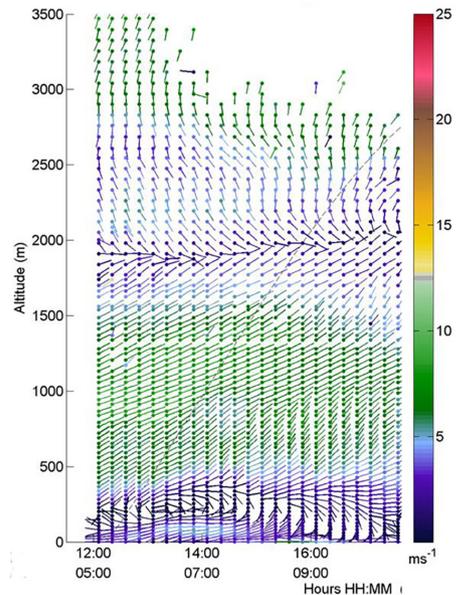


WindCube lidars for artillery test ranges

Accurate boundary layer wind data is vital for calculating ballistic trajectories



Photo courtesy of DoD. The appearance of U.S. Department of Defense (DoD) visual information does not imply or constitute DoD endorsement.



Real-time wind vertical profile in the lower atmosphere measured up to the top of the boundary layer with Vaisala WindCube Scan series.

The firing distances for modern artillery can be tens of kilometers. Weather is responsible for two thirds of long-range fire accuracy error. Accurate weather measurements ensure that military test ranges understand the effects of weather on observed firing performance to ensure successful validation campaigns and development projects.

WindCube lidars provide accurate 3-dimensional, real-time wind information for improved awareness of weather impacts on artillery fires. As the weather is constantly changing, weather models alone cannot match live weather data enabled by Vaisala. With the insight WindCube provides, artilleries gain detailed understanding of wind speed and direction profiles in the lower atmosphere that affect the impact point of artillery fires.

WindCube is a compact, dependable, unattended solution ideal for artillery test ranges. WindCube lidar is easy to deploy. You can even set up and operate multiple WindCubes along the firing test range for detailed studies of the effects of weather to the trajectories.

Key Benefits

Improved accuracy

Rule out weather variables by measuring the effectiveness of fire control systems.

Safety

Measure wind in front of firing units to quantify crosswind

Continuous, real-time data

Provides accurate 3-dimensional, real-time wind information

Easy to deploy

Simple installation process makes deployment easy and fast.



WindCube Scan (left) offers full 3D scanning with typical ranges up to 3km, 6km, or 10km (depending on model).

WindCube (right) provides accurate wind vertical profile up to 300 meters.



Complementary technologies

WindCube lidars are a complementary measurement to traditional radiosoundings with weather balloons.

Radiosoundings utilize a balloon-borne instrument, a radiosonde, to accurately measure atmospheric temperature, humidity, pressure and wind speed and direction during the flight path of the radiosonde. The measurement range of radiosondes reach from surface up to 35 km, and is defined by the size of balloon used.

While radiosonde observations can be considered reference measurements, some test ranges require a more frequent measurement of lower atmosphere winds.

The Vaisala WindCube Lidar allows real-time measurement of either a vertical atmospheric profile or a 3D scanned cross section of the lower atmosphere.

Deploying both Vaisala upper-air and Vaisala WindCube measurements ensures that the full-column atmospheric profile is understood. This unique combination provides reliable situational awareness of the slowly changing high-level winds, full-column temperature and humidity measurements and real-time measurement of the rapidly changing boundary layer winds.

Key features

- Mobile in-situ real-time wind profiling
- 2 approaches:
 - Short-range (300m) wind measurements with instant setup of a transportable WindCube
 - 3D scanning of boundary layer winds with ranges up to 10 km
- Accurate boundary layer wind profile
- NWP winds are accurate above boundary layer if supported by sounding data
- All-weather when combined with weather radar
- Line of Sight measurement capabilities:
 - More accurate wind speed and direction all along projectile trajectory at longer distance

The industry's most dependable technology

More than 1,000 WindCube units have been installed worldwide for a variety of applications. They have been used by defense forces across the globe.

Support to count on

Decades of experience with the world's leading defense forces have given Vaisala a detailed understanding of tactical weather requirements. We offer complete end-to-end service, from project management to training, installation, maintenance and full logistical support.

VAISALA

www.vaisala.com/windlidars



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