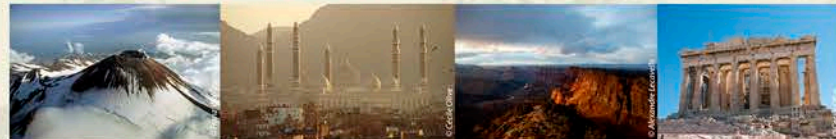


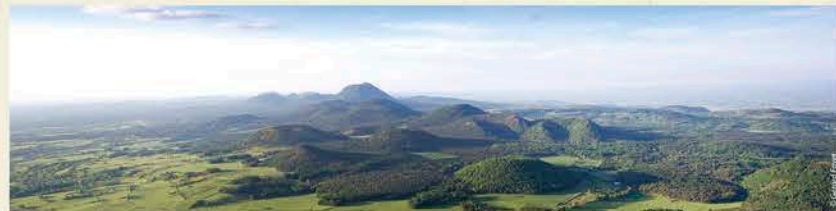
Chaîne des Puys and Limagne fault tectonic arena

UNESCO and World Heritage



The United Nations Educational, Scientific and Cultural Organization (UNESCO), set up in 1945, initiated the World Heritage program with the specific objective of preserving places of universal value in order to pass them on to the future generations. These sites, whose importance and significance transcend national boundaries, thus belong to all the peoples of the world, and it is their responsibility to preserve them.

An exceptionally complete illustration of continental break-up



The Chaîne des Puys-Limagne fault ensemble perfectly illustrates one of the major terrestrial phenomena: that of continental break-up. The geological formations of this exceptional tectonic site demonstrate clearly how the continental crust underwent faulting and downwards movement, allowing magma to rise, and ultimately leading to significant uplift of the ground surface. The Chaîne des Puys alignment – around 80 volcanoes – contains the closely grouped collection of highly diverse domes, cones and maars that can be found on Earth.



Hiking guidelines

The Chaîne des Puys is much appreciated and visited by walkers and tourists but it is also relatively fragile. Thus certain rules must be respected in order to preserve it:

- Follow defined paths, and do not take short cuts across slopes;
- Keep your dog on a leash, especially around livestock;
- Give livestock a wide berth, and remember to fasten gates behind you;
- Pick up your litter and do not start a fire in unauthorised areas;
- Obey Private Property signs and other 'no right of way' signs;
- Only ride motorised bikes on paths which are authorised for this usage.



Shuttle buses to the volcanoes

Shuttle buses run from April to November between Clermont-Ferrand (with stops at the train station, Ballainvilliers, and Jaude) and the train station at the base of the puy de Dôme (the Panoramique des Dômes), the car park at the puy des Goules, and Vulcania.

For more information visit the sites: www.puy-de-dome.fr > See 'Transport' and 'navettes volcan's' (shuttle buses) tab
www.panoramiquedesdomes.fr > How to come?

Hiking circuits

01. The puy de Louchadière: 3.5 hours - 11 km - difficult - yellow markers - at Beauregard in Saint-Ours-les-Roches
02. The puys de Jumes and de la Coquille: 3 hours - 10.5 km - medium - yellow markers - at Beauregard in Saint-Ours-les-Roches
03. The puys de Chopine and des Gouttes: 2 hours - 6 km - easy - blue markers - D559 going towards Chant-la-Mouteyre
04. The Croix de Ternant: 3.5 hours - 13 km - medium - yellow markers - the church at Chant-la-Mouteyre
05. The cheire de Côme: 3 hours - 9 km - medium - yellow markers - D559 going towards Mazeyre
06. The puy des Goules and the cave in the puy de Sarcou: 2 hours - 5.3 km - easy - car park at the Puy des Goules
07. The puy de Pariou: 3 hours - 6.2 km - medium - car park at the Puy des Goules
08. Saint-Pierre-le-Chastel: 2 hours - 7.5 km - easy - blue markers - town hall (Marie) rental accommodation (site)
09. The puy de Dôme GRAND SITE DE FRANCE: 2.5 hours - 7.5 km - medium - yellow markers - car park at the Col de Ceyssat
10. Circular walk around the base of the puy de Dôme: 3 hours - 10 km - medium - yellow markers - car park at the Col de Ceyssat
11. The puy de Montroueix: 4 hours - 14 km - medium - green markers - La Baraque car park at the church
12. The Paradis: 2.5 hours - 7.5 km - medium - yellow markers - Royat (avenue du Paradis)
13. The puy de Mercœur: 3.5 hours - 11 km - medium - yellow markers - Laschamps, by the church (place de l'Eglise)
14. The gorges de l'Artière: 2.5 hours - 8 km - medium - blue markers - Ceyrat (car park next to the stone bridge)
15. The puy de la Vache: 1.5 hour - 3 km - easy - painted butterfly markers - car park on the D5 1.5 km after the Château de Montlosier, Aydat
16. The puy de Vichatel: 3 hours - 9.5 km - medium - yellow markers - car park on the D5 1.5 km after the Château de Montlosier, Aydat
17. Nadailat: 2 hours - 7 km - easy - blue markers - car park at the cemetery
18. The lac d'Aydat: 4 hours - 13 km - medium - yellow markers - north side of the lake
19. The puy de Combrasse and the Nars d'Espinasse: 3 hours - 10 km - medium - yellow markers - D983, at the bottom of Combrasse
20. The plateau de Gergovie: 1.5 hour - 3.5 km - easy - painted butterfly markers - at the car park by the monument on the plateau

