

— C-FOQA TCAS TA/RA Analysis

C-FOQA

Data collected from

+2000 Aircraft and +600 Flight Departments

Aircraft Types

Airbus

Boeing

Bombardier

Dassault

Embraer

Gulfstream

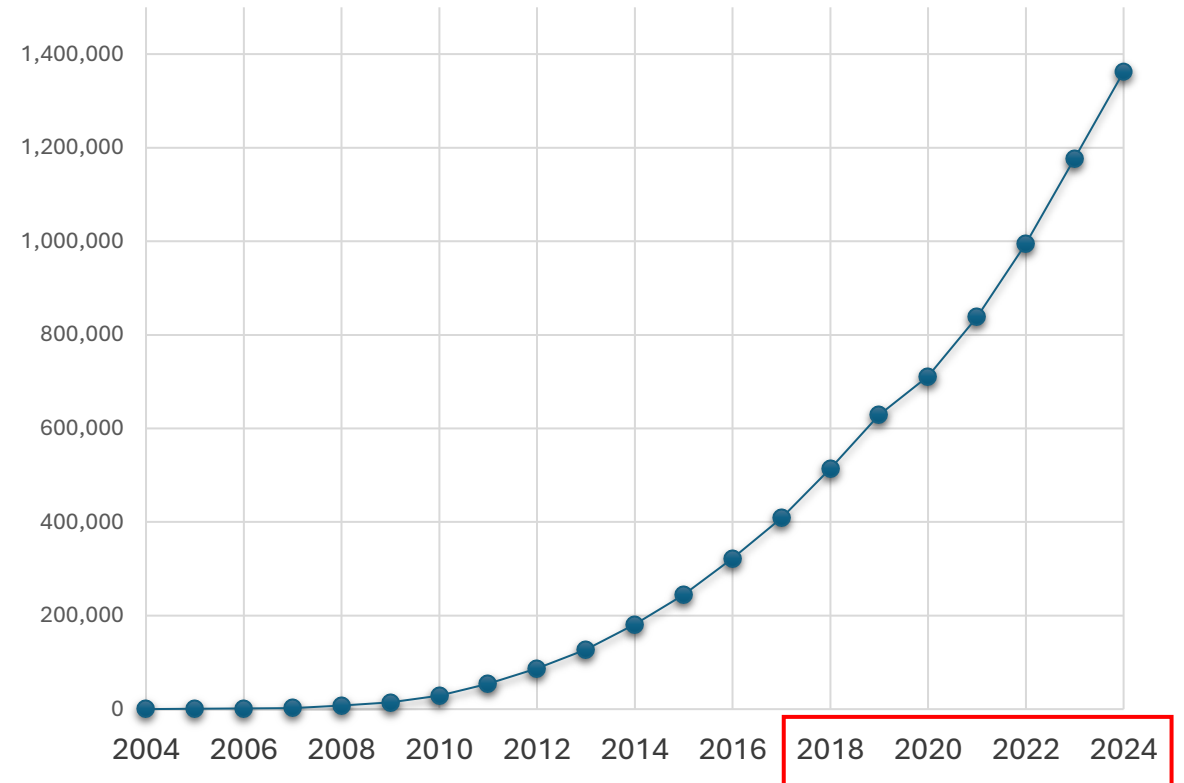
Honda

Pilatus

Textron Aviation

53% Large Cabin, 19% Mid/Super-Mid, 15% Regional, 12% Narrow Body

Cumulative Flights Analyzed



TCAS Operation and Alerts

TCAS Resolution Advisories

Immediate risk exists between two or more aircraft, requiring crew action to prevent a collision

Alerts are Based on Time

- 1,000ft to 2,350ft: **Time to CPA is**
 - TA 25 seconds or less (.33nm)
 - RA 15 seconds or less (.20nm)
- 2,350ft to 5,000ft: **Time to CPA is**
 - TA 30 seconds or less (.48nm)
 - RA 20 seconds or less (.35nm)

Inhibit Area

- RAs are inhibited below 1,000ft (± 100 ft) AGL
- TAs are inhibited below 500ft (± 100 ft) AGL

Source: Introduction to TCAS II Version 7.1 (FAA)

