The Afar Volcanic Province within the East African Rift System

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The Afar Volcanic Province within the East African Rift System

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Preface

A full understanding of the structure and evolution of the Afar volcanic province requires a number of approaches to be applied, including geophysics, geochemistry, structure, geomorphology and other geoscience disciplines. Adopting this philosophy, we have assembled this collection of papers with the objective of providing an integrated study of the continental rupture processes above asthenospheric upwellings. This special publication of the Geological Society was inspired by an international conference entitled 'The East African Rift System: Geodynamics, Resources and Environment' held in Addis Ababa, Ethiopia, in June 2004. At this meeting, organized by the Ethiopian Geoscience and Mineral Engineering Association, more than 100 geoscientists were treated to 66 presentations on a broad range of topics, including rift geodynamics, geophysics, tectonics, magmatism, sedimentation, environment, geohazards and resources. A number of these papers are included in this volume, which covers various aspects of the deep structure, tectonic and magmatic evolution of the Afar volcanic province (see Introductions to Parts for summaries). The theme reflects a burgeoning interest in the international geoscience concerning the continental rifting and break-up processes associated with a mantle plume. We believe that the papers will help to unify some of the more fragmented aspects of previous research. Also, and in particular, the volume includes research outcomes from the recent Ethiopia Afar Geoscientific Lithospheric Experiment undertaken over the Northern Main Ethiopian Rift, which is believed to represent the transition between continental rifting and seafloor spreading. The results provide details about the structure and physical properties of the crust and upper mantle that have important implications concerning the geodynamics and magmatic evolution of the rift.

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