Safety Performance Metric

Federal Aviation Administration

Presented to: CEO Conference, Belgrade

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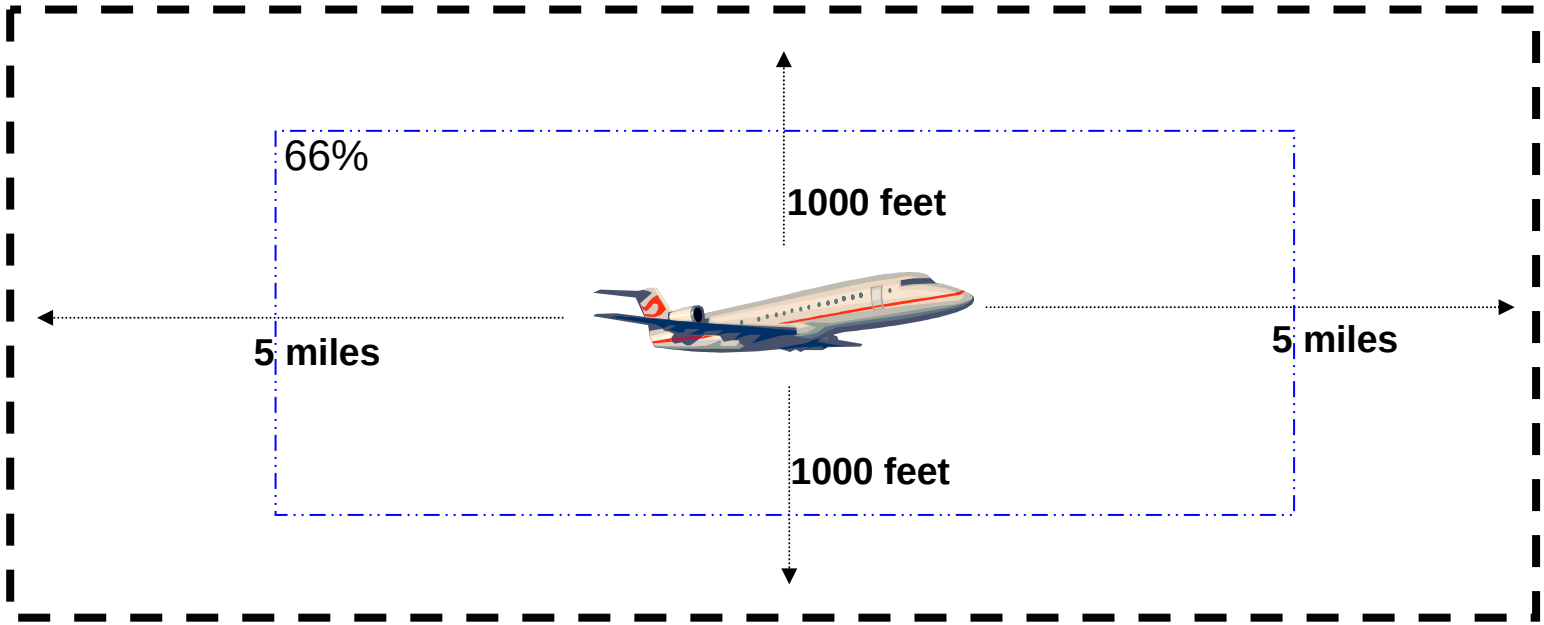
Date: October 27-28, 2010

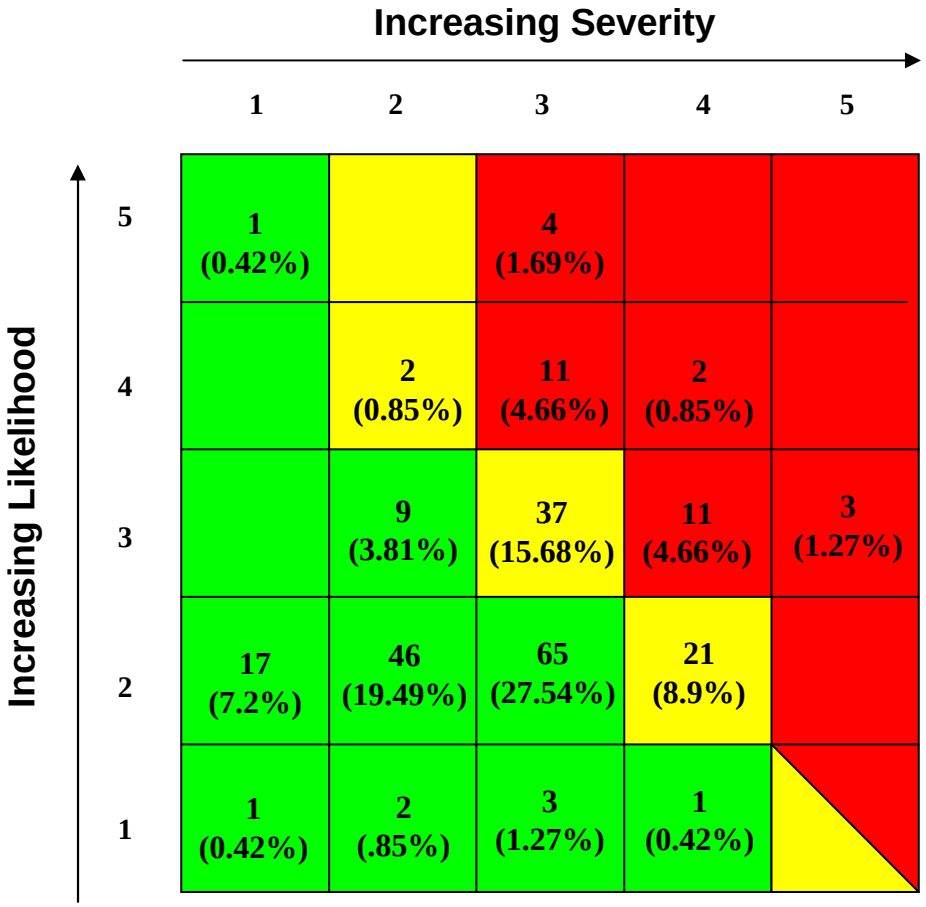
Public Metric -- Assumptions

- Improving safety requires robust data
  - From our front line employees (ATSAP + Partnership for Safety)
- Risk analysis will be transformed with the introduction of electronic detection and analysis (TARP, PDARS, etc.)
- Public metric must express risk
  - Implemented standardized risk analysis program jointly developed by FAA and EUROCONTROL; assesses risk equally across contributing factors, e.g., controller, pilot, avionics

Analyzing Losses of Standard Separation



Risk Assessment Results



Risk Analysis Event (RAE)

- High Risk
- Medium Risk
- Low Risk

OF RAEs ASSIGNED VALUE

(% OF RAEs ASSIGNED VALUE)

Actual results of the **236** events reviewed thus far this year, using the ATO SMS risk matrix and risk assessment program jointly developed by FAA & EUROCONTROL

Detailed analyses are triggered by a loss of separation greater than 34% of standard separation.

