

NAARMO Mexico Vertical Safety Monitoring Report 2025

GTE26 WP09

CAR/SAM Planning and Implementation Regional Group (GREPECAS)
Twenty-sixth Scrutiny Working Group Meeting (GTE/26)
Mexico City, Mexico, 12-16 October 2026

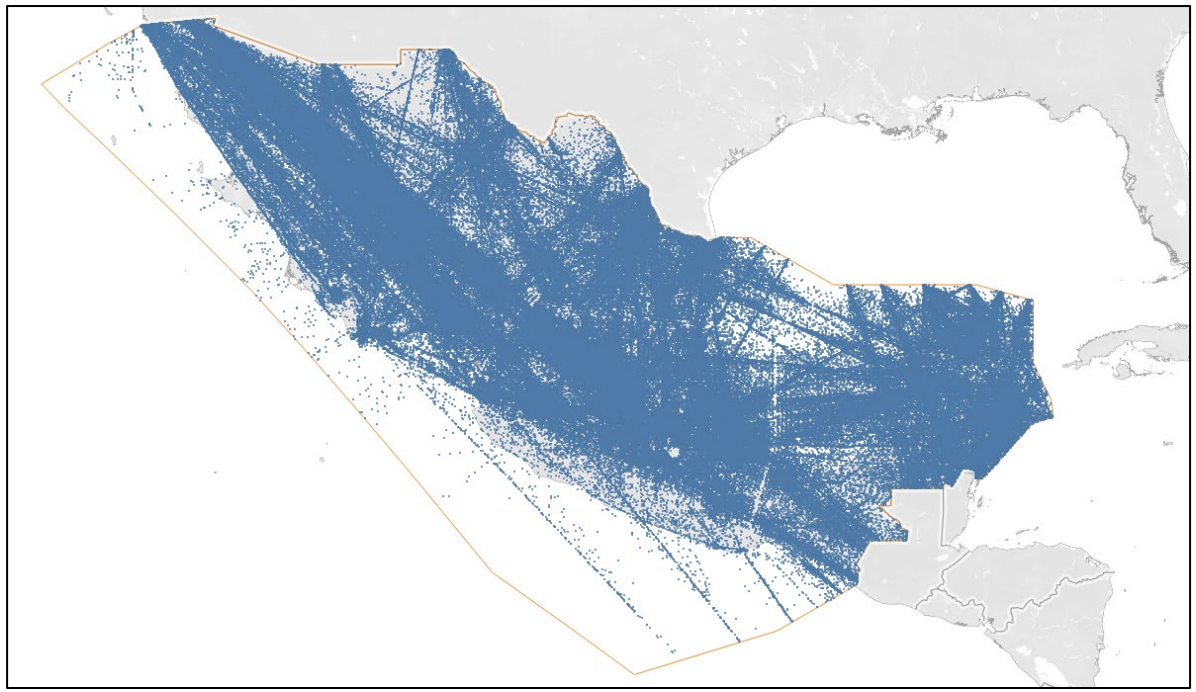
Vertical Safety Analysis For Mexico Airspace | Traffic Data