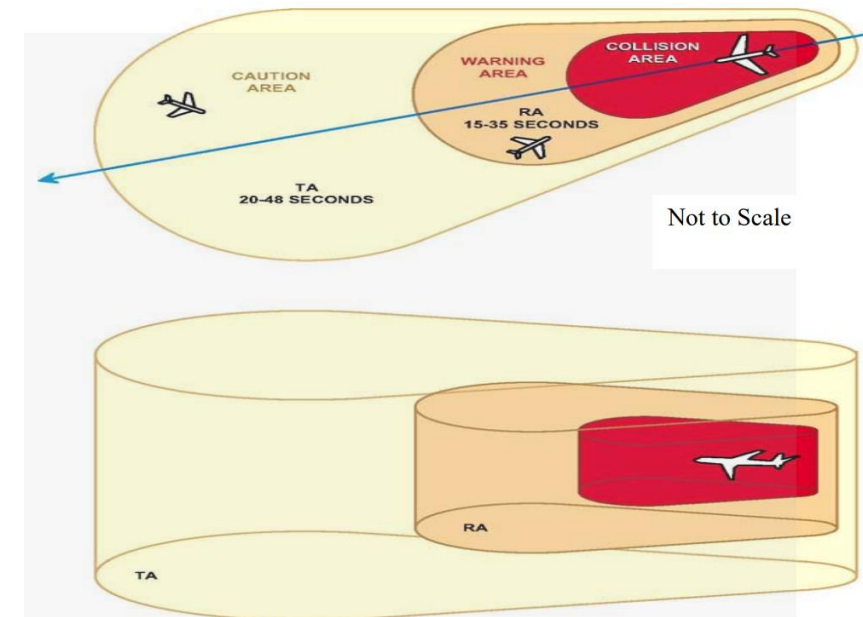


Figure 14. TCAS Protection Volume

TCAS Operation and Alerts

TCAS Response

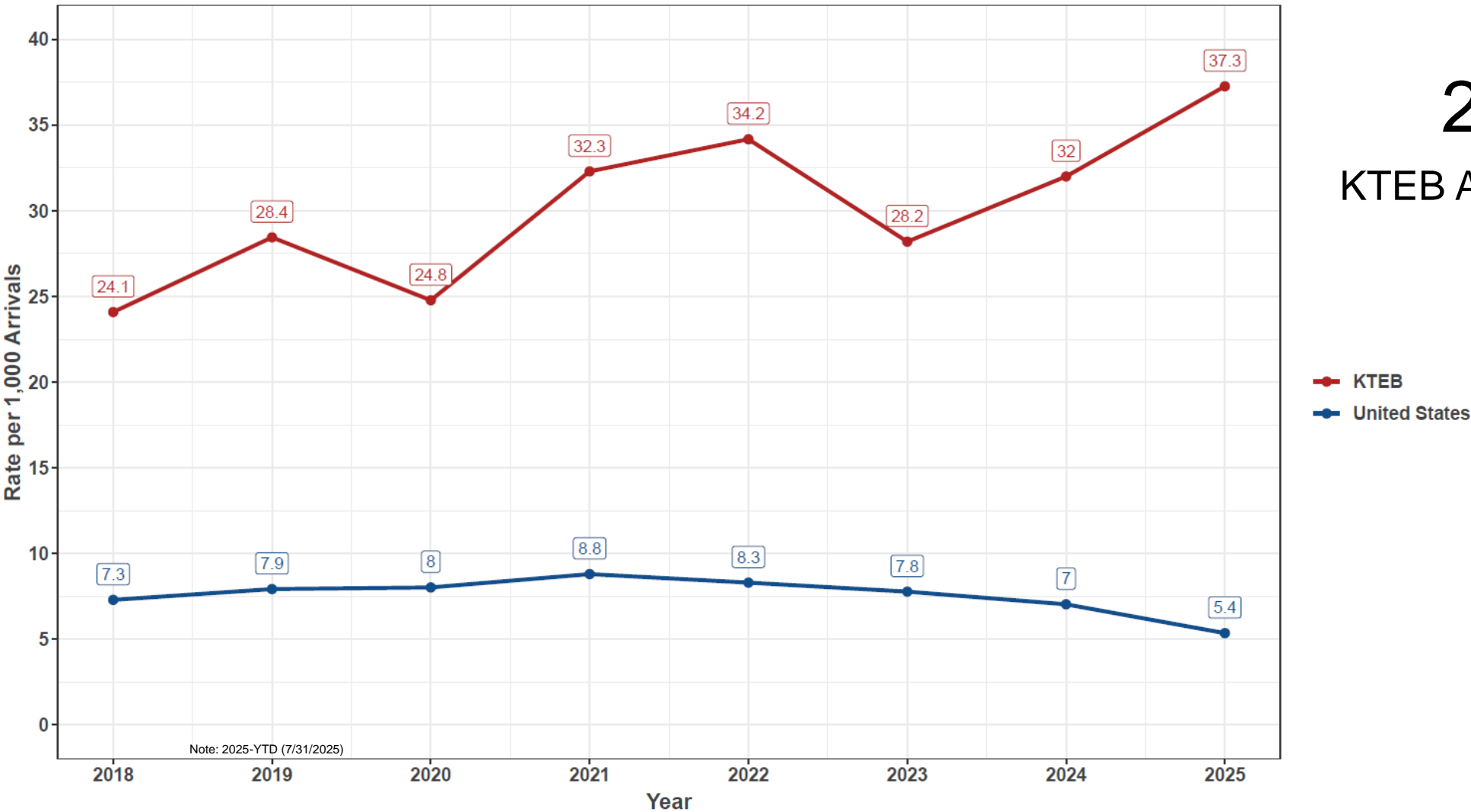
For aircraft to achieve required separation, pilots must begin a 0.25g maneuver and achieve a 1,500ft/min vertical rate within 5 seconds.

For subsequent RA's, pilot response is a 0.35g maneuver to 2,500ft/min vertical rate within 2.5 seconds.

