

ZHENG Ning, SHI Zhigang, LI Tingdong, GENG Shufang, 2013. Lithofacies Characteristics of Cambrian and Ordovician Greywacke And Sedimentary Environment in The South Of Jiangxi And Hunan. *Acta Geologica Sinica* (English Edition), 87(supp.): 615-616.

Lithofacies Characteristics of Cambrian and Ordovician Greywacke And Sedimentary Environment in The South Of Jiangxi And Hunan

ZHENG Ning¹, SHI Zhigang¹, LI Tingdong¹, GENG Shufang¹

Institute of Geology, Chinese Academy of Geological Sciences, Beijing 100037, China

Field investigation and laboratory analysis (observation under a microscope and geochemical analysis) on the Cambrian and Ordovician flysh in the south of Jiangxi and Hunan Provinces indicate the following: (1) the flysh is a set of hemipelagic sandy and muddy submarine fan. Its greywacke has low compositional and textural maturity, increasing upward with the strata. Horizontal bedding and parallel bedding developed. Graded bedding and low angle-inclined bedding are observed. Flute cast has been occasionally detected. Seven types of lithofacies are indentified. The sea water got deeper gradually from SE to NW in Cambrian. The material source of the fan was from Cathaysia Block. After weathering, the terrigenous clast moved a short distance across narrow shelf and then poured from the continental steep slope. Finally they accumulated on the continental rise. (2) Radiolaria fossils were discovered for the first time in the lower Cambrian and middle Ordovician strata of the South China orogenic belt. Cambrian Radiolaria fossils of China have never been reported as yet. They occur in argillaceous slate of the lower Cambrian Niujiaohe Formation in Pingxiang of Jiangxi Province and silicalite of the middle Ordovician Yanxi Formation in Yongzhou of Hunan Province. The discovery of Radiolaria shows that there might have existed a low-latitude sea basin of considerable scale in Pingxiang-Yongzhou area in Cambrian-Ordovician period.

Key words: sedimentary environment, Cambrian, Ordovician, Jiangxi, Hunan, Radiolaria

Reference

- Allen P A, Allen J R. Basin analysis, principles and application [M]. Blackwell Scientific Publication, 1990, 10-160.
Bhatia M R. Plate tectonic and geochemical composition of sandstones[J]. *Journal of Geology*, 1983, 91: 611-627.
Bouma A H. Sedimentology of some flysch deposits: a graphic approach to facies interpretation[J]. *Amsterdam: Elsevier*, 1962, 34-38.

- Brewer J. Thermal effects of thrust faulting[J]. *Earth and Planetary Science letters*, 1981, (56):233-244.
Chen X, Rong J Y., Wang X. F. et al. Correlation of the Ordovician rocks of China[J]. *International Union of Geology Science Publication*, 1995, 31, 15-20.
Feng Zengzhao. Sedimentology of China[M]. Beijing: Petroleum Industry Press, 1993, 30-80 (in Chinese with English abstract).
Huang Ying. Study on the distribution and the relation with mineral resources of the siliceous rocks on Yangtze Platform and its surrounding regions[J]. *Journal of the Graduate Sun Yat-Sen University*, 2010, 31(1), 60-63 (in Chinese with English abstract).
Ji Lei. Cambrian-Ordovician Deep-Water Deposits in Southwest Jiangxi, China[M]. *Acta Geologica Sinica*, 1994, 68(2), 173-185 (in Chinese with English abstract).
Liu Baojun. Sedimentology of China[M]. Beijing: Geological Publishing House, 1980, 1-497 (in Chinese with English abstract).
Klein G. Current aspects of basin analysis[J]. *Sedimentary Geology*, 1987, 50:95-118.
Lowe D R. Sediment gravity flows: II. Depositional models with special reference to the deposits of high-density turbidity currents[J]. *Jour. Sediment. Petrol.*, 1982, 52(1):279-297.
Greensmith L. J. Petrology of the Sedimentary Rocks[M]. Unwin Hyman, London, Seventh Edition, 1989, 61-107.
Morton A C, Todd S P, Haughton PDW. Developments in Sedimentary Provenance Studies[M]. London: Oxford University Press, 1991, 21-33.
Mclaren D. J. Rare events in geology. EOS[J]. *Transaction, American Geophysical Union*, 1988, 69(2):24-25.
Mutti E, Ricci-Lucchi F. Turbidites of the northern Apennines: introduction to facies analysis [J]. *Internat. Geol. Rev.*, 1978, 20(1):125-166.
Perrier R., Quiblier J. Thickness changes in sedimentary layer during compaction history: Methods for quantitative evolution, Bull[J]. AAPG, 1974, 58(3):507-530.
Piper D J W. Turbidite muds and silts on deep-sea fans and abyssal plains. In: Stanley D J, Kelling G. Sedimentation in submarine canyons, fans and trenches [C]. Pennsylvania: Dowden, Hutchinson and Ross, Stroudsburg, 1978, 163-136.
Posamentie H. W., Jervy M. T. and Vail P. R. Eustatic controls on clastic deposition I-Conceptual framework[J]. *SEPM Special Publication*, 1988, (42):89-124.
Read J. F. Carbonate ramp-to-basin transitions and foreland basin evolution, Middle Ordovician, Virginia Appalachians,

