

Airborne Doppler Wind Lidar: investigating tropical cyclones with curtains of wind profiles

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Abstract

During the THORPEX Pacific Asian Regional Campaign (TPARC 2008), the Office of Naval research (ONR) deployed a P3 aircraft equipped with dropsondes, the NCAR ELDORA radar and a Doppler wind lidar. For the P3 Doppler wind lidar (P3DWL), this was its first use in a field program designed to study the lifecycle of tropical cyclones. During the eight weeks in the western Pacific, the P3 aircraft flew in and around numerous cyclones with the P3DWL collecting nearly 12,000 vertical wind profiles with 50 meter vertical resolution of u and v and , on occasion, w . The profiles were separated by 2 -3 km depending upon the scan pattern and aircraft ground speed. In addition to wind profiles, the P3DWL provided information on the distribution of aerosols and the condition of the ocean surface (waves, sprays, and foam). Several case studies will be presented that illustrate the utility of an airborne DWL in tropical cyclones characterized by multiple cloud layers and strong shear.

Recorded presentation