



RASG-PA SAFETY ADVISORY

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Regional Aviation Safety Group – Pan America (RASG-PA)

El Niño 2026–2027: Adverse Weather Preparedness and Operational Risk Management

Document Abstract and Target Audience	This Advisory supports RASG-PA Safety Issue Alert RSIA-04 on El Niño 2026–2027. It provides the analysis, seasonal timing, monitoring indicators and organization-specific guidance behind the Alert’s recommendations. Target audience: air carrier operators (safety, flight operations, training and operational control), ANSPs and meteorological watch offices, aerodrome operators, and States’ Civil Aviation Authorities.
Occurrence Category	Loss of control in-flight (LOC-I); runway excursion (RE); turbulence encounter (TURB); controlled flight into terrain (CFIT); large-scale operational disruption (mass diversion).
Issue Summary	The U.S. National Oceanic and Atmospheric Administration’s Climate Prediction Center (NOAA/CPC) forecasts a very strong, possibly historic, El Niño peaking in October–December 2026. El Niño is not an aviation hazard in itself, but it changes the likelihood and distribution of adverse weather across the region and amplifies tactical changes, workload and network disruption that erode safety margins.
Key Recommendations	Convert the seasonal outlook into threat and error management (TEM) briefings; monitor leading indicators against seasonal baselines; select alternates by weather system and network capacity; share plans, reports and constraints across the information chain; verify whole-airport operability and exercise multi-airport disruption.

1. Purpose

This Safety Advisory supports the **RASG-PA Safety Issue Alert RSIA-04** *El Niño 2026–2027: Increased Operational Risk from Adverse Weather*. The Alert is deliberately short: it brings the issue to the attention of operators, air navigation service providers (ANSPs), aerodrome operators and States, and lists the recommendations RASG-PA considers most urgent before the October–December 2026 peak. This Advisory provides the supporting analysis and the more detailed, organization-specific guidance that does not belong in an alert: the operational pathway from seasonal weather to observable precursors, regional exposures and their timing, suggested leading indicators for seasonal monitoring, barrier ownership across the information chain, a 90-day preparedness plan and a set of self-assessment questions.

The Advisory is intended for air carrier operators (safety, flight operations, training and operational control), ANSPs and meteorological watch offices (MWOs), aerodrome operators, and States’ Civil

Aviation Authorities. It is a planning document. Seasonal outlooks describe changes in probability over broad areas and periods; they do not replace authoritative real-time meteorological products, company procedures or operational risk assessment for tactical decisions. RASG-PA intends to update this Advisory as the season evolves.

2. Background

El Niño is a periodic warming of the central and eastern equatorial Pacific that alters atmospheric circulation over the Americas. It is not an aviation hazard in itself. Its safety relevance lies in its potential to change the probability and geographic distribution of adverse weather over an entire season, and in doing so to amplify operational chains that the region already manages every day.

The issue was first raised at the 71st meeting of the Pan American Regional Aviation Safety Team (PA-RAST/71; São Paulo, 17 August 2026), where Grupo Aeroméxico presented a seasonal risk outlook and an operator-level leading-indicator approach for loss of control in-flight (LOC-I). On 16 September 2026, the Latin American and Caribbean Air Transport Association (ALTA) hosted a regional multi-stakeholder session with 171 participants from airlines, aerodromes, ANSPs and civil aviation authorities, at which Aeroméxico, Airports Council International Latin America-Caribbean (ACI-LAC) and the Civil Air Navigation Services Organisation (CANSO) presented regional risks, available resources and proposed actions. The outcomes of both meetings are the basis for the Alert and for this Advisory.

2.1 Climate outlook

On 10 September 2026, the U.S. National Oceanic and Atmospheric Administration’s (NOAA) Climate Prediction Center (CPC) reported that El Niño is strengthening, with a greater than 90% chance of a very strong event during the Northern Hemisphere fall and winter 2026–27. For October–December 2026, CPC assigns a 75% chance of a historic event, defined as a three-month Relative Oceanic Niño Index (RONI) of +2.5°C or more, which would exceed the strength of every El Niño recorded since 1950. In August, the Niño-3.4 and Niño-1+2 indices reached +1.8°C and +3.4°C respectively. Impacts consistent with El Niño become more likely at this magnitude, but they are not guaranteed.