Serious Loss Event = High Risk Matrix Event (Red)

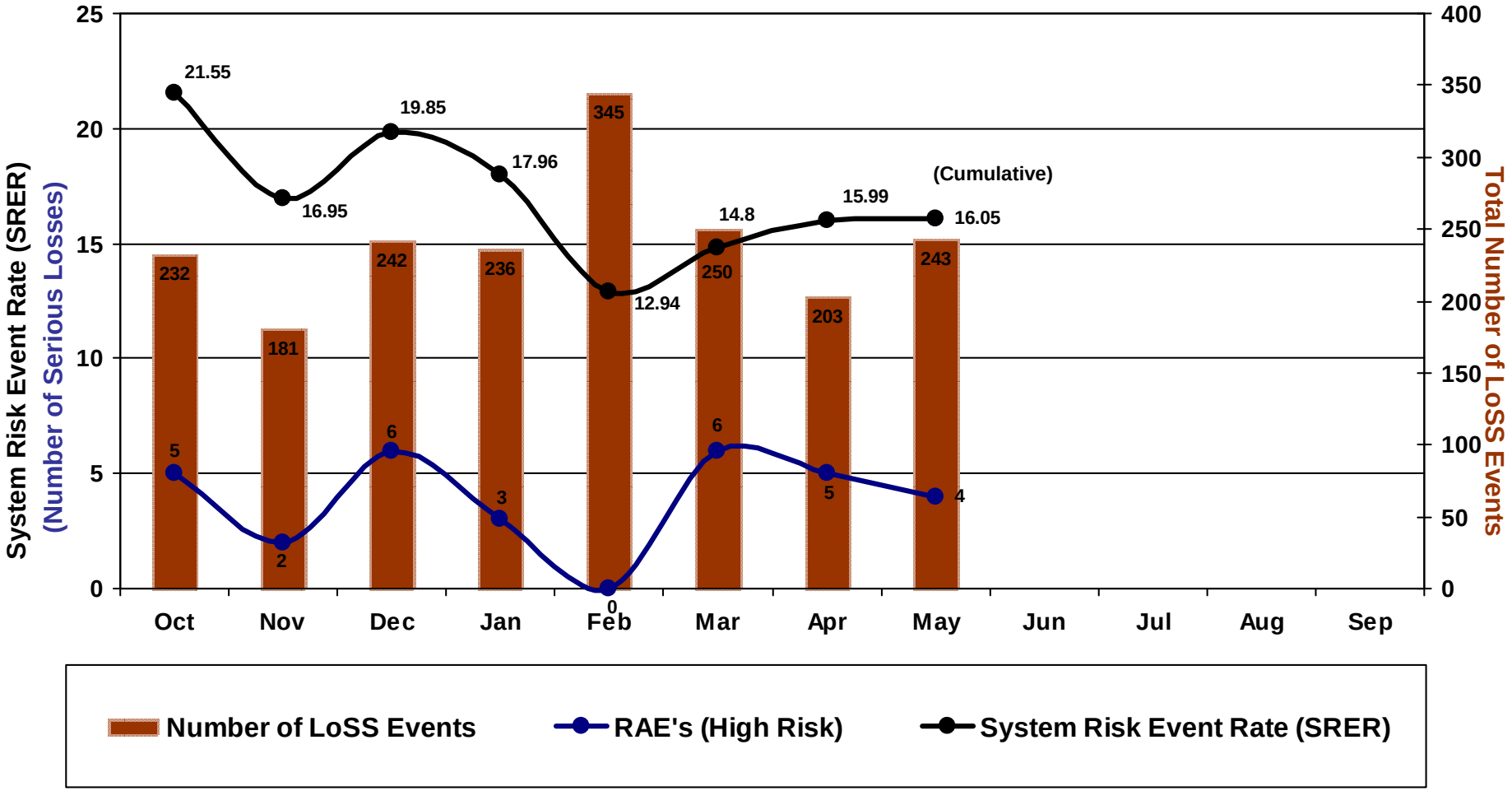
System Risk Event Rate (SRER) Calculation

$$\frac{\text{Serious Loss Events}}{\text{Total Number of LoSS Events x 1,000}}$$

The ATO ensures that aircraft flying within the national airspace system maintain required separation. When a loss of separation does occur, we will limit the rate of the most serious losses to 20 or fewer for every thousand(.02) losses of standard separation within the system.

FY10 System Risk Event Rate (SRER)

(Preliminary Data – 45 days processing time required)



SRER Calculation: (Serious Loss) / (Number of LoSS Events)*1,000

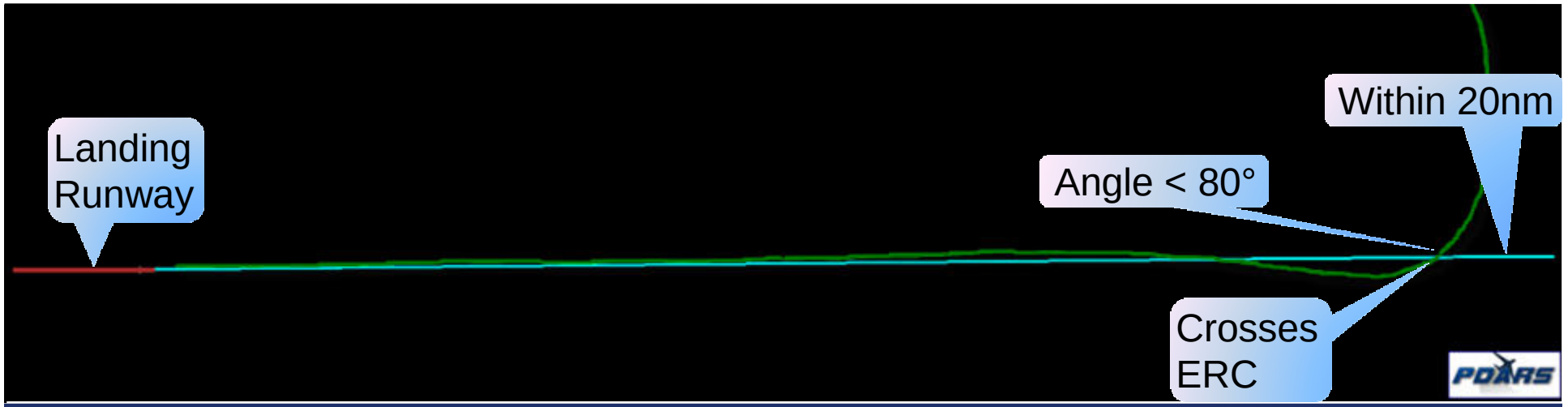
In Development – Radar Based

PDARS

(Performance Data Analysis and Reporting System)

Criteria for ERC Intercept

- PDARS identified landing runway
- Aircraft within 20 nm of airport
- Aircraft radar tracking data crosses ERC
- At intercept, course of the aircraft must be within 80° of the ERC
- No Helo's
- If an aircraft does not cross the ERC, the first point where aircraft was 1215 ft (.2nm) away from ERC is labeled as its intercept point



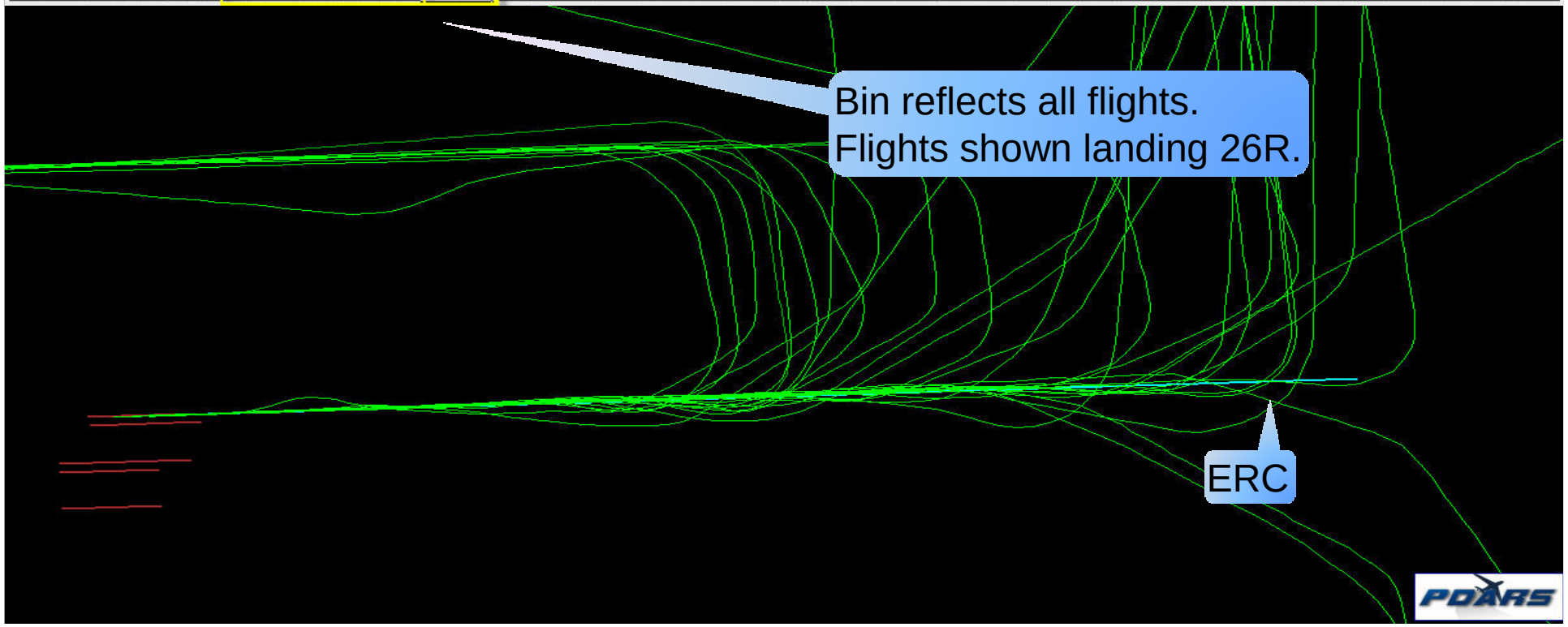
Turns to Final Metrics

- **Maximum Overshoot after Intercept of ERC**
- **ERC Intercept location relative to FAF and Gate**
- **Angle of ERC Intercept**
- **Speed at Intercept**
- **Altitude at Intercept**

