

Aviation Preparations for Summer Adverse Weather



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Summer weather traditionally brings challenges (threats, in risk management terms) for European aviation, in terms of operational impact on aviation activities, on the workforce and on passengers. With a changing climate, such challenges are becoming more frequent as well as arising in areas and airports which have not previously been exposed to such weather for prolonged periods of time.

Summer 2022 already saw a series of such weather events, where record high temperatures confronted aviation with operational and infrastructure disruption. Based on these experiences, the below briefing sets out potential challenges which the aviation system – with a particular focus on airports - may face from adverse weather in Summer 2023 and response options which they could plan to take in order to reduce the impact.

Weather conditions	Impact
Weather conditions	Disturbance to flight and airfield operations, delays resulting from ground stops or holding arrival aircrafts. Cancelled or diverted flights. Can cause issues for Tower Visual Control Rooms as a result of reduced visibility of runway, taxiway and apron operations leading to reduced arrival and departure capacity. Risks of flash flooding, hail damage, microburst/strong and variable winds, lightning.
Heavy showers	Flooding, increased taxi times, risk of hydroplaning on take-off or landing; risk of runway excursions; delays due to active water removal from surfaces. risk of contaminated run-off water infiltrating local water courses when there is flooding. Can cause issues for Tower Visual Control Rooms as a result of reduced visibility of runway, taxiway and apron operations leading to reduced arrival and departure capacity. Strong/gusty/variable winds leading to delays and go-arounds.
Heat waves	Degrading of passenger experience, health risks to passengers and staff from high temperatures, damage to runways/taxiways/apron. Increased energy demand and consumption for air conditioning. Risk of fire. Impacts on airport ATM equipment such as radars, ILSs, VOR, DME. Impact of heat on flight operations, leading to delays/ground congestion.
Water scarcity	Impact on runway pavement. Shortage of drinking water; shortage of water for Rescue and Firefighting Service: reduced airport firefighting capabilities.
Strong winds	Dangerous working conditions, disruption to flight and airfield operations, impact airport ATM equipment, aircraft and GSE. Foreign Object Debris (FOD).
Low visibility	Disruption to flight operations. Can cause issues for Tower Visual Control Rooms as a result of reduced visibility of runway, taxiway and apron operations leading to reduced arrival and departure capacity
Any of the above in adjacent areas	Increased complexity of air traffic often leading to diversions. Greater numbers of aircraft on the ground due to weather preventing departure.

Possible Actions

Weather conditions	Possible actions
Thunderstorms and heavy rain	Runway checks and issuance of Runway Condition Report(s). Warning to all airport stakeholders and training to pay attention to triggers even before receiving Met reports. Monitoring of areas that may get flooded, creation of alternative paths where flooding has hindered vehicle movement. Mandatory speed reductions and alternative routes for airside vehicles. Infrastructure improvements to increase removal flow of rainwater. More use of (or installation of) Surface Movement Radar. Flashing lights on apron lampposts to warn of imminent ground stop. In all cases, planning ahead as far as possible for timely application of any capacity reductions to ensure stability and effectiveness – use of European Cross Border Forecast and collaboration between Met providers is beneficial.
Heat wave	Cooling in the terminal – ensure sufficient capability Cooling in offices and air traffic control units Cooling and shade for ground workers; notifications to use protective equipment (hats, clothing) and more frequent breaks at cooling areas. Water management practices and prioritization – firefighting, drinking, cooling, etc. - to ensure sufficient water supply. Notification to cease external activities (e.g. construction) during hottest part of the day (e.g. 12.00-15.00). Readiness of auxiliary power sources, back-up air conditioning units in hot weather for operationally critical functions. ATM equipment rooms to have more resilience to high temperatures through specification of higher power air conditioning systems Increasing the number of runway checks for FOD due to the impact on the pavement. Modification of departure procedures/runway changes to address reduced aircraft performance on departure.

Possible Actions

Weather conditions	Possible actions
Strong winds	Warning to all airport stakeholders and training to pay attention to triggers even before receiving MET reports. Request to secure lighter planes, and all ground handling equipment. Laying ballast in Unit Load Devices; Request for monitoring operation of loaders, jet bridges and canopied stairs (according to its physical limit to the wind). Flashing lights on apron lampposts to warn of imminent ground stop.
Low visibility	Notice issued by the Airport Operations Service, with the implementation of specific operating procedures for this type of operation More use of (or installation of) Surface Movement Radar
Any of the above	Coordination with the airport function to mitigate the impact on the network and airport stakeholders. In all cases, planning ahead as far as possible for early application of any capacity reductions to ensure stability and effectiveness.

At an overall level, the importance of risk identification and risk assessment to properly inform contingency planning is key, involving all relevant partners across the airport as well as beyond (e.g. wider transport infrastructure, tourism sector...) and acting proactively rather than reactively can reduce impacts. This should be carried out sufficiently in advance and based on regular and clear lines of communication – and is a live piece of work, so should be regularly revisited - with each identified risk, having a named owner as best practice.

This document will be further updated to reflect operational impacts of winter-related weather in due course.



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