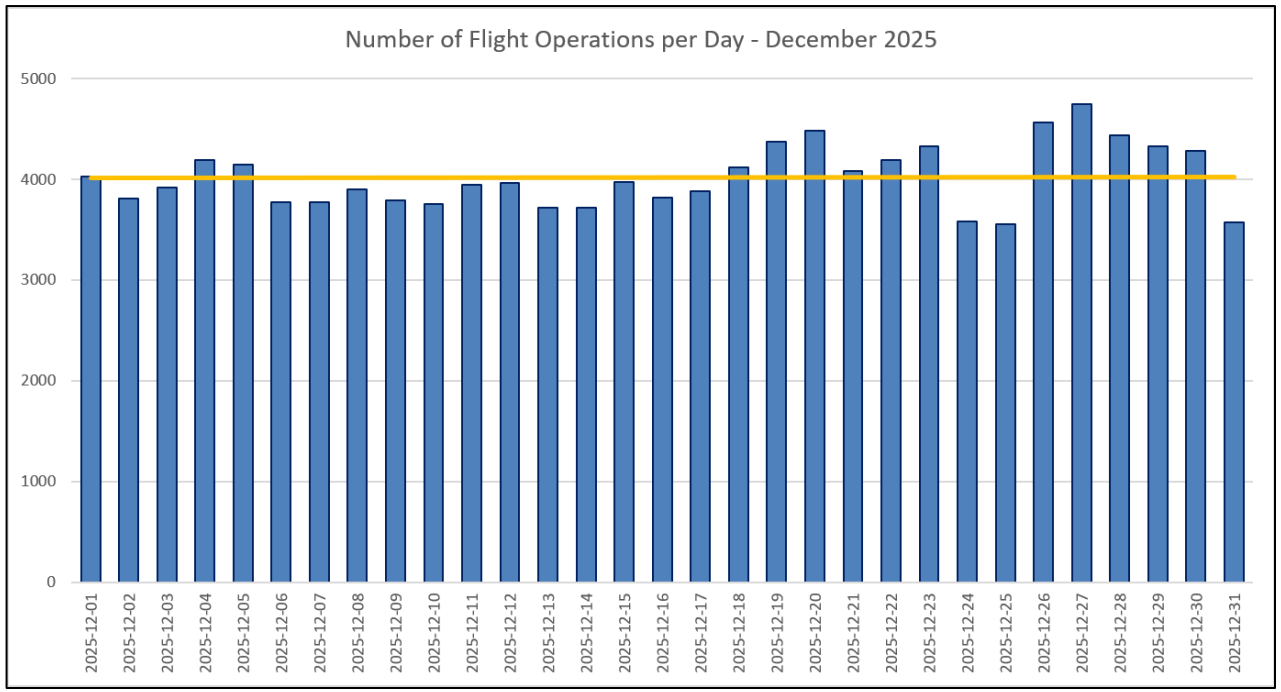
The figure presents the aircraft positions provided in the Traffic Flow Management System (TFMS) data for 23 December 2025.

- Flight observations from four area control centers (ACCs) – Mexico City (MMEX), Monterrey (MMTY), Mazatlán (MMZT), and Mérida (MMID).

The chart shows the number of flights by day in the Mexico TFMS data for December 2025.

- The average number of flight operations per day observed in the TFMS data is **4,024** flights per day
- this is an **increase** in the average **3,844** flights per day observed in December 2024





Vertical Safety Analysis For Mexico Airspace | Reported Large Height Deviations (LHDs)

Of the **34** received LHD reports most were associated with the Mérida (MMID) FIR, which accounted for 30 reports (88.2%). Mexico City (MMEX) and Mazatlán (MMZT) each accounted for one report (2.9%), as did the Albuquerque (ZAB) and Los Angeles (ZLA) sectors. No reports were listed for Monterrey (MMTY).

A total of **9** reports were identified as operational risk bearing LHDs accounting for **6** minutes of operation at incorrect flight level and **8** incorrect flight levels crossed in Mexico airspace.