Summary of Turn to Final Events for ATL

For A80 on 6/23/2010

			Max OverShoot after Intercept				Location of Intercept			Angle at Intercept				Speed at Intercept			Altitude at Intercept		
Airport	Arrival Count	No In	0-200	201-500	501-800	>800	Int Outside Gate	Int Between Gate/FA	Int Inside FAF	0°-20	21°-30	31°-60	>60	0-18	181-21	>21	Below GlideSl	At GlideSl	Above GlideSl
ATL	1400	2	764	463	93	78	799	196	403	1290	72	35	1	416	710	272	281	945	172



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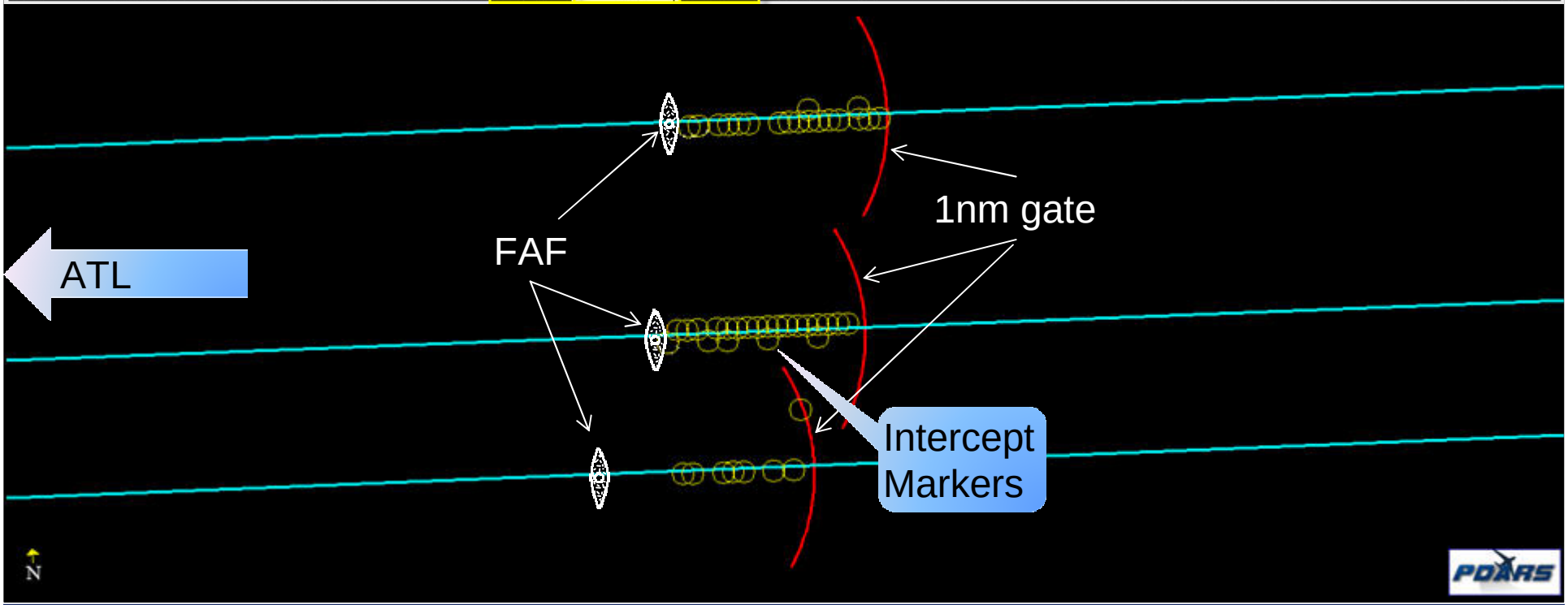

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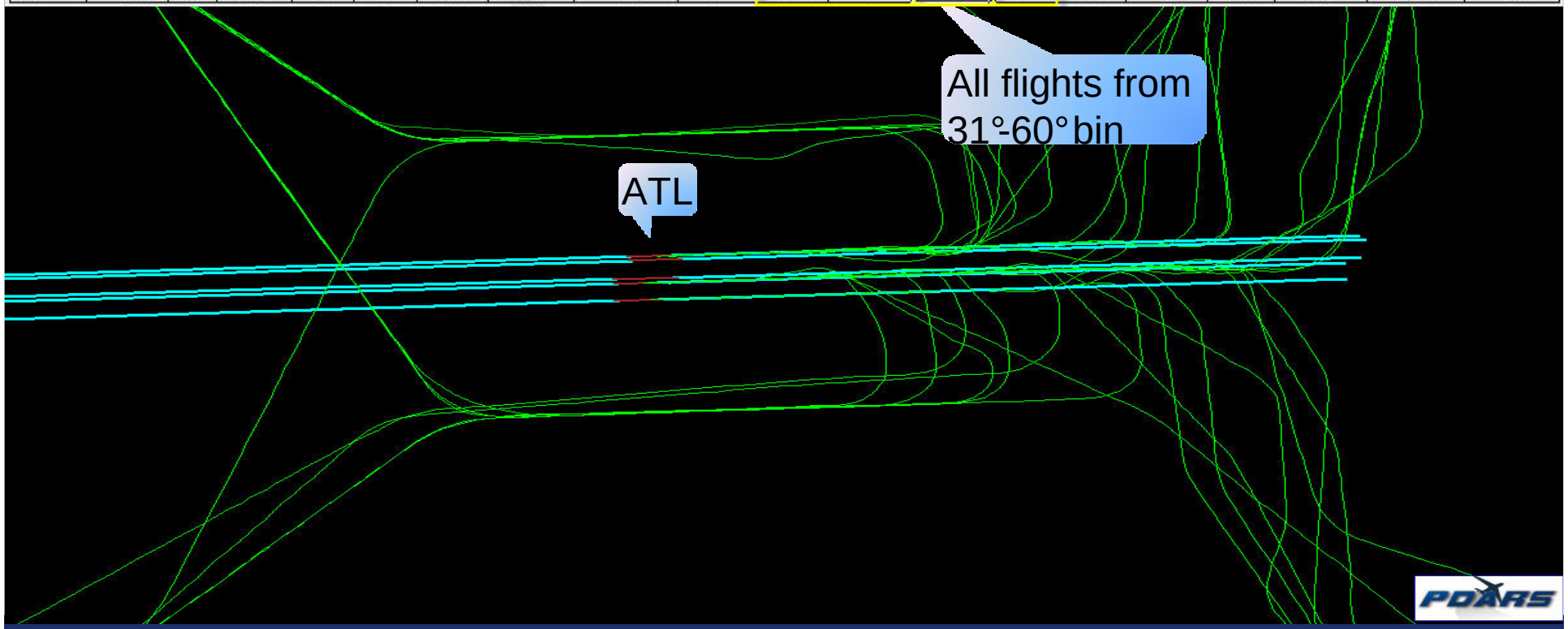