Conflict Resolution

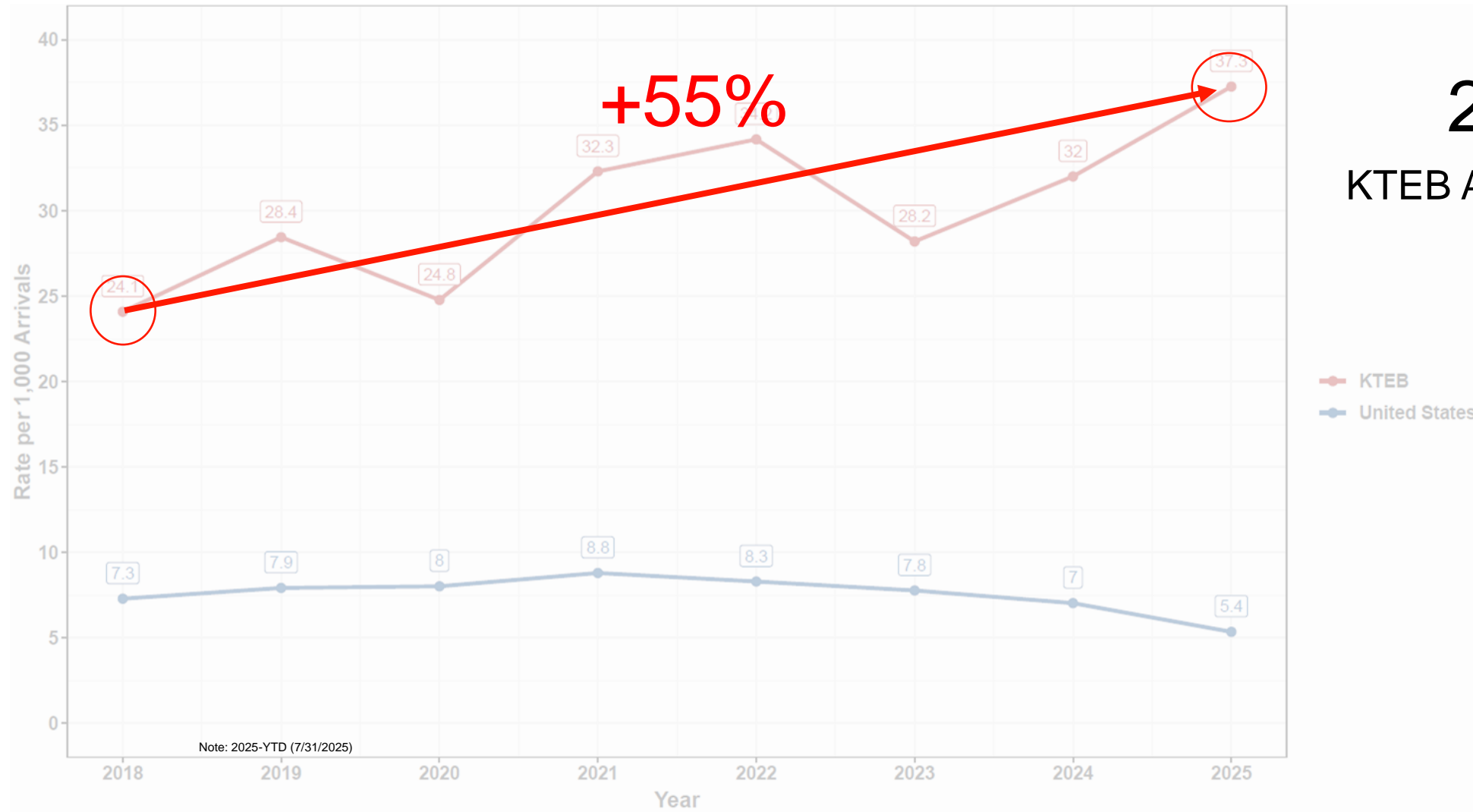
Resolution advisories are concluded when the required vertical separation is achieved (300ft). After a resolution, an audio message, “clear of conflict” is generated. After this message, the aircraft may return to its IFR cleared altitude.

TCAS Resolution Advisory Rate (per 1,000 Arrivals)



28,781
KTEB Arrivals Analyzed

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28,781
KTEB Arrivals Analyzed