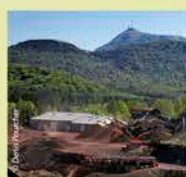
The boucle des Dômes: 2 or 3 days (about 14 hours walking in total) - 49 km - easy - green and white markers - visitor centre at the foot of the puy de Dôme

Hike included in the Local Council's plan of hiking routes (PDIPR) Can be downloaded from the site: www.rando-planetepuydedome.com

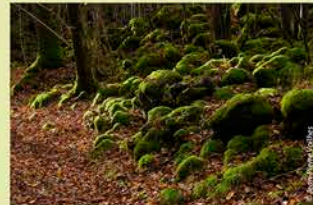
Information at the start point of hikes (paths maintained by the Auvergne Volcanoes Regional Park)

The Lemptéguy volcano

The Lemptéguy volcano is a very unusual and interesting tourist site, combining fun and science, which provides a unique view into the internal structure of a Strombolian cone. The guided tour into the heart of the edifice is accompanied by a 4D film, a family ride, and an exhibition about the scientific research carried out at the site.



The cheire de Côme



Certain recent lava flows in the Chaîne des Puys are locally termed 'cheire'. The so-called blocky lava flow originating from the puy de Côme was replaced by blocks of lava being carried and rolled along on top of a viscous flow which occasionally rose up between the blocks.

Vulcania



Vulcania is a theme park aimed at all the family to explore the world of volcanoes and planet Earth. In addition to the rides, the park includes moving platforms, 3D films, high-tech modules, tandem experiences in a deserted area, and guided tours both inside and around the grounds. There is also a tethered hot air balloon which provides an opportunity to admire the surrounding volcanoes from above.

The Puy de Dôme



The puy de Dôme, the emblematic summit of the Chaîne des Puys (1,465 m), is a Péléen volcano (dome) which formed around 11,000 years ago. It was granted the status of a Grand Site de France in 2008, and from 2012 an ecological cog and wind farm, the 'Panoramique des Dômes', has provided means of access to the summit. There is an exceptional 360° view from the summit, and the site lays on free activities throughout the year, as well as catering to tourists by providing information of a scientific, fun and educational nature. (See hike No 9 and 10) www.panoramiquedesdomes.fr



The twinned craters of the Puys de la Vache and Lassolas and their volcanic bombs



These two Strombolian cones are the youngest volcanoes in the Chaîne des Puys (8,500 years old), and their breached craters resembling two giant attached croissants are amongst the most emblematic. From their redolent summits there is a breathtaking view of the southern part of the volcanic alignment. Excellent examples of volcanic bombs are found at the foot of the volcanoes in a former quarry, which has been landscaped into an educational site. (See hike No.15)

The Nars d'Espinasse: an infilled maar



A maar forms when rising lava comes into contact with a body of water, provoking a violent explosion. The Nars d'Espinasse, unlike Lake Pavin and the Gout de Teneat whose craters are still filled with water, has been infilled by sediment to form a bog. (See hike No.19)

Formation of a maar



The puy de Vichatel



This volcano in the south of the Chaîne des Puys is less well known than its neighbouring volcanoes of la Vache and Lassolas, but is well worth a visit. Work carried out by the Auvergne Volcanoes Regional Park has improved the visibility of the crater's outline, and has opened up a path to the summit. The crater is almost as deep as that of the Puy de Sarcou, and the summit provides a panoramic view of the southern part of the chain and the Monts Dore. (See hike No. 16)

