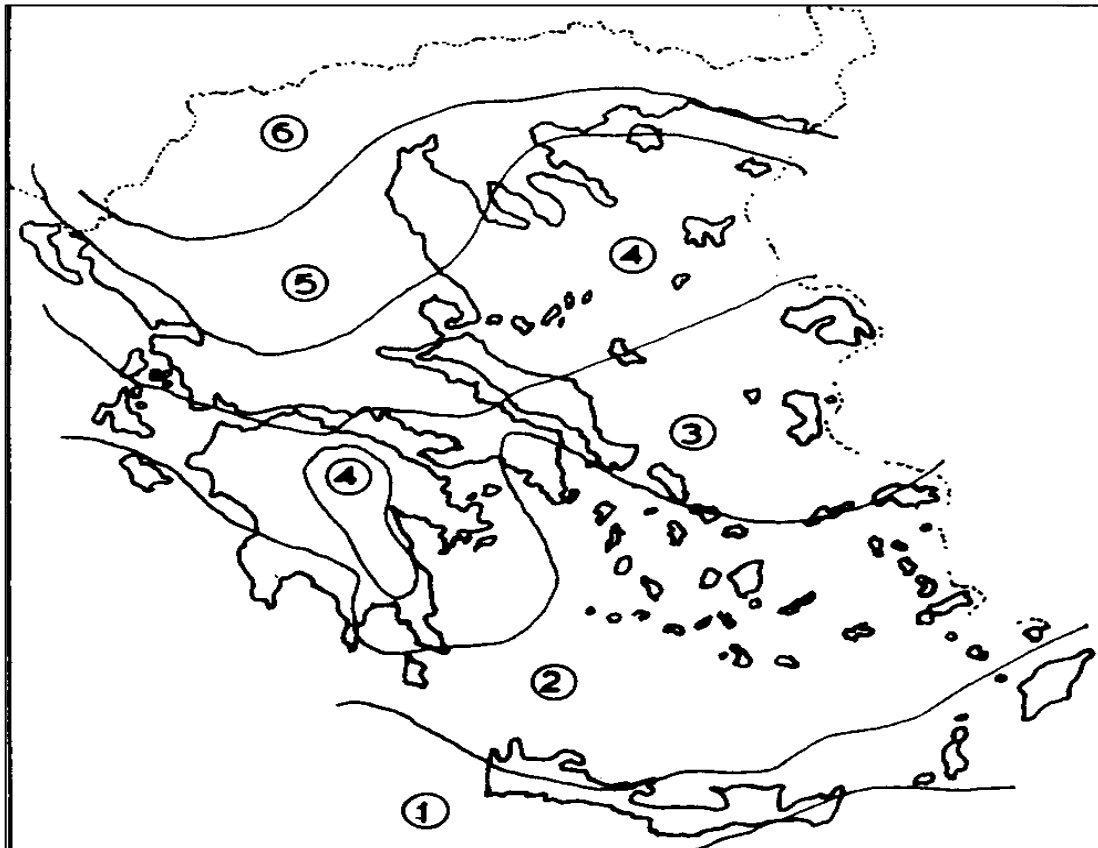


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2.2.2. Greece - climate

The climate has all typical characteristics of the Mediterranean climate, with limited raining seasons, dry summers, mild winters and ample sunshine (about 3,000 hours per year). From a climatic point of view the year can be divided in two main periods: the cold one lasting from October to March and the warm one lasting from April to September.

Greece can be divided in six main climatic areas, which are presented in the following map.



Different Climatic Areas in Greece

Additional information concerning the most important cities, the average atmosphere temperatures and the heating degree-days of the six different climatic areas in Greece can be viewed in the tables of the following page.

Table 1: Classification of the most important cities in the six climatic areas

1	2	3	4	5	6
Iraklion	Athens	Argostoli	Arta	Thessaloniki	Ioannina
Ierapetra	Kalamata	Korinthos	Corfu	Kavala	Komotini
Rhodes	Naxos	Mitilini	Lamia	Katerini	Konitsa
Sitia	Samos	Patra	Limnos	Larisa	Serres
Chania	Syros	Chios			

Table 2: Average Atmosphere Temperature during 24 hours (⁰ C)