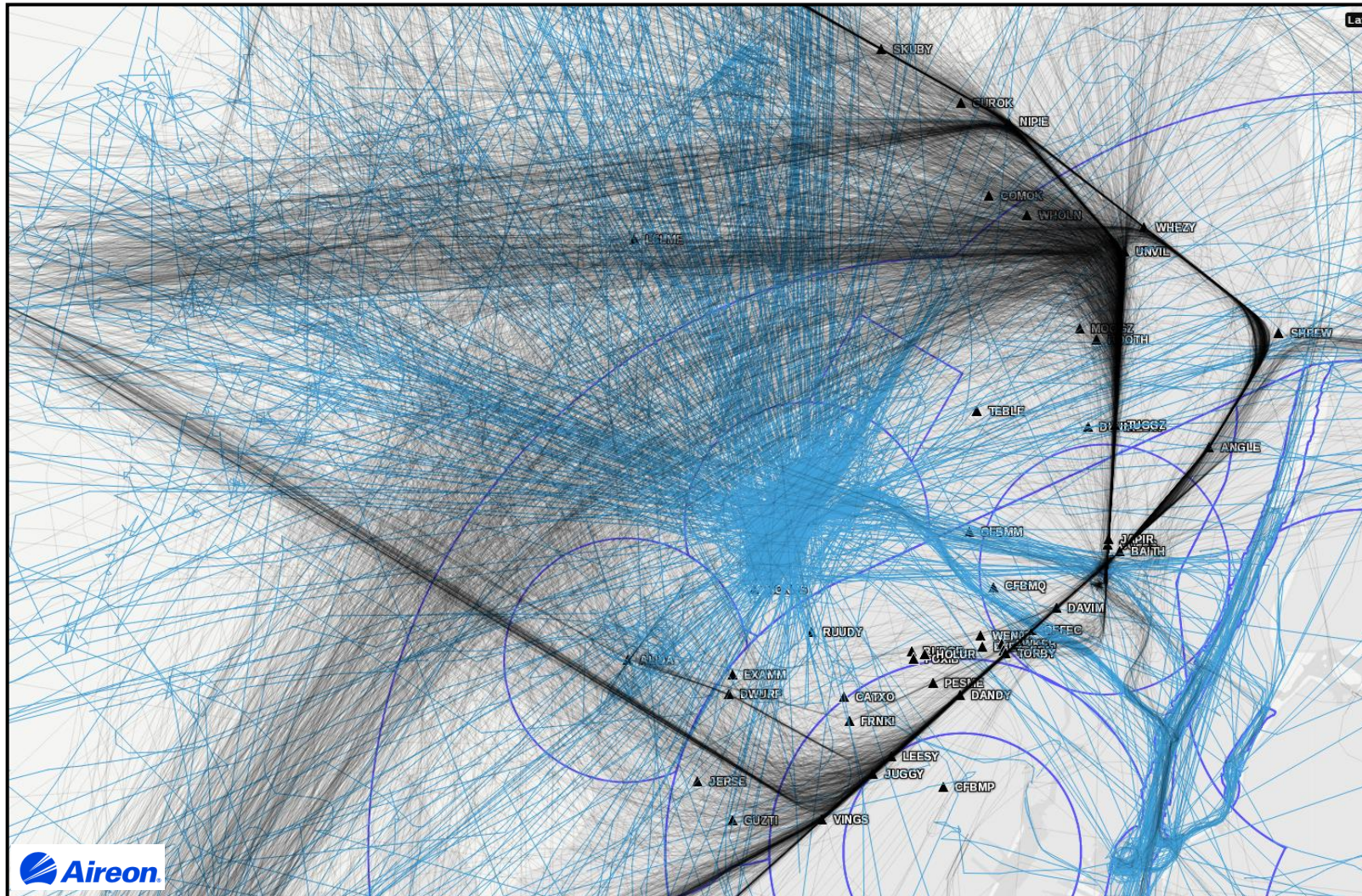
TCAS Resolution Advisory Rates

2025 YTD

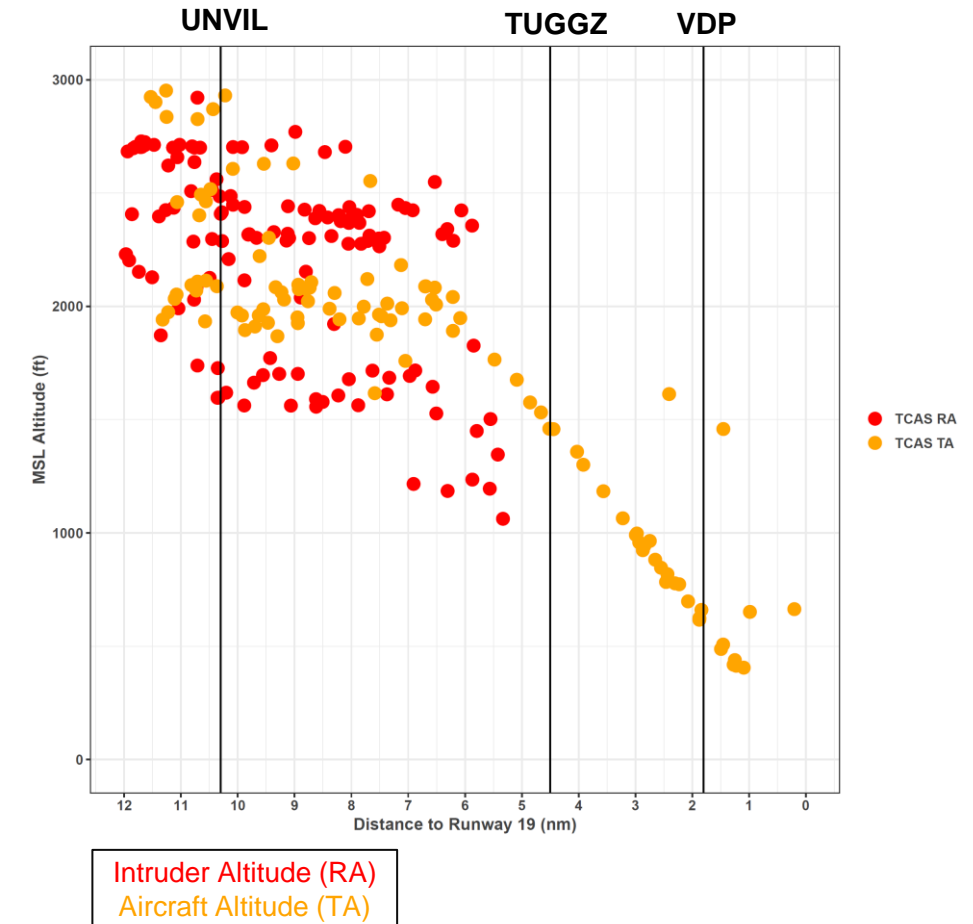
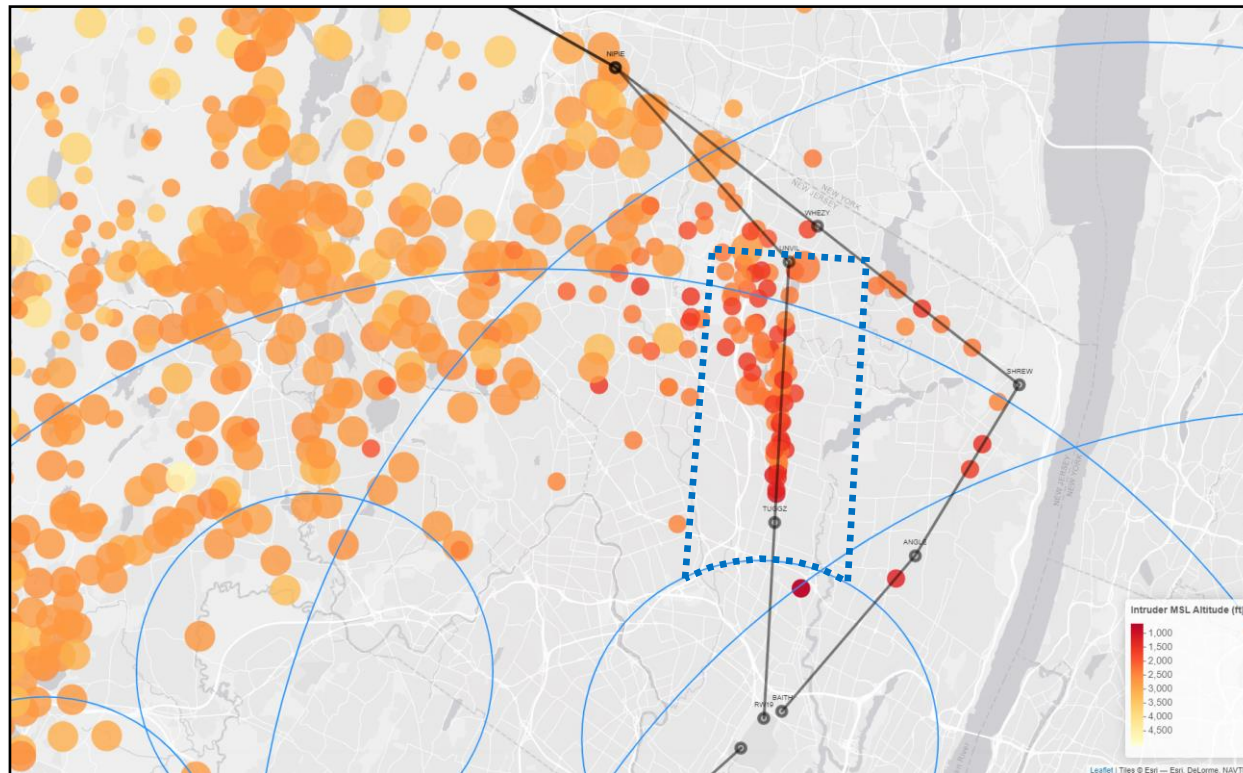


