Study on Resolution of Dating Method by Free Iron Oxides Analysis for loess sediments (Red-Brown soil Layer) of Matsue Area, Japan

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As an alternative to soil dating method by using widespread tephras, it is proposed dating method based on free iron oxides analysis by Nagatsuka (1973).
In the Matsue area, tephras from Sanbe volcanoes (SK, about 105ka) and Daisen volcanoes (DMP, about 130ka) are preserved. Tanaka et al. (2016) examined the applicability of dating method by free iron oxides analysis for loess sediments (Red-Brown soil layer) below the DMP. Loess sediments below the DMP is classified red soils by Nagatsuka (1973). Sasaki(2011) proved that it would take about 125ka for red soils to develop. The age is most consistent with tephra stratigraphy and chronology.
In this study, the authors examined Resolution of this method. Soil samples were used from loess sediments below the DMP, collected continuously with depth segregation.
As a result, The crystallinity ratio of free iron oxides values of middle terrace and high terrace in the present study range from 0.67 to 0.78, and from 0.59 and 0.70, respectively. The crystallinity ratio of these soils were all distributed within the range of red soil-region by Nagatsuka (1973) and the crystallinity ratio of free iron oxides increased gradually to the direction of a depth. Therefore, it is considered the crystallinity ratio of free iron oxides can be the high resolution of the degree of soil development and the relative chronology of red soils.

Keywords: Free iron oxides analysis, Crystallinity ratio, Relative chronology, Loess sediments, Red soil, Matsue area

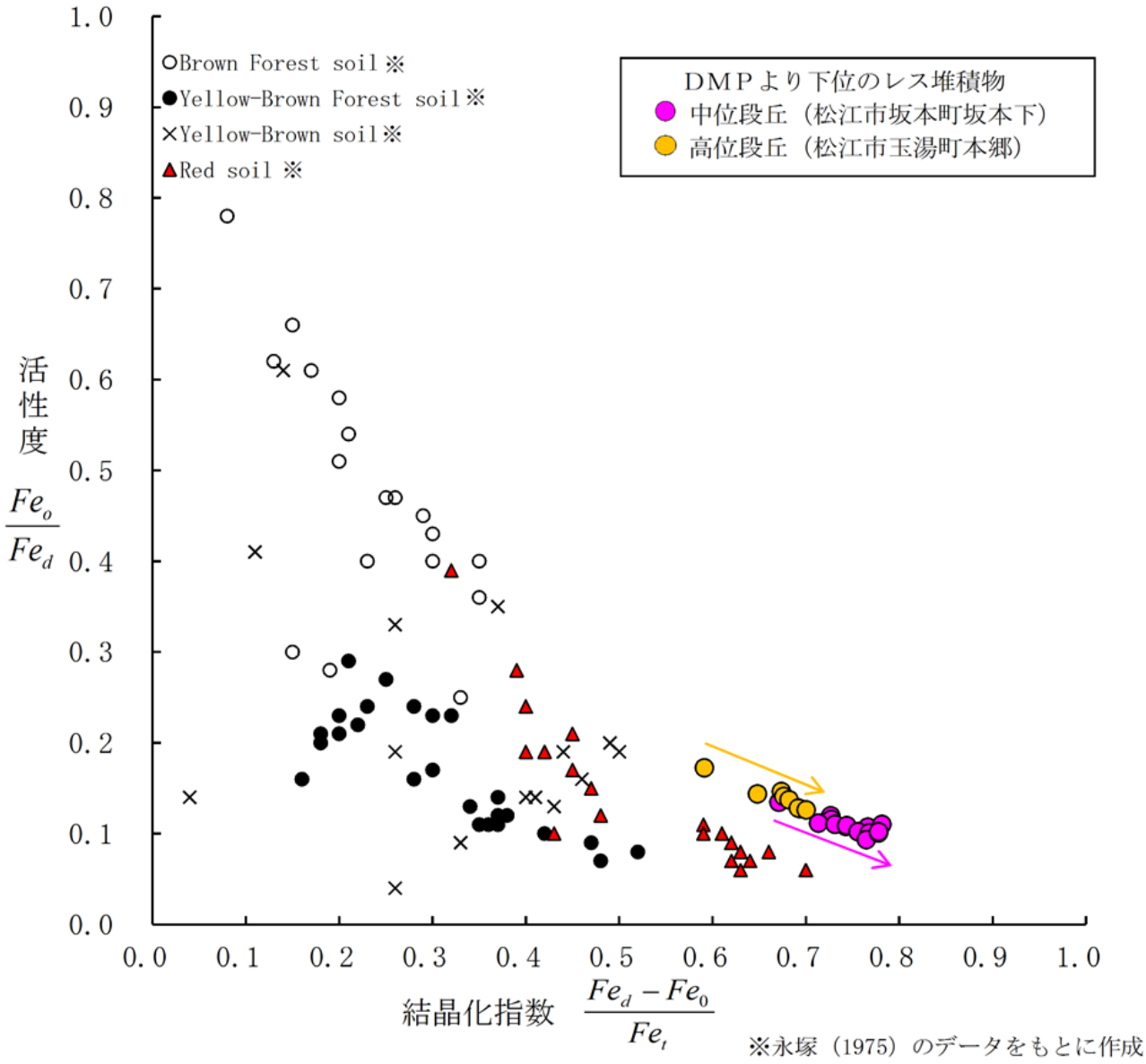

図　DMPより下位のレス堆積物における活性度ー結晶化指数の関係

