

Next**GEN**

In-Flight Icing Users Technical Interchange Meeting (TIM) Overview

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FAA



WELCOME TO DC

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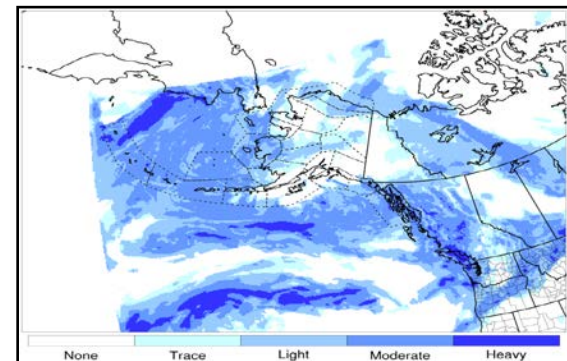
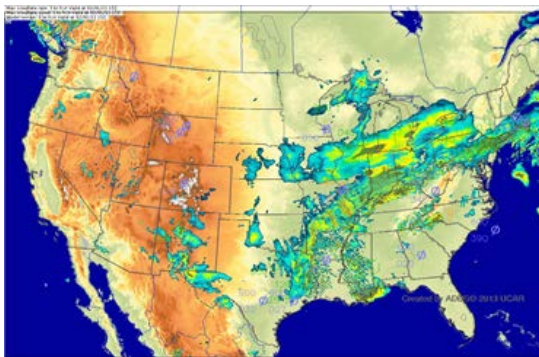


Congratulations and Wishing You A Very Happy Retirement Marcia!!

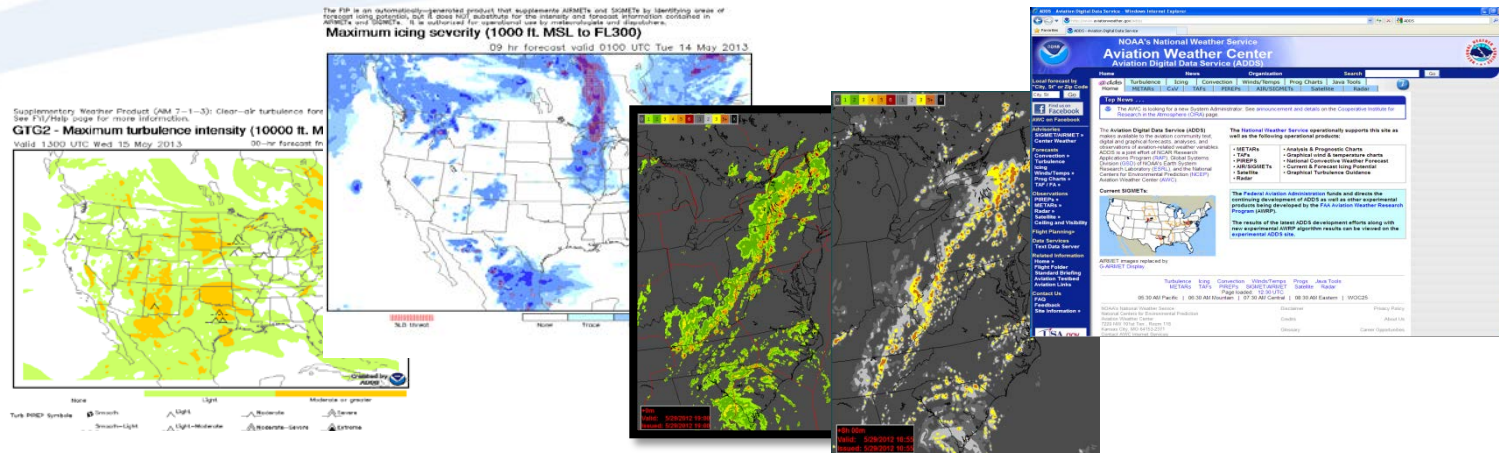


Why We Are Here Today

- Icing remains one of the major weather hazards to aviation, particularly General Aviation (GA)!
- FAA Aviation Weather Research Program desires NAS User In-Flight Icing needs and requirements to:
 - ✦ Enhance current icing weather products and research
 - ✦ Determine future research efforts and direction.



