

## Biostratigraphy of Doushantuo formation in Weng'an, South China

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The emergence of the Metazoan is one of the most important issues of the biological evolution through the time. The visible macrofossils without microscopic analyses have never been present until the Late Proterozoic: emergence of the Ediacaran Fauna or the Weng'an biota in south China. The some groups of the Weng'an Biota are ancestors of the modern Metazoan, whereas the Ediacaran biota do not have any corresponding animals at present, suggesting that two independent kinds of animals were simultaneously and separately present in those days. However, the cause and feature of the emergence and subsequent divergence of the Ediacaran and Weng'an biota are still ambiguous as well as the detailed biological or ecological characteristics. Previous works reported many fossils including multicellular algae, cnidarians, sponge, small bilaterians, acritaches, and animal embryos from the phosphorite layers. They are the oldest evidence and unique to this area. Especially, the occurrence of small bilaterians and animal embryos are restricted to the Upper Phosphorite Layer. However, the detailed biostratigraphy is still ambiguous. This work presents biostratigraphy including multicellular algae, acritaches, and animal embryos in Weng'an area, and preliminary chemical paleontological investigations of the fossils.

We collected rock specimens from the 630 Ma Marinoan Glaciation through the black shale, dolomite and phosphorite of the Doushantuo Formation to the dolomite of the Dengying Formation in Weng'an, south China. The detailed microscopic observations shows occurrence of many fossils, over hundreds. The reconstructed biostratigraphy of the Weng'an biota suggests presence of layers of the first appearance of some fossils, like animal embryos in the Upper Phosphorite Layer. Although required for more data, the preliminary results of the biostratigraphy suggests determination of the first appearance the specific fossils, and classification into some biota.

Generally, microfossils in the Precambrian are simple in the form, and some are unique, unsuitable for the paleontology on the basis of their morphology. Therefore, another diagnostic criteria for the Precambrian fossils are necessary. We also carried out in-situ trace element analyses by LA-ICP-MS at Tokyo Institute of Technology, respectively because of combination investigation of geochemistry and paleontology. There are small differences among animal embryos, multicellular algae, inorganic minerals and matrices in Zn contents.