

Climate Adaptation Synthesis Factsheets

Aviation and Storms

Storms are projected to become stronger as the climate changes but there is less certainty as to the changes in frequency of future storms. There will also be regional differences: storms in some areas may become more powerful and more frequent, while in others they may only become more powerful. Potential impacts on aviation from increased intensity of storms vary widely across different geographic regions. Storm surges are also projected to have greater impacts due to sea level rise and an increased frequency and severity of storms.

Potential Impacts

- Storms may damage or destroy infrastructure and inundate drainage systems.
- Storms and extreme winds can impact airport and air traffic operations, e.g. delays and cancellations, affect en-route and airport capacity and even lead to runway closure.
- The local effects of storms can also cause network-wide effects as loss of capacity at one airport can impact the airspace system as a whole.
- Access to ground transportation to and from airport facilities may be impacted.
- Operational costs associated with delays or cancellations due to storms may increase across the aviation sector.
- Impacts on aircraft from storms may increase maintenance requirements and costs.
- Storm surges can damage or cause inundation of infrastructure and ground transport access (see sea-level rise fact sheet).
- As global temperatures increase, lightning strikes are projected to increase impacting airport operations, causing safety risks for personnel and aircraft and other aviation infrastructure to require more frequent maintenance checks and repair.

Adaptation and Resilience Measures

- A move towards proactive rather than reactive responses can help reduce the impact of storms, by anticipating risks and developing contingency action plans.
- Reinforce or design facilities for higher intensity hurricanes, typhoons, and other extreme events.
- Better understanding and forecasting of weather events is needed to prepare for storms before they happen.
- Prepare for storms by securing loose items, ensuring lights and navigational aids are working, stock-piling fuel for back-up generators, and clearing debris.
- When storms are forecast to be severe, some airlines may preemptively cancel flights and airports relocate equipment to ensure the safety of their operations, and to reduce business impacts.
- Vulnerable people or infrastructure will either need to be protected or moved to mitigate the effects when a storm surge is forecast.
- Additional adaptation and resilience measures to accommodate lightning strikes to aircraft and other aviation infrastructure.
- Improved lightning detection systems around airports and lightning protection shelters on the air side of an airport.

