Airline Wet Drill

Weather and Environmental Factors

Welcome all to the class

Topics

- Impact of weather conditions on ditching decisions.
- Assessing environmental factors (e.g., water temperature, sea state).
- Weather forecasting tools and techniques.

Welcome all to the class

Aircraft with Slide/Raft/Hatches

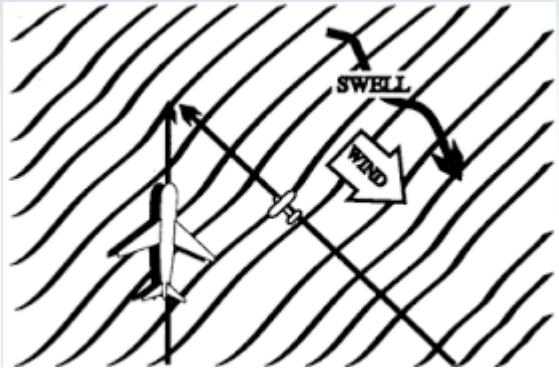
- *Source: Aviation International News, https://www.wsj.com/articles/SB123301773654017857*

Impact of Weather Conditions on Ditching Decisions

Wind Speed and Direction:

- **Landing Orientation:** Pilots prefer to land into the wind to reduce ground speed and impact forces. High winds can complicate this, requiring more precise maneuvering.

- **Control:** Strong crosswinds or gusts can make controlling the aircraft during ditching more challenging, potentially leading to uneven impact and increased structural damage.

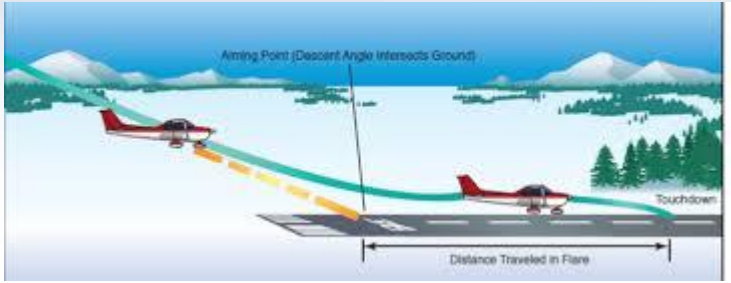


Sources: https://www.casa.gov.au/download/ditching-ac, https://community.infiniteflight.com/t/the-most-dangerous-crosswind-landing/72626

Impact of Weather Conditions on Ditching Decisions

Visibility:

- **Approach:** Poor visibility due to fog, rain, or nighttime conditions can hinder a pilot's ability to judge distance and altitude accurately, making a safe ditching more difficult.



- **Search and Rescue:** Limited visibility can delay rescue operations, as locating the aircraft and survivors becomes more challenging.

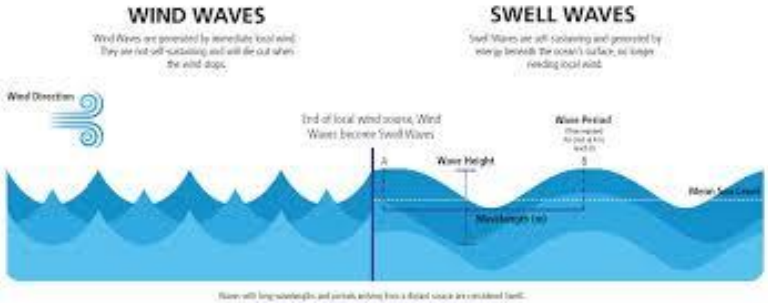
Sources: https://www.studyflight.com/approach-and-landing/, https://indianexpress.com/article/india/india-news-india/after-two-episodes-in-indian-waters-coast-guard-puts-in-place-elaborate-plan-to-rescue-any-aircraft-in-sea-3104687/

Impact of Weather Conditions on Ditching Decisions

Sea State:

- **Wave Height and Frequency:** High waves can increase the risk of structural damage upon impact. Pilots prefer calmer waters with lower wave heights to facilitate a smoother landing and easier evacuation.

- **Current and Swells:** Strong currents and swells can displace the aircraft quickly, complicating rescue efforts and the stability of life rafts



Sources: https://bluewatermiles.com/extras/waves/,

Impact of Weather Conditions on Ditching Decisions

Real-World Example:

- The ditching of Pan Am Flight 6 in the Pacific Ocean in 1956 demonstrated the critical role of weather. The relatively calm sea state and favorable weather conditions were significant factors in the successful evacuation and rescue of most passengers and crew.

Sources: https://www.smh.com.au/traveller/travel-news/pan-am-flight-6-1956-first-ocean-landing-where-all-passengers-survived-commemorated-20171109-gzhpxy.html

Assessing Environmental Factors

Water Temperature:

- **Survivability:** Cold water temperatures can drastically reduce survival time due to hypothermia. Pilots need to consider the likelihood of quick rescue when deciding to ditch in cold waters.

- **Preparation:** Passengers are advised to wear additional clothing or thermal protection if time permits.

Assessing Environmental Factors

Sea State:

- **Wave Height and Stability:** Assessing the current sea state involves understanding wave heights, which affect the landing impact and post-ditching stability. Pilots rely on visual assessments and reports from ships or maritime authorities.

- **Current and Drift:** Understanding ocean currents helps in planning for rescue operations, as strong currents can quickly move life rafts away from the ditching site.