80% of TCAS alerts
occurred within 5,000ft of
the landing airport
elevation

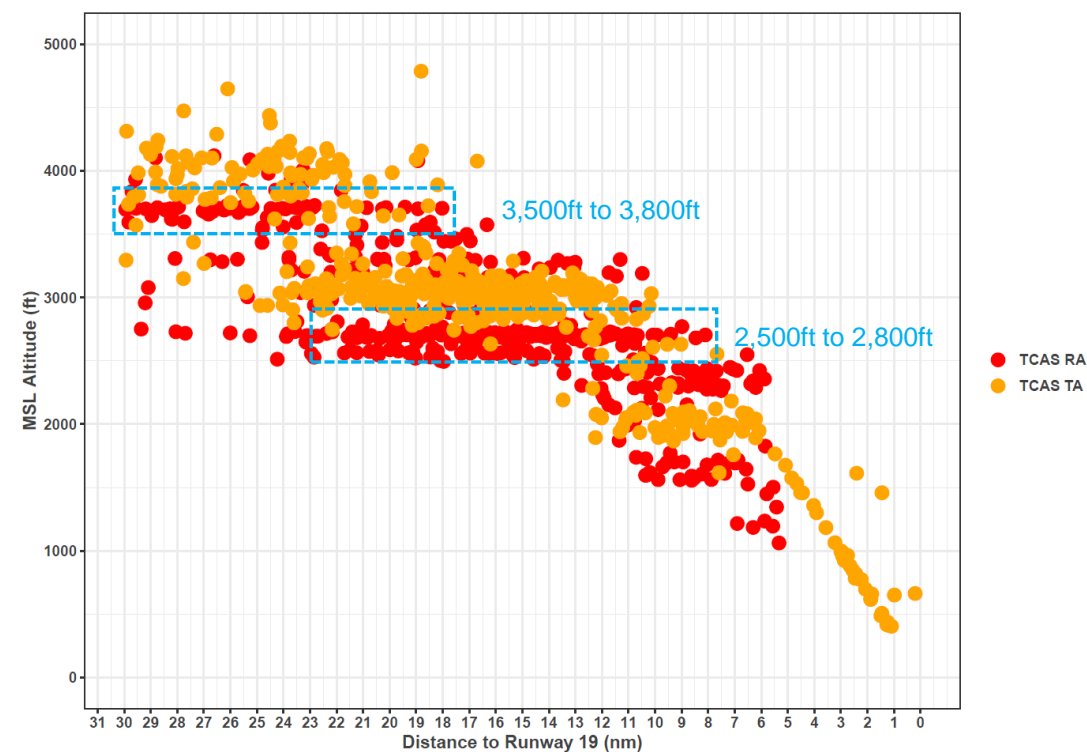
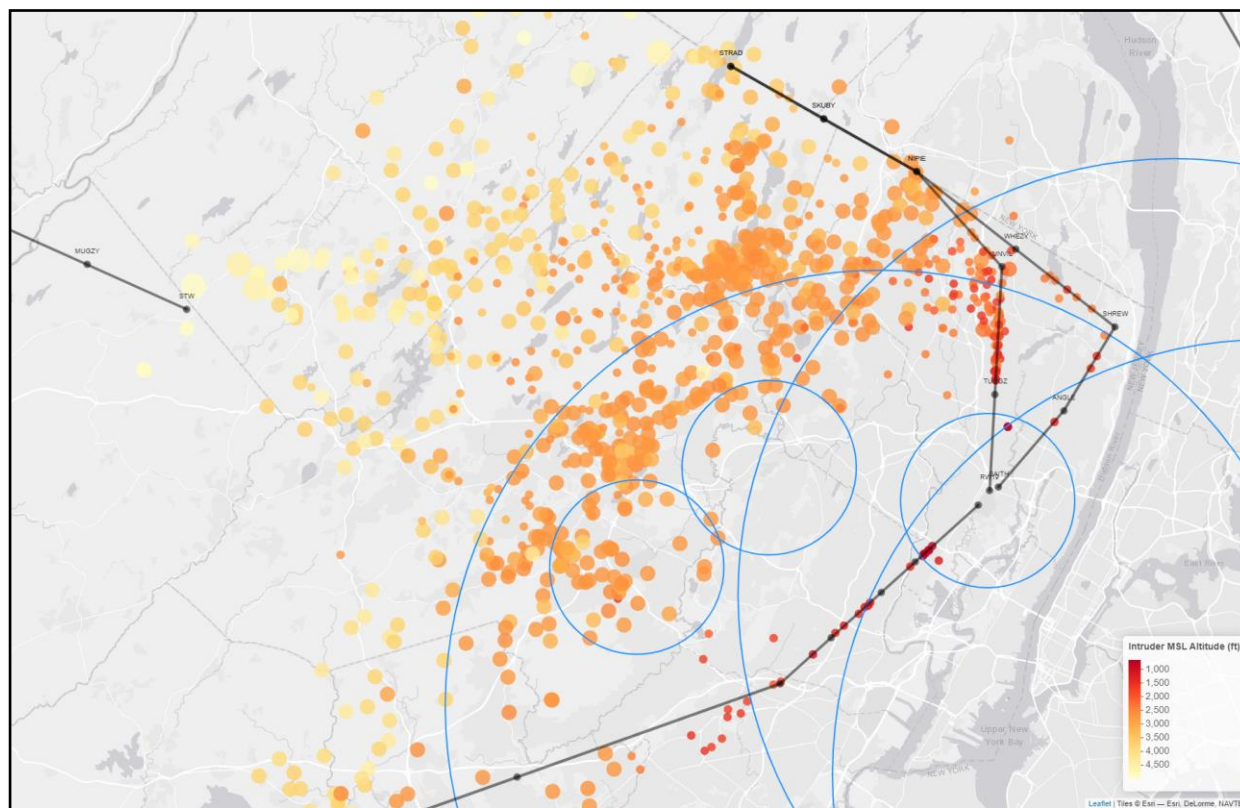
Traffic Flow [March to August 2025]



