



Abstract Details

[AOGS 1st Annual Meeting](#) > [Ocean and Atmospheres](#) > **Study on Meso-scale Vortex-streets Appeared in Wake of Jeju Island during Winter Season** >

Corresponding Author : Prof. Jai-Ho Oh (ymmin@climate.pknu.ac.kr)

Organization: Pukyong National University

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Title: Study on Meso-scale Vortex-streets Appeared in Wake of Jeju Island during Winter Season

Abstract: Since middle of 1960s, studies on vortex-street, one of meso-scale convective phenomena, had been progressed to study by evolving satellite remote-sensing technology rapidly. Through interpretation of satellite pictures meso-scale vortex-streets it had been known that these phenomena have due to the obstacle positioned in the atmosphere. But Many previous studies were restricted within certain conditions of appearing and disappearing process of vortex-streets. It was not easy to analyze their whole structure and features because of the lower data resolutions temporally and spatially. In this study we investigated the characteristics of leeward mesoscale vortex-streets in Jeju island by analyzing a general variation of regional temperature, water contents in coarse domain (synoptic scale) and a detailed variation of vortex-streets in nested domain (mesoscale). And we applied the results of isobaric two dimensional wind-fields and vortex movement on previous studies to choose five cases, and compared with each cases. From time series of wind fields and interactions between stratification and nondimensional numbers (Tsuchiya 1969), we inferred the type of mesoscale vortex-streets. And using three dimensional full dynamics nonhydrostatic mesoscale model, we inferred critical value of upper level conditions for mesoscale vortex-streets in real atmosphere. And sensitive tests induced by variation of SST and mountain height were preformed. SST play an important role in the low boundary conditions following the water vapor transport mechanism. So it strongly effect to water contents below inversion layer (). Also mountain produce the vortex and generate the cloud streets by concentrating on water vapor.

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Co-Authors

No.	Title	First Name	Family Name	Organization
1	Prof.	Jai-Oh	Oh	Pukyong National Univ.
2	Mr.	Hanse	Yi	Pukyong National Univ.

