

ICAO Symposium on Non-CO₂ Aviation Emissions

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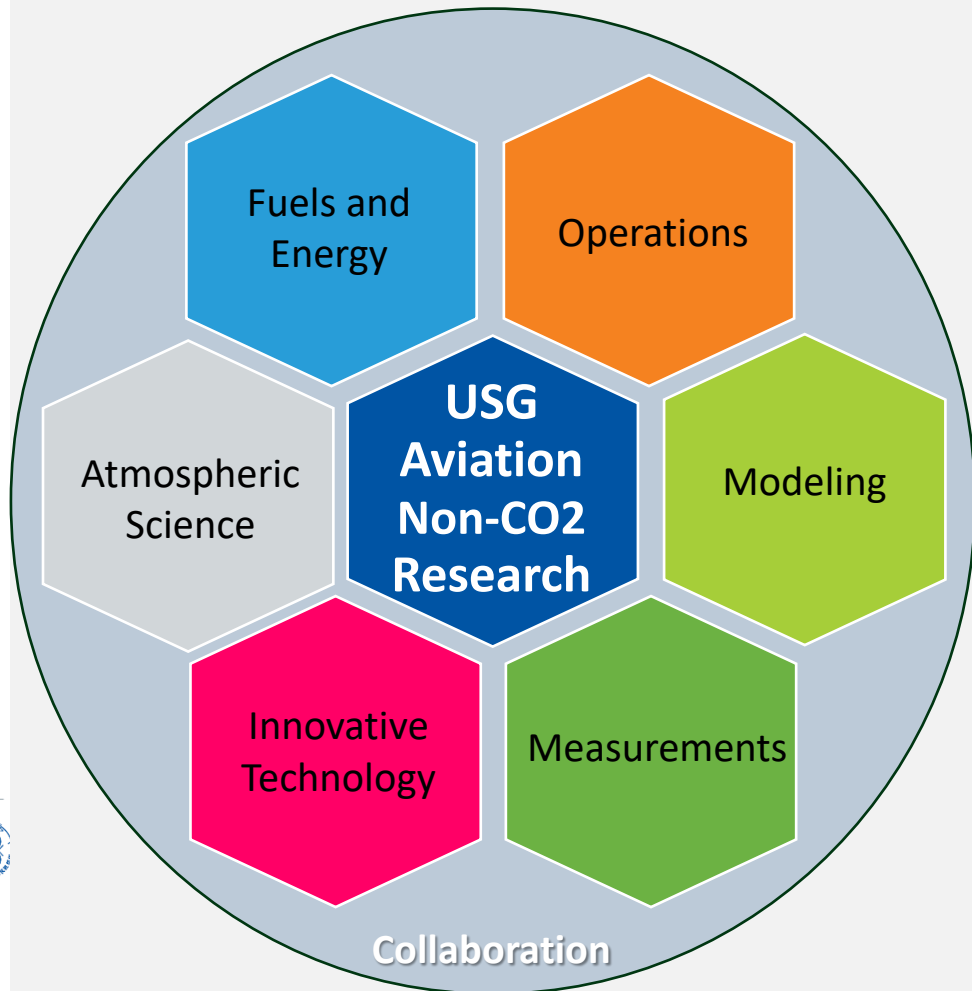
U.S. Federal Aviation Administration

Speaker

Session 4: Partnerships to act on (Part I) **Research and
Monitoring**

Advancing Sustainable Aviation

Effective Research through Collaboration



Fuels and Energy

Explore how fuel formulation (alternative fuels – SAF, H2, etc) can reduce contrail formation.

Innovative Technology

Understand how design can mitigate contrail formation & reduce pollutants (combustor design, oil venting, sensors, etc).

Operations

Aircraft movements (ATC or Airline requests) impacting contrail formation without impacting safety.

Atmospheric Science

Researching the interaction between the atmosphere (including weather) & engine exhaust to better understand impacts and develop tools that can monitor and predict impacts.

Modeling & Measurements

Emissions measurements to understand the role in contrail formation and reduce species that contribute to persistent, warming contrails as well as looking at instrumentation and atmospheric changes.

ASCENT Research – EcoDemonstrator Flight & Ground Emission Measurements

Goal 1

- ✓ Quantify engine emissions burning SAF and Low-Sulfur Jet A

Goal 2

- ✓ Quantify contrail properties associated with varying engine soot and volatile particle emissions
- ✓ Determine how contrail cirrus respond to particle emissions in the “soot-poor regime”

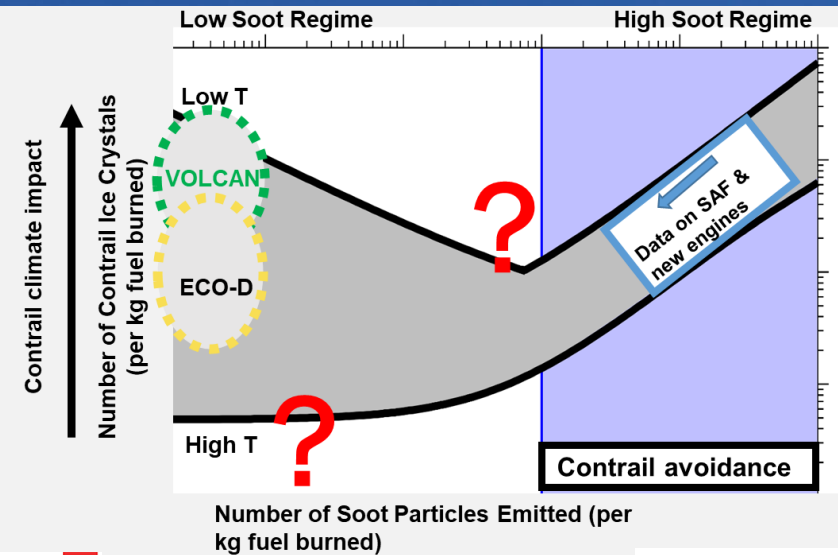
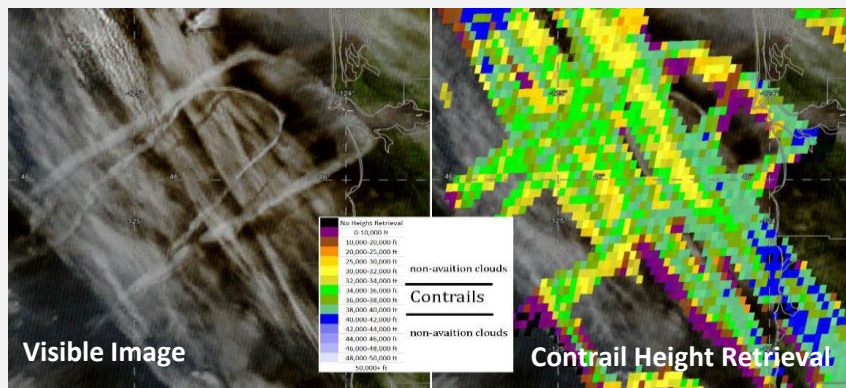
Goal 3

- ✓ Demonstrate capabilities of water vapor lidar and in situ sensors measuring humidity
- ✓ Evaluate prediction capabilities for contrail formation and persistence
- ✓ Evaluate contrail prediction forecasts (predict ice supersaturation regions)



2023 Emissions Flight Test
NASA DC8 Chasing the Boeing
ecoDemonstrator Explorer 737-10
with LEAP-1B Engines

- 11 joint science sorties
- >100 combined DC-8 and 737-10 flight hours
- 3 fuels: 100% SAF and Two Different Jet A Fuels
- Sampling in both contrail & clear air conditions



Thank You