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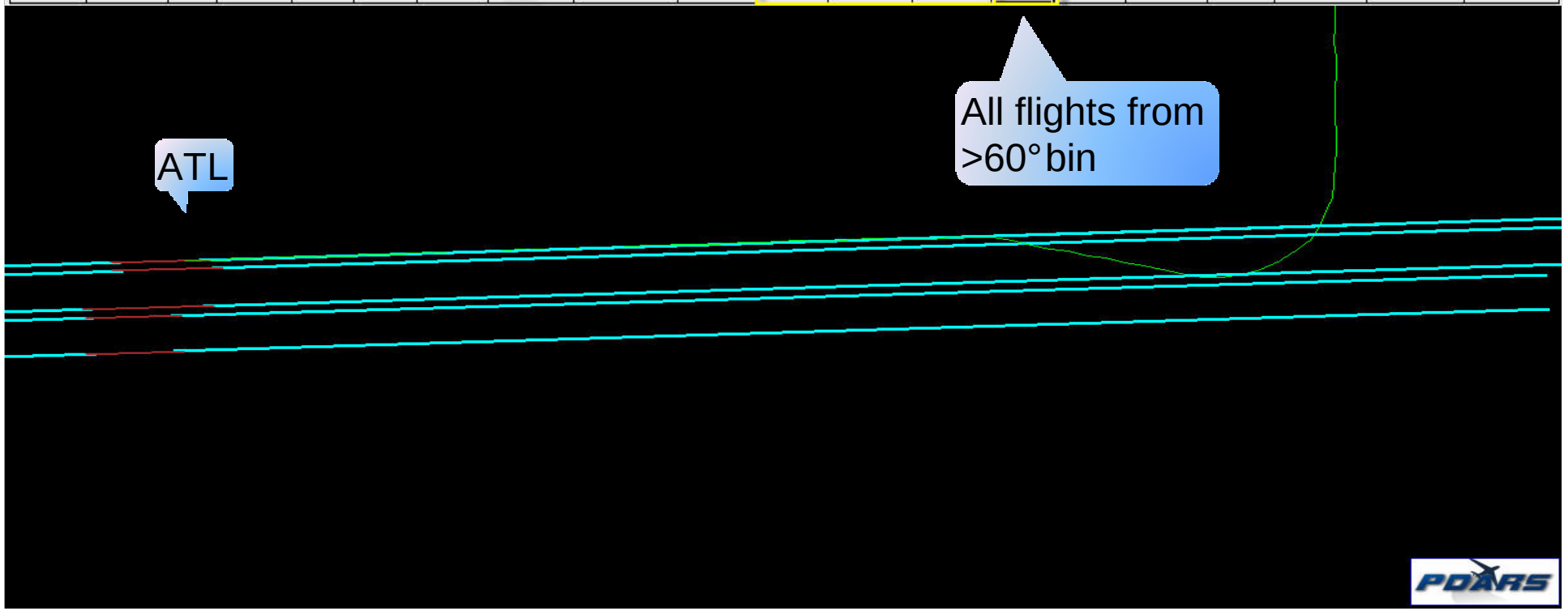

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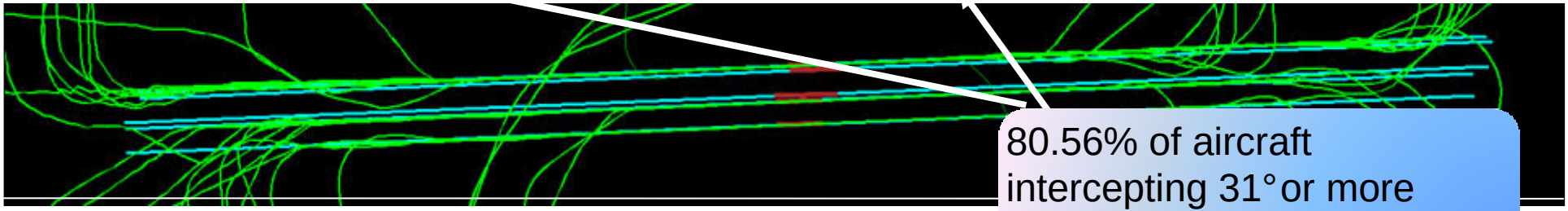

80.56% of aircraft intercepting 31° or more overshoot by more that 800’

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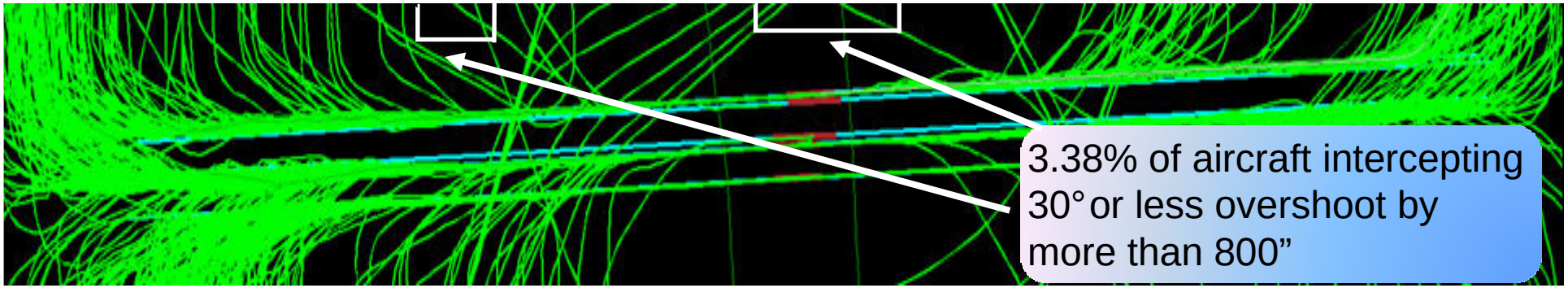

3.38% of aircraft intercepting 30° or less overshoot by more than 800”

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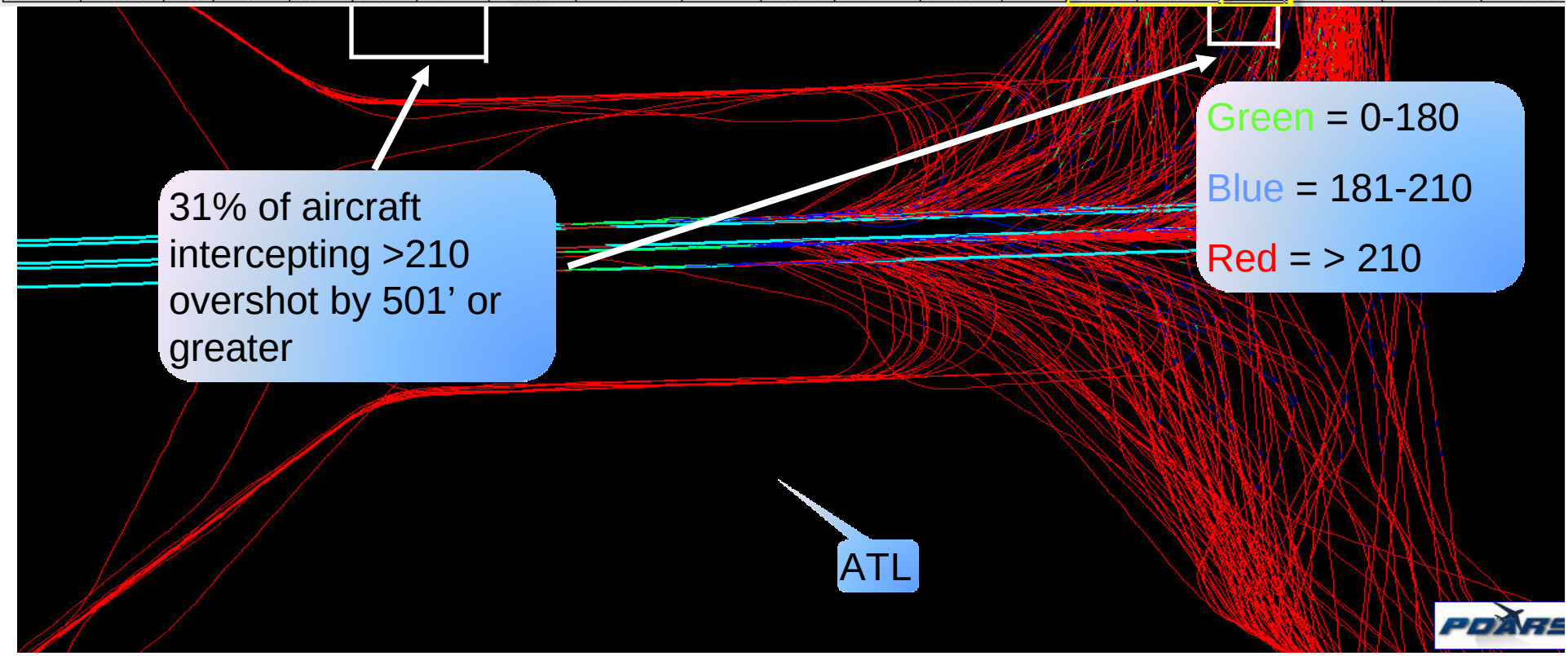

