

Two Months at Nagoya University

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I spent two months this summer at ISEE, Nagoya University, supported by the PBASE program. Working with Professor Kazuo Shiokawa and colleagues, I learned more about observations from the ground and experienced everyday life in Japan. Our research also took a different direction from the one we first imagined.

We began by searching for conjunctions between the Arase satellite, the ELFIN satellites, and the PWING ground network: opportunities to observe related activity from all three at the same time. Finding suitable orbital alignments proved difficult, and these rare events eluded our search. We eventually shifted our focus to ELFIN and PWING, which opened up a new research question.

Could the waves recorded on the ground explain how energetic electrons enter the atmosphere? We examined nine conjunctions between ELFIN and PWING, comparing the electromagnetic ion cyclotron (EMIC) wave spectra inferred from electron measurements with those observed on the ground. Most cases showed broad agreement; a few showed substantial differences, raising questions about wave propagation and electron scattering. This became the basis of the paper we worked on together. Although our original search had not succeeded, it had led us toward a study we had not initially planned.

Professor Shiokawa's experience with magnetometers and auroral imagers was especially helpful. His explanations helped me interpret the ground measurements and think more carefully about their relationship to the satellite data. I appreciated his patience during our weekly meetings, where we could work through questions and discuss how to improve the analysis. Those regular conversations were one of the most valuable parts of my stay.



Early diving equipment. Photo: Zijin Zhang.

Outside research, I visited Kamikochi for hiking and climbing and traveled to Kyoto to explore its cultural and historical surroundings. Together with daily life in Nagoya, these trips gave me opportunities to learn about Japanese culture and practice the language.

At Nagoya Aquarium, I was drawn to a display of early diving suits. I found it inspiring to see how people approached exploration with such different tools. It was a memorable moment outside my own field of research.

I am grateful to Professor Shiokawa for his guidance and to my colleague Xiaofei Shi, whom I knew as a friend at UCLA. I also thank my colleagues and the staff at ISEE for their support, and PBASE for making this stay possible. I will remember this summer for both the research we developed together and the experiences I had in Japan.