The Puys de Jumes and Coquille



These two Strombolian-type volcanoes, situated at the extreme north of the volcanic chain, are intimately nested and are characterised by two small, smooth-contoured craters. From their highest point there is a breathtaking view of the Chaîne des Puys. To provide easy and safe access to hike the Auvergne Volcanoes Regional Park carried out work in 2015 to restore the footpaths. (See hike No. 2)

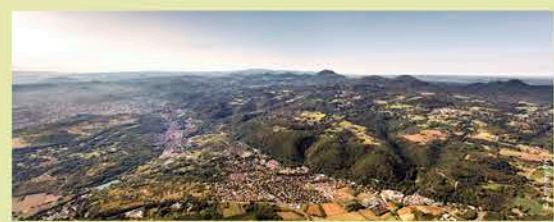
The Puys des Gouttes and Chopine



This striking pair of volcanoes is composed of a semi-circle of volcanic ejecta (scoria) 44,000 years old (Gouttes) and a volcanic spine around 9,500 years old (Chopine). The latter resulted from the accumulation of highly viscous lava in the volcanic vent. (See hike No.3)

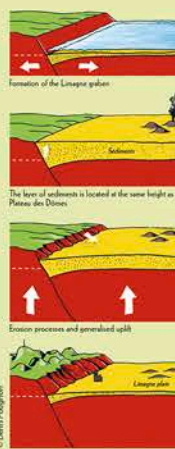
The Limagne fault: an aborted ocean

The Limagne fault developed 35 million years ago as a result of the formation of the Alps. The Earth's crust became thinner, leading to a series of faults and grabens now visible throughout Western Europe, collectively termed the West European Rift. If extension had not been discontinued then the crust would have separated entirely and an ocean formed in the place of the Limagne Plain. The fault is aligned parallel to the Chaîne des Puys, and marks the separation (fracture scar) between the Plateau des Dômes and the Limagne Plain in which Clermont Ferrand is located.

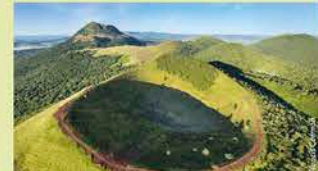


The Plateau de Gergovie, the puy de Gravenoire and the higher ground at Volvic offer the best view points over the fault. The Pitine valley at Clermont provides a close-up view of the Limagne Fault with evidence for the movement which occurred during the downthrow phase of faulting. (See hike No.14)

Formation of the Limagne fault



The puy Pariou: a perfect cone



The Pariou crater, the most famous in the Auvergne, formed around 10,000 years ago following a complex eruption history. A lava lake was created by the growth of a Strombolian cone, which subsequently caused the lava lake to empty, resulting in an almost perfect crater 200 m in diameter. The Puy is particularly susceptible to erosion, and has been subject to special management: steps have been constructed up to the summit on the south-east flank to avoid the development of multiple paths and to protect the fragile volcanic soil. (See hike No.7)



The plateau de Gergovie

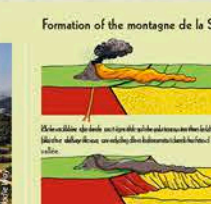
This site is well known as the scene of the famous battle described in the Gallic Wars between Vercingetorix and Julius Caesar in 52 B.C. The plateau of Gergovie has an archaeological museum, and provides an exceptional view of the entire Chaîne des Puys, the Limagne graben and the inverted relief of the Montagne de la Serre. (See hike No.10)



The Montagne de la Serre



The Montagne de la Serre lava flow, which is 10 km in length and 3 million years old, dominates the southern part of the Limagne Plain. The Plateau de Gergovie, another example of inverted relief, offers one of the best view points over the Montagne de la Serre. (See hike No.17)



The dammed lakes of Aydat and Cassière



The lava flow deriving from the twin puys de la Vache and Lassolas caused numerous changes to the topography. It flows 20 km in length following the Veyre valley, and has dammed lakes Aydat and Cassière along the way; they provide the only remaining evidence in the form of the natural barriers formed by the flow. Hike No. 18 provides beautiful panoramic views of the Chaîne des Puys and allows the opportunity to explore Lake Aydat, renowned for its water sports and other leisure activities.