FAA Aviation Weather Research Program (AWRP)



Applied research to minimize the impact of weather on the National Airspace System (NAS)

- ✦ Specific initiatives to support NextGen weather Operational Improvements contained in the NextGen Implementation Plan
- ✦ Collaborative, complimentary initiatives with NWS to transition legacy capabilities to meet current and future requirements
- ✦ Focused initiatives to help mitigate safety and/or efficiency issues associated with well documented weather problems

AWRP Projects

Advancing NextGen Weather

Turbulence
In-Flight Icing
Convective Storms
Ceiling & Visibility (C&V)
Weather Uncertainty
Model Development &
Enhancement (MD&E) *
Advanced Weather Radar
Techniques (AWRT)*
Aviation Digital Data Service
(ADDS)*
Volcanic Ash

R&D Management Processes
Research Evolution Planning
Quality Assessment
Aviation Weather Demonstration
& Evaluation (AWDE) Services

Flight Safety/Standards

Terminal Area Icing Weather
Information for NextGen (TAIWIN)*
High Ice Water Content (HIWC)*

**Other AWRP Projects collaborating with In-Flight Icing Project*



FAA





Changes to FAA Regulations

- FAA released new aircraft icing regulations to improve safety for flight in icing conditions by addressing supercooled large drop (SLD) icing conditions, mixed phase, and ice crystal conditions for the portion of transport category airplanes determined to be affected by these icing conditions, and for all turbine engines.
- These regulatory changes necessitate improvements to icing weather information in the terminal area and en-route.



Icing Research Objectives



- **FAA Focusing on 3 Major Icing Research Areas:**

- **In-Flight Icing (IFI)**

- ❑ Improvements to existing icing products for pilots
- ❑ Long-needed development of Diagnosis and Forecast Icing Product for Alaska
- ❑ Enhanced CONUS icing capability using Liquid Water Content (LWC), Drop Size Distribution, & Temperature Wx Parameters

- **Terminal Area Icing Weather Information for NextGen (TAIWIN)**

- ❑ Provide reliable, highly resolved, accurate diagnoses and forecasts of icing conditions on the ground and aloft in the terminal area to support flight mission planning and aircraft operations.
- ❑ Better icing diagnosis/forecast for airborne icing along terminal arrival/departure routes

- **High Altitude Turbine Engine Icing (HIWC)**

- ❑ Improve diagnosis/forecast of high altitude ice crystal icing in deep convective clouds
- ❑ Prevent flights thru areas of high ice water content
 - ❖ Temporary Engine shut-down
 - ❖ Loss of power – blade damage



TIM Goals

- ✦ Promote common understanding of the impacts of icing conditions on various elements of the NAS (*e.g. air traffic management, airline flight operations, general aviation, and aviation weather forecasting*)
- ✦ Examine on-going research and development of icing mitigation capabilities
- ✦ Explore possible government and industry cooperative efforts to address in-flight icing issues.

By FAA policy OIP is for enhanced situational awareness only and must be used in conjunction with one or more products (early detection such as a Q-STRMSI or SIGMET (see AIM 7-1-2.3))

Maximum icing severity (1000 ft. MSL to FL300)
Analysis valid 1800 UTC Tue 09 Dec 2014



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NextGEN

TIM Topics

- ✦ User community perspectives and needs (airlines, dispatchers, pilots, aviation safety, international, weather forecasters)
- ✦ Observing and reporting Icing conditions
- ✦ Icing forecasting
- ✦ Future challenges (data access, new capabilities, probabilistic forecasting, building business cases, visions).

Expectations

- We hope everyone will participate
- We need your ideas and experiences!
- USER inputs will drive our future icing research planning



Summary



- From this meeting we are looking for your inputs and ideas not only for current and future research needs but any other icing issues or concerns you consider significant (e.g. sensors)
- Your Inputs from this meeting will allow FAA AWRP to research:
 - *Providing better quality Icing information to NAS Users*
 - *Providing better ways to access Icing information*
 - *Providing improvements which will allow NAS Users to better utilize Icing weather information*
- Key is for all AWRP future research work is to be aligned with FAA NextGen Operational Improvements and Requirements
 - *Evolution of Weather Information to meet NextGen requirements and improve GA/commercial light aircraft safety with full-suite of enhanced outputs*
 - *Integrate gridded data into Decision Support Tools developed by non-government entities for flight planning and in-flight avoidance*





Thank You!