Figures presented at PA-RAST/71 and at the 16 September session, drawn from earlier NOAA and Copernicus products, differ from the CPC figures above because they were issued at different dates. This Advisory uses the CPC discussion as its single primary source for forecast probabilities.

2.2 Regional exposures and timing

Table 1 summarizes the regional exposures identified by industry at PA-RAST/71 and on 16 September, with the operational focus each implies. The periods are those presented by industry; they indicate when exposure is expected to be highest, not when it begins or ends. The Ecuador and Peru period reflects the coastal rainy season: analyses of the 1982–83, 1997–98 and 2015–16 events place the rainfall impacts on that coast mainly between February and April, with anomalies beginning in December or January. The southeastern South America row draws on the PA-RAST/71 presentation and on documented El Niño impacts in the region.

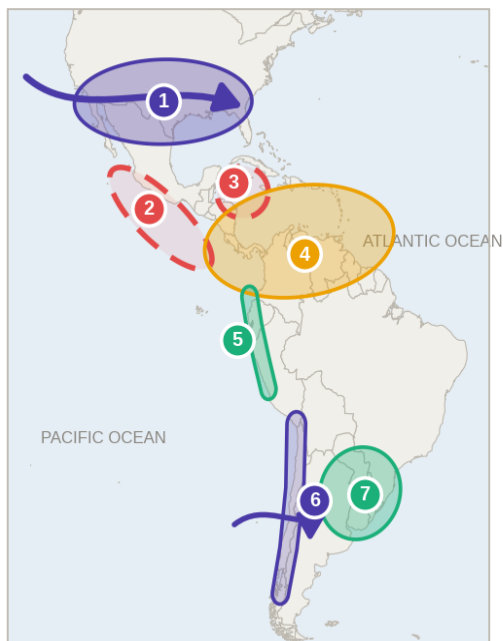
Area and period	Planning exposure	Operational focus
Mexico and Central America Pacific coast (Jul–Oct)	Eastern Pacific tropical cyclones; rapid intensification near the coast that cuts warning time (e.g. Hurricane Otis, Acapulco, October 2023)	Compressed decision time; aircraft protection or repositioning; airport-closure triggers; diversions, fuel and alternates

Area and period	Planning exposure	Operational focus
Caribbean and Atlantic (Oct–Nov)	Quieter Atlantic season expected; readiness still needed for late-season western Caribbean systems	Contingency readiness; alternate planning
Central America, Caribbean and northern South America (season-long)	Hotter, drier conditions; wildfire smoke and reduced visibility	Performance margins; smoke information; visibility and alternate planning
Ecuador and Peru coast (Dec–Apr)	Heavy rainfall and flooding, with possible simultaneous impacts on several airports; wet or contaminated runways	Drainage; airport access; backup power; runway condition reporting; diversion capacity and recovery
Chile and the Andes (Nov–Mar)	Strong Pacific winds; mountain wave and clear-air turbulence, including over the Altiplano	AIREP/PIREP and EDR sharing; level-change and deviation planning; lee-side turbulence at high-elevation aerodromes
Southeastern South America (Dec–Mar)	Wetter and more convective conditions in Argentina, Uruguay, Paraguay and southern Brazil; flooding and wet runways	Convective weather avoidance; runway condition reporting; alternate planning
Southern United States and northern Mexico (Nov–Feb)	Winter storms and atmospheric rivers; fog on the central Mexico plateau	Ground stops; alternate availability; network recovery; crew-displacement management
High-elevation airports (season-long)	Persistent heat and high density altitude	Takeoff performance, climb gradients and payload; approved performance procedures

Table 1: Regional exposures identified by industry (Aeroméxico, PA-RAST/71 and 16 September 2026)

Figure 1 shows the same exposures on a map. It is a planning aid only: shading marks broad areas of elevated seasonal exposure as identified by industry, not deterministic impacts or a severity ranking. High-elevation airports (season-long exposure) are not shown.

