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Study on Fractal Feature of Fault Structure and Its Geological Implications Based on Remote Sensing

—A Case Study of Jiuyi Mountain Area, Southern Hunan

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Abstract: Based on the ETM + data source in Jiuyi mountain area, the faults in the area are extracted rapidly through information extraction and interpretation. Applying the Box-Counting method of fractal to fault structures, the result shows that fault structures have self-similarity and fractal character within the scale range of 0.05 ~ 2.75km. As the same time, fractal dimension value is 1.1155 for the whole area and 0.9184 ~ 1.0441 for different strike faults and the square of correlation coefficient is greater than 0.996. Fractal dimension value here is close to the stable region of overall tectonic units in China, it not only describes the complexity of the fault distribution and the maturity of tectonic evolution, but also reflects the role in process of mineralization; fractal dimension values access to 1.0441, the faults mainly being ore-transporting structures; fractal dimension values access to 0.9870, the faults mainly being ore-controlling structures; fractal dimension values access to 0.9502, the faults mainly being ore-hosting structures.

Key word: fractal; fractal dimension value; remote sensing; Jiuyi Mountain; faults

GEOLOGICAL REVIEW

Vol. 58 No. 3 2012

CONTENTS

Discussion

- Tectonic Environment of the Metamorphosed Basement in the Jiangnan Orogen and Its Evolutional Features
..... WANG Ziqiang, CAO Linzhi, DING Xiaozhong, HUANG Zhizhong(413)
- Analysis of Structural Styles in Northern Segment of Tancheng—Lujiang Fault Zone
..... WANG Shuqin, SUN Xiaomeng, DU Jiyu, WANG Yingde, XU Qiangwei, TIAN Jingxiang(425)
- Re-discussion on the Origin of the Rudstone in Middle Permian Qixia Formation along Lower Yangtze River of Anhui Province
..... DU Yelong, LI Shuangying, JIA Zhihai, WANG Song(433)
- Study on Dinosaur Track Fossils and Footprints Reconstruction in Zhucheng Area, Shandong Province
..... LI Su, ZHOU Yaoqi, YAO Xu, LI Chao(441)
- Characteristic and Dynamical Mechanism of Post-Collision Extensional Basins
..... YANG Xin, WANG Yadong, LIU Xingwang, ZHENG Jianjing(450)
- A Study on Mineralogical Phase Confines Reaction from Spinel to Garnet in Baigang Iherzolite of the Yarlung Zangbo Suture Zone, and Its Geological Implication
..... XIA Bin, ZHOU Guoqing, LI Jianfeng, CHEN Genwen, (468)
..... LIU Weiliang, WANG Ran, DONG Binghua

Analogue Modeling of Fold-and-Thrust Structures Based on Particle Image Velocimetry (PIV)	
..... SHEN Li, JIA Dong, YIN Hongwei, SUN Chuang, ZHANG Yong, FAN Xiaogen(480)	
Geochemistry and Tectonic Significance of Middle Triassic Volcanic Rocks in Nalong, Guangxi Area	
..... HU Lisha, DU Yuansheng, YANG Jianghai, HUANG Hu, HUANG Hongwei, HUANG Zhiqiang(494)	
The Genetic Relationship between the H ₂ S-bearing Gas in Sichuan Basin and Lead—Zinc—Copper Deposits	
around the Basin	LI Houmin, ZHANG Changqing(510)
⁴⁰ Ar/ ³⁹ Ar Ages and Its Geologic Significances of the Machangqing Porphyry Cu—Mo—Au Deposit,	
Yunnan Province	
..... GUO Xiaodong, GE Liangsheng, WANG Zhihua, WANG Liang, WANG Xiaojun(518)	
Analysis on the Influence of Small Caves on Stability of Underground Tunnel	
..... SHAO Yong, YAN Changhong, XU Baotian, WANG Ning, ZHENG Jun(525)	

Scientific Comment

The Application of Carbon Isotope of Element Carbon in the Research of Paleoenvironment	
..... LIU Lian, ZHOU Xin, GE Junyi(532)	
Landslide Monitoring and Early-warning: an Overview	
..... TANG Yaming, ZHANG Maosheng, XUE Qiang, BI Junbo(541)	

