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Guidelines for Airport Ramp Closures Due to Lightning

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Abstract

Thunderstorms and lightning pose a serious safety risk to outdoor airport and airline workers or passengers boarding or deplaning a plane via the tarmac. To mitigate the risk of people getting injured by lightning, major US airport and airline stakeholders employ safety procedures that include observation and warning of the onset and duration of lightning hazards. While these procedures are not standardized and vary widely between different stakeholders, they typically make use of lightning information (or proxies thereof) to close the ramp and get workers inside if there is lightning within a critical safety radius of their location. This is reactive to the first lightning strike that has already occurred within the critical radius. The ramp is re-opened based on a waiting period after the last lightning strike within that critical radius. But these work stops incur operational consequences, for example, in terms of baggage handling, fuel and food supply, or push back from the gate, thus delaying traffic in and around the airport and impacting efficiency of operations. At large US airports, the majority of stakeholders base these decisions on guidance from a decision support tool that utilizes lightning information provided by a commercial vendor. For smaller local and regional airports, visual sky observation is the basic mode of operation to ensure personnel safety, and many airports do not have any formal lightning warning procedures in place at all.

Over the last 6 years, the Federal Aviation Administration has conducted research into the impacts of lightning-caused delays on the National Airspace System. Based on those findings and requests by airport managers and airline safety representatives, the FAA's Weather Research Branch developed a set of guidelines and recommendations for ramp closures due to lightning that could be tailored by stakeholders to meet operational needs and safety risk tolerances. Case studies were collected and analyzed from various airports, modeling and simulations were run based upon real data using a weather and air traffic simulator, and best practices were determined based on the findings. An adhoc committee of airline safety personnel, airport managers, meteorologists and lightning subject matter experts reviewed, modified and mutually agreed on the final suggestions.

This presentation will provide an overview of the problem, the research conducted on this issue, and the procedures and recommendations developed for this challenge.

Topic Areas

Aviation and Other Unique Uses of Lightning Data

Submission Format

Oral

