Altitude Deviations

STEADES High-level analysis

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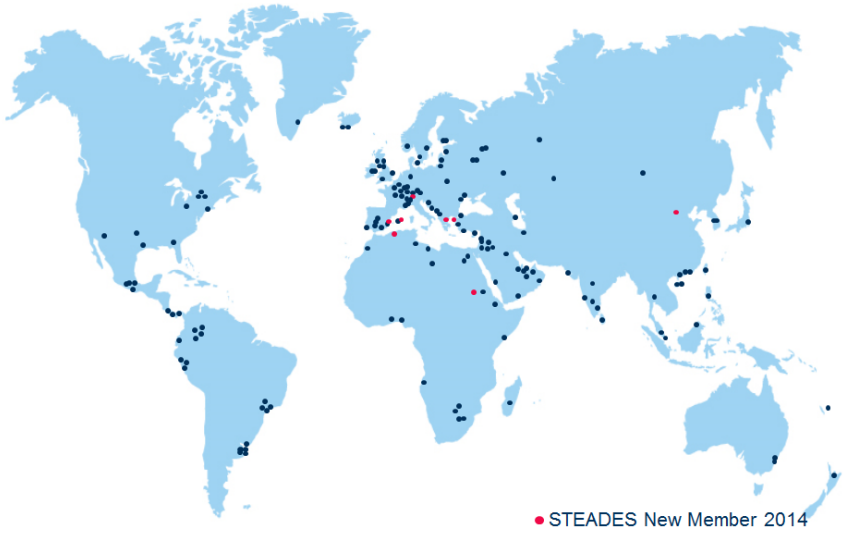
STEADES

- IATA GADM-STEADES database is the world's largest repository of operational safety reports
- More than 170,000 reports submitted annually
- Over 175 member airlines

Altitude Deviation Study

- Conducted based on a specific request to analyze safety reports of altitude deviations
- Dataset includes Air Safety Reports (ASRs) from 2009 to 2013 inclusive
- 9,686 ASRs coded with the immediate effect "Altitude Deviation"

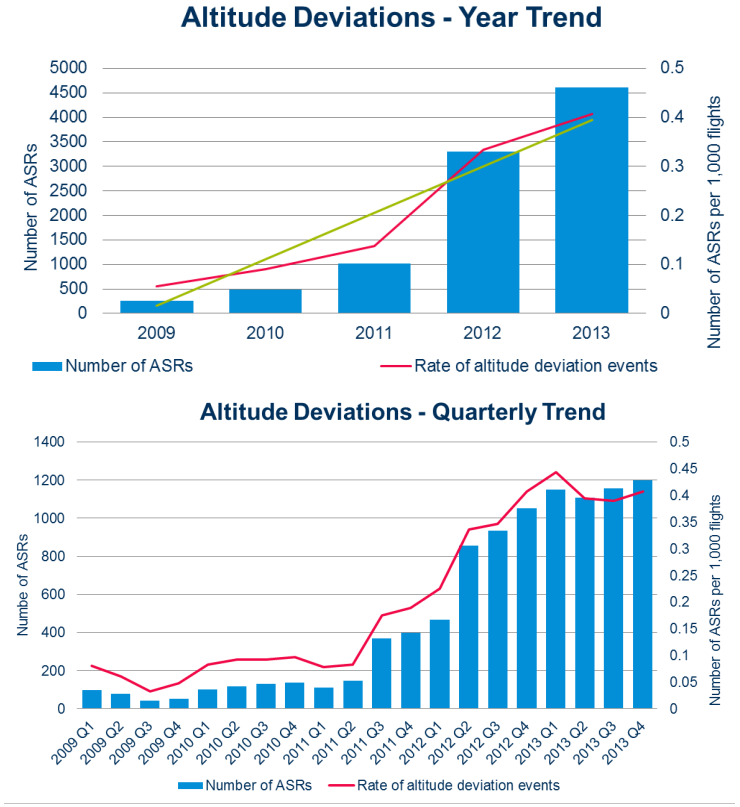


Statistical Review

- Analysis based on descriptors and factual information submitted by the contributing airline
- Used to provide a high-level understanding of events
- Next step is to read and apply a specific taxonomy to provide an in-depth analysis of the events