Assessing Environmental Factors

Presence of Obstacles:

- **Marine Traffic and Debris:** Pilots must consider areas with heavy marine traffic, reefs, or other obstacles that could complicate a safe ditching and evacuation.

Assessing Environmental Factors

Real-World Example:

- During the ditching of Ethiopian Airlines Flight 961, the pilots faced the additional challenge of evaluating environmental factors under duress from hijackers. The presence of coral reefs and strong currents complicated the ditching process.

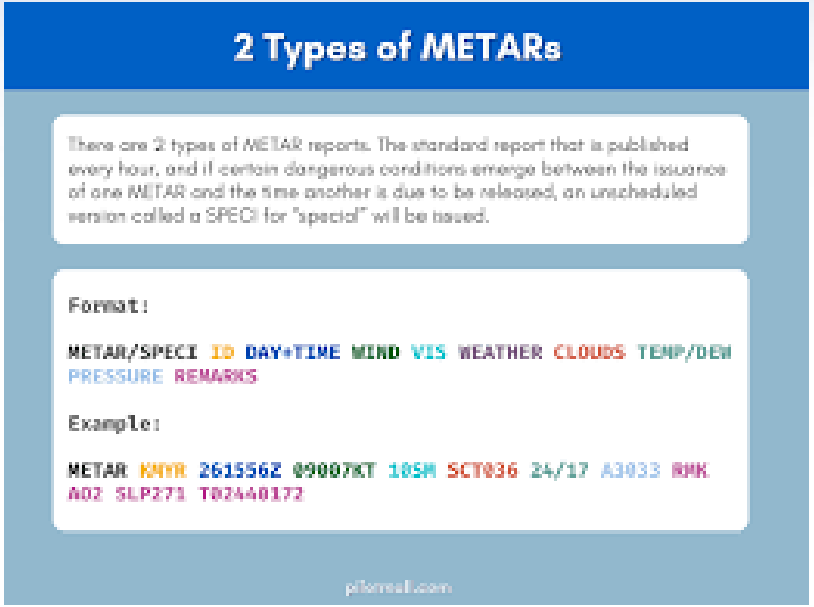
Sources: https://admiralcloudberg.medium.com/the-dead-mans-gambit-the-crash-of-ethiopian-airlines-flight-961-1a8a8daa566b


Break for 10 minutes

Weather Forecasting Tools and Techniques

Meteorological Reports (METARs):

- **Aviation Routine Weather Reports:** METARs provide real-time weather information, including wind speed and direction, visibility, and significant weather changes at airports and certain locations.



Sources: https://www.pilotmall.com/blogs/news/how-to-read-metar-aviation-reports-complete-guide

Weather Forecasting Tools and Techniques

Terminal Aerodrome Forecasts (TAFs):

- **Short-Term Forecasts:** TAFs offer detailed weather forecasts for specific airports, typically covering a 24-hour period. These forecasts include information on expected wind conditions, visibility, and significant weather changes that can affect flight operations.

Sources: https://www.pilotmall.com/blogs/news/how-to-read-a-taf-terminal-aerodrome-forecast

Weather Forecasting Tools and Techniques

Satellite and Radar Imagery:

- **Visual Data:** Pilots and meteorologists use satellite and radar imagery to monitor weather systems, cloud cover, and precipitation in real-time. This information helps in predicting weather changes and assessing current conditions.

Weather Forecasting Tools and Techniques

Weather Briefing Services:

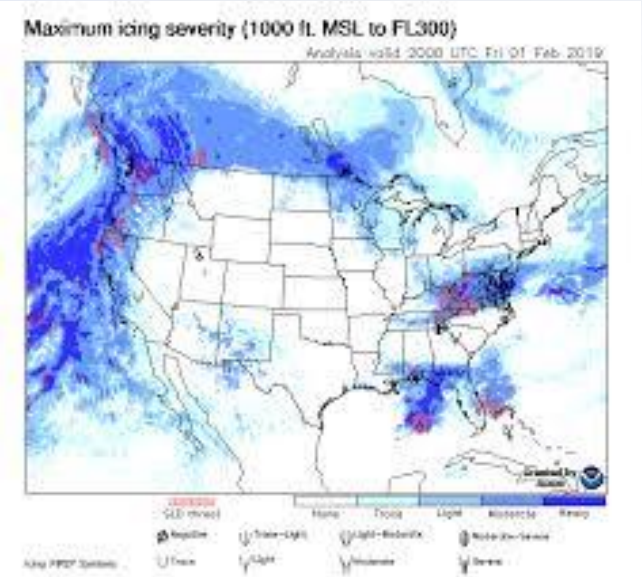
- **Flight Planning:** Airlines and pilots use weather briefing services that provide comprehensive weather updates, forecasts, and advisories for planned routes. These services help in planning for potential weather-related diversions or delays.

Sources: https://mediterr.aero/flight-planning/

Weather Forecasting Tools and Techniques

Weather Apps and Onboard Systems:

- **In-Flight Updates:** Modern aircraft are equipped with weather radar systems that provide real-time updates on weather conditions along the flight path. Pilots also use weather apps and onboard systems to receive continuous weather information.



Sources: https://www.aopa.org/training-and-safety/online-learning/safety-spotlights/weather-wise-precipitation-and-icing/preflight-strategies

Weather Forecasting Tools and Techniques

Example:

- The successful ditching of US Airways Flight 1549 involved the use of real-time weather data to make quick decisions. The crew had to evaluate the Hudson River’s conditions, including wind direction and water surface state, to execute a controlled ditching.


Q & A