



Australian Government  
Civil Aviation Safety Authority

[www.casa.gov.au](http://www.casa.gov.au)

# Weather to fly



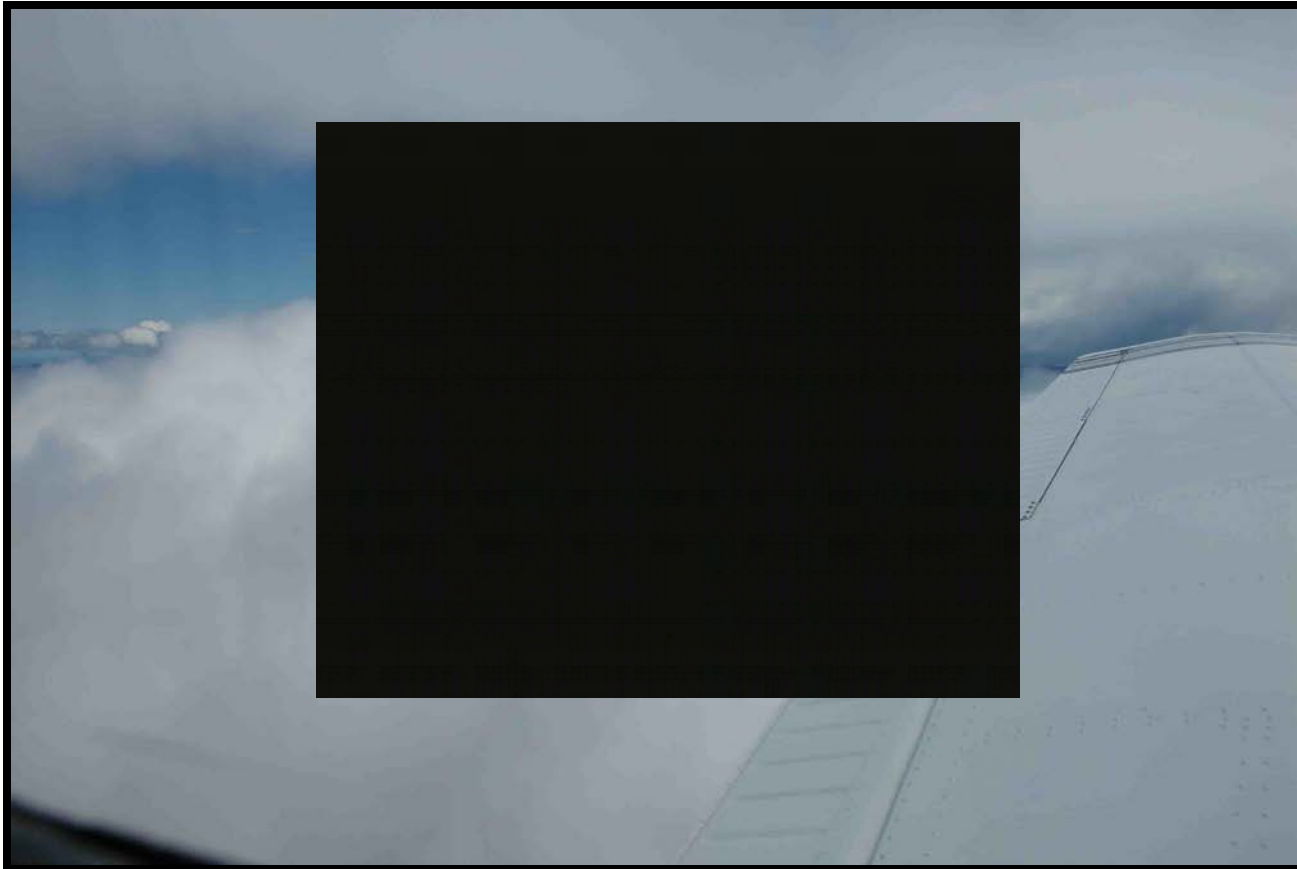
C I V I L   A V I A T I O N   S A F E T Y   A U T H O R I T Y



# Introduction

- Statistics
- Pre-flight Preparation
- En-route Information
- Decision making
- Spatial Disorientation

# VFR into IMC



# Statistics

CASA analysis of weather related occurrences from Jan 07 – Oct 10 showed:

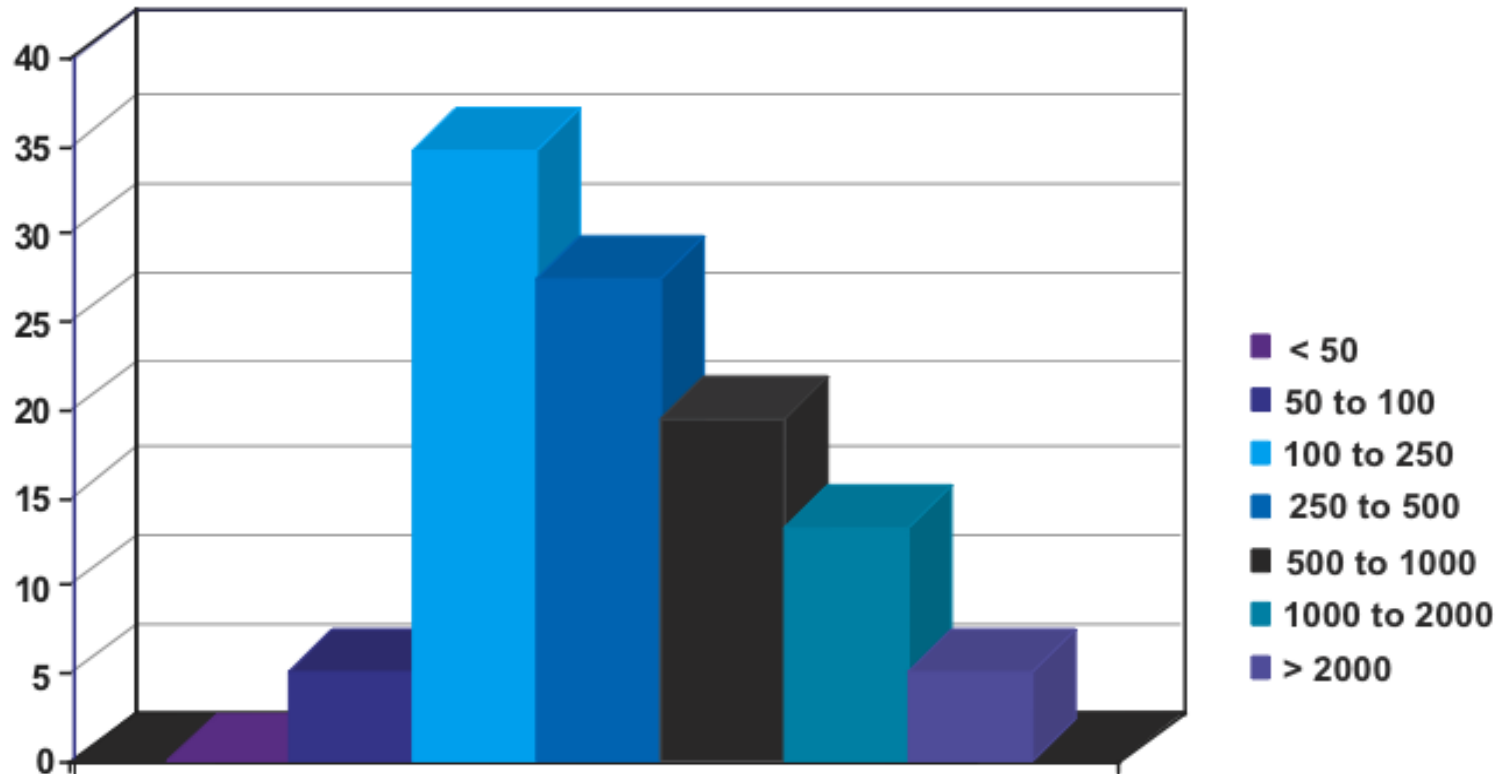
- 60 cases of VFR into IMC
- 11 cases of precautionary landing
- 28 cases of weather avoidance

Once every fortnight a pilot reports a weather related emergency – this is only the pilots who confess!

# Statistics

- Of the 60 VFR into IMC occurrences, five involved fatalities. The two other categories of weather-related occurrences had none
- Five out of six VFR into IMC accidents were fatal, the highest fatality rate after a mid air collision.
- The largest proportion of VFR into IMC situations occur during the second half of the flight
- 82% of pilots reporting VFR into IMC hold a PPL

# Total Flying Time



A close-up, profile view of a pilot wearing a headset and glasses, looking out of a cockpit window. The background is bright and slightly blurred, suggesting a view of the sky or a bright outdoor environment. The pilot is wearing a dark blue uniform. The overall tone is professional and focused.