Area	J	F	M	A	M	J	J	A	S	O	N	D	M.V
1	13	13	15	17	21	26	28	28	25	22	18	15	20
2	11	12	13	16	20	25	27	27	24	20	16	13	19
3	11	12	13	16	20	25	27	27	24	20	16	13	19
4	8	9	11	16	20	25	27	27	23	18	14	9	17
5	5	7	10	14	20	24	27	27	23	17	12	7	16
6	4	6	9	15	20	24	27	24	22	16	11	6	15

Table 3: Heating Degree Days (Reference Temperature: 18 °C)

Area	J	F	M	A	M	J	J	A	S	O	N	D	Total
1	127	147	131	78	-	-	-	-	-	10	52	130	720
2	264	224	196	85	10	-	-	-	-	29	96	206	1110
3	281	225	205	121	14	-	-	-	-	46	129	246	1267
4	310	263	251	128	25	-	-	-	-	65	166	277	1485
5	396	313	268	130	23	-	-	-	-	70	187	388	1725
6	405	349	300	189	69	-	-	-	-	73	276	404	2065

Furthermore, some areas that worth to be mentioned are: mountainous, north Greece, Ionian and Aegean. Mountainous areas are characterised by low temperatures, high snowfall, clouds and strong winds. The winter is harsh and the summer is cool. North Greece is characterised by less dry summers and regular rainfall throughout the year. The winter is harsh and the summer rainy. The typical characteristics of the Ionian are the mild winter, plenty of rainfall, limited clouding and ample sunshine. It is the sunniest area with a comfortable, mild climate. The Aegean is characterised by strong and lasting winds, ample sunshine and humidity.

In the following tables information about the weather is provided, in terms of temperature, daily sunshine and humidity. The temperatures given are the average monthly temperatures for various regions in Greece. This takes into account both day and night, so much higher daytime figures than those given should be expected. In fact, in June it is not uncommon to find temperatures of more than 40 °C on some days.

Table 4: Average monthly temperatures (°C)

	Athens	Thessaloniki	Crete	Rhodes
January	10.2	5.0	12.1	11.8
February	10.6	6.6	12.2	12.0
March	12.3	9.7	13.5	13.6
April	16.0	14.2	16.6	16.6
May	20.6	19.4	20.2	20.5
June	25.1	24.2	24.3	24.7
July	27.9	26.5	26.1	26.9
August	27.8	25.9	26.0	27.0
September	24.2	21.7	23.4	24.6
October	19.5	16.1	20.0	20.7
November	15.5	11.0	16.7	16.5
December	12.0	6.8	13.7	13.3

Average sunshine depicts the difference in climatic conditions between the south of Greece (Athens area and the islands of Crete and Rhodes) and the north (Thessaloniki area).

Table 5: Average sunshine (hours/day)

	Athens	Thessaloniki	Crete	Rhodes
January	4.2	3.1	3.8	4.4
February	4.8	3.5	4.3	5.2
March	5.9	4.8	5.7	6.6
April	7.7	6.8	7.6	8.0
May	9.4	8.1	9.7	10.0
June	11.2	9.9	11.7	11.7
July	11.7	10.5	12.0	12.1
August	11.0	9.5	11.2	11.5
September	9.2	7.7	9.4	10.1
October	6.7	5.3	6.4	7.8
November	5.1	3.9	5.0	5.9
December	3.9	3.3	3.9	4.5

Relative humidity figures illustrate the fact that northern Greece enjoys wetter conditions than the southern part. Emphasis is drawn upon the very dry summer seasons of the wider Athens area.

Table 6: Relative humidity (%)

	Athens	Thessaloniki	Crete	Rhodes
January	68.7	75.8	67.9	70.3
February	68.2	73.0	66.1	69.4
March	66.4	72.9	66.2	69.1
April	62.9	68.5	61.9	66.5
May	59.4	64.3	61.0	63.9
June	53.5	56.3	56.5	58.0
July	47.5	53.6	56.8	57.0
August	47.1	55.4	58.2	59.4
September	53.5	62.5	61.2	60.9
October	62.1	70.4	65.4	67.2
November	68.9	77.3	67.5	71.7
December	69.9	77.8	67.7	72.3

2.3. Romania



2.3.1. Romania - geography

Romania, with 22.4 million people, is the second most populous country in Central and Eastern Europe. Geographically, Romania is located in Southeastern Europe and borders the Moldova, Ukraine, Hungary, Former Yugoslavia and Bulgaria. Romania is situated inside and outside of the Carpathians Arch, on the Danube (1075 km) lower course and has exit to the Black Sea, being placed at a distance ranging between 1050 km and 2800 km against the continent extremities.