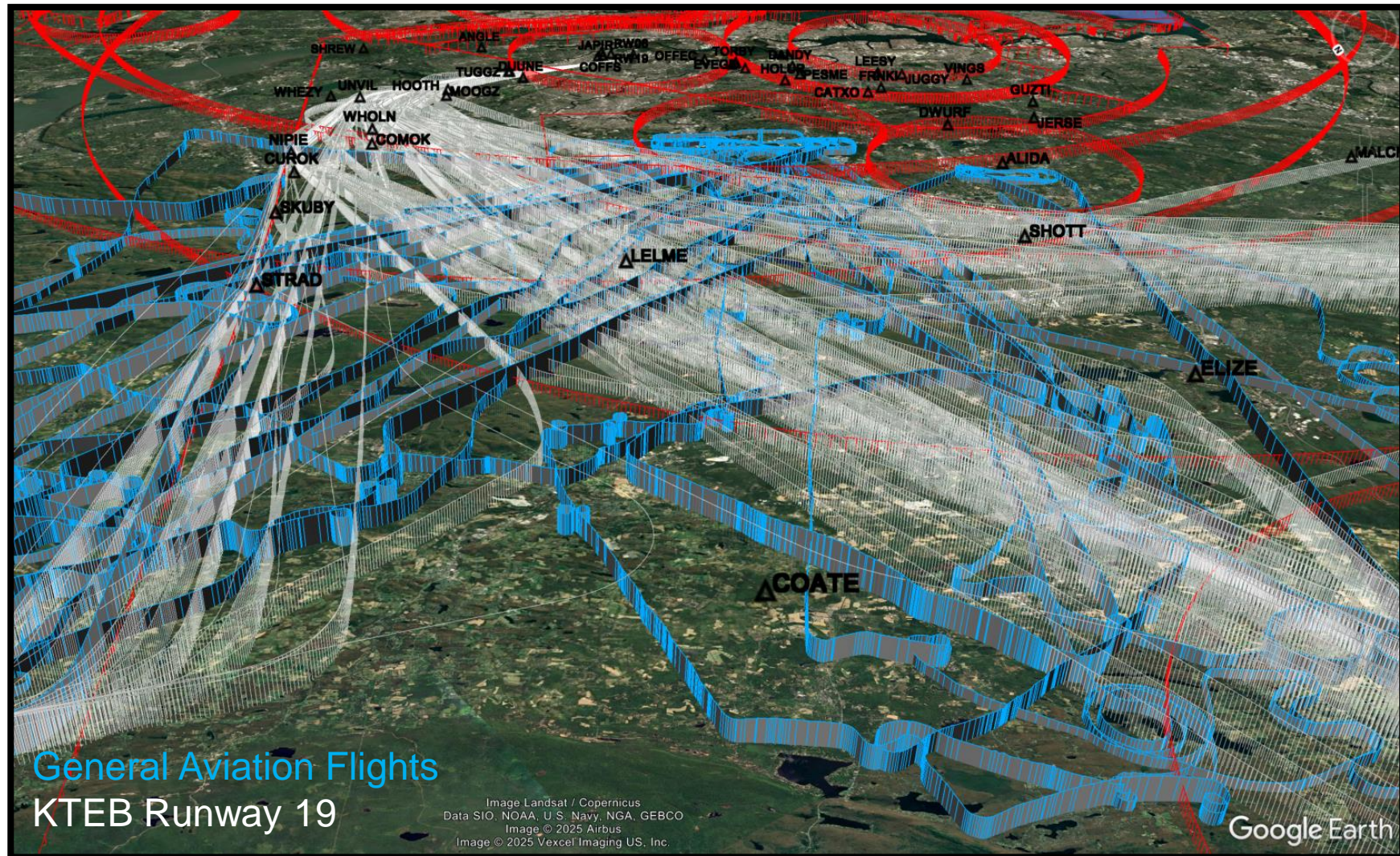
Intruder Aircraft Locations and Altitude



