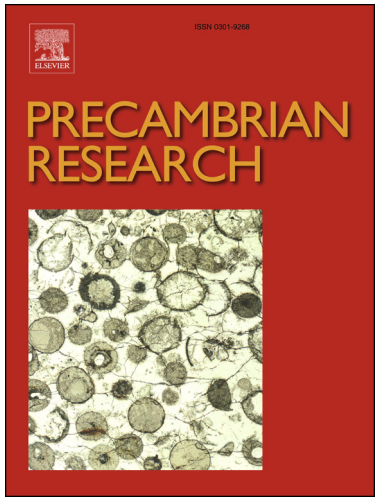

A refined late-Cryogenian – Ediacaran Earth history of South China: phosphorous-rich marbles of the Dabie and Sulu orogens

A.R Prave, F Meng, A Lepland, K Kirsmäe, T Kreitsmann, C.Z Jiang

PII: S0301-9268(17)30538-7
DOI: https://doi.org/10.1016/j.precamres.2017.11.022
Reference: PRECAM 4945

To appear in: *Precambrian Research*

Received Date: 23 September 2017
Revised Date: 25 November 2017
Accepted Date: 28 November 2017

Please cite this article as: A.R Prave, F. Meng, A. Lepland, K. Kirsmäe, T. Kreitsmann, C.Z Jiang, A refined late-Cryogenian – Ediacaran Earth history of South China: phosphorous-rich marbles of the Dabie and Sulu orogens, *Precambrian Research* (2017), doi: https://doi.org/10.1016/j.precamres.2017.11.022

A refined late-Cryogenian – Ediacaran Earth history of South China: phosphorous-rich marbles of the Dabie and Sulu orogens

[1]Prave, A.R., [2]Meng, F., [3,4,5,6]Lepland, A., [5]Kirsmäe, K., [5]Kreitsmann, T., and [7]Jiang, C.Z.

[1]School of Earth and Environmental Sciences, University of St Andrews, St Andrews KY16 9AL Scotland/UK
[2]Nanjing Institute of Geology, Paleontology and Stratigraphy, 39 Beijing E Rd, Xuanwu Qu, Nanjing Shi, Jiangsu Sheng, China
[3]Geological Survey of Norway, 7491 Trondheim, Norway
[4]Centre for Arctic Gas Hydrate, Environment and Climate, University of Tromsø, 9037 Tromsø, Norway
[5]University of Tartu, Department of Geology, 50411 Tartu, Estonia
[6]Tallinn University of Technology, Institute of Geology, 19086 Tallinn, Estonia
[7]Department of Earth Sciences, Oxford University, South Park Road, Oxford OX1 3AN, UK

Key words: Dabie Orogen; Sulu Orogen, Haizhou Group; Susong Group; Ediacaran; Marinoan glaciation; phosphorite

Abstract

The late-Cryogenian – Ediacaran geological framework for South China is constructed principally from sedimentary successions preserved in the central and western regions of the Yangtze Block. New stratigraphic and carbonate-carbon isotope data allow us to extend that framework into the exhumed HP-UHP subduction complexes of the eastern Dabie and Sulu orogens that separate the South and North China cratons. Those data show that marble and phosphorous-rich (P-rich) units in those complexes were originally part of an Ediacaran shallow-marine shelf-carbonate platform. The basal pebbly schist (metadiamictite) and lowermost P-rich marble of the Jinping Formation (Haizhou Group) in the Sulu Orogen matches in both facies character and C-isotope profile that of the Marinoan-equivalent glacial-cap carbonate couplet of the Nantuo and Doushantuo formations. The Daxinwu Formation (Susong Group) in the eastern Dabie Orogen contains a marble unit that has, for several hundreds of metres, a strikingly uniform C-isotope profile of low $\delta^{13}C$ positive values and is overlain by a P-rich graphitic schist; these features match those of the late Ediacaran to early Cambrian Dengying Formation. These correlations establish that the HP-UHP metasedimentary rocks, many of which were once considered to be Palaeo- to Mesoproterozoic in age, are a Neoproterozoic-age cover sequence of the continental margin of the Yangtze Block. Further, their widespread development limits their utility as indicators