

Monts d'Ardèche Geopark Project: reconnecting people with the geoheritage

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Document type: Article.

Manuscript history: received 2013; accepted 2013; editorial responsibility and handling by Domenico Calcaterra.

ABSTRACT

Located in the south east of France, on the western edge of Massif Central, the Regional Natural Park of Monts d'Ardèche is an Aspiring Geopark, which offers a fantastic geological heritage. The geological diversity in this area includes various elements linked to volcanism: well conserved strombolian cones, tens of kilometers of basalt columns, and other interesting geological objects such as granitic chaos, dinosaur's footprints, etc.

Although the Aspiring Geopark is well structured in terms of outreach and education, the Geopark label would help to highlight the geological richness of the area and raise awareness about this unique region. The tourism policy of the Park is based on sustainable tourism (the Park is awarded as Charter Area for Sustainable Tourism in Protected Area since 2011), and its development project is systematically based on the promotion of cultural and natural heritage. These heritages are naturally linked to the geological settings, which shaped the landscapes of Ardèche and created the right conditions for human settlement on this territory. However, the geological history is rarely integrated in the tourism activities. Connecting the discovery of the territory to the explanation of its origins seems to be the right way to offer a very special experience to everyone.

KEY WORDS: geotourism, Ardèche, public awareness.

INTRODUCTION

The Regional Natural Park of Monts d'Ardèche offers a mosaic of landscapes covering a mountainous territory, providing gorgeous and diverse sceneries: picturesque villages at the foot of volcanoes, deep gorges formed by raging torrents, etc.

Located in the south of France, on the eastern edge of the Massif Central in the south west of the Rhône-Alpes region, the park covers almost a third (ca 180,000 ha) of the administrative department of Ardèche, including 132 villages.

At the interface between Massif Central and the Rhône valley, Monts d'Ardèche are crossed by numerous side valleys including the Ardèche river and its tributaries, as well as the Eyrieux river. This results in marked reliefs, exceptional landscapes and major natural areas.

Being a crossroads between Massif Central, the Mediterranean region and the Rhône valley is a valuable asset for Monts d'Ardèche. The Park includes six typical landscape

units, each of them presenting remarkable features. In the northern part of the Park, "Region des suc's" presents volcanic phenomena such as Mont Gerbier, famous for sheltering the sources of the Loire, whereas "Plateau de Vernoux" shows remarkable meadows. In the central part, "Serres Boutiérots" offer smooth and rolling hills and "Cévennes Ardéchoise" presents deep wooded valleys and the so-called "Ardèche Young volcanoes". The "Cevennes Piedmont" in the southern part is marked by terraced vineyards based on Triassic sandstones. Southern Cevennes lay further south and cover a wide area from a Pretriassic peneplain to an arid shale slope.

Created in April 2001 through a Prime ministerial decree, the Regional Natural Park of Monts d'Ardèche is administrated by a local body, which proposed in 2012 that the Park becomes the fifth Geopark in France. This aspiring Geopark currently meets the three requirements to become a Geopark: an extraordinary geological heritage, a network of local stakeholders strongly involved in education projects and in the enhancement of geosites, and a strong policy for the development of geotourism. To achieve the Geopark project, the appropriation of geoheritage knowledge by local communities also needs to be further developed.

GEOLOGICAL SETTING

The Regional Natural Park of Monts d'Ardèche presents an extraordinary geological heritage that marks the landscape and contributes to the richness of the territory. This heritage is meaningful in term of education and economic development.

The territory can firstly be seen as a show-room for any geological ages dating back to 300 million years (pre-Triassic peneplain, Triassic sandstone, rocks of Late Quaternary, etc.).

In addition, the presence of different volcanic episodes has strongly marked the territory with visible traces in the landscape: strombolian craters, basalt columns, necks and dykes, maar, etc.

Ardèche is one of the few French regions where it is possible to find visible elements of the earth history over such a long period. This is due to its specific position on both the crystalline massif and the vast sedimentary basin of the southeastern sector. Many events explain this geological

diversity. The most important are the formation of the Hercynian chain and its erosion which all together form the largest part of the heart of the Park.

To better understand the rich geological heritage of Park of Monts d'Ardèche, a brief history of the geological folding of this territory is needed.

Between Carboniferous and Triassic, while the Hercynian chain was eroded, lakes have been formed. Sediments gave rise to irregular beds of sedimentary rocks that now form the Cevennes piedmont. The lush vegetation of that time, through the accumulation of organic matter, has been the source of coal layers which have been used for decades in the Prades-Jaujac coalfield.

Other important features of this period are the presence of dinosaurs during the Triassic in the south of the Park. The Triassic sandstone slabs have kept a very fine footprints collection corresponding to twenty different species.

During the Jurassic and Cretaceous, the sea covered much of the Ardèche for at least 120 million years. The sea has allowed the formation of the bulk of sedimentary rocks, which dominate in the marl and limestone above. It can be found only at the margin of the Park.

When the sea retreated at the end of Cretaceous, crystal Ardèche raised, while the lower Ardèche collapsed. The great step (1,600 vertical meters), between lower Ardèche and the mountains is the effect of this large general movement, which created the typical slope of the Park.

