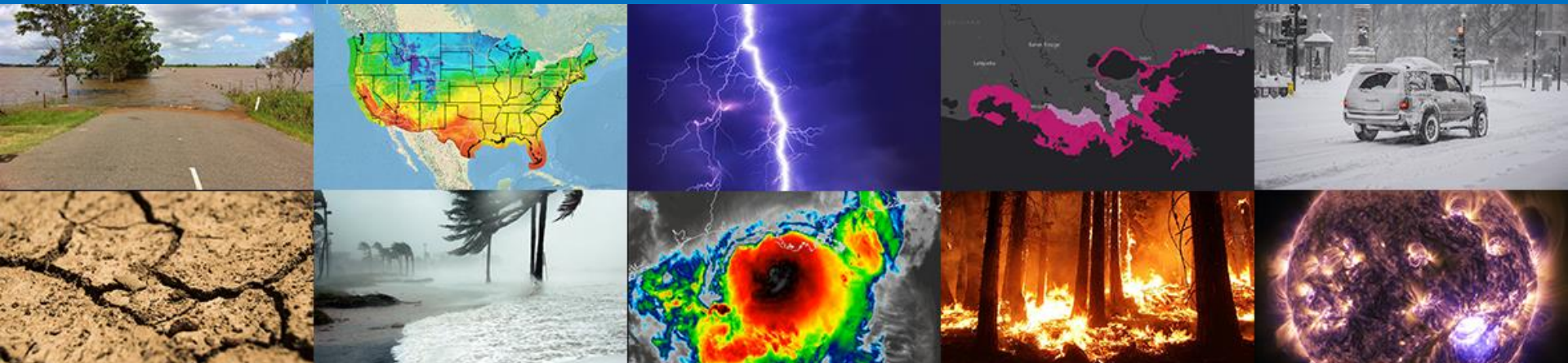
NATIONAL WEATHER SERVICE

# Understanding Important Aviation Partner Thresholds to Improve Forecaster Decision Support Services for Aviation

**FRIDAY, FEBRUARY 24, 2023**

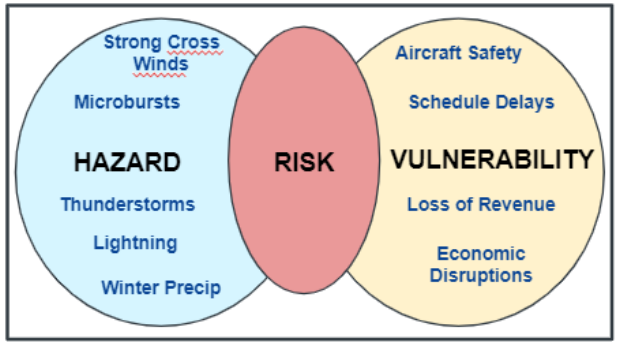
Presenter: Jonathan Howell, SOO WFO Mobile/Pensacola
Collaborators: Lt. Justin Moore, United States Coast Guard, Mobile, AL

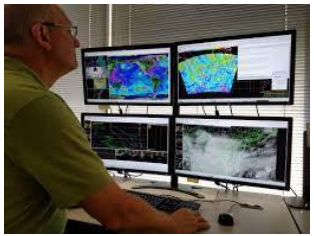


# Aviation Decision Support Services

## Determining High Impact Thresholds for Aviation Partners

- The National Weather Service in Mobile, AL, has been transitioning our operational focus to a tactical forecast approach.
- This approach focuses forecaster attention on impactful weather conditions that most impact critical partners.
- WFO Mobile wants to ensure that we are providing you with critical weather information that improves your decision making - answering questions:
  - What weather impacts may I face as a pilot today based upon user (you) defined thresholds?
  - What conditions should I avoid?
  - Do I fly today? Reroute?
- Your input providing critical weather thresholds that impact your decision making will help inform our path forward for improving our local aviation decision support services (DSS).