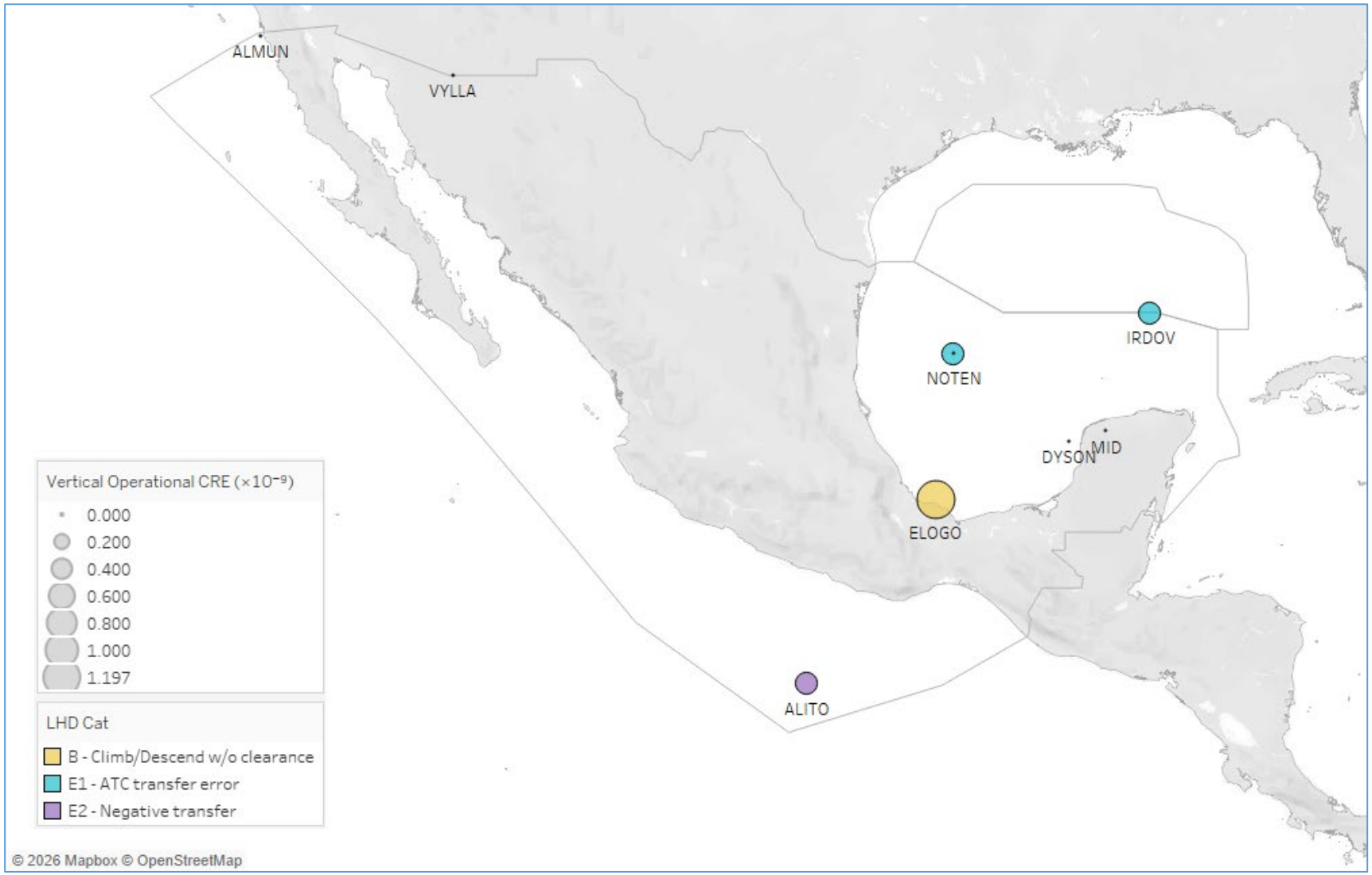
Month	Count	Duration at Incorrect FL (min)	Number of FLs Crossed
January 2025	1	0	0
February 2025	1	1	0
March 2025	1	3	0
April 2025	1	0	2
May 2025	1	1	0
June 2025	1	0	0
July 2025	1	0	5
August 2025	0	0	0
September 2025	0	0	0
October 2025	2	1	1
November 2025	0	0	0
December 2025	0	0	0
Total 2025	**9**	**6**	**8**

Reports that involve coordination errors in the ATC transfer (Categories E1 and E2) account for **5** of the **9** operational risk bearing LHD reports or approximately 56%.

LHD Category Code	LHD Category Description	Number of LHD	Duration at Incorrect FL (min)	Number of FLs Crossed
B	Flight crew climbing/descending without ATC clearance	4	3	8
E1	Coordination errors in the ATC -to-ATC transfer of control responsibility as a result of human factors issues (incorrect FL, time or route)	3	2	0
E2	Negative coordination in the ATC-to-ATC transfer of control responsibility	2	1	0
	TOTALS	**9**	**6**	**8**

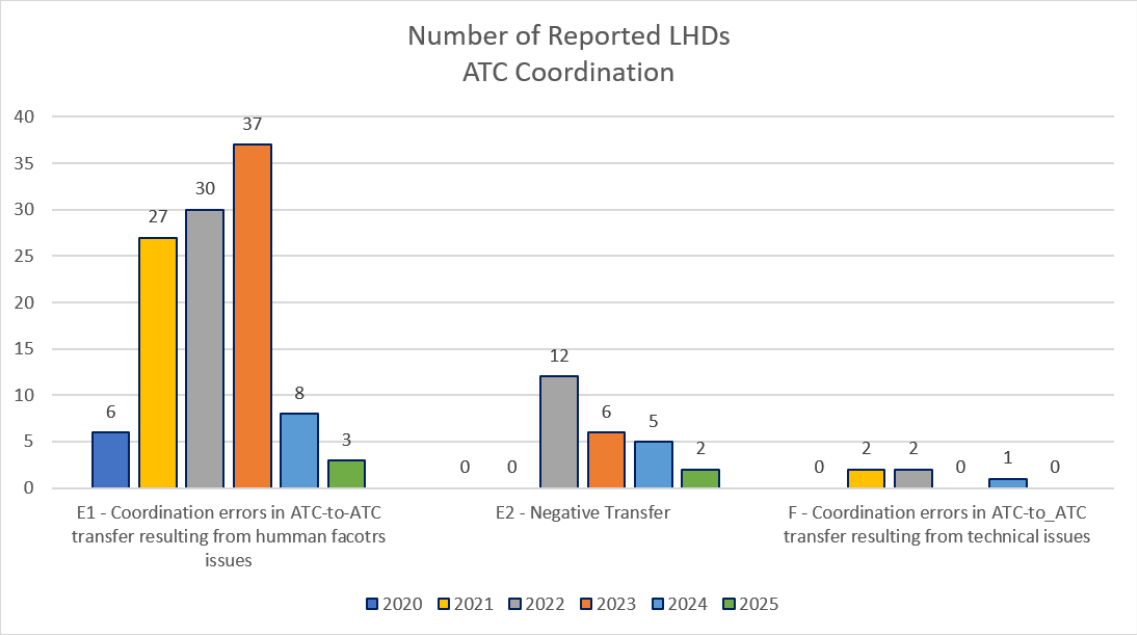
Vertical Safety Analysis For Mexico Airspace | Reported Large Height Deviations (LHDs)

