

A map showing the path of Hurricane Milton over the Gulf of Mexico and the state of Florida. The hurricane's path is indicated by a series of concentric, color-coded bands: purple at the center, followed by red, orange, yellow, and green. The map includes labels for various US states (TX, MS, AL, GA, FL, LA) and countries (Mexico, Guatemala, Honduras, El Salvador, Jamaica, Dominican Republic, Puerto Rico). Latitude lines are marked at 15N, 20N, 25N, and 30N. The title 'Airport resilience after Hurricane Milton' is prominently displayed in large, bold, black font across the upper portion of the map.

Airport resilience after Hurricane Milton

How five Florida airports responded to a major hurricane—and how **Sarasota–Bradenton International Airport** struggled to recover despite facing similar storm conditions

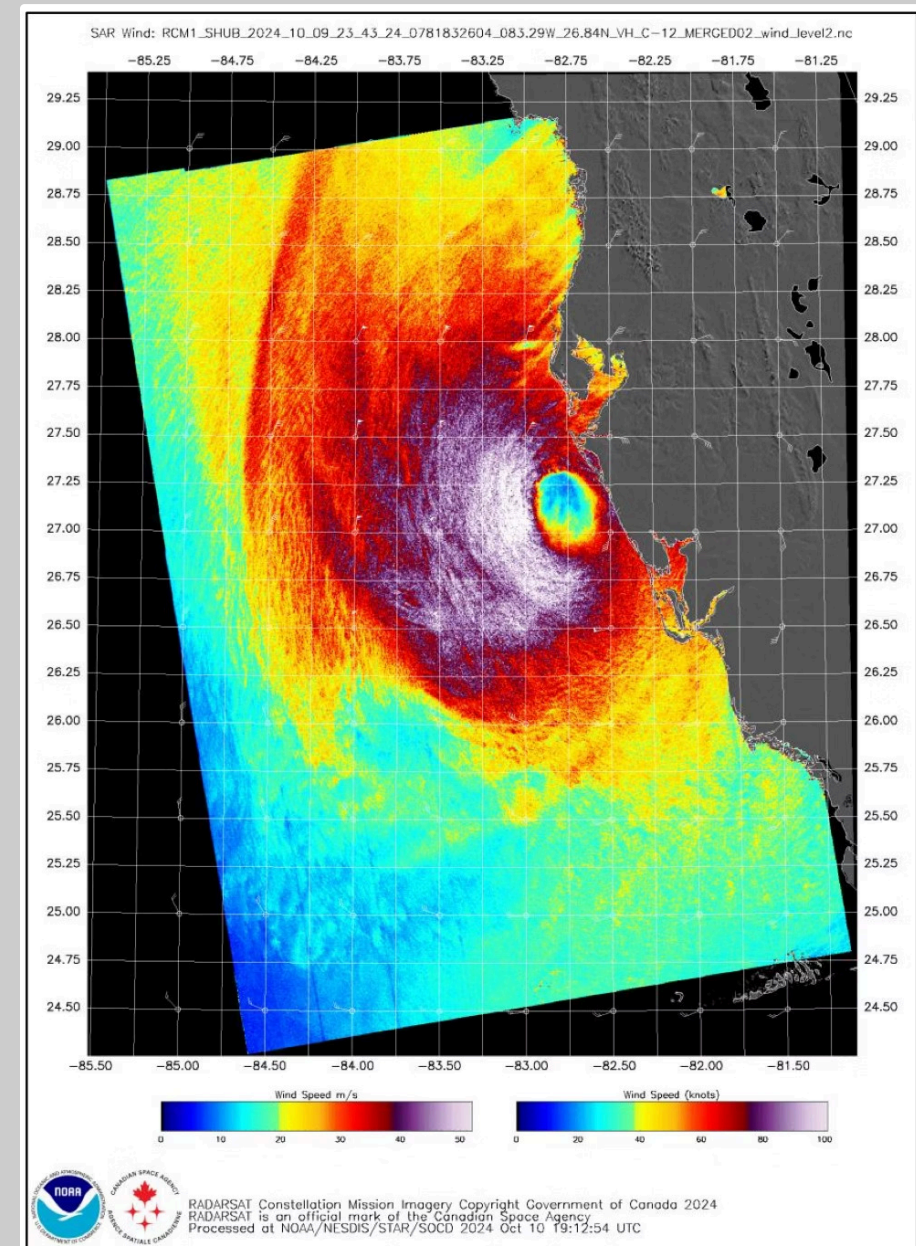
by **Christopher Bolduc**

Report published April 2025

Why this matters

- In October 2024, Hurricane Milton made landfall on Florida's Gulf Coast with **winds exceeding 100 mph**.
- The storm triggered **hundreds of flight cancellations** and **multiple airport closures** across the state.
- Five airports were placed in the **official hurricane warning zone**:
 - Daytona Beach International Airport (**DAB**)
 - Orlando International Airport (**MCO**)
 - Tampa International Airport (**TPA**)
 - St. Pete–Clearwater International Airport (**PIE**)
 - Sarasota–Bradenton International Airport (**SRQ**)

This study investigates how quickly these airports recovered—and whether their responses matched the scale of the storm they faced.