Romanian area utilisation – total area is 238,390 square kilometres out of which, agricultural areas cover 61%, forest 28%, waters 4%, buildings and gardens 3%, roads and railways 2% and other areas represent 2%. Romania's territory is unfolding on $4^{\circ}37'59''$ latitude and $9^{\circ}25'40''$ longitude being placed at the crossing of the parallel $45^{\circ}N$ with the meridian $25^{\circ}E$.

Romanian seaside of the Black Sea is lying on 245 km between stream Musura (at the border with Ukraine) and locality Vama Veche (at the border with Bulgaria).



Romania's relief consists of three major levels namely: the highest one in the Carpathians (the highest peak is Moldoveanu 2544 m), the middle one which corresponds to the Sub-Carpathians, to the hills and to the plateaux and the lowest one in plains, meadows and Danube Delta. The Danube Delta, the youngest relief unit under permanent formation, has the average height 0.52 m.

Main features of relief units are: proportionality (31% mountains, 36% hills and plateaux, 33% plains and meadows), concentric display, in amphitheater, of the relief major levels.

Romanian rivers are radial displayed, most of them having the springs in the Carpathians. Their main collector is the Danube River, which crosses the country in the south on 1075 km length and flows into the Black Sea.

The lakes are represented by natural lakes spread in all major units of relief, from glacial lakes in the mountains area (Mioarelor lake - Fagaras 2282 m) to river – maritime banks (Techirghiol lake 1.5 m) and anthropic lakes as well, in all relief units built to turn into account the hydro-energy potential, to supply with water, irrigation, fish breeding and recreation.

2.3.2. Romania - climate

Romania's climate is temperate-continental of transition, with oceanic influences from the west, Mediterranean ones from southwest and continental-excessive ones from the northeast. Average yearly temperature is latitudinally different, 8⁰C in the north and 11⁰C in the south and altitudinally with values of -2.5⁰C in the mountain areas (Omu peak-Bucegi massif) and 11.6⁰C in the plain (Zimnicea town - Teleorman county).

Depending on outdoor temperatures in winter periods the Romania's territory is dividing in four climatic areas:

area I * conventional outdoor temperatures of -12⁰C – represented by the Black Sea coast and the west side of Romania;

area II * conventional outdoor temperatures of -15⁰C – represented by the south-east side and the south side of Romania;

area III * conventional outdoor temperatures of -18⁰C – represented by the east side and the north-west side of Romania;

area IV * conventional outdoor temperatures of -21⁰C – represented by the north side, the northeast side and the center of Romania, e.g. the Carpathians area.

Yearly precipitations decrease in intensity from west to east, from 600 mm to 500 mm in the Romanian Plain and under 400 mm, in Dobrogea, and in the mountain areas they reach 1000 -1400 mm. West side slopes of Western Carpathians and Eastern ones that stand before wet air masses, oceanic, get the most important quantities of rainfalls. An important part of rainfalls is represented by snowfalls, within mountain area, where snow layer lasts 120 - 150 days.

Because of geographical position and its relief, Romania has a temperate climate, being under the influence of wet air masses, coming from Atlantic Ocean and of continental dry air masses, coming from the East side of the continent and, also, of the Mediterranean air, coming from South. From this result a temperate-continental climate with local variations determined by seasons succession, by relief forms, by the

position of Carpathians main branches, by largeness and orientation of valleys. Direction and intensity of wind are different on Romania area.

The Carpathians represents an obstacle in air masses travelling. At their outer side prevail dry winds from Northern and Western side, their direction being parallel with the outside part of the mountains. In Western and Central part of the country prevail Western wet winds. The highest wind velocity can reach sometimes 30 m/s, while in low regions it decreases intensely, the wind direction being substantially modified by the relief.

The wind regime is influenced by the position of the country: as frequency prevails West-East winds, the others being weaker. As intensity Crivatz can be felt in Moldavia, Romanian field and Dobrogea; Cosava in Banat and Nemira in Barsa depression.

The time of sun shining has a high value in field area (2100-2200 hours yearly) and a lower one in mountain area (1800 hours). The highest values are registered on Black Sea coast (2300 hours) in Danube delta (2400 - 2500 hours).



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