（Form16-2）

エルニーニョ・ラニーニャ現象にともなって太平洋の赤道の傍の深海に到達する波動のエネルギーのフラックス

Deep reaching wave energy-flux in the off-equatorial Pacific Ocean during the El Niño and La Niña events

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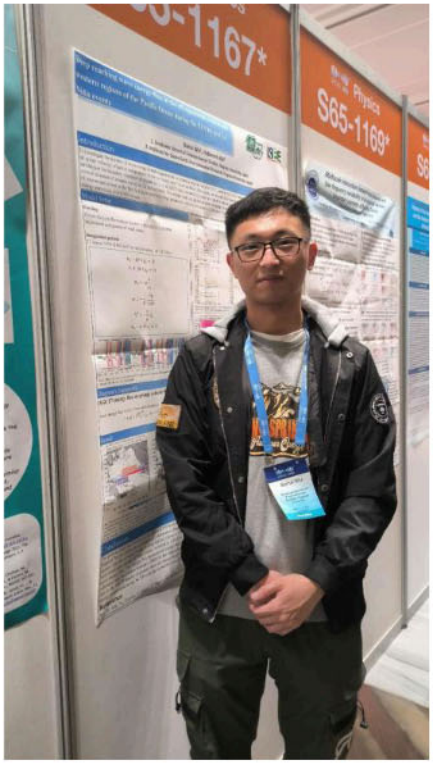
I attended the international academic conference, The Xiamen Symposium on Marine Environmental Sciences (XMAS 2025), held in Xiamen, China during January 13 to 17 in 2025. This prestigious event brought together leading researchers, scholars, and students to discuss various aspects of marine sciences, fostering collaboration and innovation. My participation included presenting a poster in Session 65, "Oceanic-Atmospheric Processes Over the Indian and Western Pacific Oceans," as well as engaging in the "Mentor Meets Mentee Program." These experiences enriched my academic understanding and provided invaluable networking opportunities in the field of physical oceanography.

Session 65 focused on exploring the dynamic processes in the Indian and Western Pacific Oceans, which is a hot spot region for scientific research. This region connects the Pacific Ocean and Indian Ocean and is associated with major climate variations including El Niño Southern Oscillation (ENSO) and Indian Ocean Dipole (IOD). My poster presentation introduced a novel method for tracing wave energy flux based on group velocity in a three-dimensional framework, as proposed by Aiki et al. (2017) and extended by Li et al. (2021). This method represents a significant advancement in understanding energy transfer mechanisms in oceanic waves. It departs from traditional ray theory and Fourier analysis, offering a seamless diagnostic that can be applied across varying latitudes and depths while satisfying coastal boundary conditions. My poster highlighted how this approach can provide insights into the vertical and horizontal structures of wave energy transfer in the Pacific Ocean, particularly in relation to phenomena like ENSO events and other interannual oscillations. This study is an extension of Wu et al. (2025), which focus on the horizontal wave energy transfer in the surface layer of Pacific Ocean. During the poster session, I received constructive feedback and engaged in stimulating discussions with fellow researchers. Additionally, I had the opportunity to learn about various studies conducted by other students and scholars. I note that artificial intelligence (AI) is now widely applied in scientific research, including oceanography, and is likely to become a significant focus of future research.

Participating in the "Mentor Meets Mentee Program" was one of the most rewarding aspects of the conference. This program provided a platform to connect with esteemed professors from top universities around the world. I had the opportunity to present my research to these mentors and gain their perspectives on the applicability and potential impact of the three-dimensional wave energy flux diagnostic. They offered suggestions and comments on expanding the method's scope, such as the prediction of ENSO events. These conversations not only broadened my academic horizons but also motivated me to explore interdisciplinary approaches to my research.

My participation in XMAS 2025 was a highly enriching experience that significantly contributed to my academic and professional development. I am grateful for Institute for Space-Earth Environmental Research (ISEE) to give me the chance to attend this conference and look forward to applying the knowledge and connections gained to further my research in physical oceanography.



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