Surface wind estimates from Hurricane Milton shortly before landfall

Captured by RADARSAT (RCM-1) at 2343 UTC on Oct 9, 2024.

Image courtesy of NOAA/NESDIS and the Canadian Space Agency

SRQ suffers major structural damage

Florida airport suffers loss of entire concourse roof from Milton's 102-mph winds, will remain closed for days

Fox Weather – Oct 11, 2024

Sarasota–Bradenton International Airport (SRQ) experienced the worst structural damage of any airport in the hurricane warning zone. The storm **ripped off the entire roof** of Concourse B, which housed 13 gates and the main TSA checkpoint.

As a result, SRQ remained fully closed for seven days, with no departing flights between October 9th and 15th.

Limited operations resumed on October 16th, and full recovery was achieved on October 17th—**eight days after landfall**.

This raises a key question:

Was SRQ's prolonged shutdown simply a matter of storm severity—or was it a sign of operational failure?



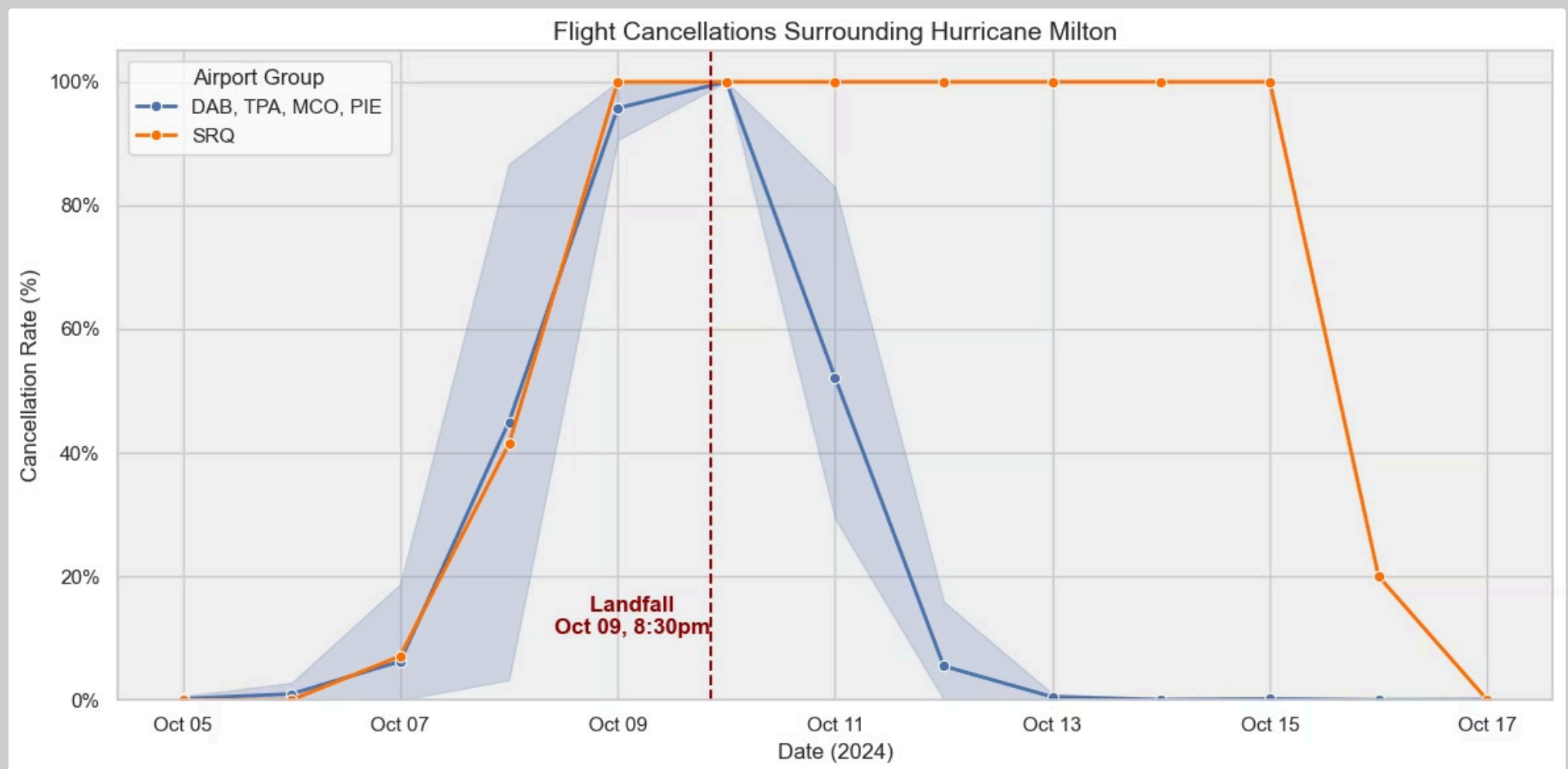
Following roof damage and flooding, cleanup was required in gate areas

Image courtesy of Sarasota Bradenton International Airport

Understanding airport resilience after Hurricane Milton

Can we define and compare **airport resilience** in a way that accounts for both **storm severity** and **operational response**?

