



Imaging a Mantle Plume by seismological Means – the Massif Central Story revisited

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Picking up on the earlier ideas from the 70', that there might be a mantle plume beneath the Massif Central, and following extensive seismological and petrological field work in the French Massif Central in the beginning of the 1990's a small-scale plume beneath the volcanic zone in the central part of the Massif Central, ascending from asthenospheric depths was postulated (Granet et al., 1995 a,b). Including Bouguer gravity and petrophysical modelling arguments this fascinating idea was further established and the name "baby-plume" was created for this kind of phenomena (Sobolev et al., 1997). However, the southeastern end and the depth extension of this plume structure could not properly be established, due to the limited aperture of the seismic arrays used at the time. This triggered a new research program, called TRACK, with the aim of tracking the traces of supposed small-scale continental mantle plume structures by integrated seismological methods. Part of Track was a new seismological field experiment carried out in central-southern part of the Massif Central in 1998/99, with seismic tomography and the study of seismic anisotropy at its core.

In this paper we will present the new results (size and depth extent) of the mantle plume beneath the Massif Central from the joint multi-method analysis of the old and new seismic data and discuss the geodynamic implications.