

RASG-PA · PA-RAST/71 · SÃO PAULO, BRAZIL · 17 AUGUST 2026

Adverse Weather — Seasonal Risk Outlook

El Niño 2026–27: Operational Safety Implications for the RASG-PA Region

LOC-I / ADVERSE WEATHER

Isaac Luviano · Enrique Guardarrama

Aeroméxico — Corporate Safety, Security & Quality Assurance



WHERE WE STAND · AUGUST 2026

El Niño Is Here — and the Forecast Is Verifying



ADVISORY

NOAA/CPC ENSO Alert System status: El Niño Advisory in effect — El Niño conditions present since June 2026



97%

Probability that El Niño continues through early spring 2027, growing through the end of 2026



63%

Chance of a very strong event at the Nov–Jan peak — 23 of 26 IRI/CCSR models forecast Niño $3.4 \geq +2.0$ °C in Oct–Dec



7 vs 2

Named storms to date: E. Pacific active (outlook 15–22) vs Atlantic, where NOAA gives 75% odds of a below-normal season

Sources: NOAA/CPC ENSO Diagnostic Discussion & Evolution Update (Aug 2026) · IRI/CCSR ENSO plume (mid-Jul 2026)

HOW THE SIGNAL REACHES THE FLIGHT DECK

From Ocean Physics to Operational Hazards



Warm coastal waters — E. Pacific

Fuel for rapid intensification close to shore, cutting warning time (Otis 2023 as the reference case).



Strong wind shear — Atlantic

Breaks storms apart as they form: a quiet Caribbean/Atlantic season — partial relief for the region.



Subtropical jet moves south

More winter lows and atmospheric rivers across the southern U.S. and northern Mexico (Nov–Feb).



Ongoing continental heat

High density altitude at high-elevation airports: performance, climb gradients, payload.



Stronger North Pacific jet

More frequent and intense clear-air turbulence at cruise levels on transpacific routes.



Rainfall flips — South America

Above-normal rain on the Peru/Ecuador coast; dry weather and smoke over northern South America.

REGIONAL OUTLOOK · ALL FOUR AREAS

Where the Risk Lands — and When



Mexico & C. America

HIGH · JUL–OCT 2026

6–9 direct tropical-cyclone impacts projected. Rapid intensification near the coast can cut decision windows below 24 h (Otis 2023). Exposed: ACA · ZIH · PVR · MZT · SJD.



Caribbean & Atlantic

FAVORABLE · SEASON-LONG

75% probability of a below-normal season; only 2 tropical storms and no hurricanes to date. Keep readiness active for late-season western Caribbean systems (Oct–Nov).



South America

MIXED · DEC 2026 – MAR 2027

Above-normal rain and flood risk on the Peru/Ecuador coast (LIM exposed); below-normal rain and wildfire smoke in the north; more convection in the southeast.



North America Winter

ELEVATED · NOV 2026 – FEB 2027

Atmospheric rivers drive ground stops at LAX · SFO; El Niño winters average ~23 river-flood events/yr vs ~5 in neutral years; more winter fog on the central Mexico plateau.

Sources: NOAA/CPC seasonal outlooks & ENSO Update (Aug 2026) · NHC · regional CST inputs

SEASON TIMELINE

Risk Timeline — August 2026 to March 2027

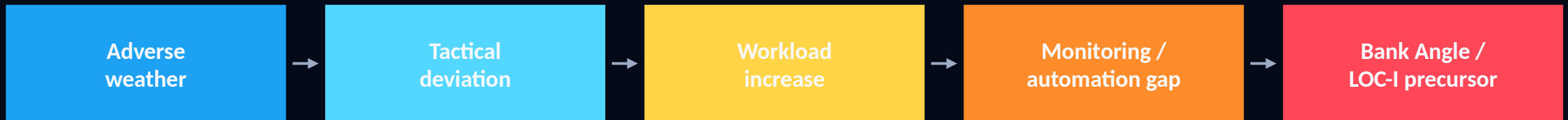


Operational peak spans the whole boreal winter — incl. +20–35% more moderate–severe CAT on NOPAC / PACOTS (FL330–410)

The safety question

El Niño is not the hazard by itself.

The hazard is the operational chain it can amplify:



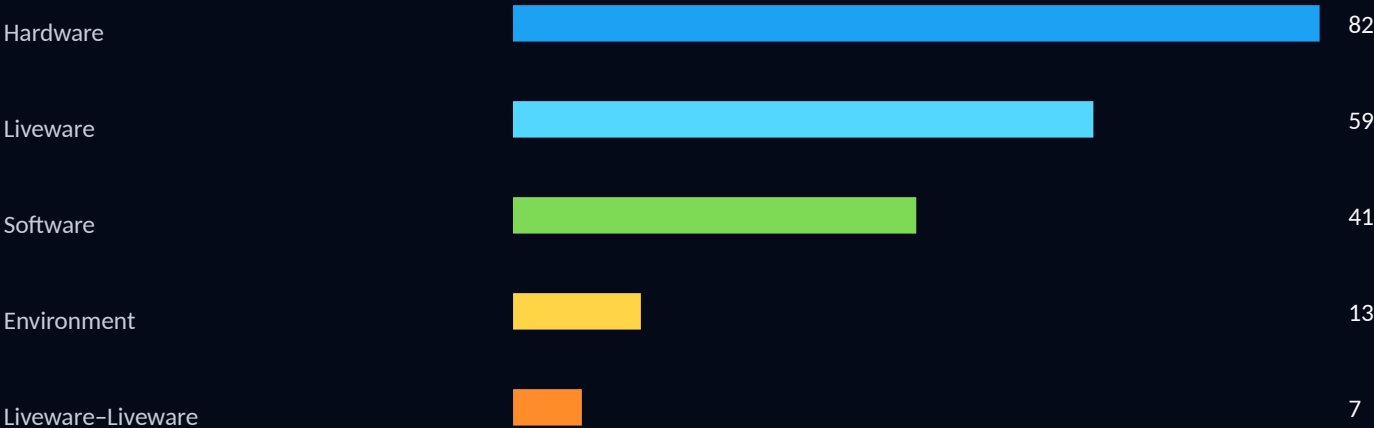
Purpose

Use a seasonal trigger to open operator-to-operator communication before isolated signals become a regional pattern.

Source: Operational framing developed from Aeroméxico FDM signal and RASG-PA seasonal outlook draft.

LOC-I literature suggests a practical gap

A recent scoping review of 116 LOC-I studies found heavy emphasis on technology and modeling, with fewer studies on environmental influences and crew-to-crew dynamics.



Why it matters here

The regional opportunity is not only more technology. It is better translation of environmental threats into crew monitoring, training, and shared operator learning.

Source: Roggow, B.J. (2025), A Scoping Review of Aviation Loss of Control Inflight Research, JAAER.

Mexico FDM signal: LOC-I precursors

472

YTD events in LOC-I risk dashboard

+16.3%

YoY change

1.4

YTD accumulated index

B787 • B737 • E190

signal visible across Grupo Aeroméxico fleets

Dominant event type



leading precursor category

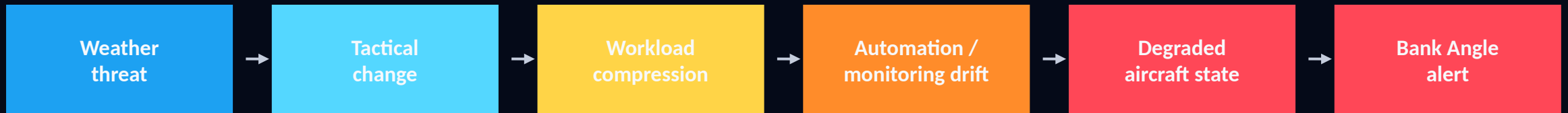
Bank Angle events are not LOC-I by definition. They are treated here as early warning signals of degraded lateral path management, high workload, monitoring gaps, or tactical weather decisions.

Data use: aggregated and sanitized for safety discussion; no causal inference is implied.

Source: Grupo Aeroméxico FDMP LOC-I Risk Dashboard, snapshot shared for this PA-RAST discussion.

Bank Angle as a signal, not a label

The alert may be the first visible symptom of a chain that started earlier: weather avoidance, vectors, runway change, visual maneuvering, turbulence, or late recovery from automation behavior.



Safety objective

Move detection upstream — from reactive recovery to proactive threat recognition and crew intervention.

What operators can do now

Seasonal FDM SPIs	Track Bank Angle, windshear alerts, unstable approaches and go-arounds against seasonal baseline.	Threat-based briefings	Convert the outlook into station- and route-specific TEM briefings for dispatch and crews.
LOFT / UPRT scenarios	Build scenarios that combine weather, automation surprises, workload and delayed monitoring.	Fuel & alternates	Revalidate alternates and contingency fuel for Pacific coast and winter disruption windows.
FRMS after disruption	Treat mass-diversion and ground-stop recovery as a second hazard, not an administrative issue.	Feed the regional picture	Share sanitized SPI trends so the region sees the pattern, not only each operator's slice.

Source: Operator-level mitigations adapted from PA-RAST/71 draft and LOC-I / adverse-weather pathway.

MITIGATION · NEXT 90 DAYS

The Critical Window Is Open Now



Operators · Fuel & alternates

Review alternate lists and contingency fuel for coastal Pacific and AR-exposed stations before each phase.



Operators · RI-aware triggers

Pre-armed 72-h activation protocols keyed to invests and shear/SST indicators — don't wait for the advisory.



Operators · Briefings & SPIs

Flight Safety Bulletins, an OCC watch cycle tied to the monthly ENSO update, and seasonal FDM SPIs by station.



PA-RAST · Standing watch item

Keep El Niño 2026–27 as a standing Adverse Weather item: progress review at PA-RAST/72 (Lima, November), closing in spring 2027.



PA-RAST · Regional data call

Invite operators and States to share seasonal weather SPIs and TC/AR event data through the CSTs and IATA FDX.



PA-RAST · Contingency alignment

Coordinate State/ANSP mass-diversion and ground-stop contingency plans ahead of the November–February peak.

KEY MESSAGE

The critical window is open now.

El Niño peaks in October–December, but its operational impact spans the whole boreal winter. The mitigations that protect the region in January are the ones its operators and States put in place in the next 90 days.

Obrigado · Thank you · Gracias

Isaac Luviano · Enrique Guardarrama — Aeroméxico Corporate Safety

Questions and data-sharing coordination: via the PA-RAST Secretariat