UNIVERSITY of HAWAI'I MĀNOA

Department of Atmospheric Sciences Seminar Announcement

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SCHOOL OF OCEAN AND EARTH SCIENCE AND TECHNOLOGY

Retrieval of three-dimensional wind, pressure, temperature and moisture fields over complex terrain using Doppler weather radar observations

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Date: **Wednesday, January 27, 2021**
Time: **3:30pm HST**
Zoom Meeting: **https://zoom.us/j/93583080682**
Meeting ID: 935 8308 0682
Passcode: 6daVMR

Abstract:

In this seminar two variational-based retrieval algorithms are introduced. The first algorithm, called WISSDOM (WInd Synthesis System using Doppler Measurements), is a multiple-Doppler radar three-dimensional wind synthesis method. Compared to the traditional techniques, WISSDOM is able to recover three-dimensional wind field along the radar baseline and over complex terrain. Data from any number of radars, surface station, wind profiler, sounding, and meso-scale numerical model outputs can all be utilized by WISSDOM at the same time. The second algorithm, called TPTRS (Terrain-Permitting Thermodynamic Retrieval Scheme), can directly use the wind fields from WISSDOM to retrieve the three-dimensional pressure, temperature, and moisture fields. By using idealized data and real cases observations, the accuracy of WISSDOM and TPTRS is examined. By combing WISSDOM and TPTRS, one can obtain a complete set of high resolution meteorological variables. The applications of this high quality data set in weather diagnosis and improving short-term quantitative precipitation forecast (QPF), especially in mountainous areas, are also discussed.