The Figure shows the approximate aircraft locations of the **9** reported LHDs in 2025 attributed to operational risk. The size of the circle represents the vertical risk estimate for each reported LHD while the color represents the causal code.

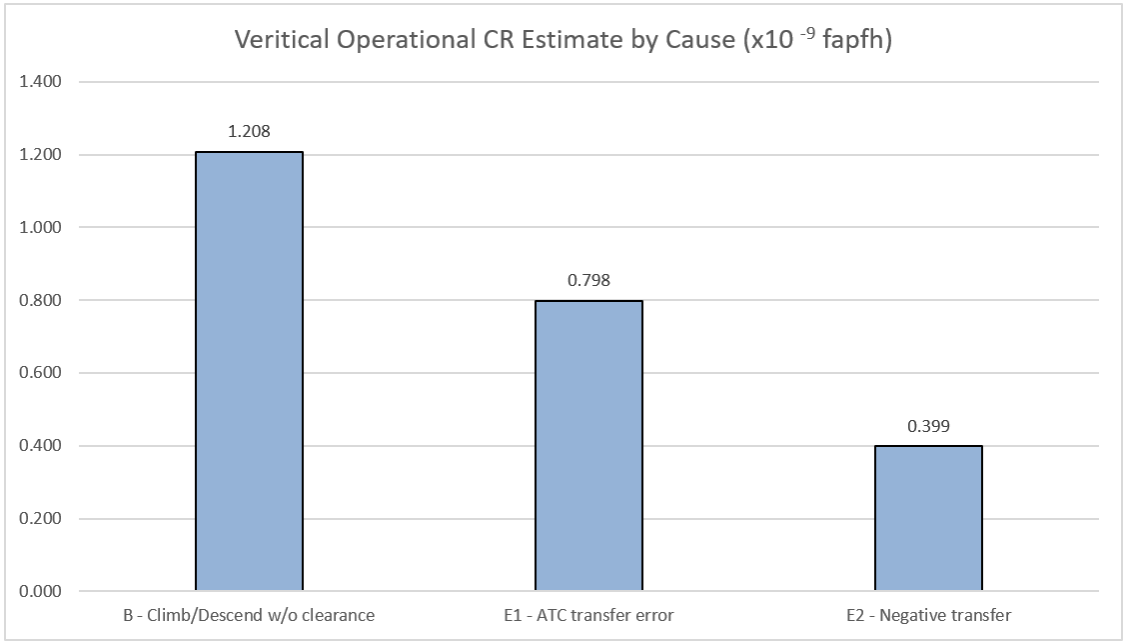


Vertical Safety Analysis For Mexico Airspace | Observed LHD Trends

- The trend in LHDs involving ATC coordination is *decreasing for calendar year 2025*.
  - There were **5** reported coordination errors in 2025, compared to **14** reported coordination errors in 2024.

