

Southwest Airlines Aviation Weather



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Topics of Discussion

- Quick Summary of Current Industry Projects
- SWA Facts and Figures
- SWA Weather
- Local NWS Issues

Weather Evaluation Team (WET)

- Collaborative Decision Making (CDM) Sub-team (Reps from Industry, FAA, NWS)
- Two Current Tasks
 - Implement LAMP-CCFP Hybrid web site
 - Addresses the growing demand for change to current format (Forecast Time Frame, Method)
 - Extends the current CCFP forecast (6 hours) out to 24 hours
 - Implements a probabilistic approach
 - Utilized as a real-time test bed this Spring & Summer
 - Develop process for airport weather forecasts to be presented to all participants prior to Strategic Planning Telecons (SPT's)
 - Capability for those involved to view information
 - Opportunity to comment and/or present differences

SWA Facts and Figures

- 3300+ daily flights from 65 airports
- 535 Boeing 737 aircraft (300's, 500's, 700's)
- Average flight length is 627 miles
 - Shortest: 133 miles (RSW-MCO)
 - Longest: 2,295 miles (BWI-SAN)
- Southwest consumed 1.5 billion gallons of jet fuel in 2007.
- Southwest offers the most domestic flights of any airline

SWA Cities



Set Love Free!



Top 10 SWA Airports (Flights)

Cities	Daily Departures	Number of Gates	Nonstop Cities Served	Established
LAS	234	21	54	1982
MDW	214	29	47	1985
PHX	187	24	42	1982
BWI	162	26	38	1993
HOU	135	17	29	1971
DAL	134	15	15	1971
LAX	120	11	18	1982
OAK	118	13	21	1989
DEN	115	9	28	2006
MCO	115	14	33	1996

SWA Weather

- Big picture is a major responsibility
 - Contribute more to strategic decisions than tactical decisions (large scale movement of aircraft)
 - Rely solely on NWS TAFs for individual flight planning decisions.
- Twice daily briefings to all ops-related groups (Dispatch, Pilots, Maintenance, Ground Operations, Reservations, Crew Scheduling, Executive Office, Customer Service)
- Intranet Weather System always available to all SWA employees (includes daily briefing info)
- Integrate both government and private sector weather information sources into our dispatch applications

Strategic vs Tactical

- Strategic Planning (Hurricanes, Winter Storms)
 - Employee Issues/Staffing Decisions
 - Passengers
 - Aircraft & Airport Operations (Terminators/Originators)
 - Local Infrastructure
 - Evaluation & Recovery
 - Restore Operations
- Tactical Planning (Thunderstorms, Wind, Fog, Ice Pellets, Minor Snowfalls)
 - Fuel Concerns
 - Alternate Requirements (necessary for less than 3 miles or 2 kft)
 - Suspend Ramp Operations (Code Red)
 - Flight Delays
 - Diversions
 - Cancellations

Ongoing Challenges

- Minimizing forecast variation for single station
 - TAF's and more (Gridded Fcst, Zone Fcst, AFD, CCFP, SPC, etc.)
 - TAF still makes dispatchers world go round
 - However, now more frequently utilizing other products (This is a good thing)
 - Can be significant variation in forecast products (both terminal and local airspace)
- Local Effects (terrain, land-water boundaries, lake-effect snow)
- Winter Weather
 - Ice (Never clear cut; fine line between nuisance and major problem)
 - Precipitation Type (Snow, Freezing Rain, Mixed)
 - Terminator/Originator Decisions
- Ceiling and Visibility variability (very localized)

Winter Weather Issues

- Winter weather forecasts - more than planning and monitoring flights.
- Decision points include:
 - De-icing of airplanes
 - Employee availability
 - Local Power
 - Local infrastructure
 - TSA Staffing
 - Customer Demand
 - Airport conditions
 - Overnight aircraft
 - De-icing fluid availability

Local Issues

- Convection and resulting ATC implications (doesn't have to impact station to be a major issue)
- Ceiling and Visibility forecasts (especially ISP, PHL)
 - Fog can roll in quickly and reduce conditions at ISP
 - Problem Ceilings at PHL can be 3500 kft
- Winds (Strong westerly cross winds; Sea Breeze [BOS])
- Lake Effect Snow events (BUF, PIT)
- Winter Mixed Precip Occurrences (ALB, MHT, PVD, BDL, ISP, PHL, BOS)
 - What type, how much, start & end times
 - Tactical Impacts (Multiple precip types, runway treatment, deicing conditions)
 - Strategic Impacts (Overnight aircraft, employee & passenger concerns, local media)

Why We Love the NWS

- TAF Tidbits
 - Utilization of VCTS, VCSH, and CB in TAF can be very helpful
 - Amend in timely manner when necessary, even if near end of TAF cycle (**Important with regard to planning for fuel load!**)
 - Watch Winter weather closely in terms of type(s) of precipitation included and the timing; TAF as consistent as possible with other products.
- Aviation portion of AFD can be huge asset
 - Adds clarification, conveys forecast confidence, and presents potential “If Then” secondary scenarios
 - Provides access to local NWS office expertise on timing and type of precip, wind variations, ceiling/vis issues
 - Breaking out specific airports in aviation section is **VERY** helpful

Example:

KLAX...HI CONFIDENCE IN VFR CONDS THRU AT LEAST 04Z...AFTER WHICH MARINE LAYER WILL LIKELY MAKE IT INTO THE AIRFIELD. CURRENT PACKAGE REFLECTS AN ARRIVAL AROUND 10Z...BUT VERY LOW CONFIDENCE IN TIMING. CIGS SHOULD COME IN UNDER 010...BUT ONLY MODERATE CONF THERE TOO.

Our Partnership with the NWS

- We only use NWS TAFs for operational decision making (including fuel planning).
- Participation in meetings & workshops to communicate SWA operating decision criteria to NWS forecasters so they can better understand our use of their products.
- We are a huge advocate of the NWS
 - Always looking for ways to help promote your efforts
 - Help educate all levels of the NWS concerning aviation community use of your products and services.
 - Please continue to be enthusiastic about your role in aviation weather.....we count on you!

Summary & Thanks

- Going the Extra Mile
 - Allowing us to be included in conference calls initiated for media or emergency management on significant weather events....very helpful.
 - Accepting our calls for brief discussions as conditions warrant.....even when busy....thanks for doing this.
- Additional Helpful Actions
 - Familiarity with your airports operating criteria and local minimums
 - Working closely with your CWSU to ensure forecast consistency and awareness of traffic flow status
 - Web site graphics and details for ongoing events.....many offices now do that.....again tremendously helpful.