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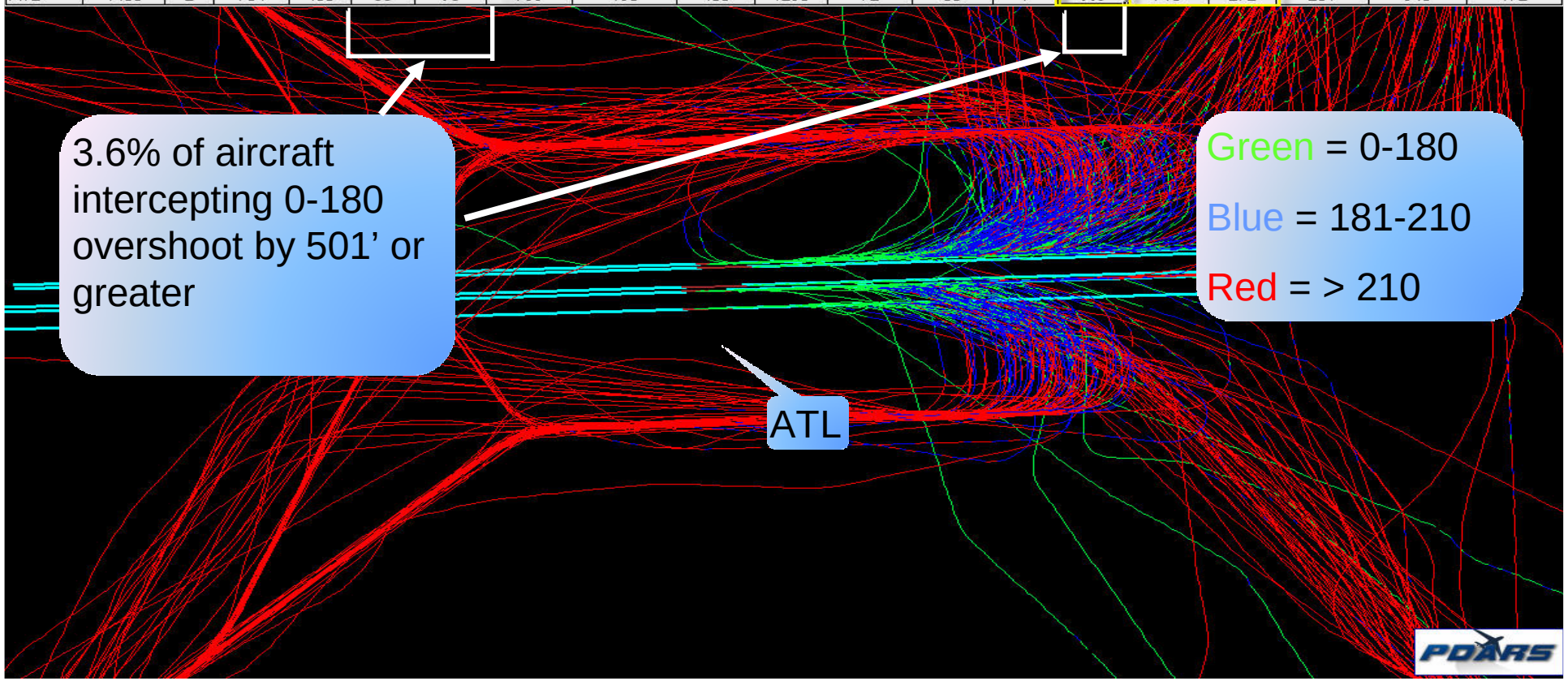
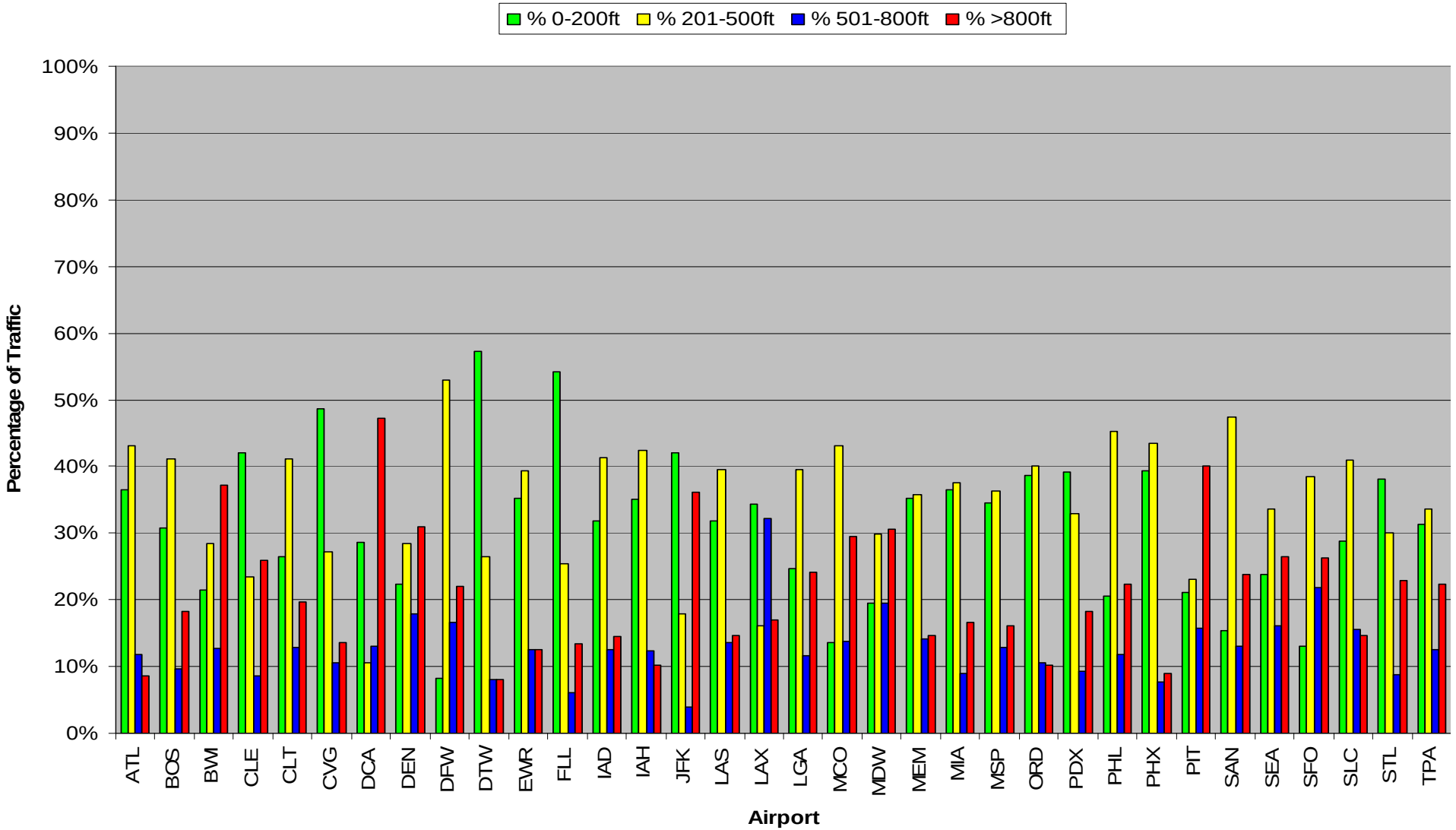
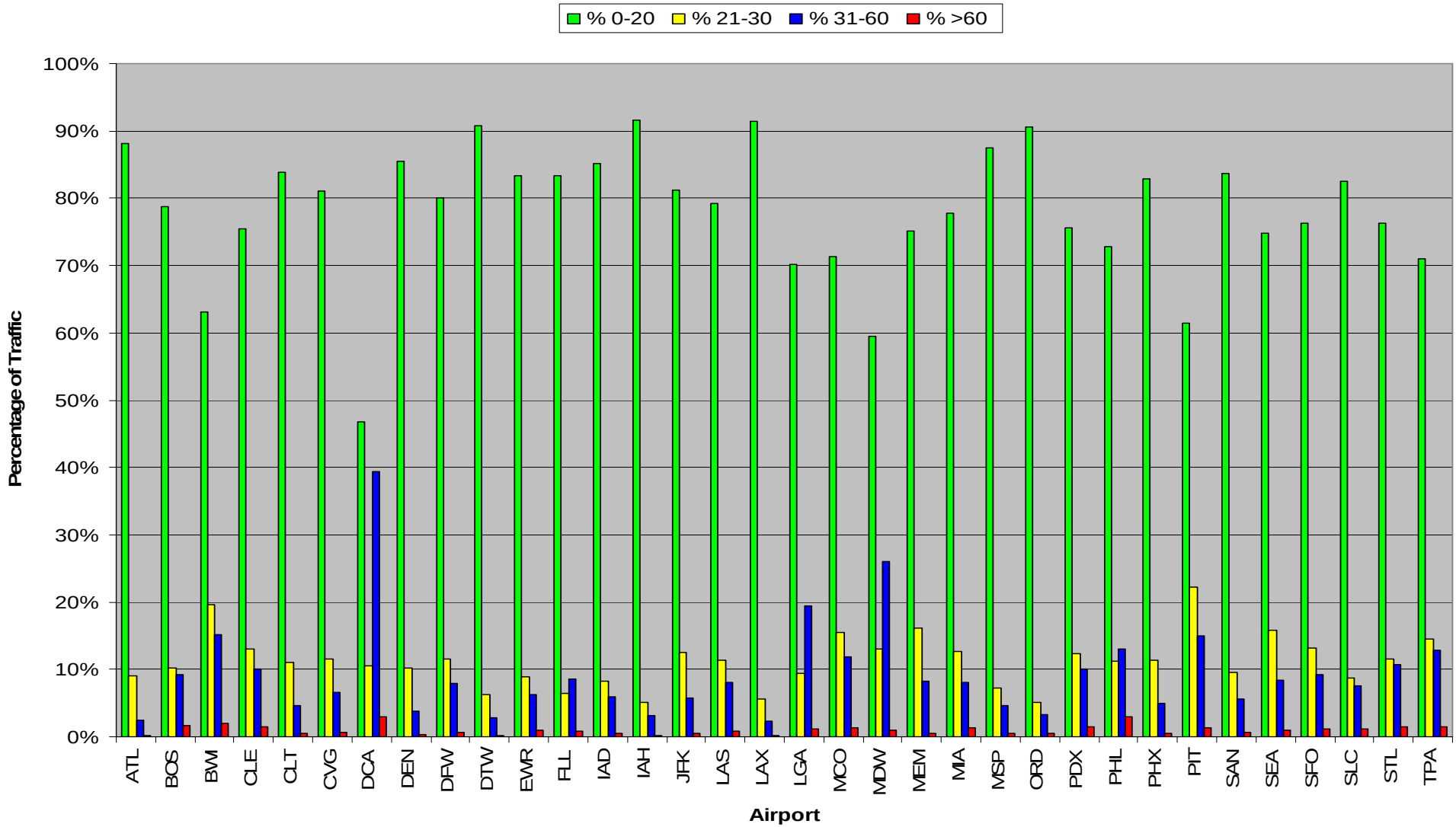


