

Stratigraphic Sedimentary Environmental Change of the Mt. Bruce Supergroup, Southern Pilbara, Western Australia

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The Mount Bruce Supergroup is deposited from Late Archaean to Early Proterozoic in the Pilbara craton, Western Australia. It is filled the information of the period that changes from the Late Archean to the Early Proterozoic, and is the key sequences which could reconstruct the sedimentary environment because of its low metamorphic grade. The purpose of this study is to grasp the change of the sediments in the Mt. Bruce Supergroup, and to develop the sedimentary environment of the Meteorite Bore Member that is reported the evidence of early Proterozoic global ice age as the glacial sediment

In this study, we focus the lithological changes of the Mount Bruce Supergroup at the Beasley River - Rocklea Dome area in the Southern Pilbara. Along the Beasley River, this supergroup distributes more than 10000m thick with 5 billion years sequences, and is divided into three groups. The Fortescue Group is identified with the flood basalt to the shallow marine or the non-marine sediment, the middle Hamersley Group rich in the banded iron formation and the acidic volcanic rock and the upper Turee Creek Group mainly of the shallow marine sediment.

Here we focused origin of sandstone in each group, especially in the Meteorite Bore Member of the Turee Creek Formation that is identified as the early Snowball Earth events. At the matrix of the diamictite of the Meteorite Bore Member, Origin of diamictite matrix in the Turee Creek Group sediment by the U-Pb detrital zircon geochronology by CHIME and SHRIMP 2. The zircon ages points between 2.7Ga and 2.4Ga. In addition from this matrix, TOC value indicate 0.1-0.05%, the delta 13 C value is -30-20 par mil. These evidence suggested that the organic activity might take place at during ice age.