

Fieldwork in Kagoshima and Sata Observatory, 4–5 March 2026

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I had an opportunity to participate in a fieldwork activity in Kagoshima to gain direct experience in handling observational instruments together with Shiokawa-sensei and Yoshida-kun (B4). The fieldwork was conducted over two days, from 4 to 5 March 2026, with activities carried out at two observation sites: Kagoshima Observatory in Tarumizu and Sata Observatory. The distance between these two stations is approximately 1 hour and 45 minutes by car.

On the first day, after traveling for about one hour by car from Kagoshima Airport, we arrived at Kagoshima Observatory in Tarumizu. The field observatory consists of several instrument huts and observation areas, including the induction magnetometer hut, fluxgate magnetometer hut, amplifier hut, and the VLF antenna. In addition, several GPS receivers are installed at the site. Some of these receivers are used to determine the precise location of the observatory and to monitor movements associated with ash activity from Mount Sakurajima, an active volcano located near the observatory.

At Kagoshima Observatory, one of our main activities was the re-installation of an induction magnetometer. A pair of induction magnetometers was installed and aligned along the magnetic north–south (H) and magnetic east–west (transverse D) directions. The sensor orientation was calibrated using a magnetic compass to ensure proper alignment with the local magnetic meridian. Another main activity involved the installation of an LTE network device at the Ueno-Daichi amplifier hut. This additional device was installed to improve the communication link between the observatory system and the systems at Nagoya University. We also took back a 2 TB portable hard disk drive from the vlfkag2 system.

On the second day, we visited Sata Observatory. At this site, we re-installed the all-sky camera (Z001), which had previously been damaged by lightning. The all-sky camera is equipped with optical filters that provide observations of auroral and airglow structures in the upper atmosphere. One of the most challenging parts of this work was mounting the camera system. The installation had to be handled carefully to ensure proper alignment of the system. Another maintenance activity at Sata Observatory was the re-burying of sensor cables for the induction magnetometer. The power lines, sensor instruments, and control PC are connected through underground cables. However, some of the cables between the induction magnetometer sensor and the control PC had become exposed due to soil erosion and disturbances caused by nearby animals such as wild boars, which occasionally dig in the area. So, we re-buried the exposed cables with soil. After completing the maintenance work, several checks were done to make sure that all instruments were working properly.

During short breaks between these fieldwork activities, we also had the opportunity to enjoy the natural environment surrounding the observatories. In Tarumizu, we visited a Sakurajima observation point, where we were able to observe the volcano at a closer distance. We also stopped by a GEONET station, a large GPS receiver equipped with solar panels, operated by the Geospatial Information Authority of Japan.

In Sata, we visited Cape Sata, the southernmost point of mainland Japan, and enjoyed the coastal scenery. On the way back from this area, we met a group of Japanese monkeys crossing near the roadside, which was a memorable moment during the trip. We also stopped by Sugawara Shrine, a local shrine dedicated to Sugawara no Michizane, who is widely regarded in Japan as the deity of learning.

On our way back to the airport, we briefly stopped at a roadside rest area where we enjoyed a foot bath hot spring while viewing Mount Sakurajima, which was erupting.

Overall, the two-day fieldwork was intensive and somewhat physically challenging, but it was also a valuable and enjoyable experience. I would like to express my sincere gratitude to Shiokawa-sensei for explaining a lot about the aforementioned instruments, the sites, and the history, as well as driving us for much of the trip over the two days. Most importantly, I would also like to thank PBASE for supporting this activity.



At Cape Sata



Calibrating the orientation of the induction magnetometer

Installed all-sky camera

Digging soil to rebury underground cables

Collage of fieldwork activities