* Corresponding author. E-mail: zhengninglaio@163.com

- Bull[J]. AAPG, 1980, 64(10):146-155.
- Roser B P, Korsch R J. Determination of tectonic setting of sandstone-mudstone suites using SiO_2 content and $\text{K}_2\text{O}/\text{Na}_2\text{O}$ ratio[J]. *Journal of Geology*. 1986, 94:635-650.
- Roser B P, Korsch R J. Provenance signatures of sandstone-mudstone suites determined using discriminant function analysis of major-element data[J]. *Chemical Geology*, 1988, 67:119-140.
- Sanjeev Gupta. Comments and reply on "Mesozoic overthrust tectonics in China"[J]. *Geology*, 1988, (17):669-687.
- Sahu B. K. Depositional Mechanism From Size Analysis of Clastic Sediments [J]. *Journal of Sedimentary Research (SEPM)*, 1964, 34(1):73-83.
- Song Tianrui, He Zhenjun, Wan Yusheng et. al. A study of Mesoproterozoic iron cosmic micro-spherules from 1.8Ga and 1.6Ga old strata in the Ming tombs District, Beijing[J]. *Acta Geologica Sinica(English Edition)*, 2007, 81(4):649-657.
- Song Tianrui. A comparison study between biomineralization of geological materials and human stone disease[J]. *J. Fossil Research Is.*, 2003, (3):13-17.
- Song Tianrui. Textural maturity of arenaceous rocks derived by microscopic grain size analysis in thin section. In: J. P. M. Syvitski(edit.), *Principles, methods and application of particle size analysis*[M]. Cambridge University Press, 1991, 163-173.
- Shu Liangshu, Charvet Jacques. Kinematics and geochronology of the Proterozoic Dongxiang-Shexian ductile shear zone (Jiangnan region, South China)[J]. *Tectonophysics*, 1996, 267 (14):291-302.
- Taylor S R, McLennan S H. The continental crust: Its composition and evolution[M]. Oxford:Black-well, 1985, 117-140.
- Visher G S. Grain-size distribution and depositional processes[J]. *Journal of sedimentary Petrology*, 1969, (29):1074-1186.
- Wu Fujiang, Zhang Fangrong. Features and genesis of Caledonian granites in the Wugongshan in the eastern segment of the northern margin of South China plate [J]. *Geology in China*, 2003, 30(2):166-172 (in Chinese with English abstract).
- Xia Wenjie, Du Senguan, Xu Xinhuan,et al. Sinian lithofacies paleogeography and mineralization in South China [M]. Beijing:Geological Publishing House, 1994, 1-86 (in Chinese with English abstract).
- ZHENG Ning, LI Tingdong, YOU Guoqing, et al. Lithofacies Characters and Significance of the Submarine Fan of the Liufengguan Group in Qinling[J]. *Acta Geologica Sinica (English Edition)*, 2012, 86(1):801-815.