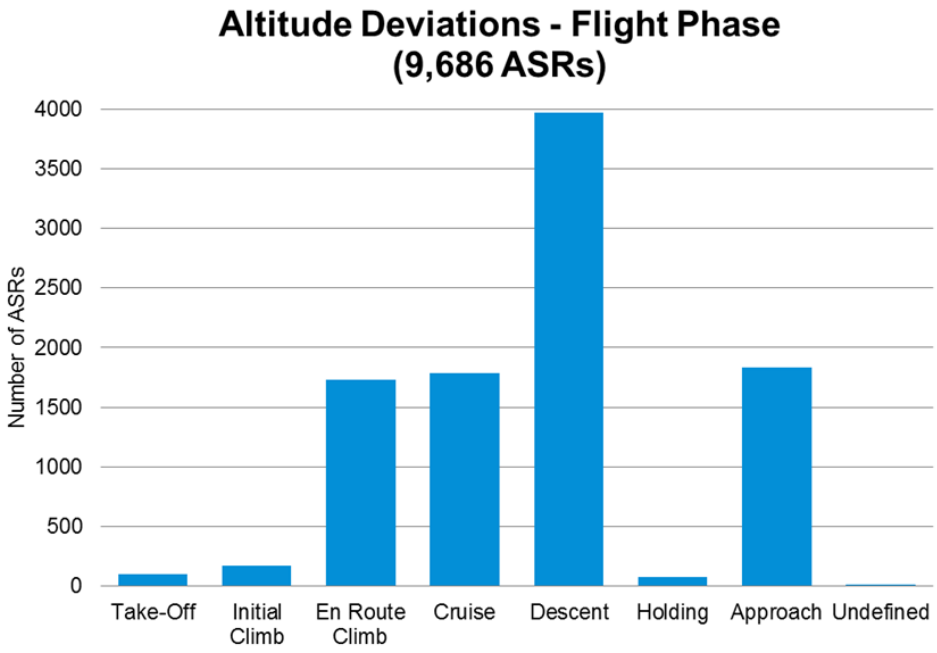
Altitude Deviations: Trend over time

- Overall rate for altitude deviation events was 0.25 reports per 1,000 flights
- Compare this to a reporting rate of all ASRs of 15.4 per 1,000
- Increasing number of ASRs and increasing trend