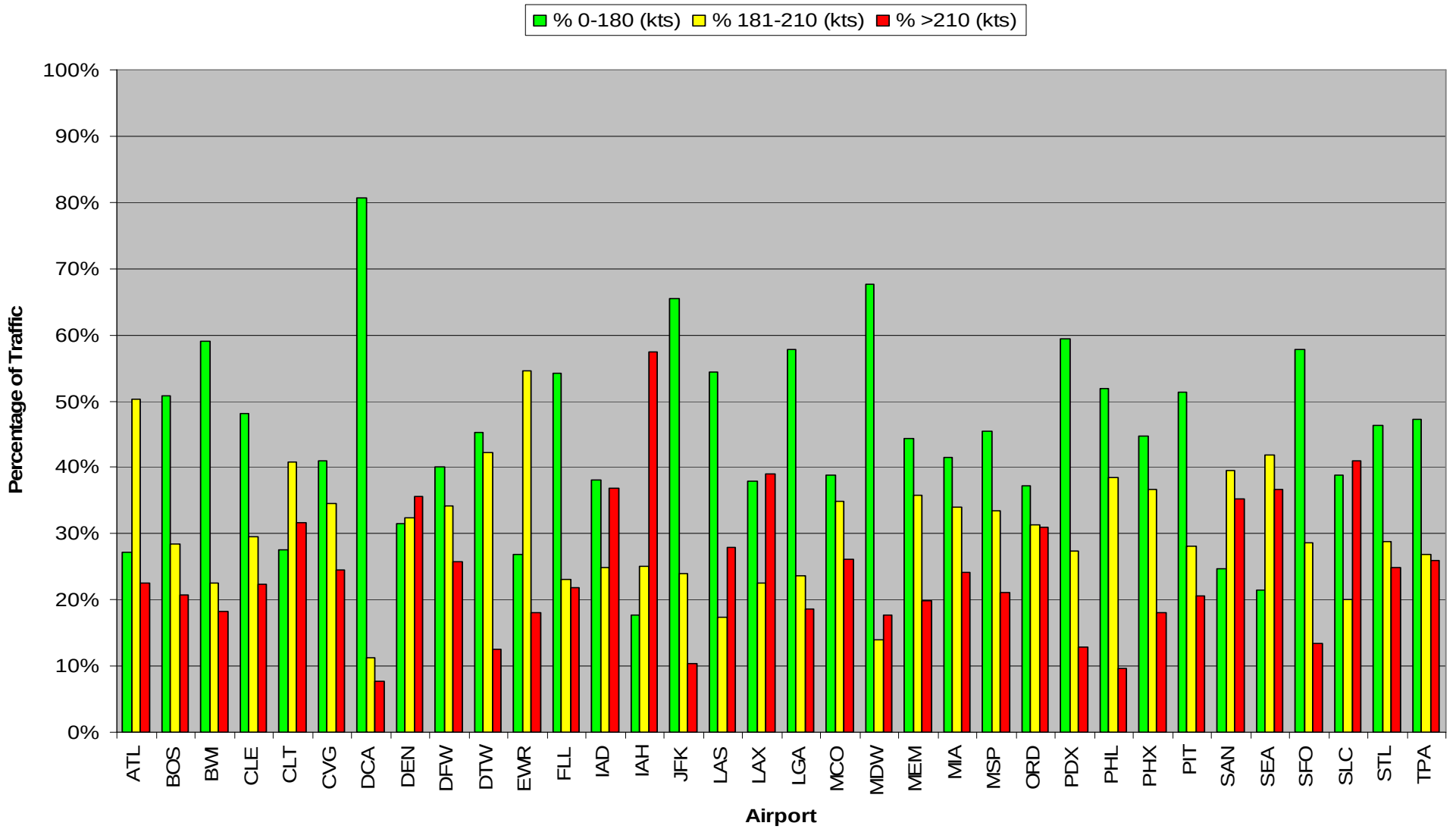
Percent of Max Over-shoot (Bin)
7/1/2010 through 7/31/2010



