

Plates, Plumes, and Planetary Processes



edited by Gillian R. Foulger and Donna M. Jurdy

Edited
by
G.R. Foulger
and
D.M. Jurdy

Plates, Plumes, and Planetary Processes

24. *Propagation of the Hawaiian-Emperor volcano chain by Pacific plate cooling stress*
W.D. Stuart, G.R. Foulger, and M. Barall
 25. *Geophysical characterization of mantle melting anomalies: A crustal view*
V. Sallares and A. Calahorra
 26. *North Atlantic Igneous Province: A review of models for its formation*
R. Meyer, J. van Wijk, and L. Gernigon
 27. *Origin of the Bermuda volcanoes and Bermuda Rise: History, observations, models, and puzzles*
P.R. Vogt and W.-Y. Jung
- Continental Melting Anomalies**
28. *Lithospheric control of Gondwana breakup: Implications of a trans-Gondwana icosahedral fracture system*
J. Sears
 29. *Post Paleozoic magmatism from eastern Paraguay*
P. Comin-Chiaromonte, A. Marzoli, C. de Barros Gomes, V.F. Velásquez, M.M.S., Mantovani, A. Milan, P. Renne, C. Riccomini, C.C.G. Tassinari, and P.M. Vasconcelos
 30. *The origin of the Columbia River flood basalt province: Plume versus nonplume models*
P.R. Hooper, V. Camp, S. Reidel, and M. Ross
 31. *Evaluation of different models for the origin of the Siberian traps*
A. Ivanov
 32. *Eastern Anatolia: A hot spot in a collision zone without a mantle plume*
M. Keskin
 33. *Phantom plumes in Europe and the circum-Mediterranean region*
M. Lustrino and E. Carminati
 34. *Mechanisms of crustal growth in large igneous provinces: The North-Atlantic Province as a case study*
L. Geoffroy, C. Aubourg, J.-P.I. Callot, and J.-A. Barrat
 35. *K-T magmatism and basin tectonism in western Rajasthan, India, results from extensional tectonics and not from Reunion plume activity*
K.K. Sharma
 36. *Plume-related regional pre-volcanic uplift in the Deccan Traps: Absence of evidence, evidence of absence*
H.C. Sheth
 37. *Nd and Sr isotope systematics and geochemistry of plume-related early Cretaceous alkaline-afic-ultramafic igneous complex from Jasra, Shillong Plateau, Northeastern India*
R. Srivastava and A.K. Sinha
 38. *A bimodal LIP and the plume debate: The Palaeoproterozoic Dongargarh Group, central India*
S. Sensarma
 39. *Thick and high velocity crust in the Emeishan large igneous province, SW China: Evidence for crustal growth by magmatic underplating/intraplating*
Yi-gang Xu, B. He, and D. Zhu
- Planetary Evolution**
40. *Venus' Coronae: Impact, plume or other origin?*
D. Jurdy and P.R. Stoddard
 41. *An alternative Venus*
W. Hamilton
 42. *Interaction between local magma ocean evolution and mantle dynamics on Mars*
C. Reese, V.S. Solomatov, and C.P. Orth
- Education**
43. *The mantle plume debate in undergraduate geoscience education: Overview, history, and recommendations*
B. Jordan
- Platonics and Plumacy**
44. *Graphic solutions to the problems of plumacy*
J.C. Holden and P.R. Vogt
 45. *Plumacy reprise*
P.R. Vogt and J.C. Holden

Preface

Plates and Plumes

1. *The "Plate" model for the genesis of melting anomalies*
G.R. Foulger
2. *Origins of the plume hypothesis and some of its implications*
N.H. Sleep
3. *The Eclogite Engine: Chemical geodynamics as a Galileo thermometer*
D.L. Anderson
4. *Plate velocities in the hotspot reference frame*
W.J. Morgan and J. Phipps Morgan

Mantle Convection and Seismology

5. *Implications of lower mantle structural heterogeneity for existence and nature of whole mantle plumes*
E.J. Garnero, T. Lay, and A. McNamara
6. *The structure of thermal plumes and geophysical observations*
S.D. King and H.L. Redmond
7. *Seismic observations of transition zone discontinuities beneath hotspot locations*
A. Deuss
8. *Lower mantle material properties and convection models of multiscale plumes*
C. Matyska and D.A. Yuen
9. *Global plume-fed asthenosphere flow—I: Motivation and model development*
M. Yamamoto, W.J. Morgan, and J. Phipps Morgan
10. *Global plume-fed asthenosphere flow—II: Application to the geochemical segmentation of mid-ocean ridges*
M. Yamamoto, W.J. Morgan, and J. Phipps Morgan
11. *The Hawaiian SWELL pilot experiment—Evidence for lithosphere rejuvenation from ocean bottom surface wave data*
G. Laske, J. Phipps Morgan, and J.A. Orcutt

Heat and Temperature

12. *Crystallization temperatures of tholeiite parental liquids: Implications for the existence of thermally driven mantle plumes*
T. Falloon, D.H. Green, and L.V. Danyushevsky
13. *Potential effects of hydrothermal circulation and magmatism on heat flow at hotspot swells*
C.A. Stein and R.P. Von Herzen
14. *Crustal geotherm in southern Deccan Basalt Province, India: The Moho is as cold as adjoining cratons*
P.S. Kumar, R. Menon, and G.K. Reddy

Geochronology, Hotspot Fixity, and Reference Frames

15. *A quantitative tool for detecting alteration in undisturbed rocks and minerals—I: water, chemical weathering and atmospheric argon*
A.K. Baksi
16. *A quantitative tool for detecting alteration in undisturbed rocks and minerals—II: application to argon ages related to hotspots*
A.K. Baksi
17. *Divergence between paleomagnetic and hotspot model predicted polar wander for the Pacific plate with implications for hotspot fixity*
W.W. Sager
18. *Global kinematics in the deep vs. shallow hotspot reference frames*
M. Cuffaro and C. Doglioni
19. *Ridge-crossing seamount chains; a non-thermal approach*
E. Beutel and D.L. Anderson

Oceanic Melting Anomalies

20. *The OIB paradox*
J.G. Fitton
21. *ΔN_b and the role of magma mixing at the East Pacific Rise and Iceland*
J.H. Natland
22. *Speculations on Cretaceous tectonic history of the Northwest Pacific and a tectonic origin for the Hawaii hotspot*
I.O. Norton
23. *A plate model for Jurassic to Recent intraplate volcanism in the Pacific Ocean basin*
A. Smith