# Flight planning

- Forecasts
- Fuel – Holding, alternates, buffers
- Terrain
- Safe altitude
- When to go
- VFR minimums



# Forecasts

- Weather forecasts
  - Area forecast
  - TAFs
  - TTFs
  - Metar/Speci
- Airservices – NAIPS
- BoM - website

Do you have the current  
ARFOR  
TAF  
TTF  
For your planned route?

NO

[www.airservicesaustralia.com](http://www.airservicesaustralia.com)  
[www.bom.gov.au](http://www.bom.gov.au)

1800 805 150 Naips direct

YES



From the TAF/TTFs, is there more than 4/8ths cloud below 1500 ft AGL or Viz less than 8Km or Cross wind greater than the maximum for the aircraft or Is the forecast endorsed with a percentage probability of fog, mist, dust or any other phenomena restricting visibility below 8km?

YES

Plan for an alternate or holding fuel

Holding Fuel  
Inter 30 minutes  
Tempo 60 minutes  
(Holding requirement starts 30 minutes before to 30 minutes after the Inter or Tempo period)

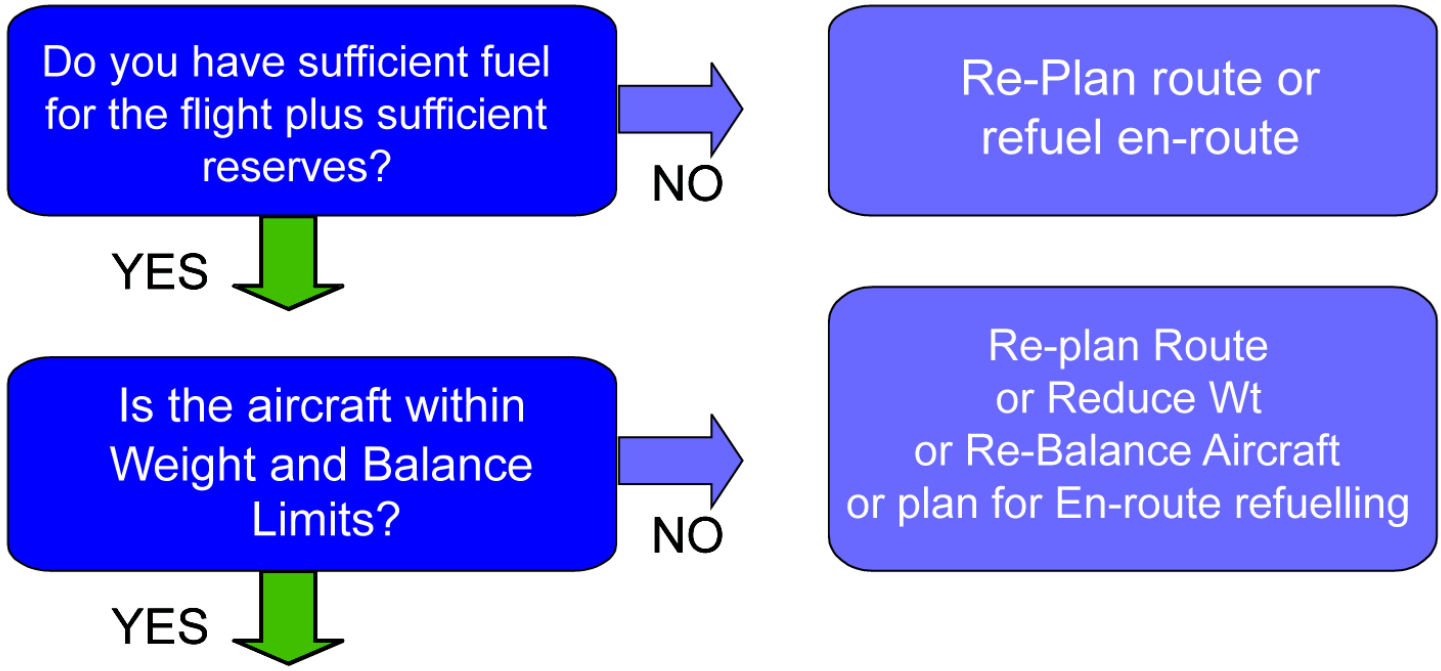
NO



Will the weather allow for a Safe altitude for the route?