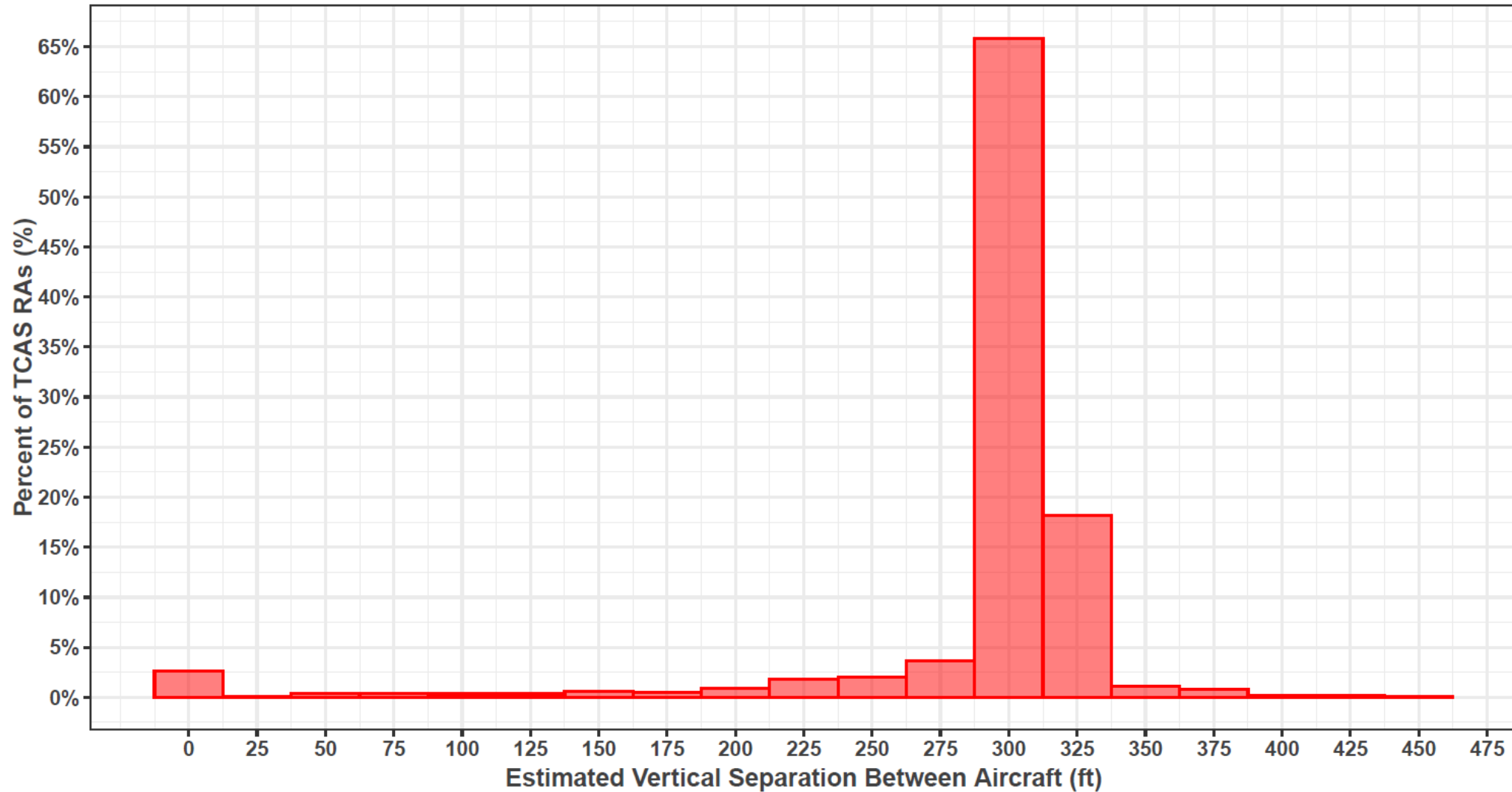
Intruder Aircraft Locations and Altitude



