

Newly developed image processing Lamination Tracer to deduce 1D profiles from 2D images of cap carbonate

Nagayoshi Katsuta[1], Masao Takano[2], Teruyuki Okaniwa[1], Bunji Tojo[3], Shin-ichi Kawakami[4], Mineo Kumazawa[5]

[1] Earth and Planetary Sci., Nagoya Univ, [2] Dep. Earth and Planetary Sci., Nagoya Univ., [3] Nagoya Univ., [4] Fac. Educ. Gifu Univ., [5] Tono, JNC

For verifying a Neoproterozoic snowball Earth hypothesis, it is very important to determine how long the time from a cold climate to a global glaciation and the collapse of a snowball Earth to a warm climate were. We try the following approach toward the problem of a snowball Earth. Firstly, we perform the spectral analysis of XRF counts profiles of cap carbonate. Secondly, the plural peaks acquired are compared with the orbital periods such as tidal, solar and Milankovitch cycles. Then the time mark is put in the lamination of cap carbonate. Thirdly, we estimate the time scale of a series of a snowball Earth. We report an algorithm of image processing Lamination Tracer to convert 2D image to 1D profile along deformed bedding plane. The image analyzed is XRF image cross section of Rasthof cap carbonate from Otavi Group in Namibia and acquired by Scanning X-ray Analytical Microscope. We used the XRF image with the spatial resolution 0.1mm/pixel and the image size 512 by 512 pixels.