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Satellite-Based Insights into Equatorial Plasma Bubble Depth and Scintillation Relationships

Global Navigation Satellite System (GNSS)-based communication, navigation, and positioning technologies, have been researched to be highly sensitive to ionospheric irregularities. Plasma depletions around the equatorial region typically known as equatorial plasma bubble has been widely linked to these irregularities. Apart from the fact that these irregularities have various characteristics, including the depth of the depletion, studies linking the depth magnitude to scintillation intensity are scarce. My hypotheses suggest that a measurable correlation may exist between EPB depth and scintillation intensity. This formed the basis of my study during my three months stay in Kyushu University under the SCOSTEP-VS program.

While at it, I benefited immensely under the supervision of Prof. Huixin Liu who gave me a warm reception and adequate contact time to ensure my time was effectively utilized. I had the priviledge of listening and interacting during weekly seminar discussions with students and visiting researchers where I gained newer insight towards my research. I extend my sincere appreciation to Dr. Irina Zakharenkova for her meaningful contributions and suggestions, which greatly assisted the progress of my work. The study has yielded promising results, which are now being prepared for submission to a peer-reviewed journal.

Outside of my research, I enjoyed exploring the local area, easily accessible by subway and train, and sampling various Japanese cuisines, including Fukuoka's regional specialties. A particular highlight was the dinner hosted by Professor Huixin at her residence. The peaceful atmosphere on campus and at Ito Harmony House, where I resided, provided an ideal environment for focused study.

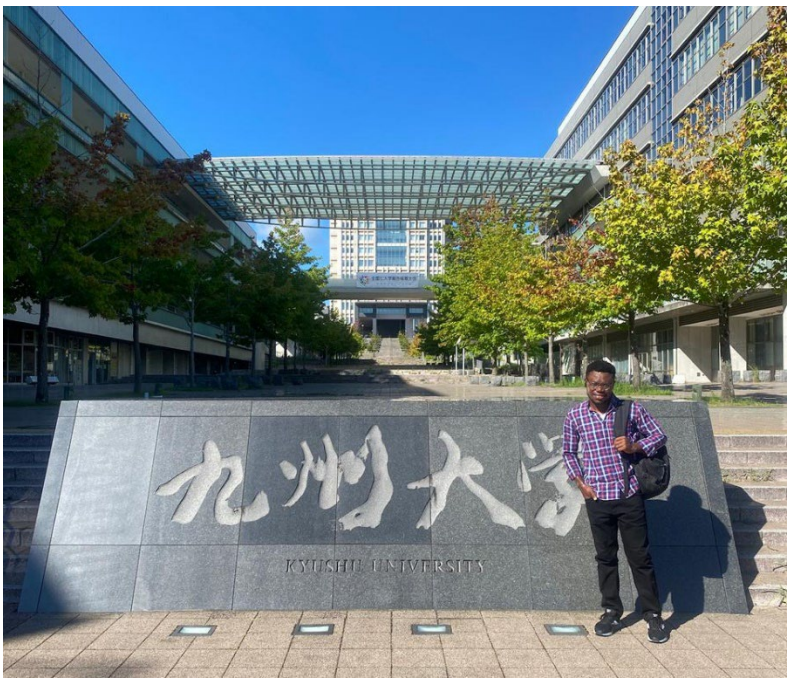

***Figure 1**: Photo of me on my first day at Kyushu University campus*

This experience significantly enhanced my research capabilities while offering meaningful cultural exposure and professional networking opportunities. It also contributed to my personal growth and the development of important academic and professional skills. Overall, my time at Kyushu University was deeply rewarding and will undoubtedly benefit my career and development in the years ahead.

Once again, I thank my host, Prof. Huixin Liu, the Secretary Ms. Goto Kayo for her kind efforts and patience. Ultimately I appreciate the SCOSTEP body for funding my trip to Japan and PBASE project for providing the funding support for my living expense throughout my three months stay (September 14 – December 13, 2025) in Kyushu University, Japan.