**WFO Mobile, AL Aviation Forecast Process**


Area Forecast Discussion
National Weather Service Mobile AL
1141 AM CST Thu Jan 26 2023

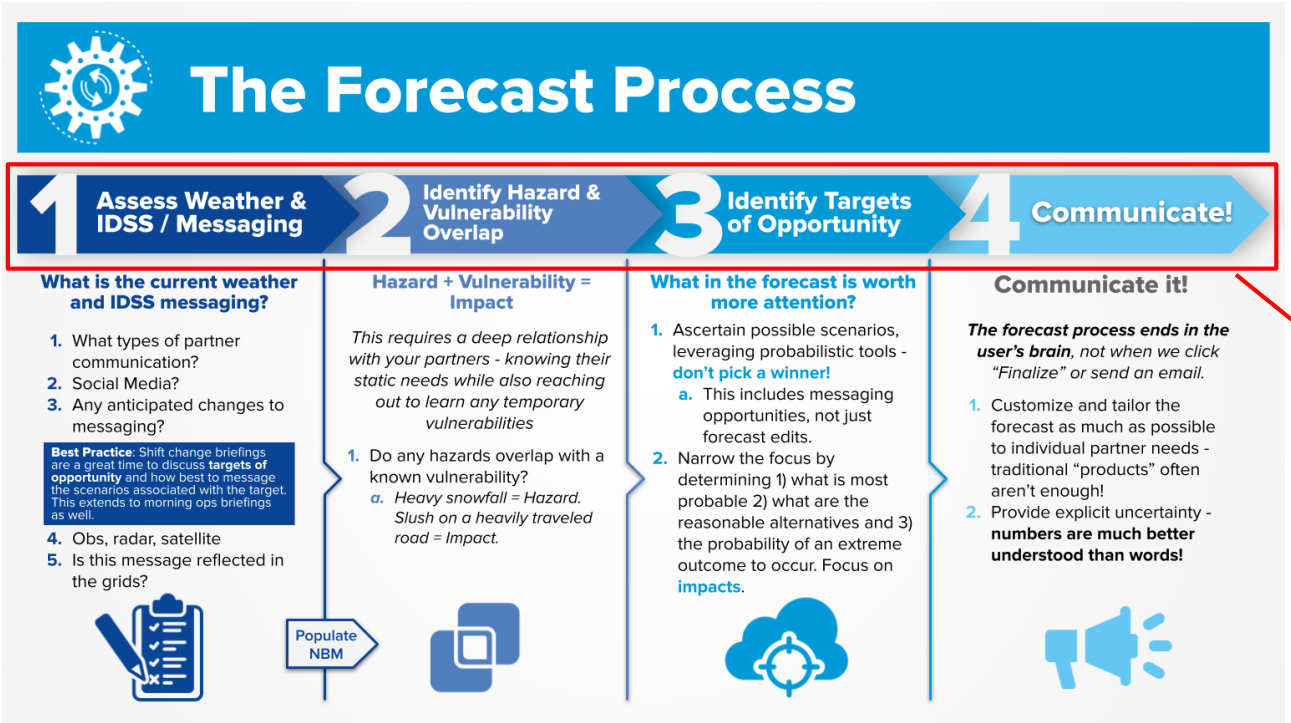
...New AVIATION..

.AVIATION...
(18Z TAFS)
Issued at 1133 AM CST Thu Jan 26 2023

VFR conditions will prevail for the next 24 hours. Northwesterly winds at around 10 knots, with occasional gusts to around 15 to 20 knots, will subside by the evening and overnight hours. /96

**THREAT FOR MICROBURSTS**

# WFO Tactical Operations: High Impact Forecast Services




**Source Document:**

**Building a Weather-Ready Nation Through Science-Based Service**

[A Vision for a Modernized Forecast Operations Concept]