El Niño 2026–2027: regional exposures for aviation planning



Regional exposures and periods (Table 1)

- 1 Southern United States and northern Mexico**
Nov–Feb
Winter storms and atmospheric rivers; fog on the central Mexico plateau
- 2 Mexico and Central America Pacific coast**
Jul–Oct
Eastern Pacific tropical cyclones; rapid intensification near the coast
- 3 Western Caribbean**
Oct–Nov
Quieter Atlantic season expected; readiness for late-season systems
- 4 Central America, Caribbean and northern South America**
Season-long
Hotter, drier conditions; wildfire smoke and reduced visibility
- 5 Ecuador and Peru coast**
Dec–Apr
Heavy rainfall and flooding; wet or contaminated runways
- 6 Chile and the Andes**
Nov–Mar
Strong Pacific winds; mountain wave and clear-air turbulence
- 7 Southeastern South America**
Dec–Mar
Wetter, more convective; flooding and wet runways

Shading: ■ Higher rainfall / flooding ■ Drier, hotter, smoke ■ Turbulence / winter storms - - - Tropical-cyclone readiness

Figure 1: El Niño 2026–2027 regional exposures for aviation planning (regions and periods as in Table 1)

2.3 Seasonal phases

The seasonal signal evolves over several months. Table 2 summarizes the phases on which preparedness should be planned.

Phase	What to expect	Operational focus
Sep–Dec 2026: strengthening and preparedness	Oceanic strengthening; Eastern Pacific tropical-cyclone exposure; increasing pressure on several parts of the regional system at once	Establish baselines, verify readiness, conduct exercises
Jan–Mar 2027: lagged atmospheric and operational effects	Rainfall and flooding on the Ecuador and Peru coast; mountain wave and turbulence; concurrent airport and FIR constraints	Increase monitoring and event-driven coordination
Apr–Sep 2027: residual and recovery effects	Hydrological, infrastructure and recovery impacts may continue where supported by local forecasts and observations	Maintain monitoring; close corrective actions

Table 2: Seasonal risk phases and operational focus

3. Hazard Statement

Adverse weather amplified by El Niño increases the frequency of tactical changes in flight: last-minute runway changes, radar vectors, go-arounds, holding, windshear encounters, level changes and reroutes. Each adds workload for flight crews and air traffic controllers. When several occur at the same time in the same area, safety margins shrink, monitoring and automation management degrade, and the aircraft state can deteriorate before the crew recognizes it. The observable precursor, such as a bank-angle alert, an unstable approach or a turbulence injury, is often the end of a chain that began earlier.

Figure 2: Representative operational pathway

Adverse weather	Tactical change	Workload compression	Monitoring / automation gap	Degraded aircraft state	Observable precursor
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The objective is to identify and manage threats upstream, before the observable precursor.

Depending on the local threat and the operation, consequences may include LOC-I precursors, unstable approaches and go-arounds, runway excursions on wet or contaminated surfaces, CFIT exposure in terrain-constrained operations, hail and lightning encounters, turbulence injuries and mass-diversion events. The specific hazards identified for this season are described below.

Rapid tropical-cyclone intensification. Short warning windows compress decisions on aircraft repositioning, airport closure, crew recovery, fuel, alternates and diversion capacity. Hurricane Otis (Acapulco, 25 October 2023) intensified rapidly just before landfall and is a reminder of how little preparation time a near-coast storm can leave. Operators and aerodromes should use current NOAA National Hurricane Center (NHC) advisories and local meteorological information, with decision thresholds designed for compressed timelines.

Clear-air turbulence and mountain wave. Strong Pacific winds and altered jet-stream patterns can change turbulence exposure, particularly along Andes crossings and over the Altiplano. Use authoritative turbulence forecasts, air reports and pilot reports (AIREP/PIREP), eddy dissipation rate (EDR) data and operator data to identify route- and altitude-specific changes. ANSPs should anticipate deviation and level-change requests, relay reports across sector and FIR boundaries, and consider lee-side turbulence at high-elevation aerodromes.

Network predictability, mass diversion and recovery. When several flight information regions (FIRs) or airports are affected at once, early information on expected reroutes, capacity constraints, closures and airport status becomes a primary safety barrier. Mass-diversion and extended ground-stop recovery is a secondary hazard in its own right: fatigue, crew displacement, workload and schedule pressure must be managed through fatigue risk management systems (FRMS) and operational control.

Heavy rainfall, flooding and airport operability. A usable runway does not mean an operable airport. In addition to drainage and runway and taxiway condition, aerodromes must assess access roads, backup power, communications, fuel, parking, handling, staff access and the capability to receive diversions or humanitarian flights. The Global Reporting Format (GRF) should be applied consistently, with timely runway condition report (RCR) and runway condition code (RWYCC) dissemination during active precipitation.