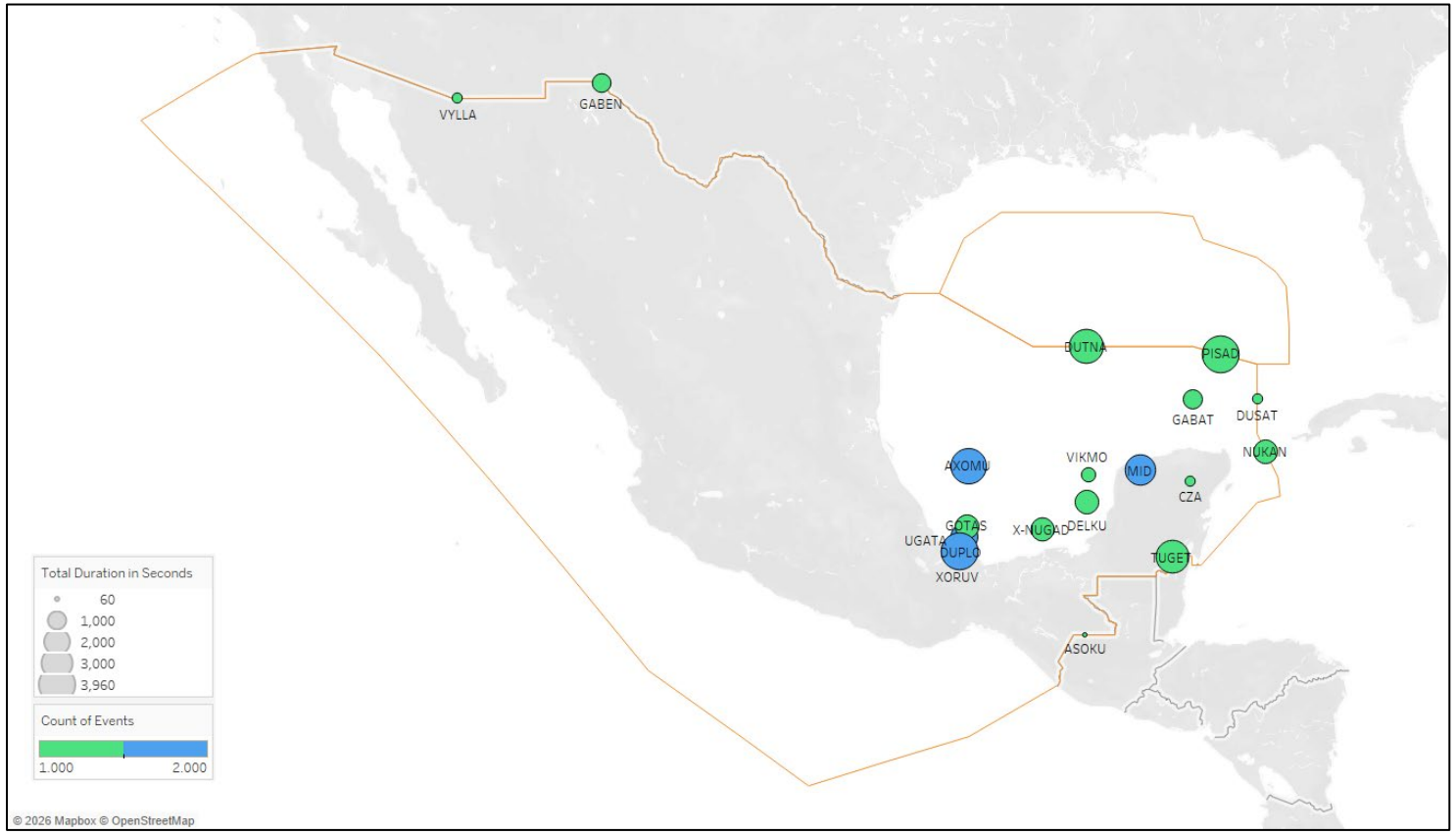


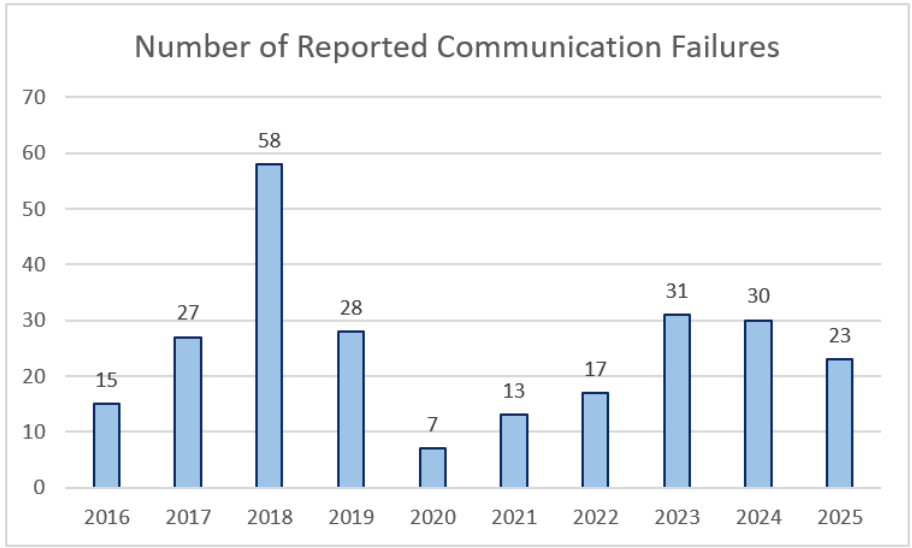
- The bar graph shows the vertical collision risk estimate by LHD category for calendar year 2025. From the data provided in the figure, the combined reported LHDs attributed to ATC coordination (E1 and E2) have the highest contribution towards the risk estimate.



