

ASCENT Project 62



Noise Model Validation for AEDT

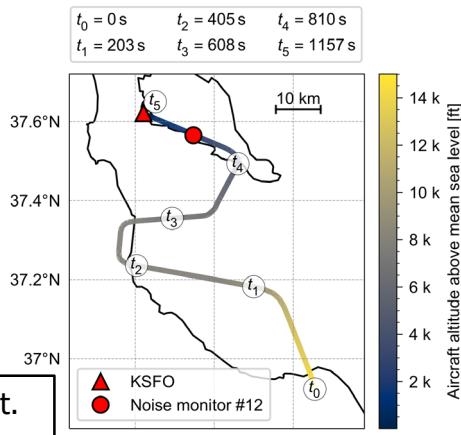
Pennsylvania State University

PI: Victor Sparrow

PM: Chris Hobbs

Cost Share Partners:

- Spire Global
- Metropolitan Washington Airports Authority



Example arrival into SFO airport.
Trajectory provided by GaTech.

Research Approach:

- Leverage findings in sound propagation and related tools from completed ASCENT Project 40 (PSU and Purdue).
- Finish developing an in-house ray tracing code to include inhomogeneous atmosphere for noise predictions around airports.
- Understand the influence of AEDT's atmospheric absorption and acoustic impedance corrections in noise calculations, if they were a function of high-fidelity weather.
- Eventually compare the in-house code with AEDT predictions, to assess the extent of differences caused by weather effects.

Objective:

- Assess the accuracy of AEDT in estimating noise compared to real-world measurements in both the vicinity of airports as well as further afield under various modeling assumptions
- Enable incorporation of high-fidelity weather in AEDT noise modeling for real-world flights

Project Benefits:

- One of the main benefits of this project is to suggest possible improvements that could be made in future releases that enhance the predictive capability with respect to real world measurement data

Major Accomplishments (to date):

- Supported GaTech colleagues in importing Spire Global high-fidelity weather into AEDT.
- Predicted noise near SFO with in-house code.

Ongoing Work:

- Comparing in-house noise results with inhomogeneous atmosphere to AEDT's homogeneous assumption.
- Finishing assessment of acoustic impedance adjustment and then focusing on atmospheric absorption adjustment
- Assisting with acquisition of new validation data for Washington Dulles, SFO, and other airports.