“Severe Icing: Urgent PIREP!”

Severe Icing Across the United States from 2002 – 2010: Relationship to Icing Type, Terrain, Altitude, Aircraft Type & Climate

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The Stats:
1990-2000  27% (105 accidents) involved fatalities

Total Weather Accidents
- All Weather 88% (2842)
- Icing 12% (388)

Pilot Total Time
- 500-999 19% (72)
- 100-499 25% (98)
- <100 7% (26)
- Unknown 1% (6)

Leading Factors
- Structural Icing 40% (153)
- Induction Icing (32)
- Multi 14% (56)
- Retract 22% (83)
- Fixed-gear 64% (249)
- Single

Ground Accumulation
- 8% (32)

Source: AOPA Air Safety Foundation accident database
RMG UA /OV RMG /TM 1705 /FL045 /TP P28A /WX FV10SM /TA 17 /TB MOD /RM DIFFICULT TO DRINK COFFEE

SUN UUA /OV HLE/TM 2107/FL120/TP SW3/SK IMC/IC SVR/RM ACFT ENCOUNTERED SVR ICING CAUSING BOTH ENGINES TO STOP, ABLE TO RESTART

BOI UA /OV BOI090100/TM 0135/FL065/TP P28R/TB NEG/RM PILOT SAID "IT JUSTS LOOKS FUNKY"

PRC UA /OV LRU-VGT/ TM1630/ FL220/ TP MU2/ RM PICKED UP A FULL LOAD OF ICE FL220-230 E OF LAS MORE THAN GOD ALLOWS

CDC UUA /OV SLC-CDC/TM 0332/FLUNKN/TP E120/TB CONT MOD OCNL SEV BLO FL260/RM HAD SOME SCREAMERS IN THE BACK

KMHT 291653Z AUTO 34004KT 1/2SM BKN004 OVC009 06/M02 A2999 RMK VISIBILITY GETTING PRETTY [EXPLETIVE DELETED RHYMES WITH PRETTY]

WORST DAY IN 40 YEARS OF FLYING

Sometimes remarks give more insight than the PIREP
This project focuses ONLY on SEVERE icing pilot reports (not moderate-severe or any other combination).
Pireps Movie
TOTALS for Severe Icing PIREPs from 2002 - 2010

Total Severe Icing PIREPS from 2002 - 2010 by Flight Altitude

- SFC-10K: 47%
- 10,001-20K: 43%
- 20,001-30K: 9%
- 30,001+: 1%

Total Severe Icing Pilot Reports from 2002 - 2010 by Aircraft Type

- Commercial Jet: 34%
- Turbo Prop: 28%
- Corporate Jet: 11%
- Small: 1%
- Unknown: 2%
- Military: 1%
Oceanic Niño Index (ONI)

http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/ensostuff/ons indices.html

Warm (El Niño) and cold (La Niña) episodes based on a threshold of +/- 0.5°C for ONI
Severe Icing PIREPs versus Oceanic Niño Index (ONI)

3 month running mean ONI and PIREP count is plotted, e.g., DJF, JFM, FMA, MAM, etc.
PIREP Icing Type versus Oceanic Niño Index (ONI)

3 month running mean ONI and PIREP icing is plotted, e.g., DJF, JFM, FMA, MAM, etc.
Conclusions & Final Remarks

• Pilot Reports for severe icing only have decreased dramatically over the past decade (by over 90%)

• Severe icing PIREPs occur during most of the year except for the months of June – September where very few are reported

• On the surface, the number of severe icing PIREPs & the icing types seem to be loosely correlated with the ONI index, however, this correlation may not be in response to the ONI but rather just the ‘weather’ during the time of year

• The majority of ice type is rime, followed by mixed and then clear. However, clear ice may be underreported due to: (a) the difficulty in detecting this type of ice with eye, and (b) confusing it with mixed or rime

• The surface up to 20,000 feet MSL accounts for 90% of the severe icing encounters