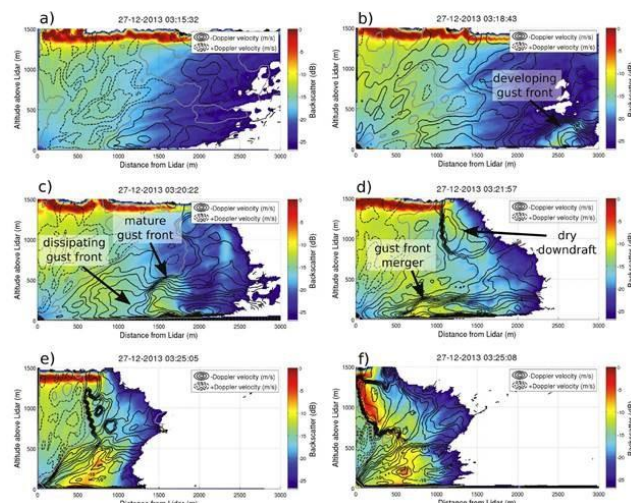




PROBLEM

As severe weather events become more prevalent, the need to better predict their location, intensity, and timing attributes is vital. It is well known that early detection of such events can improve the efficacy of emergency preparedness actions, ultimately saving lives and protecting infrastructure. While the use of regional mesonets – networks of weather stations that sample mesoscale meteorological phenomena – has improved severe weather detection, storms such as Hurricane Sandy, which left at least 147 dead and caused approximately \$75 billion in damages in 2012, prove that the stakes for early, accurate forecasting remain high.



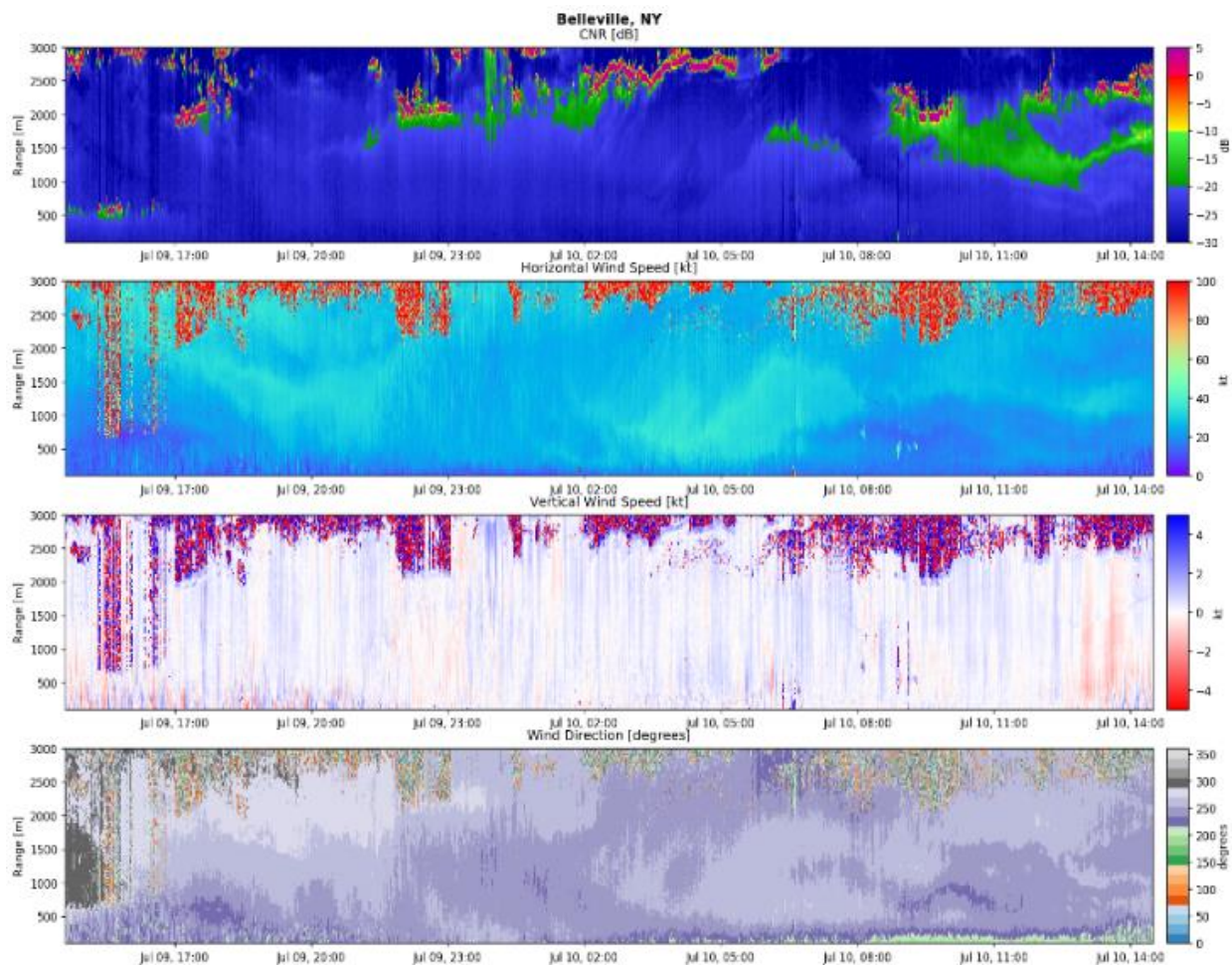
Downburst and gust front evolution at fine spatial and temporal resolution measured with the Windcube 200S during the Coastal Convective Interactions Experiment (CCIE) by the University of Queensland, Australia, 2013.

SOLUTION

To improve severe weather prediction modeling capabilities, experts have begun incorporating scanning Doppler Lidar, a remote sensing solution, into mesonet configurations. In fact, such mesonet composition is a critical part of the unprecedented New York State Early Warning Weather Detection System established by the Department of Homeland Security in January 2014. The System consists of 125 weather stations across New York State, 17 of which are enhanced with [Windcube® 100S Doppler Scanning Lidar](#) provided by NRG Systems.

BENEFITS

Scanning Doppler Lidar solutions, including Windcube, provide real-time assessments of flux parameterization, mixing layer entrainment, mesoscale outflow boundaries, gust fronts and other mass field interactions that are critical to detecting and monitoring convective weather system initiation and evolution. Data from Windcube also allows experts to determine aerosol and cloud optical properties throughout the planetary mixing layer.



Volumetric boundary layer data from the Belleville, NY Enhanced Mesonet station provided by WindCube 100S; indicating Carrier-to-Noise Ratio, Horizontal and Vertical (Turbulent) Wind Speed and Direction, July 9-10, 2017. Courtesy University at Albany, [NYS Mesonet](#).

RESULTS

The observations gathered by Windcube allow meteorologists and forecasters to create detailed, three-dimensional imaging of the atmosphere at a very high spatial and temporal resolution. When coupled with conventional observation systems, this value added observation system allows experts to better predict severe weather in all terrain. The result is accurate, timely local forecasts and alerts, which ultimately minimize the impact of severe weather events on people, businesses, and infrastructure.

To request more information about using Scanning Lidar for regional mesonets, please email sales@nrgsystems.com or call 802.482.2255.