NO

Find an alternate route to avoid bad weather



Enjoy your flight

# In-flight information

- AWIS sites
- Flightwatch HF/VHF
- AERIS VHF automatic en-route information service
- AIREPS/SIGMETS
- ATC intelligence
- VFR Flight Following

# Types of IMC

- Cloud
- Dust
- Smoke
- Rain
- Fog
- Ocean (blue out)

A flight is only ever as safe  
as the pilot's last decision



# Decision Making Factors

- Improper judgment of deteriorating weather
- Underestimating/overconfidence associated with flight into adverse conditions
- Inadequate gathering of weather information prior to the flights
- Social pressures affecting decision making

# Decision making

- Diminishing horizon
- Keeping options open
- 180 degree
- Slowing aircraft down
- Informing pax
- ATS help



# Decision making guide

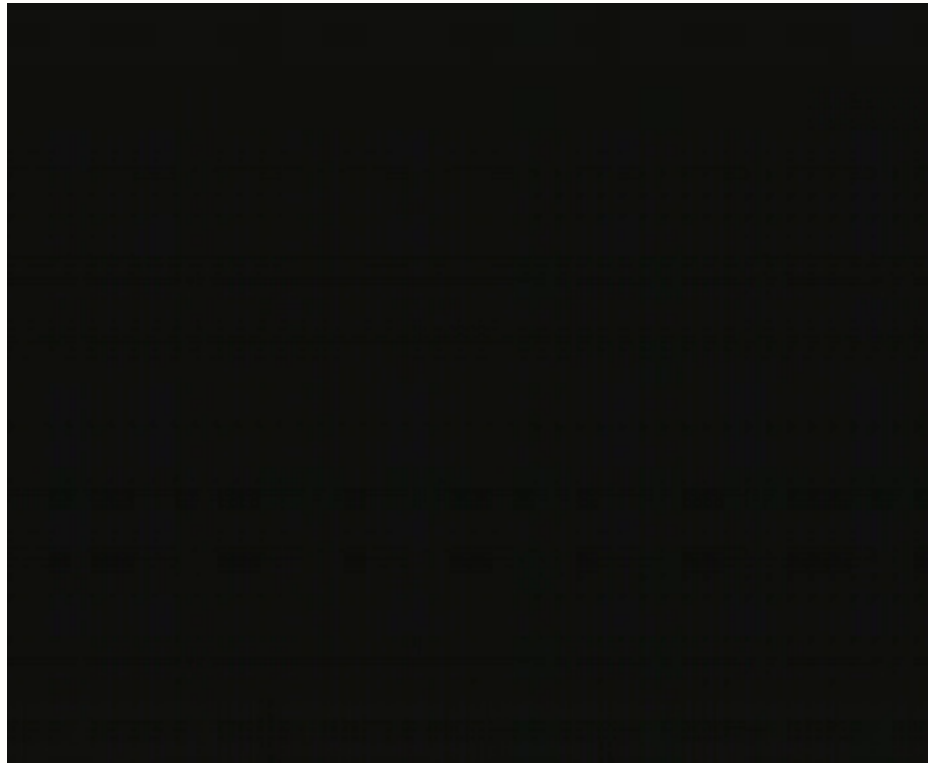
## Indicators

- Cloudbase
- Visibility
- Cloud – colouring
- Terrain clearance
- Wind speed
- Cloud type
- Wind direction
- Rain

3+

Consider your situation

# Spatial disorientation



# Spatial disorientation

- If you lose visual reference outside the aircraft, 80% of your orientation information has gone.
- The remaining 20% is split between your inner ear balance mechanism and “seat of the pants” perception, which are not accurate
- No amount of training or practice can allow us to correctly interpret erroneous vestibular sensations

# Spatial disorientation

SO... WE CAN:

- Stay out of conditions that deprive us of adequate visibility or...
- *Learn to use flight instruments to compensate for absent visual cues outside the aircraft!*

# Increasing the risk of disorientation

- Poor pre-flight preparation
- Lack of proficiency with instrument flying
- Flying when not physically & mentally fit
- Failing to transition onto instruments early

# Emergency procedures

- Stay calm
- Keep level
- Stay on instruments
- Timed turns – rate 1 only
- Lowest safe altitude
- Call for help – ATC
- Transponder

# ATC assistance

- Who can help?
- What frequency can help?
- How can ATC help?
- Limitations

# Know your aircraft

- Autopilot
- Instruments
- GPS
- Nav aids
- Radio



# Passenger concerns

- Press-on-itis
- Briefing of pax
- Time to spare, go by air

# Final thoughts

- Obtain weather from all available sources prior to the flight
- Know the tools you can use to update weather information in flight
- Establish SOLID personal minimums
- Learn to interpret in-flight weather cues and deteriorating visibility
- Separate the mission from the goal

# Questions