Vertical Safety Analysis For Mexico Airspace | Communication Failure Reports

The figure shows the locations associated with the reported communication failures. The number of minutes in which ATC could not communicate with an aircraft was **553** minutes in calendar year 2025. These results are less than the previous year.





During the calendar year 2025, there were **23** communication failures between ATC and the aircraft. This trend has *decreased with the previous year.*

Operator	Count
AMERICAN AIRLINES	2
UNITED	2
VIVA AEROBUS	2
IGA	3
TYSON	1
SPIRIT	1
COPA	1
DELTA	1
SOUTH WEST	1
GEMINI	1
TAMPA	1
ALASKA AIRLINES	1
AVIANCA	1
VOLARIS	1
JETSAL	1
VOLARIS COSTA RICA	1
LATAM CARGO	1
AEROMEXICO	1

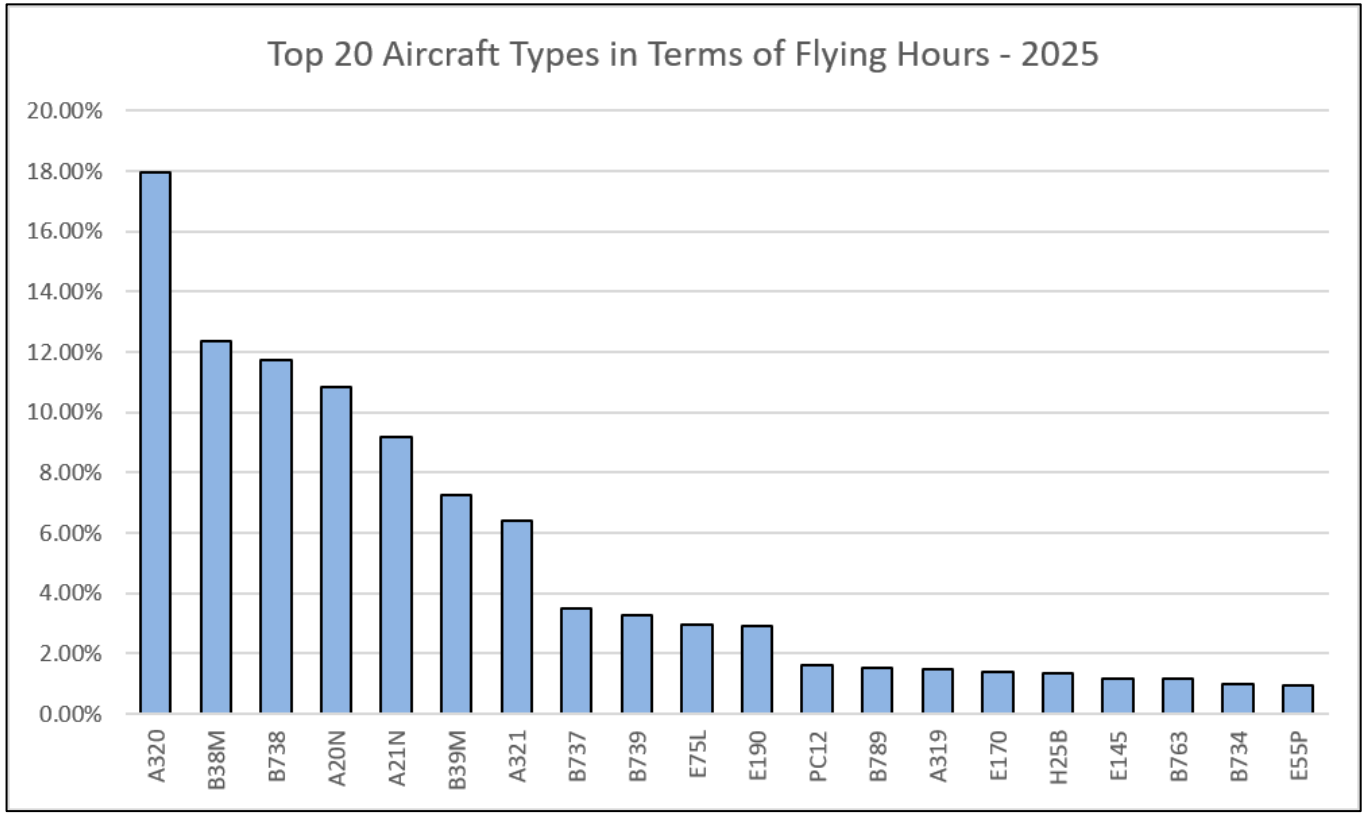
Vertical Safety Analysis For Mexico Airspace | Vertical Collision Risk (Aircraft Size)

Based on the December 2025 TFMS data, the NAARMO estimates approximately **1,733,292** annual flying hours for 2025 in Mexico airspace where the RVSM is applied.

