Japan Geoscience Union Meeting 2012
(May 20-25 2012 at Makuhari, Chiba, Japan)

SEM21-P11 Room:Convention Hall Time:May 25 15:30-16:45

Reexamination of geomagnetic secular variation in Kinki District using samples from Suemura kilns

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In 1960's-70', enormous number of kilns were excavated in Sakai city and its vicinity, Osaka prefecture for a large residential development. The enhanced archeological studies were carried out by Osaka Prefecture. The archeomagnetic researches were also conducted under prof. Kawai of Osaka University. As the result, the geomagnetic secular variation curve from the 5th century to the 10th century was drawn. However, there are problems from the present paleomagentic view point. The natural remanent magnetizations (NRM) were measured by astatic magnetometer and demagnetization was not made. Fortunately, those samples are stocked in Osaka Ohtani University, and we are conducting remeasurement study of their NRM after alternating magnetic field demagnetization (AFD). Number of samples stocked amounts to about 4000, and 1000 of them were moved to Kumamoto University for this study. This report describes remeasured NRM using spinner magnetometer and results of AFD for 213 samples of 19 sites.

After AFD, precision parameter of each site generally improved from the previous results in the initial reports, about 4 times on average, 21 times at most.

Those improvements seems due both better measurement accuracy and stable magnetization component found by AFD. The degree of concentration of average magnetic directions in each age group is also improved. However the resultant secular variation curve has still some problem in smoothness, which shall be attributed to reasons other than the accuracy of magnetic measurements.

Keywords: Suemura kilns, Archeomagnetism, Geomagnetic secular variation