*Last Update: 6-Jan-2022*

**Ensure that the forecast communicated informs partner decisions and public action!**

# Advance the Forecast Process

## Moving from standard forecast to improved decision support

**Impacts TAF Board** TAF Home | Plot | Data | Board | Info

**FOR SITUATIONAL AWARENESS. NOT TO BE USED FOR FLIGHT PLANNING PURPOSES.**

IDs: KMOB Submit

**KMOB - Mobile Rgnl, AL, US**

Issued at 1724 UTC 26 Jan 2023
Updated at 1859 UTC 26 Jan 2023

Potential Impact: None | Slight | Moderate | High

| Time | 1856Z | 26/19Z | 26/20Z | 26/21Z | 26/22Z | 26/23Z | 27/00Z | 27/01Z | 27/02Z | 27/03Z | 27/04Z | 27/05Z | 27/06Z | 27/07Z >> |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | OBS | PRVL | PRVL | PRVL | PRVL | PRVL | PRVL | PRVL | PRVL | PRVL | PRVL | PRVL | PRVL | PRVL |
| VIS | 10 | >6 | >6 | >6 | >6 | >6 | >6 | >6 | >6 | >6 | >6 | >6 | >6 | >6 |
| CIG | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cover | FEW | SCT | SCT | SCT | SCT | SCT | SCT | FEW | FEW | FEW | FEW | FEW | FEW | FEW |
| FltCat | VFR | VFR | VFR | VFR | VFR | VFR | VFR | VFR | VFR | VFR | VFR | VFR | VFR | VFR |
| WX | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| WDir | 290 | 330 | 330 | 330 | 330 | 330 | 330 | 310 | 310 | 310 | 310 | 310 | 310 | 310 |
| WSpd | 9 | 10 | 10 | 10 | 10 | 10 | 10 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| WGst | 16 | 17 | 17 | 17 | 17 | 17 | 17 | -- | -- | -- | -- | -- | -- | -- |
| WSHgt | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| WSDir | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| WSSpd | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**NOTE:** LAMP data beyond the time of the TAF data is denoted as LAMP in Type and colored magenta.

**Raw TAF**

```
KMOB 261724Z 2618/2718 33010G17KT P6SM SCT200
  FM270100 31004KT P6SM FEW250
  FM271200 03006KT P6SM SCT250
```

**Raw METAR**

```
KMOB 261856Z 29009G16KT 10SM FEW200 13/M02 A3025 RMK AO2 SLP243 T01281022 $
KMOB 261756Z 33009KT 10SM FEW120 FEW200 11/M02 A3029 RMK AO2 SLP256 T01111017 10117 20050 58005 $
KMOB 261656Z 34012G18KT 10SM SCT120 BKN200 11/M01 A3031 RMK AO2 SLP262 T01061006 $
KMOB 261556Z 35012KT 10SM FEW025 SCT120 BKN200 09/M01 A3032 RMK AO2 SLP267 T00941011 $
```


- Pivot away from <u>only</u> providing the standardized aviation forecast represented by the TAF's and generic aviation area forecast discussion.
- Provide aviation customers with additional aviation forecast information based upon defined meteorological thresholds.

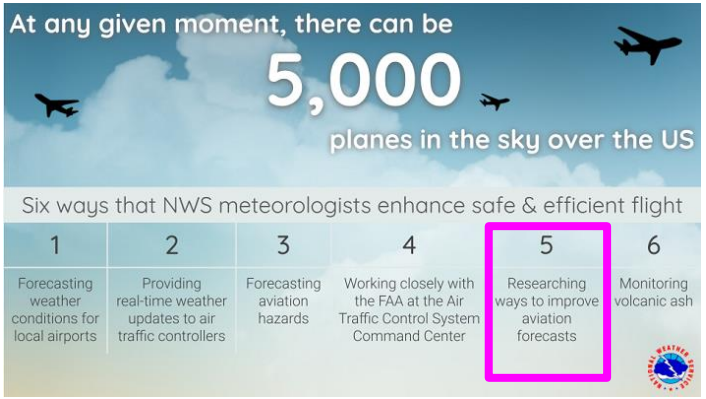
- Defined thresholds influence flight decisions and safety considerations.
- Forecast improvements should answer the more specific weather and safety questions pilots have when considering flight operations.
- More adequately serve our aviation partners!

# Advance the Forecast Process

## Moving from standard forecast to improved decision support

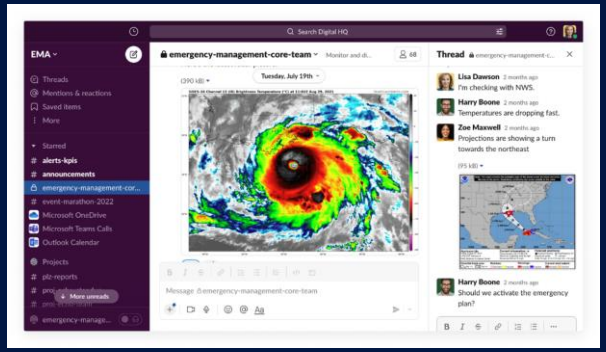
So How Do We Go About Improving the Process:

- Gather threshold information from aviation partners.
- Develop expertise among our forecasters through improved and focused training at WFO Mobile.
- Ensure forecasters are focused on delivering quality aviation forecasts with the defined thresholds in mind.
- Develop the best techniques to communicate threshold forecast information.
- Best Technology to deliver information.
- Quality Control - Check with aviation partners to ensure that they are getting what they need to make better decisions.