Percent of Intercept Angle (Bin)
7/1/2010 through 7/31/2010

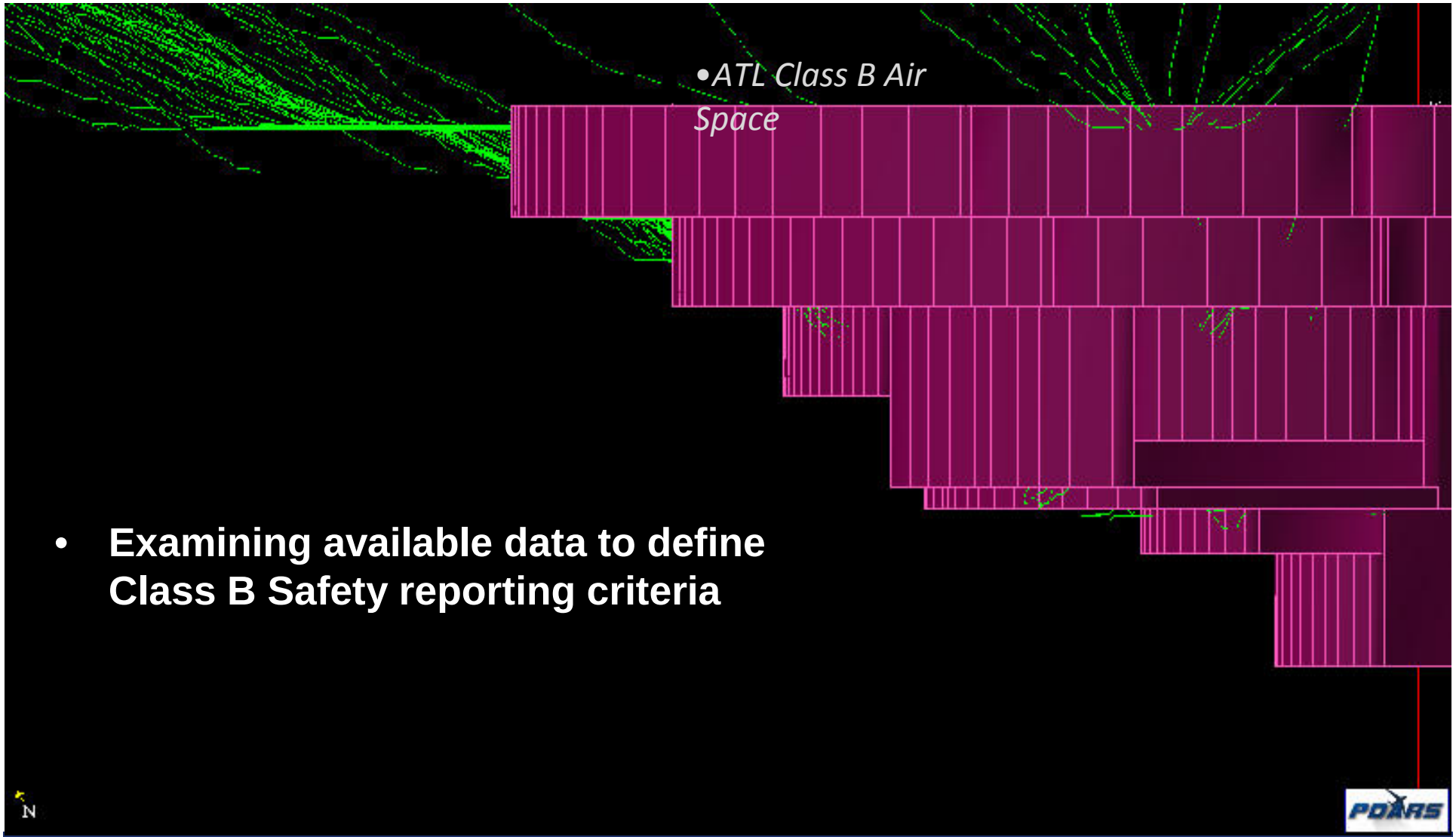


Percent of Intercept Speed (Bin)
7/1/2010 through 7/31/2010

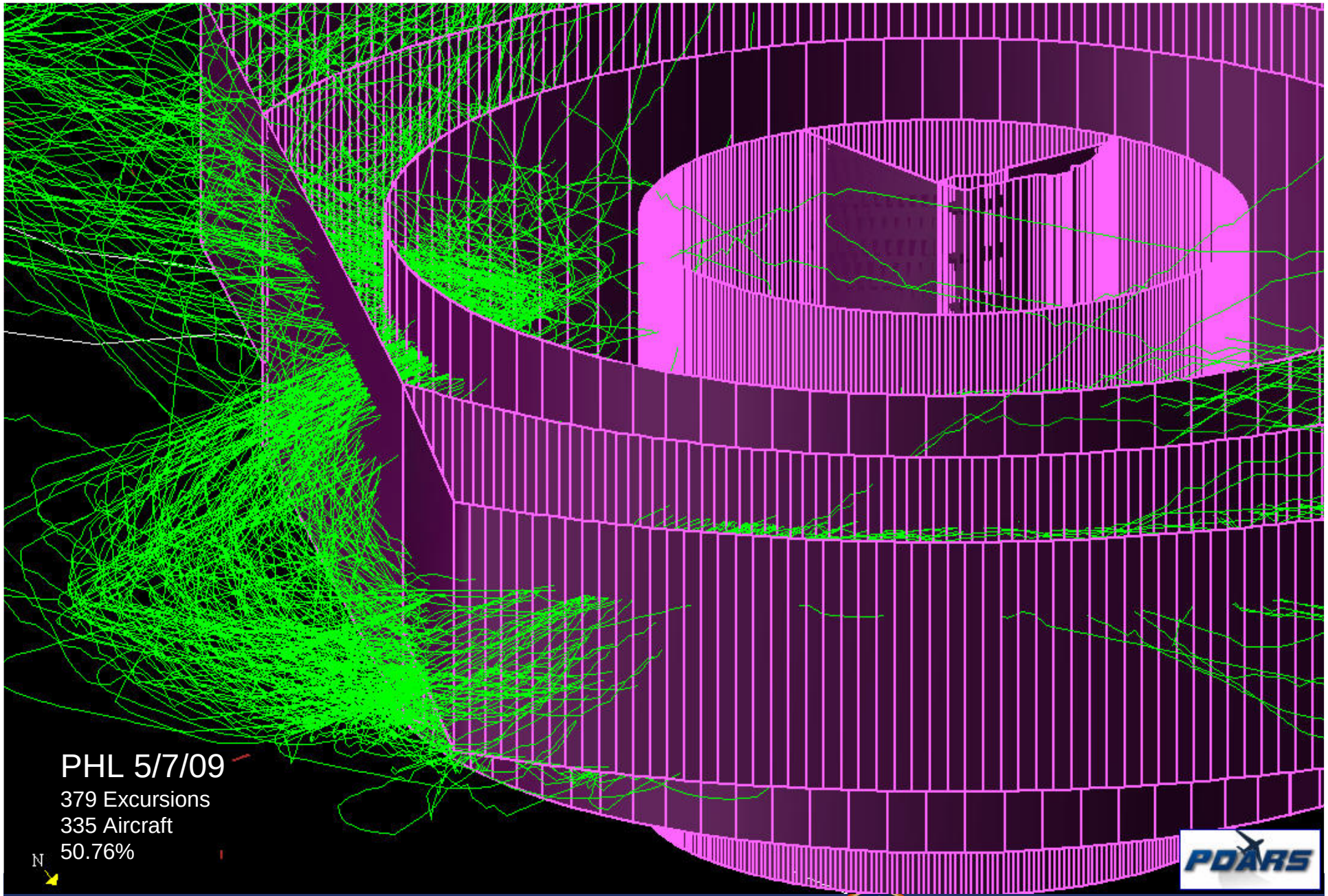


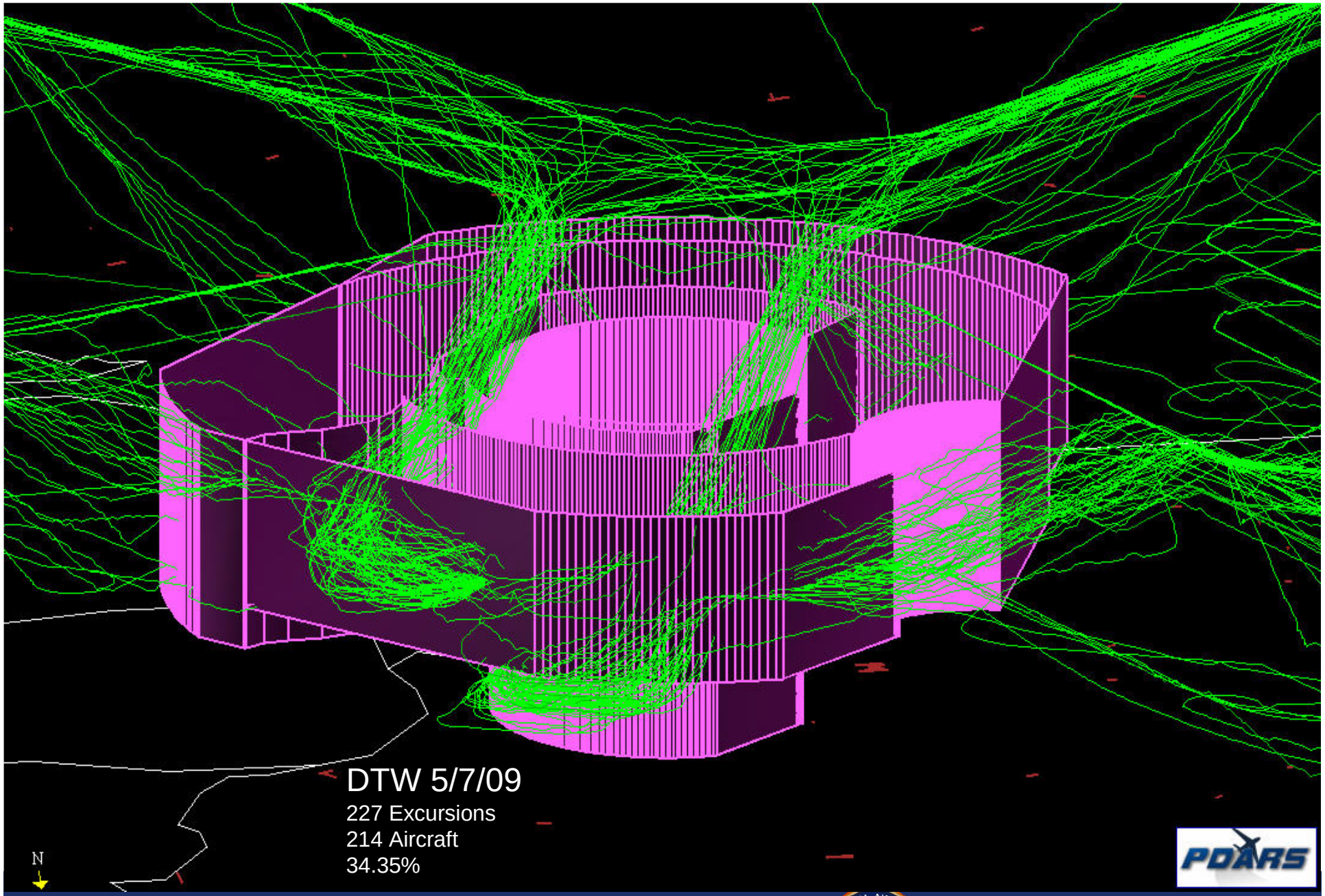
Analyzing Class B Excursions

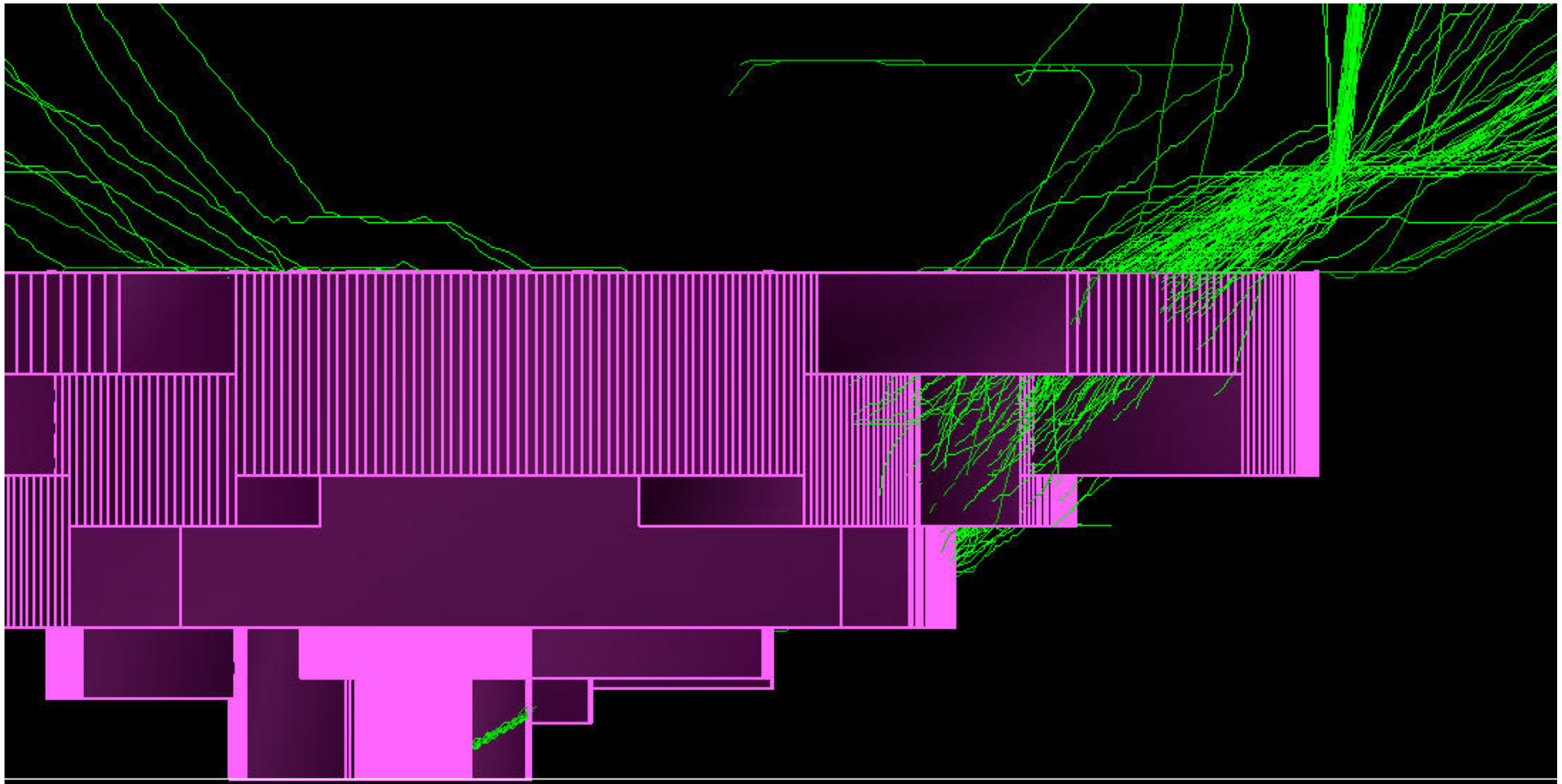
Review of Activities



- **Examining available data to define Class B Safety reporting criteria**


PHL 5/7/09
379 Excursions
335 Aircraft
50.76%
N
PDARS


DTW 5/7/09
227 Excursions
214 Aircraft
34.35%
N
PDARS



SEA 5/7/09
142 Excursions
122 Aircraft
27.29%

N

PDARS

Integrated Metrics

ASIAS

(Aviation Safety Information and Sharing)

Landscape of Potential Safety Issues Needing Coordination

- **Traffic Alert and Collision Avoidance System (TCAS) – High rate of Resolution Advisories (RAs)**

- **Terrain Awareness and Warning System (TAWS) – High rate of alerts**

TAWS Alert Mitigation Strategy

- **Near Term:**
  - Use of RNAV/RNP and other procedures to reduce unnecessary terrain alerts and to provide better separation from terrain
  - Evaluate Minimum Vectoring Altitude (MVA) in relation to terrain and traffic flows in high-terrain airports
- **Longer term:**
  - Having GPS + Software Version 218 or greater reduces unwarranted warnings when the aircraft is not in imminent danger
  - Increases the effectiveness of EGPWS alerting during approach phase

TCAS Mitigation Strategy

- **Near Term**
  - airspace and procedural strategies to reduce/eliminate TCAS RAs
- **Longer term**
  - TCAS/NexCAS design should incorporate ASIAS TCAS RA results