Key to tourist map



Key to geological map





Tourist Offices

Clermont Auvergne Tourisme
www.clermontauvergne.com
Clermont Ferrand (63000) : Place de la Victoire - 04 73 98 65 00
Roiat Chamalières (63130) : 1 av. Auguste Bostaud - 04 73 99 74 70

Mont-Auvergne Tourisme
www.montauvergne.com
Aurillac (63070) : Sauréna - 04 73 79 37 69
La Roche-Blanche (63670) : 8 rue de la Mairie - 04 73 79 42 98
Saint-Saturnin (63450) : Garage de Mail - 04 73 39 21 17

Tour Volcans Pays de Volvic
Roiat (63000) : 27 place de la Fédération - 04 73 38 59 45
www.tourvolcans.com
Volvic (63450) : Place de l'Église - 04 73 33 58 73
www.volvic-tourisme.com

Office de tourisme des Combrailles
www.tourisme-combrailles.fr
St-Gervais d'Auvergne (63390) : Place R. Guévin - 04 73 85 80 94
Puygnaud (63330) : 04 73 85 80 94

Maison du Tourisme du Livradois-Forez
www.tourisme-livradois-forez.com
Maison du Parc : 63880 St-Gervais-Montmort - 04 73 95 57 57

Pays d'Issoire Tourisme
www.issoire-tourisme.com
9 place Saint Paul - 63500 Issoire - 04 73 89 15 90

Office de tourisme Auvergne Volcans Sancy
www.auvergnevolcansancy.com
La Tour d'Auvergne (63660) : Place de la mairie - 04 73 91 79 78
Ossial (63301) : Place Notre-Dame - 04 73 05 89 77

Office de tourisme du Massif du Sancy
www.sancy.com
11 avenue de la Libération - 63240 Le Mont-Dore - 04 73 65 80 21

Office de tourisme communautaire du bassin d'Aurillac (Cantal)
www.aurillac.com
7 rue des Carmes - 15000 Aurillac - 04 71 48 46 58

Office de tourisme des Moulins et sa région (Allier)
www.moulins-tourisme.com
11 rue François Peron - 03000 Moulins - 04 70 44 14 14

Office de tourisme du Pays-en-Velay (Haute-Loire)
www.lepaysenvelay-tourisme.fr
2 place du Châtel - 43000 Le Puy-en-Velay - 04 71 09 38 41

A little background to the map

The Massif Central is situated in the heart of France, and prior to continental breakup it was part of a very large mountain chain termed the Hercynian mountain chain. Remnants of this mountain chain can still be found from Spain to Bohemia, as well as in the Appalachians (USA) and in North Africa.

Its long and complex history began 440 million years ago (Ma) when two continents collided, causing oceans and sediment-filled grabens (infilled with gravel, sand and clay) to be buried. This material was carried to great depth during the collision, where it was crushed, deformed and recrystallised to form metamorphic rocks, while at the surface there was powerful volcanism. With time many of the metamorphic rocks underwent melting to recrystallise as granites around 300 Ma. The whole Hercynian chain was then subject to erosion down to its roots, thus bringing to the surface rocks which had formed at depth. The eroded mountains were thus transformed into a vast plateau, remnants of which can be seen around the world.

Around 37 Ma, at the start of the formation of the Alps, the Earth's crust thinned and stretched in the region of the Massif Central. Faults formed, creating a vast series of downthrown grabens separated by upland areas, and these grabens gradually infilled with sedimentary material derived from the uplands by erosion.

Soon after this the emplacement of the huge volcanic massifs of the Auvergne began: the Velay, Monts du Cantal, Cézallier, Devès, Monts Dore and the Chaîne des Puys; and the whole region was uplifted by several hundred metres.

This sequence of events, which built up the sites as they appear now, explains the varied landscape and relief which characterise the region today.

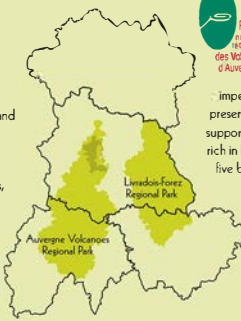
Regional Natural Parks



The Livradois-Forez Regional Park was set up in 1986 by locally elected officials to preserve the environment and landscape while simultaneously stimulating economic and social development of the area.

The Livradois-Forez has a huge diversity of natural habitats, from forested mountains, through dry hillides, to humid plains.

