

Reduction of the data from geomagnetic repeat observations by Natural Orthogonal Components method

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The Japanese geomagnetic regional model is constructed based on the data of first- and second- order geomagnetic station. To construct the regional model, all observed data at a repeat station are first reduced to a common epoch t_0 to eliminate influence of externally fields by using the data at reference Kakioka magnetic observatory, and then the polynomial fitting are used to obtain the reduced values with high accuracy. This reduction method generally requires the last measurement time at a repeat station is around the common epoch t_0 . However, in recent years, since the repeat survey is made in a long cycle of three to four years, the total amount of new survey data is small. When the conventional reduction method is applied, the data are insufficient to establish the regional model. Therefore, in order to obtain the large amount of reduced values, the new reduction method with natural orthogonal components and multivariate regression are proposed. In this study, the comparison of this new method and the conventional one are reported and regional model for 2000 based on these reduced values is introduced.