Smoke, convection and reduced visibility. Where dry conditions and wildfire activity develop, smoke can affect visibility, airport operations and route planning. Where convection is elevated, hail, lightning, windshear and tactical weather avoidance further increase workload. Meteorological (MET), ANSP, aerodrome and operator stakeholders should agree in advance how wildfire-smoke information will be assessed, communicated and incorporated into operational decisions.

High density altitude. Persistent heat at high-elevation airports may affect takeoff performance, climb gradients, payload and operational margins. Apply approved performance procedures and current airport and weather data.

4. Safety Analysis Summary

4.1 Leading-indicator approach

Aggregated and sanitized operator flight data monitoring (FDM) data presented at PA-RAST/71 identified bank-angle alerts as the leading LOC-I precursor category in one operator's monitoring framework, and illustrated how such events can be used as leading indicators within a LOC-I risk-monitoring approach. The value of the example is methodological: it uses existing safety data to identify changes in exposure before a serious event occurs.

Interpretation. Bank-angle events are not LOC-I events by definition, and no causal relationship between an FDM trend and El Niño should be inferred without supporting analysis. A bank-angle alert may, however, be the first visible symptom of a chain that began earlier with weather avoidance, vectors, runway changes, visual maneuvering, turbulence or late recovery from unexpected automation behavior. Interpreted together with operational context, such events can signal degraded lateral-path management, high workload, monitoring gaps or tactical weather decisions.

A 2025 scoping review of 116 LOC-I studies found a heavy emphasis on technology and modelling and comparatively few studies on environmental influences and crew-to-crew dynamics. The practical opportunity for operators is therefore not more technology but better translation of environmental threats into crew monitoring, training and shared operator learning.

4.2 Practical application for operators

- Review whether seasonal weather exposure is reflected in safety dashboards and operational briefings.
- Use FDM trends as a prompt for targeted review, not as a stand-alone causal conclusion.
- Connect FDM findings with crew, dispatch and operational-control reports to understand context.

- Use emerging trends to adjust TEM briefings, training scenarios and operational guidance before peak exposure.

In short: use forecasts to anticipate exposure, TEM to prepare crews, FDM and safety performance indicators (SPIs) to detect patterns, training and procedures to strengthen barriers, and regional sharing to identify common signals.

4.3 Suggested seasonal monitoring

Table 3 lists indicators organizations may select, depending on their operation, to monitor seasonal exposure against historical and seasonal baselines. Indicators should be reviewed more frequently whenever operational exposure materially changes.

Safety / operational area	Suggested indicators	Purpose
Flight path and approach	Bank-angle events; unstable approaches; go-arounds or missed approaches by runway or TMA; long landings	Identify workload, flight-path and runway-specific changes
Convective weather and windshear	Windshear and GPWS alerts; weather deviations; runway changes	Quantify exposure and tactical response
Turbulence and mountain wave	Turbulence exceedances or injuries; AIREP/PIREP/EDR; level-change requests	Track route and altitude exposure; warn subsequent flights
Runway condition	RCR/RWYCC downgrades; maximum braking; braking-action reports	Assess wet or contaminated runway exposure
Altimetry	Altimeter-setting errors and related deviations	Detect QNH errors during rapid pressure changes and frequent runway or approach changes
Network and ATFM	Holding minutes; diversions; ATFM activations; airport-capacity constraints; fuel-related indicators	Detect system compression and emerging disruption
Resilience and recovery	Access, power, communications, handling or fuel limitations; fatigue reports; crew displacement	Identify secondary safety and recovery risks

Table 3: Suggested seasonal monitoring indicators

4.4 Barrier ownership across the information chain

The 16 September session emphasized that no single organization holds the full picture: effective risk management depends on the reliable flow of existing information to the right decision-maker at the right time. Each link in the chain should have a designated owner, agreed escalation triggers and a risk-based coordination cadence that can increase as forecasts, network constraints or operational impacts warrant.

- **MET / MWO:** timely and geographically precise significant meteorological information (SIGMET) and seasonal hazard information.
- **ANSP / air traffic services (ATS):** expected network impacts, reroutes and air traffic flow management (ATFM) measures shared early; AIREP/PIREP relayed across sectors and FIR boundaries.
- **Aerodrome operators:** runway condition and whole-airport capacity, including access, power, fuel, parking and handling.
- **Airlines, operational control centres (OCCs) and flight crews:** operational plans, AIREP/PIREP/EDR and de-identified safety signals.

- **States and RASG-PA/PA-RAST:** consolidation of the regional picture, connection of stakeholders to available tools, and sustained follow-up.