The chart below tracks **daily flight cancellations** across all five airports before, during, and after the hurricane. It offers our first real glimpse into **how each airport weathered the disruption and began to recover**.



Key Takeaways:

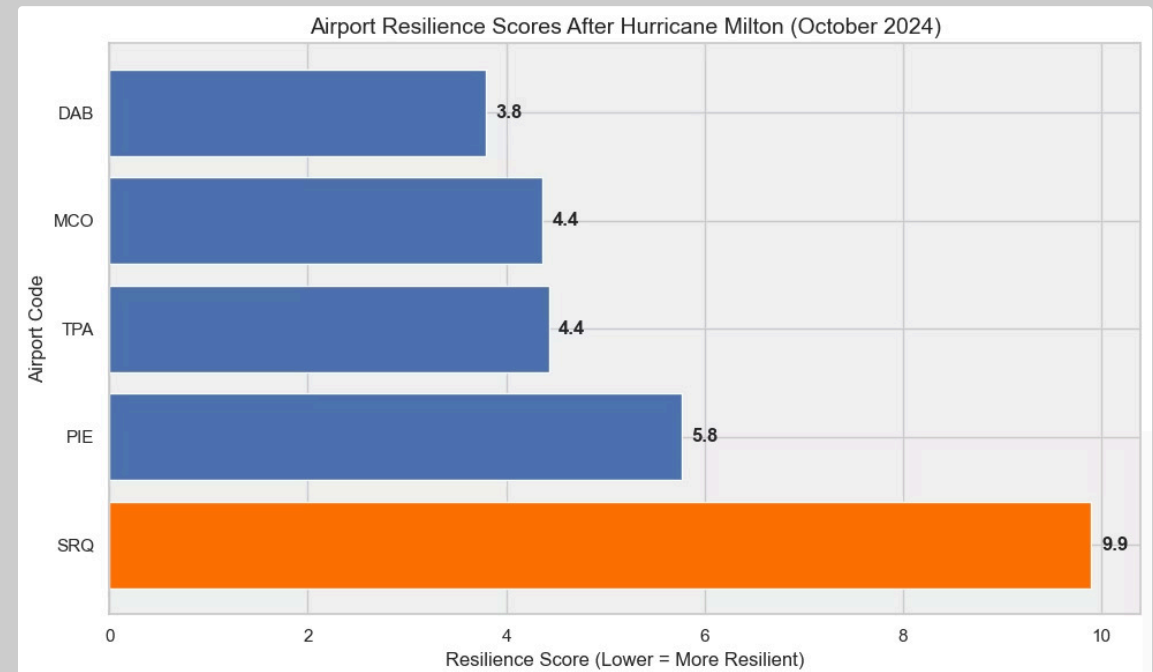
- **SRQ** experienced 100% cancellations for **seven days**.
- **DAB, TPA, MCO, and PIE** returned to near-normal within **three to four days**.

How was resilience measured?

I created a composite **resilience score** for each airport based on three factors:

1. **Days to recovery** — how many days it took for flight activity to normalize
2. **Cancellation rate** — total % of flights cancelled in October scaled x 10 to match the range of recovery days
3. **Peak wind speed** — highest hourly average wind speed, square root scaled to reflect storm intensity without overemphasizing outliers

The final **resilience score** rewards fast recovery and penalizes excessive cancellations—but also **gives credit to airports that faced stronger storm conditions**.



▼ Code (resilience score)

```
resilience_score = (  
    (days_to_recovery + (pct_cancelled_oct * 10)) /  
    (peak_wind_speed_kmh ** 0.5 / 10)  
)
```

Lower score = faster, more resilient recovery

Key Takeaways:

- **SRQ** had the highest (worst) **resilience score**, even after adjusting for wind severity, due to its **eight-day recovery timeline**, and the **highest cancellation rate** among the five airports.
- **DAB** achieved the lowest (best) **resilience score**, recovering in just **three days**—the fastest turnaround—despite facing the **second-highest peak wind speed**, just behind **SRQ**.

Final Analysis

SRQ faced challenges—but not all were meteorological

SRQ endured the highest sustained winds and significant structural damage—a valid and serious disruption.

But even adjusting for storm severity, **SRQ**'s recovery lagged **well behind its peers**. The data suggests that infrastructure damage alone **doesn't explain the extended closure**. Other factors—like emergency planning, staffing, or logistical coordination—likely played a critical role in shaping **SRQ**'s slower return to normal operations.



SRQ suffered major structural damage from Hurricane Milton

Image courtesy of Sarasota Bradenton International Airport



Debris from the damaged roof covered the aircraft ramp

Image courtesy of Sarasota Bradenton International Airport

Enduring the storm isn't enough—resilience requires a rapid, coordinated response.