

Battlespace Environment Laboratory

The mission of the Battlespace Environment Division is to specify, forecast, mitigate and exploit the impacts of the operating environment on Department of Defense systems and operations. The division develops technologies to allow satellite designers, builders and operators to minimize impacts on their systems due to the effects of the natural and perturbed space and atmospheric environment. It also develops advanced imaging and surveillance technologies to detect hard-to-see targets under stressing conditions and to aid in the monitoring of nuclear explosions.

The Battlespace Environment Division represents the DoD's expertise in space and atmospheric environment research and development and features the only full-spectrum (basic and applied) space weather science and technology program in the U.S. military. The division is composed of the Space Weather Center of Excellence and the Battlespace Surveillance Innovation Center.

As a result of the 2005 congressional Base Realignment and Closure process, the Battlespace Environment Division is in the process of relocating from Hanscom AFB in Massachusetts to Kirtland AFB in New Mexico. The division will work from the new Battlespace Environment Laboratory, a state-of-the-art, 145,000-square-foot facility designed to house the Space Weather Center of Excellence, which studies solar effects in the space and ionospheric environment to forecast and mitigate these disturbances, and the Battlespace Surveillance Innovation Center, which develops space-based detection capabilities.

The laboratory will be used for tests in high vacuum environments, environmental calibration, chemistry and spectrometry, computer modeling, processing of space data, space operations, remote sensing and quantum computing. With an annual operating budget of nearly \$89 million, the relocation of the Battlespace Environment Division to Kirtland AFB will add 25 military, 152 government civilian and as many as 50 contractor positions to the force relocating from Hanscom AFB .

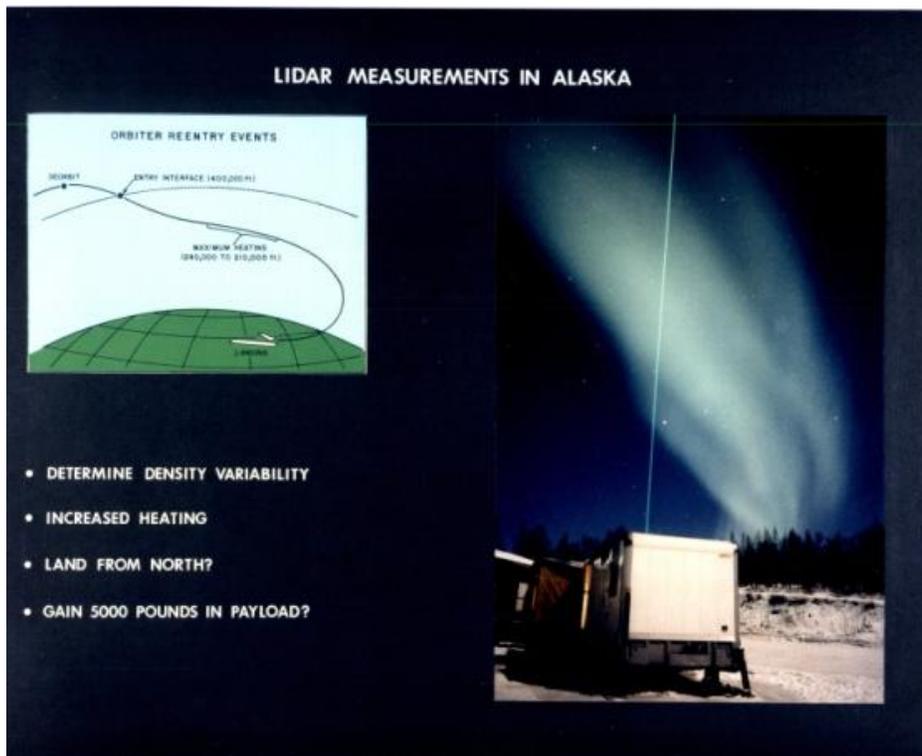


Battlespace Environment Laboratory Domes

Two domes adorn the roof of the Battlespace Environment Laboratory (BEL) on Kirtland Air Force Base's west side. The instruments contained within the domes represent state-of-the-art technology critical to Air Force Research Laboratory's mission.

The dome adjacent to the north side of the building houses a Raven-class telescope used for tracking space objects and collecting data using experimental sensors and imagers. The telescope will serve as a test bed for advanced sensor development. Once they have been tested and evaluated for accuracy, the sensors can then be deployed to remote sites such as the Magdalena Ridge Observatory located west of Socorro, N.M. and the Starfire Optical Range located on the eastern edge of Kirtland AFB.

Near the southwest corner of the BEL, a penthouse Light Detection and Ranging (PH LIDAR) dome will accommodate 36-inch and 12-inch telescopes used for atmospheric effects characterization. The LIDAR dome's telescopes operate by transmitting light along a path and then measuring the light scattered by particles along that path. Sensing the characteristics of the scatter help determine the composition of the particles that are doing the scattering. LIDAR functions are similar to radar, but instead use light waves, which have a shorter wavelength than radio waves. In the past, these research techniques have been applied in several field campaigns to investigate the transport and dispersion of simulant bulk chemical in a target-interceptor collision. LIDAR has been successfully used at locations including AFRL's HAARP in Gakona, Alaska, White Sands Missile Range, San Nicolas Island and New Mexico Tech Socorro test site.



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