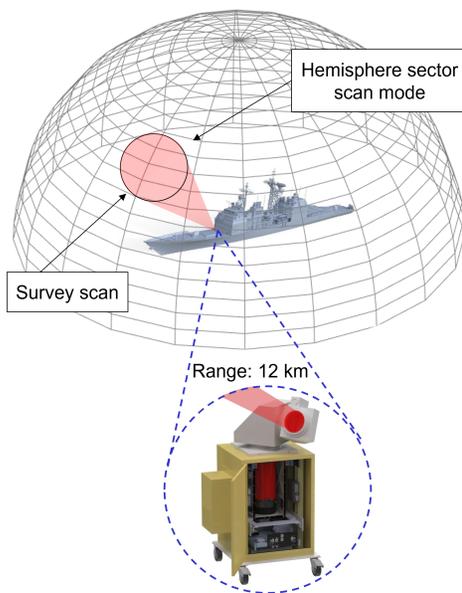


WHO

SYSCOM: NAVSEA
Sponsoring Program: NAVSEA
Transition Target: Directed Energy Systems Integration Lab, NAS Pt. Mugu
TPOC: (812) 854-4804
Other Transition Opportunities: Shipboard Panoramic Electro-Optic/Infrared (SPEIR)
Notes: The figure illustrates a conceptual design for the compact LIDAR system.



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WHAT

Operational Need and Improvement: The deployment of Laser Weapon Systems and passive imagers aboard Naval vessels for ship defense necessitates the ability to dynamically characterize the maritime atmosphere to predict system effectiveness. The Navy needs novel approaches to determine atmospheric attenuation on a continuous or discrete basis and use this information to generate an 'Effectiveness Range' for use by the ships tactical team to determine e.g. whether the laser system is an appropriate weapon choice for a given threat. Atmospheric characterization in both azimuth and elevation is desired to allow for improved weapons selection ability against surface and airborne targets.

Specifications Required: Operational wavelength to match wavelength of laser weapon. Measurement over ranges from ship to horizon. Measurement in both azimuth and elevation angles. Capable of 24/7 operation in a maritime, shipboard environment. Minimal maintenance requirements and/or operate as a stand-alone device

Technology Developed: The basic lidar has been developed and field tested in a relevant environment. It has reached a TRL of 7. We are developing an additional algorithm to extrapolate results over the wavelength range from 1000 to 2000 nm. We are developing an additional algorithm to process multi angle data sets and characterize improvement in accuracy of retrieved vertical profiles of aerosol extinction.

Warfighter Value: The constant monitoring provided by the LIDAR will enhance environmental situational awareness for ship defense. The data collected by the LIDAR will be used to create a 3D map of the atmospheric attenuation surrounding the ship. It will be used to estimate effective power on target. The data will contribute to quick evaluation of the effectiveness of the laser weapon against a target in a given engagement.

WHEN

Contract Number: N00024-24-C-S164 **Ending on:** Aug 07, 2026

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Algorithm to extrapolate retrieved vertical profiles of aerosol extinction to 1000 to 2000 nm	Low	Agreement with predictions of AFIT LEEDR atmospheric modeling code good to ± 20%	6	3rd QTR FY26
Algorithm to process multi angle data sets and characterize improvement in accuracy of retrieved vertical profiles of aerosol extinction	Low	Agreement with predictions of AFIT LEEDR atmospheric modeling code good to ± 20%	6	3rd QTR FY26

HOW

Projected Business Model: Physical Sciences Inc. (PSI) will manufacture the LIDAR system once development and operational testing are complete at the end of a Phase III program. PSI will deliver the initial system to the Directed Energy Systems Integration Lab, (DESIL) at NAS Pt. Mugu at the end of the Phase II.

Company Objectives: Our objective at the Forum for SBIR/STTR Transition is to meet with Navy HELWs personnel, DoD Test Range personnel, and prime contractor personnel to discuss further system development and testing. The lidar system is an important part of PSI's growing family of lidars we are developing for atmospheric monitoring. Specifically we are adapting some of the technology and algorithms to a smaller, ceilometer variant.

Potential Commercial Applications: Potential commercial applications include incorporation into emerging ground networks for boundary layer meteorology to determine boundary layer height and cloud ceiling. Other applications include visibility and Asian dust monitoring, hazardous volcanic ash cloud monitoring, regional air quality and human health assessments.