

Research Fieldwork Report in Stø and Andenes, Norway

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During the summer period, from August 1 to 9, 2026, I had the opportunity to conduct a research fieldwork trip to Stø and Andenes, Norway, together with members of Shiokawa's research group: Shiokawa-sensei (Professor), Nagashima-san (D1 student), and Yoshida-san (M1 student). My research focuses on atmospheric gravity waves and equatorial plasma bubbles using airglow imaging. Since my research also involves airglow imaging, this fieldwork provided me with valuable hands-on experience in installing, operating, and maintaining scientific cameras used for airglow observations.

To begin the fieldwork, after arriving in Andenes, we traveled to Stø to remove the shutter of the OMTI (CH) camera and retrieve two ZWO cameras for installation in Andenes. Before the retrieval, three cameras were installed at the Stø observation site: one OMTI camera equipped with five wavelength filters and two ZWO cameras, Z010 for 630.0-nm airglow and Z011 for OH-band airglow observations. Although the OMTI camera was functioning well, its shutter sometimes did not work during winter, so we removed the shutter. We then removed the two ZWO cameras from Stø and installed them at the new observation site in Andenes. The driving distance between Stø and Andenes is approximately 150 km, requiring about 2.5 hours by car.

Of the two ZWO cameras that we brought from Stø, we successfully installed the Z011 camera. Unfortunately, the other camera, Z010 had a malfunction. Since it was not possible to repair it at the site, we brought the camera back to Japan for repair. After the repair is completed, it is planned to send it back to Andenes and will coordinate with the local team to assist with its installation. With the new observation site in Andenes, we now have two airglow observation sites in northern Norway, which allows us to broaden the spatial coverage of our airglow observations since each camera can observe an area extending approximately 500 km horizontally.

In Norway, the airglow observations are conducted in collaboration with the Leibniz Institute of Atmospheric Physics (IAP), University of Rostock, Germany. IAP operates several observation sites in northern Norway, where we install and operate the airglow cameras as part of the collaboration. The observation site in Andenes is also associated with Andøya Space, which supports scientific activities and facilities in the region.

Near the new ZWO camera hut in Andenes, also located the MAARSY (Middle Atmosphere Alomar Radar System) radar owned by IAP. MAARSY observes polar mesospheric echoes at altitudes of approximately 80–95 km. Our OH camera observes airglow emissions from the upper mesosphere at an altitude of around 87 km, which is close to the region observed by MAARSY. By combining observations from these instruments, we may obtain complementary information on atmospheric gravity waves and investigate the dynamics of the middle atmosphere.

During the fieldwork, we also had the opportunity to visit the Andøya Space facilities. We met Ellen Haltuff from Andøya Space, who kindly gave us a tour of the Arctic Lidar Observatory for Middle Atmosphere Research (ALOMAR). It was a valuable opportunity to see more about the lidar observations. In the northern part of Andenes, there are also several facilities related to space research, as well as military areas.

Overall, this fieldwork was a valuable and memorable experience for me. It provided an opportunity not only to gain practical experience in installing and maintaining scientific instruments, but also to see how international collaboration and field observations are conducted. Since we visited during the summer, there was still considerable twilight even around midnight, making it difficult to observe the Northern Lights during our stay. Nevertheless, experiencing the midnight sun and the unique environment of northern Norway was also a memorable part of the trip.

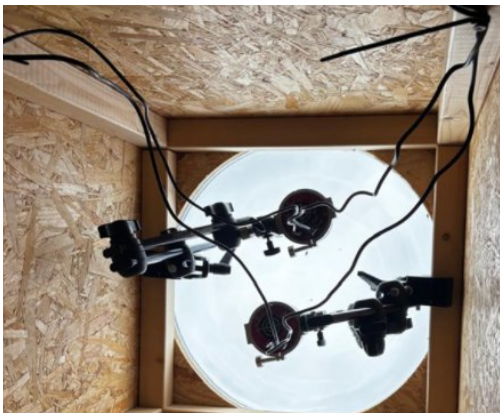
I would like to express my sincere gratitude to PBASE for supporting this research fieldwork. I hope that, with the successful installation of these cameras and the collaboration with IAP, we will be able to obtain valuable datasets in the future for research on atmospheric gravity waves and auroral phenomena.



OMTI Camera at Stø



Removing the shutter from the OMTI camera



Z010 and Z011 cameras at Andenes (testing)



Z011 camera installed at Andenes