The **top 20 aircraft types** observed in December 2025 TFMS traffic data by flying hours represent approximately **80%** of the total observed hours in the sample.

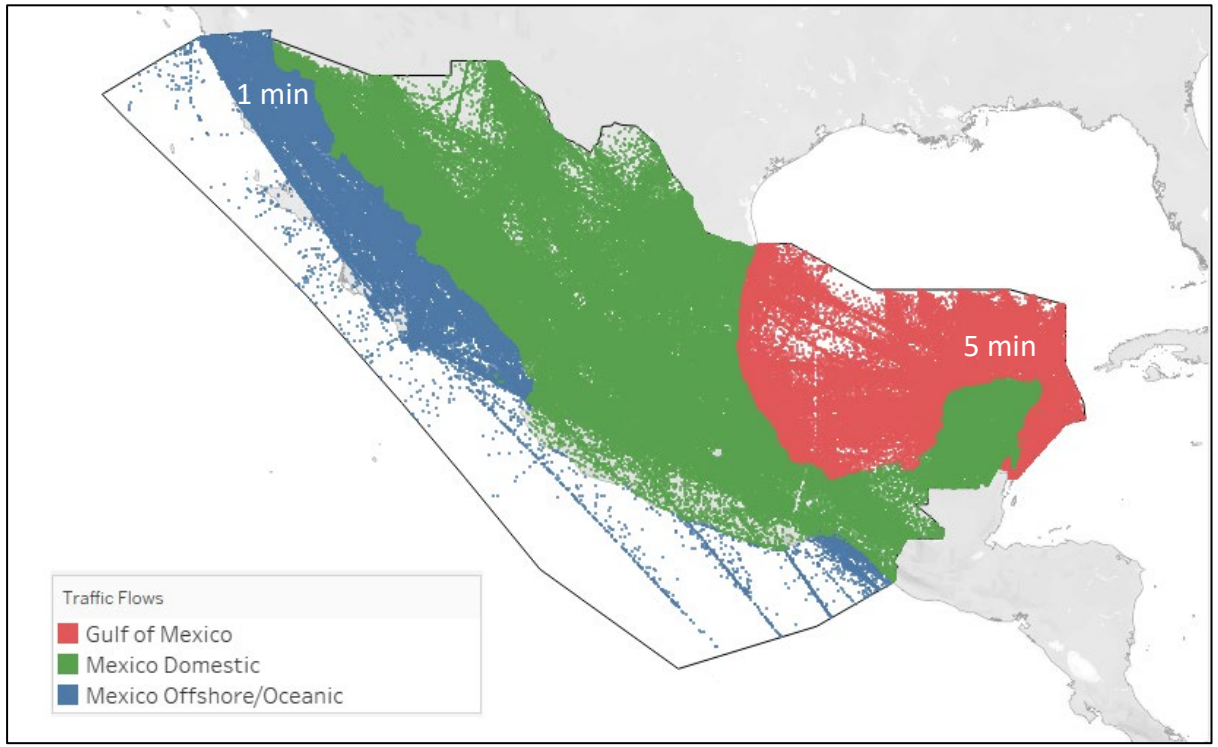
The collision risk model parameters related to the aircraft size are: **length, wingspan, and height**. These parameters are estimated directly from the December 2025 TFMS data and related aircraft specifications. The weighted dimensions are calculated using the actual dimensions of the aircraft type multiplied by the proportion of total flying time observed for the type in the traffic sample.

