

## Preface to Special Issue: Reduction in Frequency of Absolute Geomagnetic Measurements

The curtain fell on the field offices of the Memambetsu Magnetic Observatory (Ozoracho, Hokkaido) and Kanoya Magnetic Observatory (Kanoya, Kagoshima Prefecture) as field offices, and they became unmanned observation facilities in April 2011 after slightly more than a half-century of operations. With this organizational change, the personnel of the field offices were collected at the main office at the Kakioka Magnetic Observatory, and liaison offices for geomagnetic observations were also established at both the Abashiri Local Meteorological Observatory and the Kagoshima Local Meteorological Observatory, which were near the two facilities. Two staff members (one of them having shared duties with the local meteorological observatory) were dispatched to each, and they began to carry out absolute magnetic observations and perform routine maintenance on the equipment. In the year that followed, the absolute magnetic observations that had been carried out weekly were reduced to biweekly, and the liaison offices were reduced to one employee each jointly employed with the local meteorological observatory.

This organizational change was based on a report of the results of investigations into the system for carrying out geomagnetic observation work by the Committee to Study the State of Magnetic Observatories, established within the Japan Meteorological Agency in 2006. The purpose was to reduce work and also increase the effectiveness of promoting the following improvements: work on supplying information such as that on magnetic storms, fuller PR activities, research and development, and international cooperation.

After receiving this report at the Kakioka Magnetic Observatory, an investigation was carried out by the Technical Investigative Subcommittee for Developing Remote Observations at Field Stations, and investigative studies were conducted to solve various related problems according to themes of importance for survey studies at magnetic observatories. The Technical Investigative Subcommittee extracted and examined technical problems related to items involved with maintaining the quality of observational data; items involved with monitoring the observation environment as well as maintenance and control of equipment; and items involved with absolute observations and routine maintenance policies for the field offices as well as the policies of the main office. The results of the investigation were brought together in January 2008. During this investigation, problems involving the absolute observation intervals required for maintaining the quality of observational data after conversion to remote observations, and those related to detecting and making corrections for artificial disturbances as well as the handling of failures, were brought forward.

To solve these problems and implement the changes in observation policies at the Kakioka Magnetic Observatory, arrangements were made for the equipment for remote observations and facilities for observing the effects of artificial disturbances. Additionally, work was done on investigative research necessary for maintaining the precision of observations. In FY 2008, the “Investigation for Making Absolute Magnetic Observations More Efficient” and “Advancement of Observational Techniques for Artificial Disturbances in Geomagnetism” were carried out. Furthermore, in FY 2009–2010, the “Investigation for Improving Reliability of Geomagnetic Observations” was conducted. These results were reported in Nishimura *et al.* (2010), Mishima *et al.* (2011), Minamoto *et al.* (2011), and Fujii *et al.* (2012).

In FY2011 investigations were carried out on methods for changing to biweekly observations without the effects of artificial disturbances and reducing the precision of the absolute magnetic observations, which had been carried out weekly at Memambetsu and Kanoya, according to the “Research on Reducing the Frequency of Absolute Magnetic Observations”. In this Special Issue, reports from the results of this investigation are given on problems related to determining baseline values in absolute magnetic observations (use of baseline values corrected for the effects of earth temperature, and methods for correction when effects of artificial disturbances occur during absolute observations) and the capabilities for detecting artificial disturbances at Memambetsu and Kanoya.

We hope that these reports will be used for improving work on geomagnetic observations at various institutions carrying out such observations.

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