Park headquarters
63880 Saint-Gervais-Montmort
04 73 95 57 57



The Auvergne Volcans Regional Park (PRVA) is the largest park in metropolitan France, as well as one of the oldest, being set up in 1977. It was established under the impetus of elected officials and scientists who wished to preserve and promote the volcanic heritage and provide support for the population living there. Its territory, which is rich in fauna and has an exceptional endemic flora, comprises five big massifs, of which four are volcanic: the Chaîne des Puys, the Monts Dore, the Cézallier and the Monts du Cantal.

Park headquarters
• Montluçon - 03070 Aydat - 04 73 65 64 06
• Park and Tourism Headquarters at Mont
15300 Moulins - 04 71 90 09 47

National Nature Reserves

Four of the five national nature reserves designated locally are situated within the PRVA (Massifs des Monts Dore) and have numerous lakes aimed at the discovery of their geological and natural richness, while respecting the fragility of these environments. The Val d'Allier nature reserve covers a distance of around twenty kilometers containing the banks on both sides of the river. It is an exceptional area for observing the local fauna, particularly the birds, with more than 100 recorded species. To find out more: www.reservenaturelles.org

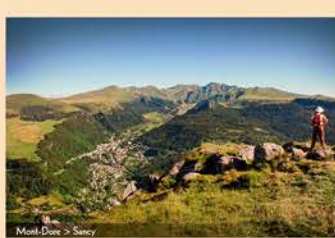


The Monts Dore: fire and ice

This mountainous area is a hotbed of activity covering an area of around 500 km². Eruptions began 3.2 Ma, and ended 230, 000 years ago with the construction of the pay de Sancy.

► The Sancy is the highest point in the Massif Central (1885 m), as well as being the youngest and least eroded of the volcanic summits of the Monts Dore. A cable car now goes up to the summit, from where there is an exceptional panoramic view of the Chaîne des Puys and all the way over to the Alps.

► The Banne d'Ondarie is a volcanic which summit formed 2 Ma, before being moulded by glaciers. The summit provides 360° views of the surrounding massifs.



► Other geological curiosities: the Valley de Chaudfleur (glacial cirque carved out of the eastern flank of the pay de Sancy), the Roches Talieres and Sarradone (two volcanic cones forming a glacial valley), the Chaussée de Géants of the Tour d'Auvergne (basaltic columns which make up a pavement 2000 m² in area). To find out more: www.sancy.com - www.auvergnevolcansancy.com For films: www.sancy.com/films



The Monts du Cantal: remnants of a huge volcano

The Monts du Cantal is the largest steno-volcano in Europe, built up during a succession of eruptive phases which lasted nearly 10 million years. The volcano was periodically broken up by large-scale collapse phenomena and underwent erosion by glaciers and water. Today it is characterised by long glacial valleys, low fens and remnants of varied shapes.

► The pay Mary, classified as a GRAND SITE DE FRANCE in 2012, it provides an exceptional panoramic view, as well as a number of hikes and outdoor activities. The different visitor centres around the pay Mary provide information on this popular volcano and its environment.

► The Plomb du Cantal, the highest point in the Monts du Cantal, is reachable by cable car, and the new point is an integral part of the steno-volcano, allowing visitors to visualise the geological history. With its core of basaltic lava, it is the most recent part of this huge edifice, formed 2.5 Ma.



► Other sites to visit: The Valley of the Impressed (glacial valley at the foot of the pay Mary), Salers (village perched on a volcanic plateau, classified "One of the most beautiful villages of France"), the columnar basalt of Saint-Flour (circumferential in the interior of a thick basaltic lava flow), pay Grou (dome with summit at 1600 m).

To find out more: www.cantal-destination.com - www.paysmary.fr - www.valdesimpresse.fr For films: www.cantal.com/films



Thermal sources: water deriving from the ground

Thermal activity is very widespread in the Massif Central, but is linked to the movement of tectonic plates rather than to the volcanism. It results from the diverse tectonic movements and fractures which affected the region millions of years ago. These fissures allow water to circulate and heat up at depth, and this heat is converted due to a very rapid rise to the surface.

► Chaudes-Aigues: this spa town has the hottest thermal source in Europe (52°C), as well as other sources in and around the town; its history is explained in the local "Géothermie" museum.

► Other sites: thermal sources at Vichy (spa town rich in culture on the banks of the Allier river), Mont-Dore (spa town and winter sports resort).

