

Paradoxes in Geology

Edited by

Ueli Briegel

*ETH-Z
Swiss Federal Institute of Technology
Department of Earth Sciences
Zürich, Switzerland*

Wenjiao Xiao

*Laboratory of Lithosphere
Tectonic Evolution
Institute of Geology and Geophysics
Chinese Academy of Sciences
Beijing, China*



2001

ELSEVIER

Amsterdam – London – New York – Oxford – Paris – Shannon – Tokyo

CONTENTS

Foreword	v
Introduction	1
<i>Shu Sun</i>	
Part I. Tectonics	5
1. The paradox of geosyncline hypothesis and orogenic analysis	7
<i>Jiliang Li and Wenjiao Xiao</i>	
2. Early Mesozoic collapse of the Late Paleozoic archipelago in South China	15
<i>Wenjiao Xiao, Shu Sun, Jiliang Li and Haihong Chen</i>	
3. Mesozoic tectonics of Fujian, Eastern China	39
<i>Zuyi Zhou and Zongting Liao</i>	
4. Songpan–Garze belt: fore-arc accretion or back-arc collapsing?	55
<i>Pan Guitang, Xu Qiang and Jiang Xinsheng</i>	
5. Rotational collision and the Tan–Lu transform fault	65
<i>Wang Qingchen</i>	
6. The paradox of an ocean-dipping Benioff zone: example from Taiwan	77
<i>Chia-Yu Lu</i>	
7. Thin-skinned plate tectonics: the re-invention of a crazy idea	101
<i>Peter Finckh and Kenneth J. Hsü</i>	
8. Oil in ‘holes-in-the-continent’ (relict oceanic basins)	113
<i>Sergey Aplonov</i>	
9. Structural rocks: stratigraphic implications	131
<i>A. M. C. Şengör and Mehmet Sakıncı</i>	
Part II. Mechanics of Overthrusting and Landsliding	229
10. Rock mechanics and the paradox of overthrusting tectonics	231
<i>Ueli Briegel</i>	
11. The flow of giant rock landslides	245
<i>Christopher R. J. Kilburn</i>	
Part III. Petrology	267
12. Concepts that led to mechanisms of movement of mass and energy in earth	269
<i>F. W. Dickson</i>	
13. Crystallization histories of alkaline intrusions in West Texas: some paradoxes and answers	277
<i>Max F. Carman, Jr. and Stanley Indest</i>	
14. A paradox: the ultramafic rock belt (UMRB) as a metamorphosed tectonic mélange in northern Dabie Mountains, eastern central China	323
<i>Xu Shutong, Liu Yican and Wu Weiping</i>	
15. Nd isotopes vs. Ken Hsü’s tectonic facies: a case study of crust evolution in South China	343
<i>Xin-Hua Zhou</i>	
Part IV. Paleogeography, Paleooceanography and Paleoclimatology	351
16. The Messinian salinity crisis in the Mediterranean	353
<i>Maria Bianca Cita</i>	

17. A review of the catastrophic extinction at the end of the Cretaceous and its scientific implication	361
<i>He Qixiang</i>	
18. The oldest biogenous pelagic sediments above Mesozoic oceanic basement: a review	373
<i>Edward L. Winterer</i>	
19. Unveiling secrets locked in Great Ghost Lake in Taiwan	387
<i>Chen-Tung Arthur Chen</i>	
Part V. Applied and Basic Sciences	411
20. At a turning point in petroleum geology	413
<i>Stefan M. Luthi</i>	
21. Exploitation of lithium in brines by Hsü's method.....	421
<i>Chen Yancheng and Kenneth J. Hsü</i>	
22. Preliminary report on experiments to monitor C-14 beta-decay	429
<i>Kenneth J. Hsü, Min-Pen Chen and Chao-Kai Huang</i>	
Part VI. Postscript	437
23. The career of a frustrated conformist	439
<i>Kenneth J. Hsü</i>	
Author index	453
Subject index	455