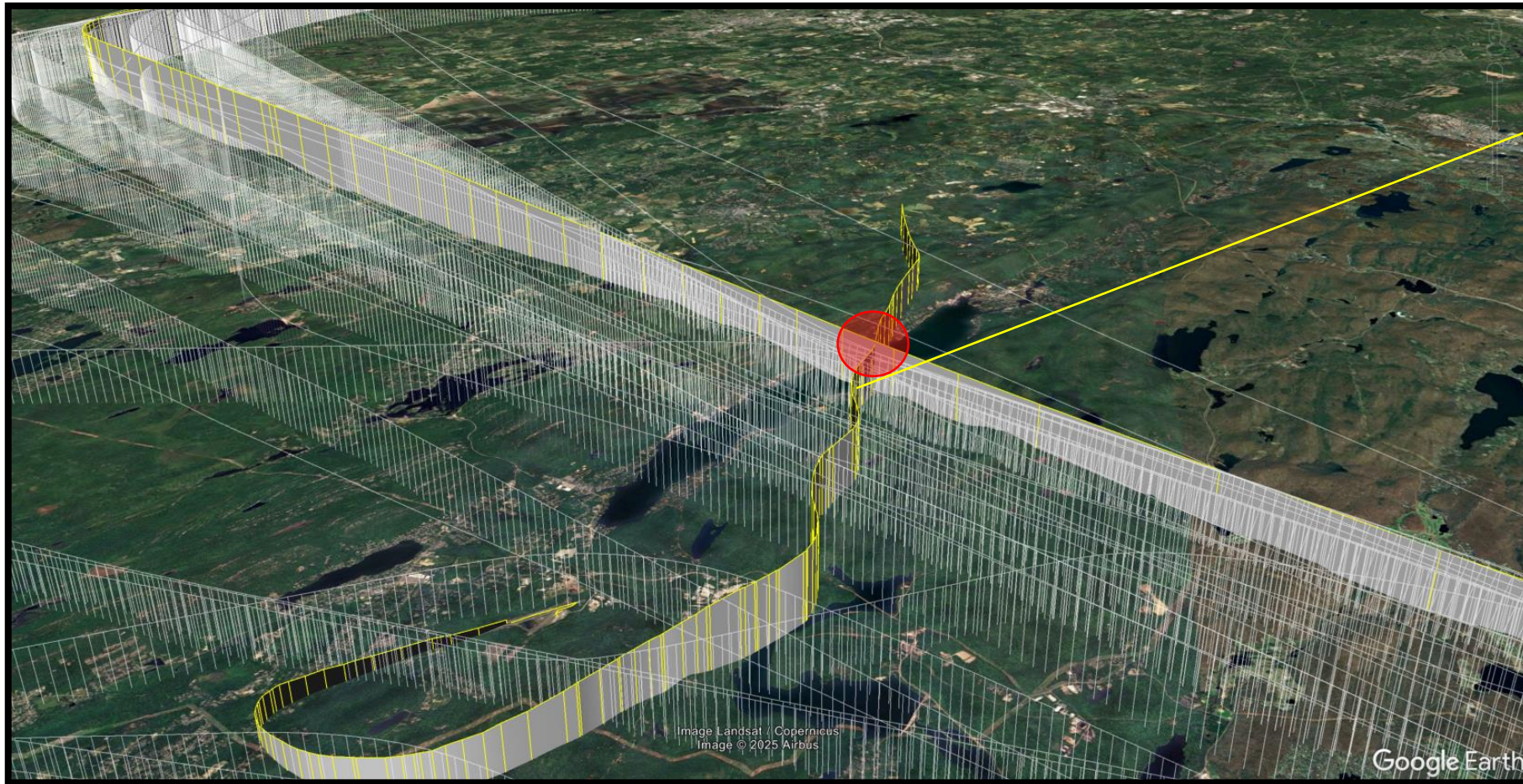
General Aviation and TEB Jet Traffic



Estimated Vertical Separation Between Aircraft



General Aviation and TEB Jet Traffic



Blind Spot



TCAS RA Rates (per 1,000 Arrivals) by Weather Conditions



Ceiling $\geq 3,000$ ft
Visibility ≥ 5 sm

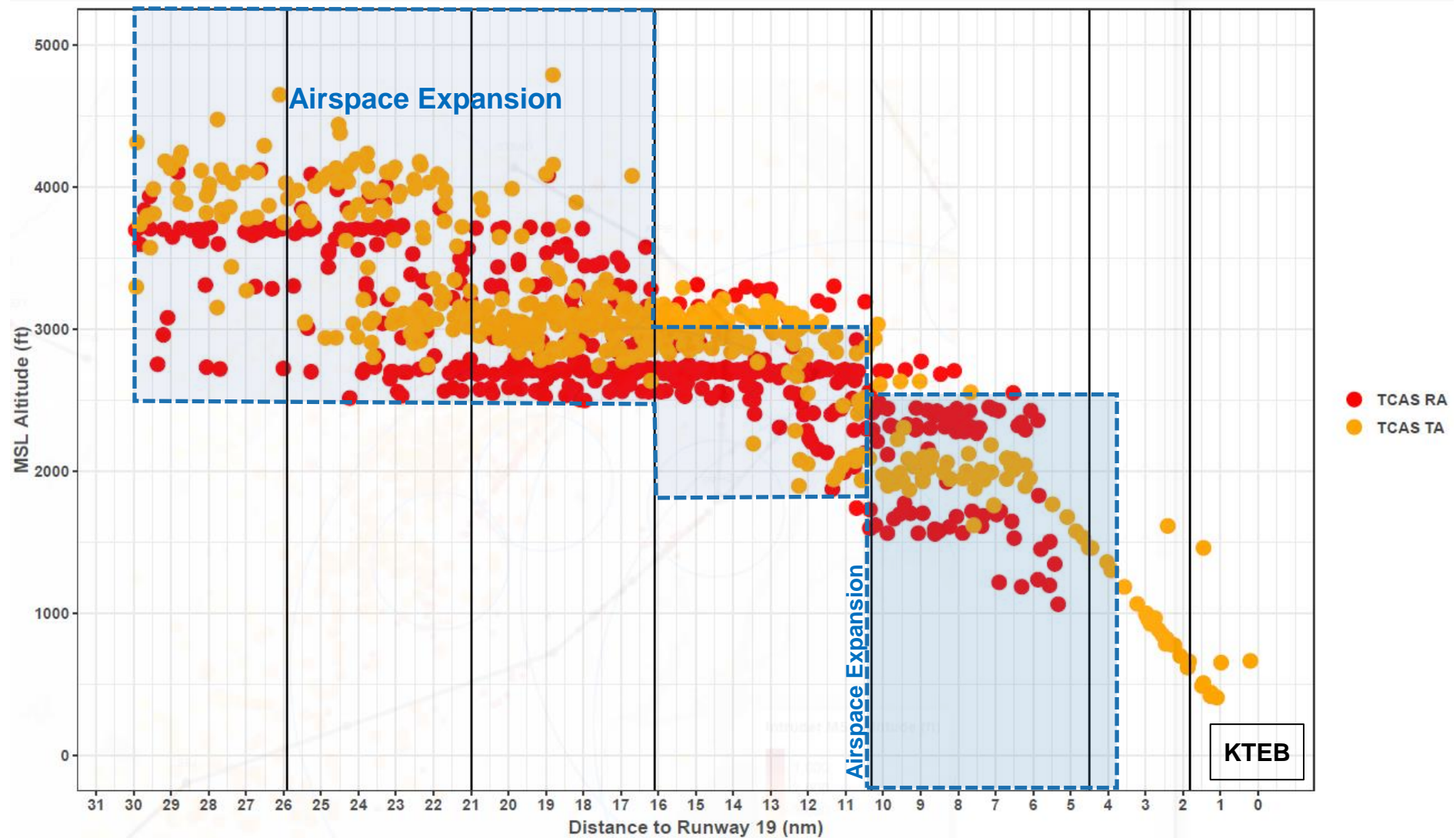


Ceiling $< 3,000$ ft to $\geq 1,000$ ft
Visibility < 5 sm to ≥ 3 sm



Ceiling $< 1,000$ ft
Visibility < 3 sm

Potential Airspace Mitigations





Questions?