One gap identified on 16 September illustrates the point: some airlines receive automated EDR turbulence data on their electronic flight bags, but ANSPs and other operators generally do not. Until that data is shared more widely, pilot reports relayed through air traffic control (ATC) remain the fallback for the rest of the network.

5. Recommendations

The Alert lists the most urgent actions for each stakeholder. The recommendations below expand on them and add guidance for training, operational control, meteorological services and regional coordination. They should be applied in proportion to each organization's exposure, and adapted as the season evolves.

5.1 Air carrier operators

- Establish seasonal FDM/SPI monitoring against appropriate historical and seasonal baselines, selecting indicators from Table 3 according to the operation. Review them at least monthly during the event, and more frequently whenever exposure materially changes. Escalate meaningful changes through the safety management system (SMS) and adjust TEM briefings and training accordingly.
- Convert the seasonal outlook into station- and route-specific threat and error management (TEM) briefings for flight crews, dispatchers and operational control personnel, refreshing the seasonal context with each monthly CPC update and the tactical content whenever operational conditions change.
- Where applicable, incorporate line-oriented flight training and upset prevention and recovery training (LOFT/UPRT) scenarios combining adverse weather, automation surprises, workload compression and delayed or degraded monitoring.
- Revalidate alternate-airport assumptions and contingency fuel for the disruption windows in Table 1, including scenarios in which several airports are affected at once. Select alternates by weather system and network capacity, not proximity alone, and confirm they have sufficient runway, parking, handling, fuel, staffing and ground-access capability. Consider flexible fuel policies during peak events.
- At exposed stations, review hurricane and winter-storm plans, fleet-repositioning or evacuation criteria, aircraft-protection measures and decision thresholds suitable for compressed warning windows.
- Share operational plans with ANSPs as early as possible so they can plan capacity and contingencies.
- Adopt a five-minute rule for hazard reports: when a crew reports a hazard such as severe turbulence or ice crystals, the operational control center relays it within five minutes to all company aircraft on that route, so following flights can adjust before they reach the area.
- Treat mass-diversion and extended ground-stop recovery as a secondary safety hazard. Address fatigue, crew displacement, workload and schedule pressure within FRMS and operational-control processes.
- Share sanitized seasonal SPI trends and operational lessons through regional mechanisms, including Collaborative Safety Teams (CSTs) and the International Air Transport Association (IATA) Flight Data eXchange (FDX), where organizational, regulatory and data-protection frameworks permit.

5.2 Flight crews and dispatch / operational control

- Use seasonal information as a strategic threat-awareness input, and rely on current authoritative meteorological and operational information for tactical decisions.

- Anticipate the workload associated with weather avoidance, vectors, runway changes, diversions, turbulence and unexpected automation behavior, and brief it before departure.
- Reinforce flight-path monitoring, stabilized-approach criteria, timely go-around decisions and clear crew coordination when weather reduces operational margins. Review go-around procedures ahead of the peak.
- Secure the cabin early when turbulence is forecast or reported.
- Provide timely AIREP/PIREP reports for turbulence, mountain wave, windshear and braking action, even when EDR data reach company electronic flight bags (EFBs) automatically, and support the use of EDR where available.

5.3 ANSPs and meteorological watch offices

- Agree a seasonal briefing and escalation cadence between MWOs, ANSPs and operators, with triggers that increase the cadence as exposure rises.
- Ensure timely and geographically precise SIGMET and hazard information, including for mountain wave, convection and reduced visibility from smoke.
- Actively solicit and relay AIREP/PIREP for turbulence, windshear and braking action across sector and FIR boundaries, and give flight crews the latest meteorological information.
- Make AIREP/PIREP information available promptly on platforms that dispatchers and operational control centers can access directly, such as a web portal or shared repository, so that hazards known to ATC reach flight planning before departure. A report passed to a crew after takeoff may come too late to change the route.
- Share expected reroutes, capacity constraints, closures and ATFM measures early enough to support preflight decisions, and update them as conditions change.
- Review severe-weather traffic management, ground-stop and mass-diversion contingency arrangements before peak periods, test cross-FIR hazard and PIREP relay, and coordinate diversion capacity with aerodrome operators.
- Use established coordination lines, including the CANSO ATFM Data Exchange Network for the Americas (CADENA) calls, to exchange El Niño-related operational information.

