

## Bulletin of the American Physical Society

### 77th Annual Meeting of the Division of Fluid Dynamics Sunday–Tuesday, November 24–26, 2024; Salt Lake City, Utah

#### Session S01: Poster Session & Refreshment Break (3:47 - 4:45 p.m.)

3:47 PM, Monday, November 25, 2024

Room: Hall 1

#### Abstract: S01.00012 : On Generating Realistic Flows for Controlled Insect Orientation Studies

← Abstract →

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Mosquito orientation behavior is well-researched due to their disease transmission capability. However, predictors of mosquito activity remain poorly understood due to lack of extensive datasets that document their field activity and a lack of realistic controlled studies. Typically, mosquito activity has been analyzed for correlations with measured atmospheric properties such as temperature, relative humidity, ambient light, and windspeed (Rudolfs, 1923). More recently, bioassay methodologies, including tracking of individual mosquitoes in fabricated flow conditions with various odor attractants, has been pursued, but correlations between mosquito activity and atmospheric flow conditions has not been investigated. We aim to address this through investigating mosquito activity and its correlation with atmospheric properties documented from 2018-2024 in various habitats in Salt Lake City. Mosquito activity was documented using a Biogents Sentinel trap and flow properties were documented with a sonic anemometer and lagrangian particle tracking system. We report the data along with the results that reveal the flow conditions (such as turbulence kinetic energy, shear stress etc.) that permit high mosquito activity. These results reveal the flow conditions, which are difficult to replicate, but are essential for a realistic controlled wind tunnel study.