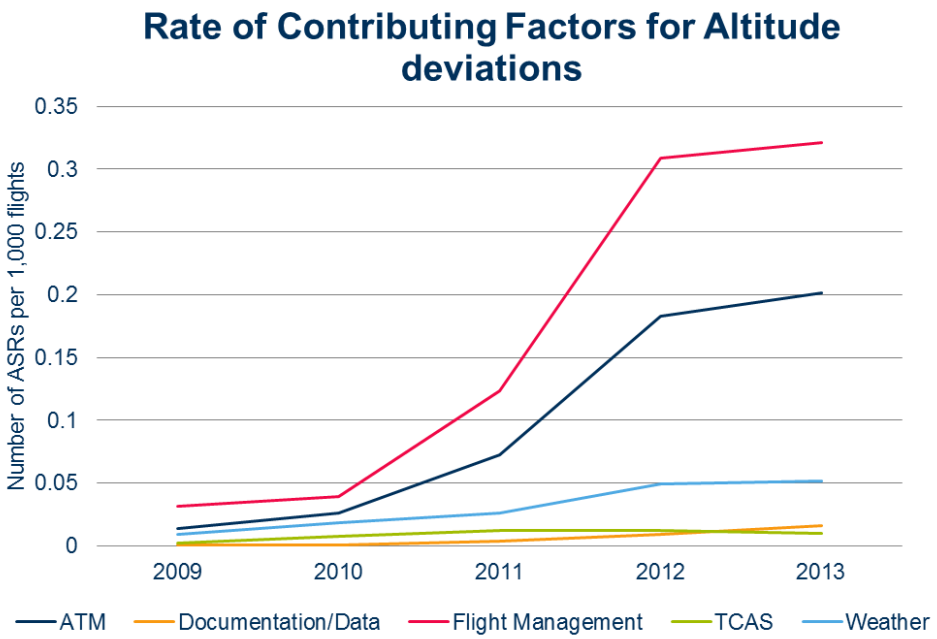
Altitude Deviations: Flight Phases

- Most common phases of flight:
  - 41% Descent
  - 19% Approach
  - 18% Cruise
  - 17% En Route Climb



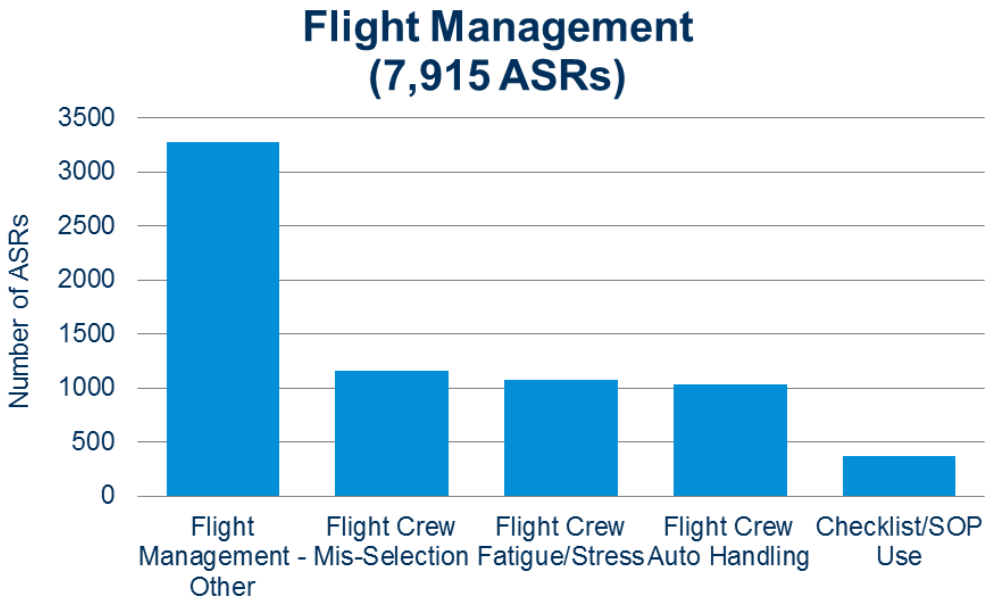
Altitude Deviations: Contributing Factors

- Determined through analysis of text descriptors applied to the narrative submitted by the airline
- Top contributing factors:
  - 82% Flight Management
  - 50% ATM
  - 14% Weather
  - 4% TCAS
  - 3% Documentation/Data