5.4 Aerodrome operators

- Verify drainage readiness, runway and taxiway condition assessment, GRF implementation and timely RCR/RWYCC dissemination during active precipitation, and the visibility of markings and signs.
- Assess whole-airport operability: access roads, backup power, communications, fuel, parking, handling and staff access, and the capability to receive diversions or humanitarian flights.
- Share real-time operational capacity and constraints with operators and ANSPs before and during peak events.
- Exercise degraded-access, degraded-power and mass-diversion scenarios, including cases in which several airports in the same area are affected at once.
- Conduct an airport-specific climate risk assessment and update the aerodrome emergency plan accordingly. ACI World's Adverse Weather Operations Handbook (2024) and Policy Brief: Airports' Resilience and Adaptation to Changing Climate (2023) provide practical guidance; the International Civil Aviation Organization's (ICAO) Humanitarian Assistance and Disaster Response in Aviation

(HADRA) Guidance Material on Airport Preparedness for Effective Humanitarian Assistance and Disaster Response (2022) covers disaster response.

5.5 States and Civil Aviation Authorities

- Integrate the seasonal risk into the State Safety Programme (SSP) and oversight activities, and encourage seasonal adverse-weather risk assessments in service providers' SMS using leading indicators rather than accident and incident outcomes alone.
- Convene cross-sector preparedness reviews with operators, ANSPs and aerodromes, and conduct tabletop exercises on simultaneous impacts at several airports.
- Clarify roles and points of contact for major disruption, mass diversion and humanitarian operations, and enable protected operational-information sharing.
- Ensure that Local Runway Safety Teams include appropriate airline pilot and ANSP participation, under confidentiality arrangements where necessary.

5.6 90-day preparedness plan

Table 4 sequences the actions above over the 90 days from the date of the Alert, so that they are completed before operational margins are compressed. It preserves the distinction between seasonal planning and tactical weather decision-making.

Action area	Next 30 days	30–60 days	60–90 days
Airline safety / FDM	Confirm baselines, indicators and escalation thresholds	Review trends with operational context; share sanitized signals	Escalate meaningful changes through the SMS; adjust TEM and training
Flight operations / OCC	Issue route and station briefings; review alternates and fuel by weather system	Exercise multi-airport disruption and fleet and crew recovery	Apply event-driven monitoring and flexible fuel and alternate strategies
ANSP / MWO	Agree briefing cadence and escalation triggers; identify network indicators	Test cross-FIR hazard and PIREP relay; exercise ATFM contingencies	Increase coordination cadence as exposure rises; share expected impacts early
Aerodrome operator	Verify drainage, GRF/RCR/RWYCC, access, power, fuel, parking and handling	Exercise degraded-access, degraded-power and mass-diversion scenarios	Share real-time status; monitor runway and whole-airport operability
State / CAA	Integrate the risk into SSP and oversight; convene stakeholders	Clarify disaster, humanitarian-response and information-sharing roles	Review readiness gaps and ensure corrective actions
Regional coordination	Confirm contacts; begin the toolkit and a common indicator set	Conduct a cross-industry tabletop exercise; compare signals	Review the regional picture in late October and at PA-RAST/72; update actions

Table 4: 90-day multi-stakeholder preparedness actions

5.7 Questions organizations should be able to answer

- Which routes, airports, FIRs and phases of operation are most exposed, and which leading indicators will show that exposure is changing?
- How will airline plans, ANSP constraints, airport capacity and authoritative meteorological information reach decision-makers before departure?

- Have alternates been assessed by weather system and network capacity, including runway, parking, handling, fuel, staffing, access and power?
- Can exposed airports remain operational if the runway is usable but access roads, power, communications, fuel or handling are degraded?
- Have stakeholders exercised mass diversion, prolonged ATFM constraints, humanitarian-flight surges and operational recovery?
- What triggers will increase the coordination cadence, and what de-identified information can be shared regionally?

Anticipate the threat. Monitor the precursors. Strengthen the barriers. Share the signal.

6. References

RASG-PA Safety Issue Alert RSIA-04, El Niño 2026–2027: Increased Operational Risk from Adverse Weather, RASG-PA, 1 October 2026

NOAA Climate Prediction Center, ENSO Diagnostic Discussion, 10 September 2026. https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.shtml

NOAA National Hurricane Center, Tropical Cyclone Report: Hurricane Otis (EP182023). https://www.nhc.noaa.gov/data/tcr/EP182023_Otis.pdf

Grupo Aeroméxico, Adverse Weather – Seasonal Risk Outlook: El Niño 2026–27, presented at PA-RAST/71, São Paulo, 17 August 2026.