Length λ_x (NM)	Wingspan λ_y (NM)	Height λ_z (NM)
0.0209	0.0188	0.0064
[127.03 ft]	*[114.3 ft]*	*[39.2 ft]*



Vertical Safety Analysis For Mexico Airspace | Vertical Collision Risk (Parameters)

Total Reported LHD Duration at incorrect Flight Level by Area



Traffic Flow	Same Direction Vertical Occupancy	Opposite Direction Vertical Occupancy
GOMEX	0.088	0.218
Offshore/Oceanic	0.000	0.001
Domestic	0.032	0.071

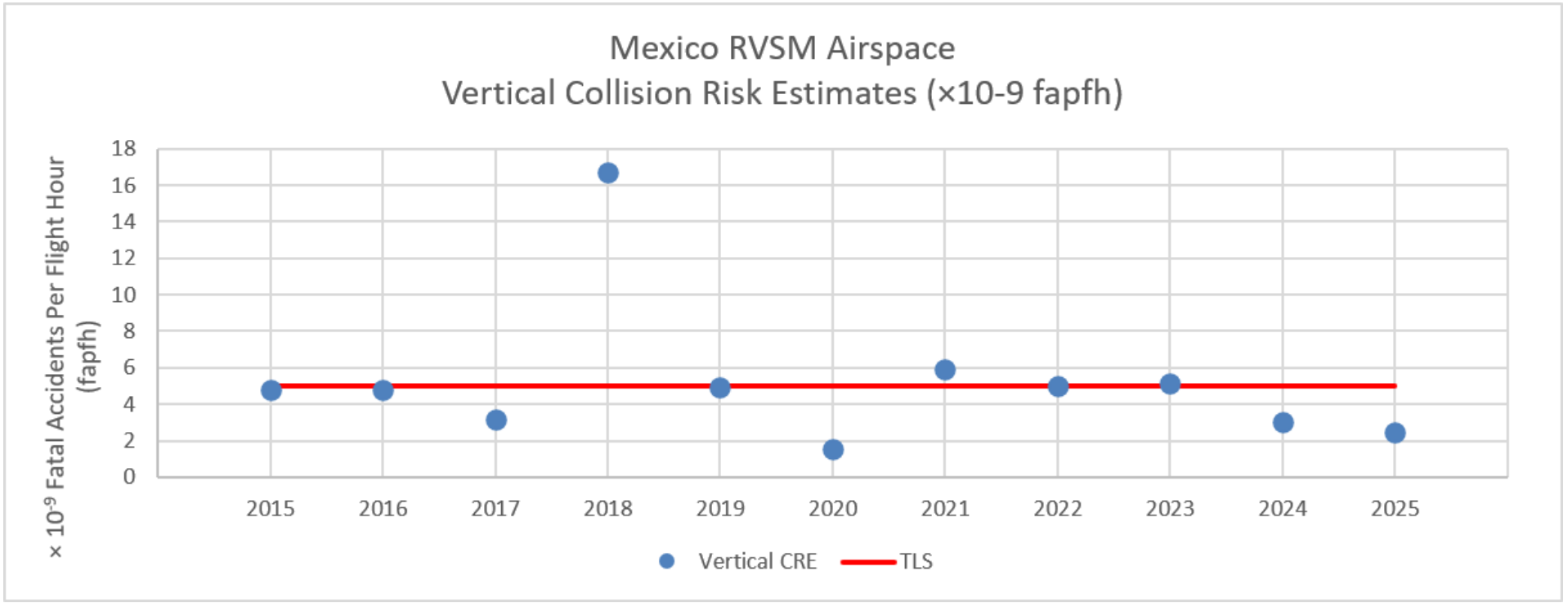
Traffic Flow	Reported LHD duration (min)	Number of FLs crossed without clearance
GOMEX	5	3
Offshore/Oceanic	1	0
Mexico Domestic	0	5
TOTAL	**6**	**8**

The qualifying LHDs for calendar year 2025 contain **6 minutes of flying time spend at unexpected flight level**. This time is split into the identified traffic flows based on the location provided in the reported LHD.

Vertical Safety Analysis For Mexico Airspace | Results and Conclusions

The total risk estimate for the RVSM airspace, **2.48 × 10^{-9} fapfh**, meets the overall safety target of 5.0 × 10^{-9} fapfh.

Calendar Year	Vertical Collision Risk Estimate (×10^{-9} fapfh)
2015	4.8
2016	4.8
2017	3.2
2018	16.7
2019	4.92
2020	1.51
2021	5.91
2022	4.97
2023	5.14
2024	3.05
2025	2.48



Traffic Flow	Technical Risk Estimate	Operational Risk Estimate	Total Risk Estimate
GOMEX	**0.03**	**2.28**	**2.31**
Offshore/Oceanic	**0.00**	0.00	0.00
Mexico Domestic	**0.04**	0.13	0.17
TOTAL	**0.07**	**2.41**	**2.48**

The increase in the vertical risk estimate for calendar year 2018 occurred because of three long duration reported LHDs. In 2019, the calculation method was modified to account for the different traffic flows. The traffic flows were identified and used to estimate associated parameters in the risk model.

Questions?