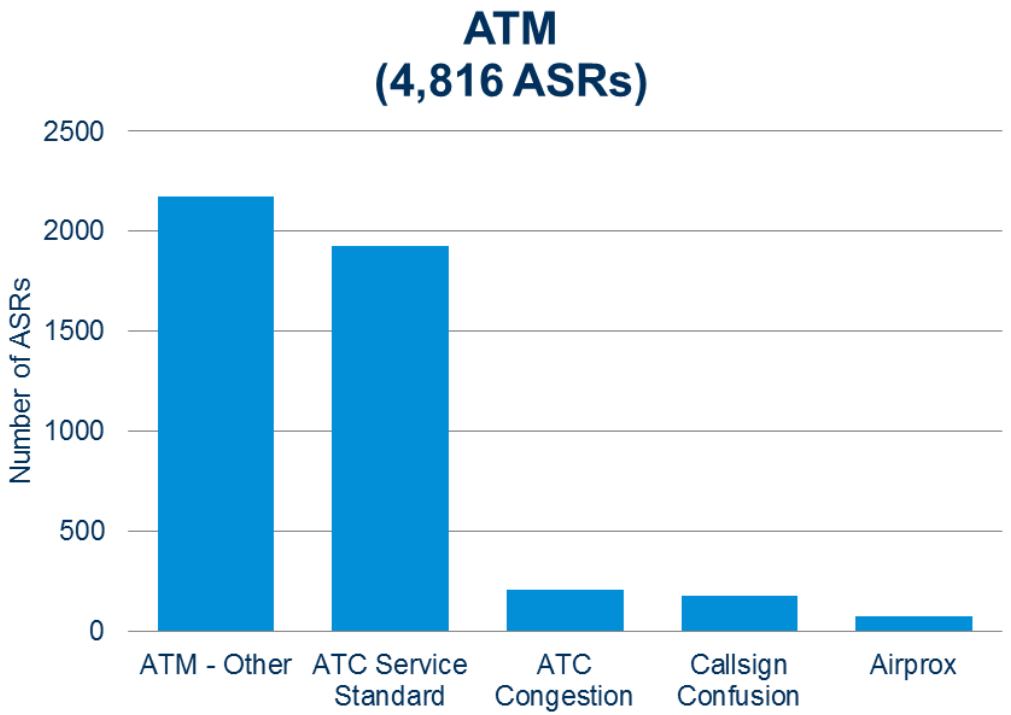
Altitude Deviations: Flight Management

- Flight Management
  - 41% Flight Management - Other
  - 15% Flight Crew Mis-Selection
  - 14% Flight Crew Fatigue/Stress
  - 13% Flight Crew Auto Handling
  - 5% Checklist/SOP Use
- Flight Crew Mis-selection:
  - Incorrect altimeter setting
  - Incorrect altitude input
  - FMC/MCDU programming error or mode selection



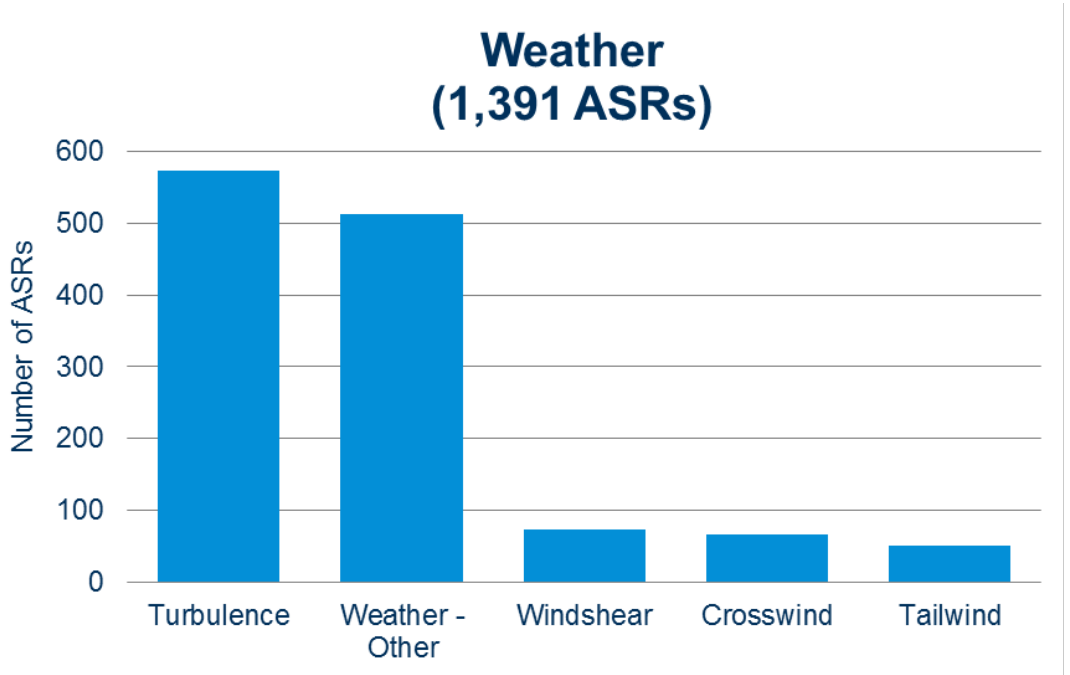
Altitude Deviations: Air Traffic Management

