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African Rift System

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# The Afar Volcanic Province within the East African Rift System

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# Contents

Preface	vii
YIRGU, G., EBINGER, C.J. & MAGUIRE, P.K.H. The Afar volcanic province within the East African Rift System: introduction	1
<b>Part 1: Plate kinematic and geodynamic framework of the Afar volcanic province</b>	
Introduction	7
CALAIS, E., EBINGER, C.J., HARTNADY, C., & NOCQUET, J.M. Kinematics of the East African Rift from GPS and earthquake slip vector data	9
GARFUNKEL, Z. & BEYTH, M. Constraints on the structural development of Afar imposed by the kinematics of the major surrounding plates	23
BUCK, W.R. The role of magma in the development of the Afro-Arabian Rift System	43
KENDALL, J.-M., PILIDOU, S., KEIR, D., BASTOW, I.D., STUART, G.W. & AYELE, A. Mantle upwellings, melt migration and the rifting of Africa: insights from seismic anisotropy	55
<b>Part 2: Geochemical constraints on flood basalt and rift processes</b>	
Introduction	73
ROGERS, N.W. Basaltic magmatism and the geodynamics of the East African Rift System	77
FURMAN, T., BRYCE, J., ROONEY, T., HANAN, B., YIRGU, G. & AYALEW, D. Heads and tails: 30 million years of the Afar plume	95
AYALEW, D., EBINGER, C., BOURDON, E., WOLFENDEN, E., YIRGU, G. & GRASSINEAU, N. Temporal compositional variation of syn-rift rhyolites along the western margin of the southern Red Sea and northern Main Ethiopian Rift	121
<b>Part 3: Rifting in the Afar volcanic province: Modelling and kinematics</b>	
Introduction	131
AYELE, A. NYBLADE, A.A., LANGSTON, C.A., CARA, M. & LEVEQUE, J.-J. New evidence for Afro-Arabian plate separation in southern Afar	133
CASEY, M., EBINGER, C., KEIR, D., GLOAGUEN, R. & MOHAMED, F. Strain accommodation in transitional rifts: extension by magma intrusion and faulting in Ethiopian rift magmatic segments	143
KIDANE, T., PLATZMAN, E., EBINGER, C., ABEBE, B. & ROCHETTE, P. Palaeomagnetic constraints on continental break-up processes: observations from the Main Ethiopian Rift	165
ASFAW, L.M., BEYENE, H., MKONNEN, A. & OLI, T. Vertical deformation in the Main Ethiopian Rift: levelling results in its northern part, 1995–2004	185
PIZZI, A., COLTORTI, M., ABEBE, B., DISPERATI, L., SACCHI, G., & SALVINI, R. The Wonji fault belt (Main Ethiopian Rift): structural and geomorphological constraints and GPS monitoring	191
VETEL, W. & LE GALL, B. Dynamics of prolonged continental extension in magmatic rifts: the Turkana Rift case study (North Kenya)	209
<b>Part 4: Rifting in the Afar volcanic province: Geophysical studies of crustal structure and processes</b>	
Introduction	235
DUGDA, M.T. & NYBLADE, A. New constraints on crustal structure in eastern Afar from the analysis of receiver functions and surface wave dispersion in Djibouti	239
STUART, G.W., BASTOW, I.D. & EBINGER, C.J. Crustal structure of the northern Main Ethiopian Rift from receiver function studies	253

MAGUIRE, P.K.H., KELLER, G.R., KLEMPERER, S.L., MACKENZIE, G.D., KERANEN, K., HARDER, S., O'REILLY, B., THYBO, H., ASFAW, L., KHAN, M.A. & AMHA, M. Crustal structure of the northern Main Ethiopian Rift from the EAGLE controlled-source survey; a snapshot of incipient lithospheric break-up	269
WHALER, K.A. & HAUTOT, S. The electrical resistivity structure of the crust beneath the northern Main Ethiopian Rift	293
CORNWELL, D.G., MACKENZIE, G.D., ENGLAND, R.W., MAGUIRE, P.K.H., ASFAW, L.M. & OLUMA, B. Northern Main Ethiopian Rift crustal structure from new high-precision gravity data	307
Index	323

## 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 sea-floor 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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