Topic: N132-090

SciTec, Inc.

Atmospheric Infra-red Transmittance Calculator (AIRTraC)

Infrared sensor developers and testers need accurate, autonomous techniques for atmospheric correction to support flight testing and calibration. SciTec's Atmospheric Infra-Red Transmittance Calculator (AIRTraC) application will provide Navy Test & Evaluation personnel with a robust, highly automated and user-friendly means of determining atmospheric transmission from available weather information and models. This high-fidelity application provides increased test flexibility and significantly reduces costs by eliminating the need for multiple weather balloon collections or other sophisticated measurement equipment. SciTec has successfully field tested the AIRTraC application against airborne IR sensors and calibrated targets. Performance specifications are available on request. SciTec seeks opportunities with Government IR sensor programs and prime contractor developers to demonstrate capability and provide test and evaluation services. SciTec also seeks partners to license the application.

Technology Category Alignment:

None
None
None

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SYSCOM: NAVAIR
Contract: N68335-15-C-0115

Corporate Brochure: https://navystp.com/vtm/open_file?type=brochure&id=N68335-15-C-0115

Department of the Navy SBIR/STTR Transition Program

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NAVAIR JSF17-908

Topic # N132-090
Atmospheric Infra-red Transmittance Calculator (AIRTraC)
SciTec, Inc.

WHO

SYSCOM: NAVAIR

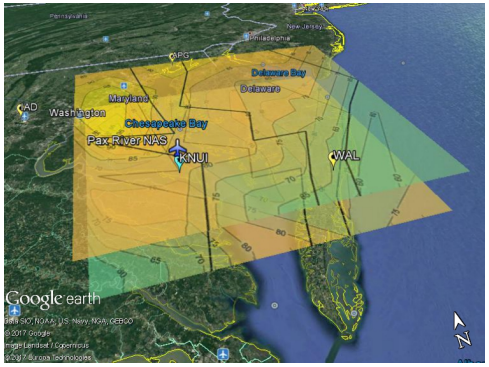
Sponsoring Program: PMA 265, F35 JSF

Transition Target: Navy EO/IR T&E Branch

TPOC:
(301)757-0725

Other transition opportunities: Navy and other Service programs incorporating Infrared (IR) sensors used for intelligence, surveillance and reconnaissance (ISR); threat warning and countermeasures; and targeting. Navy Test Pilot School.

Notes: AIRTraC produces a highly accurate, 4D model of the atmosphere by combining open-source meteorological data with surface layer data collected at the test site.



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WHAT

Operational Need and Improvement: Many warfighting capabilities rely on electro-optical and infrared (EO/IR) sensors for target detection, tracking and engagement. Development of these sensors requires accurately measurement of atmospheric conditions during flight test and typically relies on the use of data from radiosonde balloons. As EO/IR sensor missions require imaging at longer slant ranges, higher altitudes, and over longer flight durations, the sparse spatial and temporal nature of the radiosonde data has become inadequate. The test community needs a reliable and accurate computational means of determining atmospheric conditions over a variety of test conditions without resorting to the expense and complication of multiple weather collections.

Specifications Required: The ideal solution should characterize the atmosphere along the slant path from the ground target to the airborne sensor continually throughout test periods of up to eight hours, and perform in both day and night conditions. An approach that focuses on software and minimizes the use of expensive test instrumentation is desirable.

Technology Developed: SciTec's Atmospheric Infra-Red Transmittance Calculator (AIRTraC) provides Navy Test & Evaluation personnel with a robust, highly automated and user friendly means of determining atmospheric transmission to characterize IR sensor performance. AIRTraC leverages sophisticated weather models combined with state-of-the-art statistical techniques to produce a 4D model atmosphere that is accurate over large distances and times. AIRTraC is an integrated system combining a ground meteorological station with a java-based application to calculate the time-dependent transmittance over a sensor-to-target optical path.

Warfighter Value: This technology provides the Navy sensor test community with an accurate, model-driven atmospheric transmission determination that eliminates the cost and complexity of sophisticated line-of-sight measurements and detailed weather collection with balloons/radiosondes.
This technology can be applied to support testing of ISR sensors, missile seekers, FLIRs, thermal sights, telescopes or any other midwave or longwave infrared optical device operating in the atmosphere.

WHEN

Contract Number: N68335-15-C-0115 **Ending on:** March 9, 2018

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Contractor Flight Demonstration Test	Med	Demonstration of AIRTraC capability as it would be used in an actual flight test; Achieve good agreement between AIRTraC and as-measured results.	5	August 2017
AIRTraC v2.0	Med	Field usable software application tool with ability to predict and visualize transmission factors in operational scenarios.	5	February 2018
Government Flight Demonstration Test	Med	Application of AIRTraC capability in an actual flight test	6	April 2018

HOW

Projected Business Model: SciTec is a product and services company engaged in the development of advanced sensing technologies for national defense and homeland security. We envision three approaches to deliver AIRTraC to market: 1) a licensed application, 2) test and evaluation services, or 3) integration into larger test support system. For 1), the AIRTraC application can be licensed to government test organizations or their support contractors. For 2), SciTec technical personnel would field AIRTraC and provide contracted test support. For 3), SciTec would work with DoD program managers and industry to integrate AIRTraC capabilities as a software application within a larger test system.

Company Objectives: We anticipate the Navy SBIR/STTR Transition Program (STO) Forum will facilitate connections with Government and industry decision-makers involved in the development of EO/IR sensors for intelligence, surveillance and reconnaissance (ISR); threat warning; and targeting. Our short-term objective is to productize AIRTraC through a Phase III or Commercialization Readiness Program effort. In addition, we seek opportunities to employ AIRTraC capabilities to provide calibration support services to industry and DoD test organizations. These support activities would enable SciTec to demonstrate AIRTraC features and benefits to the test community and mature the product for widespread use.

Potential Commercial Applications: This technology could be applied to civil and commercial development and testing of IR systems used for remote sensing applications like precision agriculture, homeland security, and search & rescue. Additional, this technology could support the astronomical community to characterize ground telescope performance.

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