The most remarkable landscapes find their origin in volcanism, which appeared only during the Miocene period, 12 million years ago in "Pays des Sucs". This volcanic history spans over 6 million years and concerns many volcanoes, a number of them being easily recognizable by their peculiar form of "sugar loaf" due to the viscosity of lava.

Most of the area has almost not been affected by the following two eruptive phases (volcanism of Coiron between 8 and 6 million years ago, and volcanism of the Devès that surrounds it, between 2 and 1 million years ago). The centre of the most recent eruptive phase created the "Ardèche Young Volcanoes".

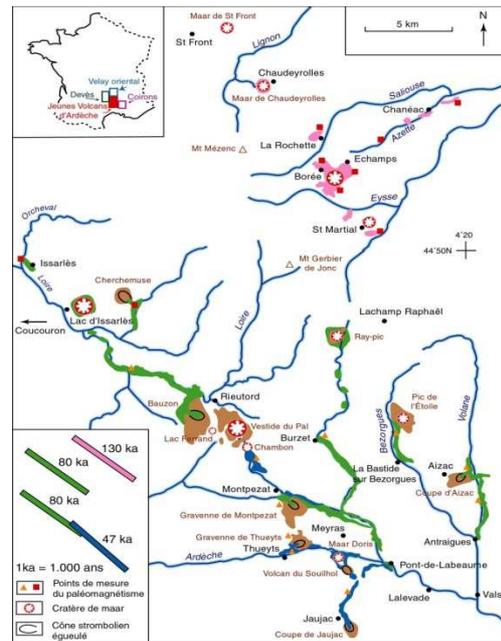


Figure 1. Eruptive episodes of the Ardèche young volcanoes (Berger, 2007).

A GEOTOURISM POLICY

The approval process for the aspiring Geopark of Monts d'Ardèche must also be seen in the broader context of the registration of Grotte Chauvet (the earliest known cave paintings) on the UNESCO World Heritage List. Through its international dimension, the Geopark project will contribute to strengthen the French application for the UNESCO label, as it deals with a theme very close to Grotte Chauvet. In fact, for the latter geology and paleontology respectively interrelated being twin sciences enriching one another. Historical scales are also very close, the Volcano of Jaujac (one of the Ardèche Young Volcanoes) for example being only 36,000 years old. Artists who painted Grotte Chauvet may have witnessed the eruptive phenomena in Ardèche. A facsimile of Grotte Chauvet, based on the model of the so-called "Lascaux 2", is planned to open to the general public at the end of 2014.

The opening of this facsimile is a chance for the aspiring Geopark, as it might modify the type of tourism in Ardèche. Today, Ardèche is considered as a nature destination allowing outdoor activities in beautiful and preserved landscapes. Through the opening of Grotte Chauvet facsimile and its possible labelling by UNESCO, the aspiring Geopark of Monts d'Ardèche will have the opportunity to develop and promote more in depth the interpretation of landscapes and of the geological history.

Through the development of geosites, the design of trails and the edition of discovery guides, Park of Monts d'Ardèche, with the support of local scientists, will create the conditions needed for the development of geotourism. Nevertheless, it is urgent to structure and reinforce the position of geotourism in Ardèche, especially in terms of marketing. Therefore the Park is involved in the broader project "Road of volcanism in Massif Central", which is developed in partnership between two other

Regional Parks and the organism in charge of tourism development in Massif Central. The involvement of the Park in this regional project highlights will allow to position its greatest geosites in a broader network of important French sites, identified for volcanism (e.g. Vulcania, Puy de Dome, Lac Pavin, etc.), and it will also reinforce the image of Monts d'Ardèche as a great geotourism destination.



Figure 2. Interpretive trail in the volcanic area "Pays des Sucs", (PNRMA, 2012).

Creating the conditions for the appropriation of geoheritage by inhabitants

Excepting for amateur geologists for whom Monts d'Ardèche constitutes an outstanding place for discovery, the general public ignores the rich geological heritage, especially related to volcanism. Most inhabitants of the Park ignore that the area has been shaped by volcanic activity, whose heritage can still be seen today through a large number of volcanoes and their basalt columns.

The nature of volcanic events that marked the French territory were first described in Ardèche in the late 18th century, and they were documented by publications of Guettard, Malsherbes, Faujas-de-Saint-Fond and Giraud-Soulavie. This scientific enthusiasm was then diverted from Ardèche and focused more on the Auvergne region.

Due to its reduced surface and its position away from the large massive Auvergne (notably Chaîne des Puys), this province has been left aside by geoscientists for decades. Fortunately, publications by Emmanuel Tobi Berger (1973-1981) drew again attention to Monts d'Ardèche, which is certainly one of the most interesting territories in France regarding volcanism.



Figure 3. Guided tour on "Jaujac Giant's Causeway", (PNRMA, 2012).

The Regional Natural Park of Monts d'Ardèche has been working with local scientists on the development of geotourism and geoeeducation in Ardèche for twelve years, especially through interpretation projects. However, local people are less interested in actions valuing the geoheritage, which they think are targeted at tourists. One objective of the Park is to raise public awareness on the importance of geological heritage. Today, various stakeholders work to enhance the architectural and natural heritage, but few is done about geology. Even in the field of natural heritage, the attention is drawn to fauna and flora, but rarely to the geoheritage. The Geopark label would help to reconcile people with the geological history of their territory, as it explains part of modern life as well as human history.

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