ALTA multi-stakeholder session on El Niño 2026–2027, 16 September 2026 (presentations by Grupo Aeroméxico, ACI-LAC and CANSO).

Copernicus Climate Change Service, seasonal forecast issued 1 September 2026

ALTA Safety & Flight Operations Committee meeting, 28 August 2026

ACI World (2024), Adverse Weather Operations Handbook. <https://store.aci.aero/product/aci-world-adverse-weather-operations-handbook-2024/>

ACI World (2023), Policy Brief: Airports’ Resilience and Adaptation to Changing Climate. <https://store.aci.aero/product/policy-brief-airports-resilience-and-adaptation-to-changing-climate/>

ICAO HADRA (2022), Guidance Material on Airport Preparedness for Effective Humanitarian Assistance and Disaster Response. <https://www.icao.int/sites/default/files/sp-files/HADRA/Documents/HADRA-Guidance-FINAL-May2022.pdf>

ICAO, Annex 14 and Doc 9981 (PANS-Aerodromes), Global Reporting Format for runway surface conditions.

RASG-PA Turbulence Toolkit. <https://www.icao.int/RASGPA/Pages/TurbulenceToolkit.aspx>

Thielen, D.R. et al. (2023), Effect of extreme El Niño events on the precipitation of Ecuador, *Natural Hazards and Earth System Sciences* 23, 1507–1527. <https://doi.org/10.5194/nhess-23-1507-2023>

NOAA/AOML, Evolution and historic perspective of the 1997–1998 El Niño. https://www.aoml.noaa.gov/phod/docs/enfield/bms_inpress.pdf

UNEP/GRID-Arendal (2005), Climate impacts of El Niño phenomenon in Latin America and the Caribbean (cartographer: Viktor Novikov). <https://www.grida.no/resources/6517>

NOAA, Understanding El Niño. <https://www.noaa.gov/understanding-el-nino>

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

7. Acronyms and abbreviations

Acronyms are expanded at first use in the text; this list is provided for readers who consult individual sections.

ACI	Airports Council International (ACI-LAC: Latin America-Caribbean region)
AIREP / PIREP	Air report / pilot report
ALTA	Latin American and Caribbean Air Transport Association
ANSP	Air navigation service provider
AOML	NOAA Atlantic Oceanographic and Meteorological Laboratory
ATC / ATS	Air traffic control / air traffic services
ATFM	Air traffic flow management
CAA	Civil Aviation Authority
CADENA	CANSO ATFM Data Exchange Network for the Americas
CANSO	Civil Air Navigation Services Organisation
CFIT	Controlled flight into terrain
CPC	Climate Prediction Center (NOAA)
CST	Collaborative Safety Team
EDR	Eddy dissipation rate (turbulence metric)
EFB	Electronic flight bag
ENSO	El Niño–Southern Oscillation
FDM / FOQA	Flight data monitoring / flight operational quality assurance
FDX	IATA Flight Data eXchange
FIR	Flight information region
FRMS	Fatigue risk management system
GPWS	Ground proximity warning system
GRF	Global Reporting Format (runway surface conditions)
HADRA	Humanitarian Assistance and Disaster Response in Aviation (ICAO)
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
LOC-I	Loss of control in-flight
LOFT / UPRT	Line-oriented flight training / upset prevention and recovery training
MET / MWO	Meteorological / meteorological watch office
NHC	National Hurricane Center (NOAA)
NOAA	U.S. National Oceanic and Atmospheric Administration
OCC	Operational control centre
PA-RAST	Pan American Regional Aviation Safety Team
PANS	Procedures for Air Navigation Services (ICAO)
QNH	Altimeter sub-scale setting to obtain elevation when on the ground
RASG-PA	Regional Aviation Safety Group – Pan America
RCR / RWYCC	Runway condition report / runway condition code
RONI	Relative Oceanic Niño Index
RSA / RSIA	RASG-PA Safety Advisory / RASG-PA Safety Issue Alert
SIGMET	Significant meteorological information
SMS	Safety management system
SPI	Safety performance indicator
SSP	State Safety Programme
TEM	Threat and error management
TMA	Terminal control area
UNEP	United Nations Environment Programme

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