Research Progress

Study on the Recovery of Erosion Quantity of Unconformities of Paleogene—Neogene in Bohai Sea Area	
..... LI Rufeng, ZHANG Gangxiong, RUAN Xiaofei(552)	
Magnetostratigraphy of Liang-ZK02 Borehole in Dalangtan, Qaidam Basin and Its Paleoenvironmental	
Significance	
..... QIN Yongpeng, HOU Xianhua, ZHENG Mianping, YANG Zhenyu, LI Hongpu, SHI Linfeng(564)	
2.3 Ga Magmatism and 1.94 Ga Metamorphism in the Xiatang Area, Southern Margin of the North China	
Craton —— Evidence from Whole-rock Geochemistry and Zircon Geochronology and Hf Isotope	
..... HUANG Daomao, ZHANG Dehui, WANG Shiyan, ZHANG Yixin, (576)	
..... DONG Chunyan, LIU Dunyi, WAN Yusheng	
Zircon U-Pb LA-ICP-MS Dating of Fenghuangshan Pluton in Northern Daba Mountains and Its Implications	
to Tectonic Settings	LI Jianhua, ZHANG Yueqiao, XU Xianbing, DONG Shuwen, LI Tingdong(593)
Study on Fractal Feature of Fault Structure and Its Geological Implications Based on Remote Sensing	
——A Case Study of Jiuyi Mountain Area, Southern Hunan	
..... LEI Tianci, CUI Fang, YU Fengmin, XU Honggen(600)	

Correspondence · Reference · News Report

A Discussion on Scholarly Learning and Teaching Experiences of Prof. WANG Hongzhen	
..... YANG Guangrong(577)	
A Textual Research on the Chinese Translation of “Ordovician”	WANG Guangxu(451)

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地质论评

2012年 第58卷 第3期

目次

问题讨论

- “江南造山带”变质基底形成的构造环境及演化特征 王自强, 高林志, 丁孝忠, 黄志忠(401)
- 郟庐断裂带北段构造样式解析 王书琴, 孙晓猛, 杜继宇, 王英德, 许强伟, 田景雄(414)
- 再论安徽沿江地区中二叠统栖霞组砾屑灰岩的成因 杜叶龙, 李双应, 贾志海, 王松(426)
- 鲁东诸城地区恐龙足迹化石和原形恢复研究 李素, 周瑶琪, 姚旭, 李超(434)
- 后碰撞伸展环境下的盆地特征与成盆机制 杨鑫, 王亚东, 刘兴旺, 郑建京(444)
- 雅鲁藏布江缝合带白朗县白岗尖晶石—石榴子石相二辉橄榄岩的相界反应及其意义
..... 夏斌, 周国庆, 李建峰, 陈根文, 刘维亮, 王冉, 董冰华(453)
- 基于粒子成像测速(PIV)技术的褶皱冲断构造物理模拟
..... 沈礼, 贾东, 尹宏伟, 孙闯, 张勇, 范小根(471)
- 广西那龙地区中三叠世火山岩地球化学特征及构造意义
..... 胡丽沙, 杜远生, 杨江海, 黄虎, 黄宏伟, 黄志强(481)
- 四川盆地富硫天然气与盆地周缘铅锌铜矿的成因联系 李厚民, 张长青(495)
- 云南马厂箐斑岩型铜—钼—金矿床⁴⁰Ar-³⁹Ar年龄及地质意义
..... 郭晓东, 葛良胜, 王治华, 王梁, 王晓军(511)
- 小型溶洞对隧道稳定性的影响分析 邵勇, 阎长虹, 许宝田, 王宁, 郑军(519)

科技述评

- 元素碳同位素在古环境研究中的应用 刘恋, 周鑫, 葛俊逸(526)
- 滑坡监测预警国内外研究现状及评述 唐亚明, 张茂省, 薛强, 毕俊肇(533)

研究进展

- 渤海海域古近系—新近系不整合剥蚀量恢复研究 李儒峰, 张刚雄, 阮小飞(552)
- 柴达木盆地大浪滩梁-ZK02孔的磁性地层及其古环境研究
..... 秦永鹏, 侯献华, 郑绵平, 杨振宇, 李洪普, 施林峰(553)
- 华北克拉通南缘豫西下汤地区2.3 Ga岩浆作用和1.94 Ga变质作用——锆石U-Pb定年和Hf同位素组成
及全岩地球化学研究 黄道袁, 张德会, 王世炎, 张毅星, 董春艳, 刘敦一, 万渝生(565)
- 北大巴山凤凰山岩体锆石U-Pb LA-ICP-MS年龄及其构造意义
..... 李建华, 张岳桥, 徐先兵, 董树文, 李廷栋(581)
- 基于遥感技术的断裂构造分形特征及其地质意义研究——以湘南九嶷山地区为例
..... 雷天赐, 崔放, 余凤鸣, 徐宏根(594)

通讯资料 · 消息报道

- 试议王鸿祯教授的治学道路 杨光荣(577)
- “奥陶纪”一词译名考 王光旭(451)

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