# Example of Existing Partnership
# &
# Future Support

NWS Mobile - Determining Weather Impacts to Aviators




Providing Aviation Decision Support Services to Core Partners

Core Partners Utilizing DSS to Make Good - Safe Flight Decisions

# Aviation WFO Decision Support Services

## Example of NWS Mobile Supporting Aviation Core Partner


- In 2022, WFO Mobile strengthened our partnership with the U.S. Coast Guard Aviation Training Center (ATC), Mobile, AL.
- The U.S. Coast Guard ATC is located at the Mobile Regional Airport.

- The USCG ATC serves as the national training & standardization center for all Coast Guard Pilots.
- We are working closely with our USCG partner liaison - Lt. Justin Moore.
- The partnership is not new, but how we provide support has changed with a focus on aviation weather training and operational mission support.

# Aviation WFO Decision Support Services

## Example of NWS Mobile Supporting Aviation Core Partner

USCG Aviation Training Center Responsibilities:

- The ATC is a multi mission unit, supporting the Coast Guard's aviation and capabilities development center.
- It is also an operational air station (more on this later).
- Pilots are trained and qualify to fly one of the aircraft used including the MH-60 "Jayhawk", MH-65 "Dolphin", C-27J "Spartan", HC-130J "Hercules", and the HC-144 "Ocean Sentry".
- Force Readiness Command Training Division is responsible for ensuring forces are best equipped and tactically proficient to complete missions.
- Operations Department conducts traditional air station missions including search and rescue, homeland security, and environmental protection.





# Aviation WFO Decision Support Services

## Example of NWS Mobile Supporting Aviation Core Partner

USCG Aviation Training Center - NWS Partnership:

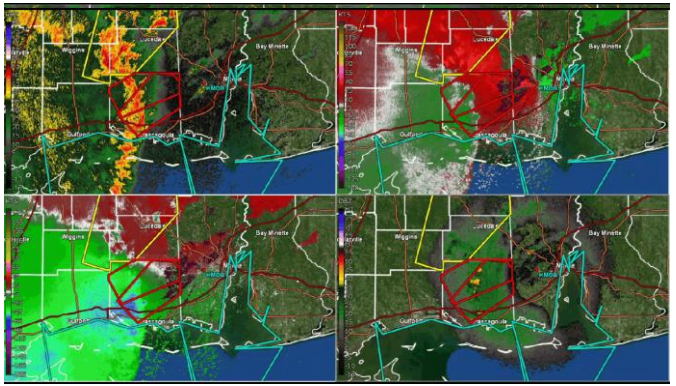
- NWS Mobile is establishing a framework to support both the training division and operations department.
- Meteorologists from NWS Mobile have committed to working with the training division to provide aviation weather training to new pilots during their flight training courses.
- There will be 2-6 training sessions per year where NWS Mobile forecasters will contribute.
- Forecasters also plan to work with the Operations division offering specialized DSS for high impact USCG operational events.

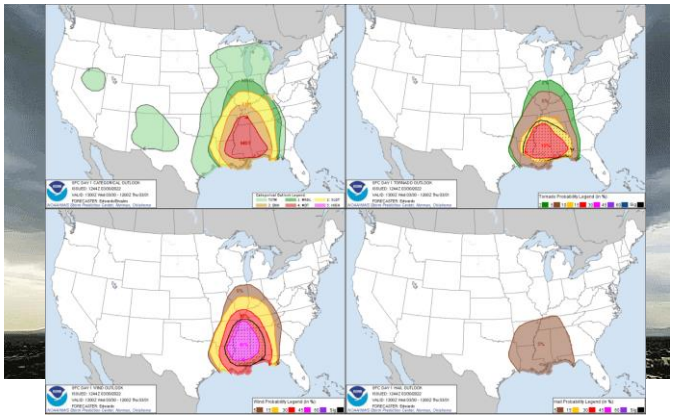
# Aviation WFO Decision Support Services

## Example of NWS Mobile Supporting Aviation Core Partner

USCG Aviation Training Center / NWS Partnership - Supporting Training Division:

- Assist training the new USCG pilots on weather hazards to be aware of that impacts flight safety.
- Provide pilots information regarding how to access aviation forecast products and how to interpret the information to support their flight planning and decision making.
- Focus on meteorological phenomena that USCG has identified as important for pilot decision making.
- Includes:
  - Increased threat and understanding of microbursts/strong downbursts, including radar morphology.
  - Introduction to products and services that support pilots in accessing the environment (aviation/public AFD, sounding interpretation, local mesoanalysis graphics).
  - Deeper understanding of forecast process. Outlook phase (forecast uncertainty) vs. Event phase (mesoanalysis/observations).
  - Interpretation of radar signatures associated with aviation weather hazards.
  - Interpretation of SPC products and thresholds.





# Aviation WFO Decision Support Services

## Example of NWS Mobile Supporting Aviation Core Partner

USCG Aviation Training Center / NWS Partnership - Supporting Operations Division:

- Provide high impact decision support services - support weather impacted search and rescue missions.
- Coordinate and develop a list of high impact weather thresholds that are important for search and rescue flight missions.
- Determine how and when DSS would be initiated and by who?
- Create avenues to directly communicate critical flight weather information to the decision makers.
- Train local forecasters to understand the impacts of certain meteorological phenomena on flight operations and the aircraft themselves.

# Group Breakouts


\- Group 1


\- Group 2

Group 3 -


Group 4 -

# Group Breakout Questions




Question 1: What are some meteorological thresholds that would influence your decision for flight safety and/or a major aspect of your operations?

Question 2: What products and services do you feel can be improved to help with important operational decisions?


Question 1: Once the NWS has the meteorological thresholds from partners, how should we best provide this information?

Question 2: What is the best technologies and techniques we should use to provide improved aviation forecast information/DSS?

# Group Brief Outs


- Group 1


- Group 2

Group 3 -


Group 4 -

# Summary

- Aviation forecasts and decision support can be improved through the identification by partners of high impact thresholds that impact aviation operations.
- We must work collaboratively to ensure that the best aviation forecast is produced and communicated effectively to you - our partners.
- Your breakout answers that you provided today will help guide NWS Mobile with developing improved aviation forecast products as well as refined decision support services for core government partners.
- NWS Mobile will continue to refine our processes based upon feedback received.
- Please continue to help us to better serve your needs.

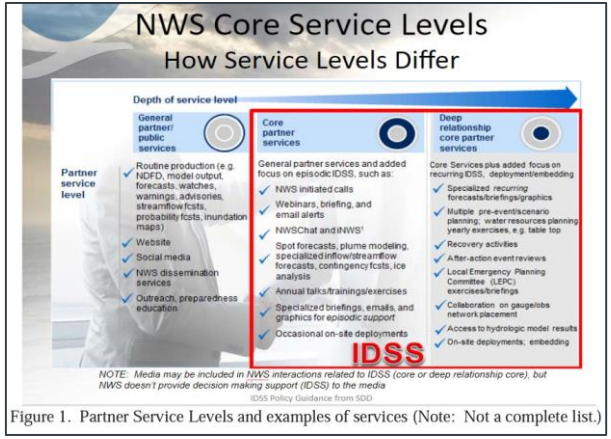


Figure 1. Partner Service Levels and examples of services (Note: Not a complete list.)



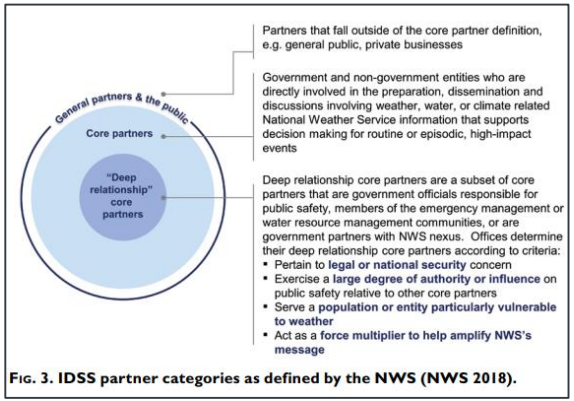


Fig. 3. IDSS partner categories as defined by the NWS (NWS 2018).

# Thank you!

## Questions

WFO Mobile/Pensacola - Contact information - jonathan.howell@noaa.gov