- Air Traffic Management
  - 45% ATM – Other
  - 40% ATC Service Standard
  - 4% ATC Congestion
  - 4% Callsign Confusion
  - 2% Airprox
- ATM Service Standard:
  - Confusing clearances
  - Late changes to clearances



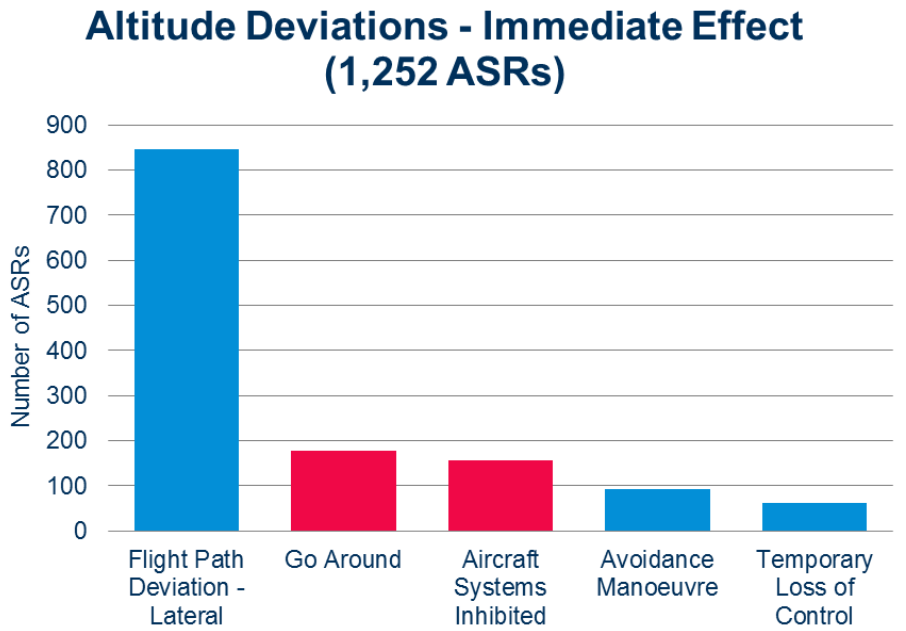
Altitude Deviations: Weather

- Weather
  - 41% Turbulence
  - 37% Weather - Other
  - 5% Windshear
  - 5% Crosswind
  - 4% Tailwind



Altitude Deviations: Other Effects

- Effects on Operations
  - 68% Flight Path Deviation - Lateral
  - 7% Avoidance Manoeuvre
  - 5% Temporary Loss of Control
- Contributing Events
  - 14% Go Around
  - 12% Aircraft Systems Inhibited



Altitude Deviations: Recommendations

↗ IOSA Standards Manual Ed.7

FLT 3.11.28 The Operator shall have policies, procedures and guidance that address altitude awareness, to include:

i) Instructions for the use of automated or verbal flight crew altitude callouts and any other actions to be taken by the flight crew to maintain altitude awareness;

ii) Policies and/or procedures for the avoidance of altitude deviations;

iii) Policies and/or procedures that address call sign confusion during altitude clearance acceptance and readback;

iv) Instructions for the flight crew to report the cleared flight level on first contact with ATC, unless specifically requested not to do so by ATC. (GM)

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