

# **Weather and the Self-Brief: What Do Pilots Know?**

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**Farmington, MN**

**FPAW – October 2018**



# The Self-Brief Vs. Flight Service

## Evolution of Flight Service

**1971 - 1988**

**5000 specialists**

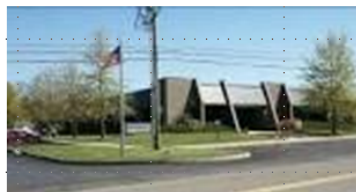
**365**



**1988 - 2005**

**2500 specialists**

**61**



**2005 - 2017**

**700 specialists**

**5**







NATIONAL WEATHER SERVICE  
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# Headlines...



SPORTY'S  
**iPAD**  
PILOT NEWS

ARTICLES ▾

Home » Advanced Tips » DUATS is dead. Here's why you won't miss it.

Advanced Tips

## DUATS is dead. Here's why you won't miss it.

March 15, 2018

### The Untimely Demise Of DUATS

## The Surprising Death of DUATS

By Scott Spangler on March 26th, 2018

Reading that the FAA will end its contract for the Direct User Access Terminal Service (DUATS) on May 16, 2018,

caught me by surprise. The surprise was not that the FAA was not renewing its support of the service. The surprise was that it had already done so around the turn of the century. Clearly, I need learn to pay closer attention to such things.

CSRA

**DUATS**





# Why some won't miss DUATS...or Flight Service...

- **More weather data**
- **More weather forecast products**
- **Wider variety of displays**





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# Headlines...



## WEATHER A SHAKY SUBJECT FOR PILOTS IN SURVEY

April 18, 2018

By AOPA ePublishing staff

Pilots in a university survey were “stumped” by almost half the weather questions posed, a research team found, noting that the weather-knowledge deficit might not stop an applicant from passing an FAA knowledge test.



## With increasing reliance on pilot self-briefing – is the standard for weather “knowledge” adequate?

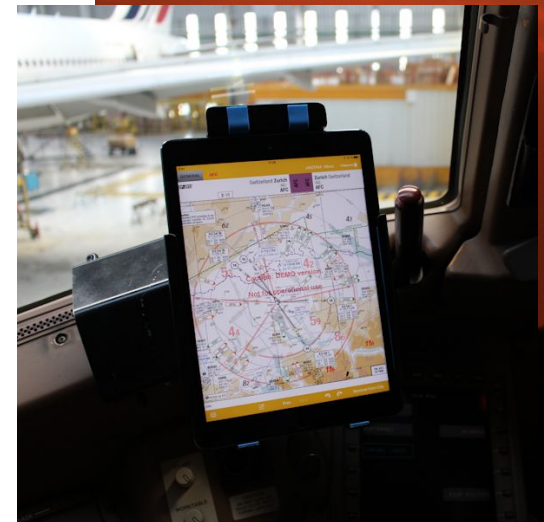






# So...what do pilots know?

- **GA vs. Commercial Jet**
  - **More resources (in theory) available to Part 121**
  - **Weather information and assistance via flight dispatch/operational control**
  - **Plus – opportunity for initial pilot training and annual recurrent training modules to include weather and updates**
  - **Is it enough?**
  - **Is training consistent among carriers?**



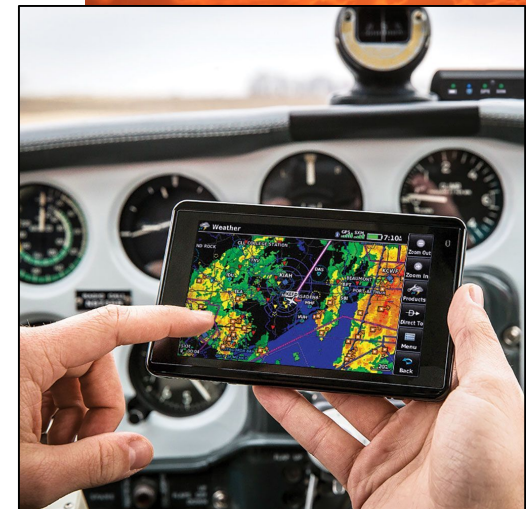


# So...what do pilots know?

- **Focus on the GA Pilot:**
  - Most vulnerable to weather-related accidents
  - Two parts needed to understand what pilots “know”:
    - Status of pilot weather training and continuing education
    - The self-brief – how much are pilots getting the complete picture prior to takeoff and during flight
  - In relation to the weather training and awareness, is there an impact on incidents/accidents? What did the pilot know or not know?



