



**HAL**  
open science

## Vulcanism and Prehistory in the Massif central of France: an updated review.

Jean-Paul Raynal, Gérard Vernet, Guy Kieffer

► **To cite this version:**

Jean-Paul Raynal, Gérard Vernet, Guy Kieffer. Vulcanism and Prehistory in the Massif central of France: an updated review.. 2005. halshs-00004083

**HAL Id: halshs-00004083**

**<https://shs.hal.science/halshs-00004083v1>**

Preprint submitted on 11 Jul 2005

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

VULCANISM AND PREHISTORY IN THE MASSIF CENTRAL OF FRANCE :  
AN UPDATED REVIEW

Jean-Paul RAYNAL

Université de Bordeaux 1, IPGQ, UMR 5808 CNRS, Avenue des Facultés, F-33405  
TALENCE, and Director of GDR 1122 CNRS *Humans and Volcanoes before History*, France

joint research with

Gérard Vernet

7 rue du Mont Mouchet, F-63320 Chadeleuf (France), INRAP, UMR 6042 and GDR 1122  
CNRS.

and

Guy Kieffer, UMR 6042, Maison de la Recherche, 4, rue Ledru, F-63057 Clermont-Ferrand  
Cedex and GDR 1122 CNRS.

Among the Massif Central, two areas are well known for their volcanic activity and their rich prehistoric heritage: The Grande Limagne, at foothill of The Chaîne des Puys, where vulcanism interfered with human settlements, and the Velay with its huge basaltic fissural eruptions and its numerous phreatomagmatic features which determine specific landscapes.

In the Grande Limagne, Late Glacial and Holocene volcanic activity of the Chaîne des Puys had a severe impact on the plain evolution. An important phase of trachy-andesitic activity was followed by several trachytic volcanic eruptions. Between the Older Dryas and the Atlantic Period, at least ten major pyroclastic formations affected the plain of the Limagne d'Auvergne and they have been preserved in various depositional contexts. Their ejections contributed to the fill of the Limagne hollows and greatly disturbed the regular evolution of these. The volcanic events are useful isochronic markers that have helped construct a detailed tephrostratigraphic framework and their impact on the botanical environment has also been quantified. Archaeological investigations demonstrate that a few Magdalenian and Mesolithic sites were directly affected by tephra falls. For example Les Roches Tephra reached Abri Durif at Enval, 30 km to the southeast of its source which was Puy de la Nugère; the Marsat syneruptive mud-flow extended 11 km from its volcano source, Puy Chopine, and covered an epipaleolithic site on the edge of the Limagne plain; the CF7 Tephra, represented by centimetric angular fragments of trachyte noticed in several sections studied to the North-east, East and South of Clermont-Ferrand, resulted from the explosion of a trachytic dome affecting a Sauveterrian camp. Archaeologists must now determine the precise consequences

of the stress on the economy of the successive prehistoric groups who were directly affected by this volcanic activity.

In Velay, fissuration and columnar jointing of basaltic lava flows played an active morphologic role during alteration and erosion. They widely control the evolution of basalt cliffs and the development of rock shelters under pleistocene periglacial climates. Maar lakes and caves of the hyaloclastic pipes of Le Puy area were attractive sites for prehistoric groups too. A wide range of volcanic rocks (basalts, trachy-phonolites) and hydrothermal silica were extensively used to manufacture stone tools during Middle Palaeolithic and various artefacts (lamps, engraved pebbles) as well. No tephra layers have been discovered in archaeological layers of Haute-Loire even if volcanoes were active in Ardèche during the Upper Pleistocene. However, Lower and Middle Pleistocene vulcanism has determined landscape characteristics which strictly control Middle and Upper palaeolithic settlements.