To find out more: www.villesdespuys.com - www.chaudesaigues.com - www.sancy.com - www.vichy-destinations.fr



Museums and attractions: to explain the geological history of the Earth



1. Numerous tourist sites provide a fun introduction to geology, mineralogy, the history of the Earth and paleontology:

- Paléoparc (Cantal): to learn more about paleontology and our planet
04 70 90 35 90 - www.paleoparc.com
- Musée de la Mine (Noyant d'Allier): introduction to the world of mining
04 70 47 31 51 - www.musee-mine.com
- Paléoterrain (Châtelresne): museum about daily life in a Neolithic time
04 70 34 84 51 - www.paleoterrain.com
- Site troglodyte de Jonat (St-Pierre-Colamine): remains of a village carved into a cliff composed of volcanic rock
04 73 96 31 69 - www.troglodyte.com
- La Maison de l'Aurélien (Vernet-la-Varenne): introduction to this people's prehistoric material and its history
04 73 71 31 32 - www.musee-aurilien.com
- Muséum des Volcans (Aurillac): presentation of the Cantal volcanoes and the processes of the Earth's interior
04 71 48 07 00 - www.musee-aurillac.fr
- Vale de la Rodde (Allier): guided visit about the discovery of antimony carried out within a series of mining galleries
04 71 76 77 32 - www.vale-de-la-rodde.com
- Musée de la Paléontologie (Cantal): exhibition of the fossils of large mammals found in the region
04 71 77 47 56 - www.musee-paleo.com



Crater lakes: when fire meets water

A maar (an explosion crater) forms when lava, rising to the surface, comes into contact with a body of water, provoking a violent explosion. The ensuing crater might then be filled by water or sediments (see reverse: Nasse d'Espérance). Being dotted with crater lakes, the Monts Dore and the Velay are ideal places to admire this phenomenon.

► Lac Pavin, 92 m in depth, occupies a maar crater (around 7000 years old) the erosion of which sent debris as far as 25 km away. A circular lake around the crater lakes around one hour, and provides a chance to enjoy the lake, which is fed by groundwater.

► The Lac de Bouchet, situated at an altitude of 1205 m in the Velay, occupies a circular crater which formed 350,000 years ago. It is surrounded by a ring of pyroclastic deposits of volcanic origin.

► Other crater lakes:

- In the north of the Chaîne des Puys: le Cour de Tencet
- In the Monts Dore: Lac-Servières, le Lac de la Roche d'En-Haut, Godivelle, lac Chauvet
- In the Velay (Haute-Loire): le Lac de Saint-Font, lac d'hostes



The Velay: contrasting volcanic landscapes



The volcanism in the Velay occupies a large part of the Haute-Loire, and spills over into its neighbouring department, the Ardèche. It covers a long period of time, from 13.5 Ma to a few tens of thousands years ago for the southern volcanoes. Thanks to the effects of erosion, the volcanism in Velay has taken on very contrasting landscapes, in particular:

- In the Boudières, facing the Alps and dominated by Mont Mézenc, a volcanic cone 1752 m in altitude.
- In the Pay-en-Velay basin, where a number of exposed volcanic chimneys are topped by statues and churches.
- In the Devès, a huge basaltic plateau capped by Strombolian cones, of which the most emblematic is the Mont Bar (1161 m), and sub-lacustrine volcanoes (formed underwater), such as the Colonne Saint-Roch, and Pulgare.

In the gorges of the Allier and the Loire and the valleys of the Ardèche where excellent examples of columnar basalt can be seen: Chilhac, Rocher de Chauray, Roche Servière, Montcel d'Allier, Aumont, and the low fens of Chauray and Saint-Pierre d'Allier.

To find out more: www.auvergnevolcansancy.com - www.lepaysenvelay-tourisme.fr - www.boudieres.fr (sub entitled Tourisme)



Key to Tourist map

- Tourist Office
- Road
- Toll roads
- Toll-free motorways
- National Natural Reserve
- Regional Natural Parks
- View point
- Geological site
- Thermal activity
- Crater lake
- Museum/attraction

Key to Geological map

- Lake - river
- Hercynian mountain chain (440 Ma):
 - Granite
 - Metamorphic rock
 - Volcanic rocks
- Sedimentary basin (25 Ma)
- Recent volcanism (14 Ma to 5,400 yrs ago)