Figure 12-2 Obtain a Thorough Weather Briefing





# The Self-Brief Vs. Flight Service

- Using available technology, are today's pilots giving themselves the complete weather picture prior to take-off? How do we know?
- Should there be a mandatory digital "weather checklist" for every self-brief?
  - Guidance: Appendices 6 & 7 VFR/IFR checklist from FAA GA Pilot's Guide to Weather Planning & Self-Brief
  - Mandatory: Department of Defense DE Form 175-1 ("Dash One")

Preflight Guide v. 1.3

## Appendix 7 Weather Analysis Checklist – IFR Flight

Ceiling and Visibility	Aircraft Performance	Turbulence
<ul style="list-style-type: none"><li>✓ Is the forecast ceiling for my estimated time of arrival high enough to make the approach?</li><li>✓ What visibility can I expect for each phase of flight (departure, enroute, destination)?<ul style="list-style-type: none"><li>--Will I have enough visibility to legally make an instrument approach at the destination?</li><li>--Do current or forecast ceiling and visibility conditions require me to select and file an alternate? (1-2-3 rule.)</li><li>--Where is the nearest GOOD weather alternative?</li></ul></li><li>✓ How do reported and</li></ul>	<ul style="list-style-type: none"><li>✓ Given temperature, altitude, density altitude, and aircraft loading, what is the expected aircraft performance?<ul style="list-style-type: none"><li>o Takeoff distance</li><li>o Time &amp; distance to climb</li><li>o Cruise performance</li><li>o Landing distance</li></ul></li><li>✓ Are these performance values sufficient for the runways to be used and the terrain to be crossed on this flight? <i>(Remember that it is always good practice to add a 50% to 100% safety margin to the "book numbers" you derive from the charts in the aircraft's approved flight manual (AFM).)</i></li><li>✓ Will weight restrictions allow me to carry more than the normal fuel amount?</li></ul>	<ul style="list-style-type: none"><li>✓ Are the wind conditions at the departure and destination airports within the gust and crosswind capabilities of both the pilot and aircraft?</li><li>✓ What is the maneuvering speed (<math>V_A</math>) for this aircraft at the expected weight? <i>(Remember that <math>V_A</math> is lower if you are flying at less than maximum gross weight.)</i></li><li>✓ Thunderstorms. Does the forecast include convective activity at any point along my proposed route?</li></ul>

FLIGHT WEATHER BRIEFING											
PART I - MISSION/TAKEOFF DATA											
1. DATE (YYMMDD)	2. ADP TYPE/NO	3. DEP PT/ID	4. RUNWAY TEMP	5. DEP POINT	6. TEMP DEW	7. PRESSURE ALT	8. DENSITY ALT	9. SFC WIND	10. CLIMB WIND	11. LOCAL WEATHER WARNING/ADVISORY	12. ROR
13. REMARKS (TAKEOFF ALT/NOTES)											
PART II - ENROUTE DATA											
14. FLT LEVEL		15. FLT LEVEL WIND/TEMP									
16. CLOUDS AT FLT LEVEL		17. MINIMUM VISIBILITY AT FLT LEVEL OUTSIDE CLOUDS									
18. MINIMUM CLOUDS		IN AND OUT		19. MAXIMUM CLOUDS TOPS		HAZE		PRECIPITATION		MILES DUE TO	
20. THUNDERSTORMS		21. TURBULENCE		22. Icing		23. PRECIPITATION		24. DRIZZLE		25. SNOW	
26. AIRBORNE		27. VIBRATION		28. SFC WIND		29. ALTITUDE		30. VALID TIME		31. REQUEST PREP AT	
32. WEATHER		33. FLIGHT		34. FORECASTER'S SIGNATURE OR INITIALS		35. FORECASTER'S UNIT		36. NAME OF PERSON RECEIVING BRIEFING		37. VOICE TIME	
38. EXTENDED TO		39. WEATHER		40. FORECASTER'S UNIT		41. NAME OF PERSON RECEIVING BRIEFING		42. VOICE TIME		43. REQUEST PREP AT	
DD Form 175-1, SEP 89 (EG)											





# The Self-Brief Vs. Flight Service

## PRE-DUTY CONTROLLER WEATHER BRIEFING

The Pre-Duty Controller Weather Briefing is designed to increase controller situational awareness. It is produced by the Center Weather Service Unit three times daily. After hours or during changing weather this briefing may not represent the latest information. This product does not replace pilot pre-flight briefings.

Pre-Duty Weather Briefing  
from ZMP Minneapolis

For ATC planning purposes only.

Surface map

01:54

vimeo

**Pre-Duty Weather Briefing – FAA mandated  
ARTCC controller weather briefing  
(from [www.weather.gov/ZMP](http://www.weather.gov/ZMP))**





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# The Self-Brief Vs. Flight Service

- **NTSB study - 41% of the weather related accidents the pilot did not obtain or receive an adequate weather briefing**



Slide/info:

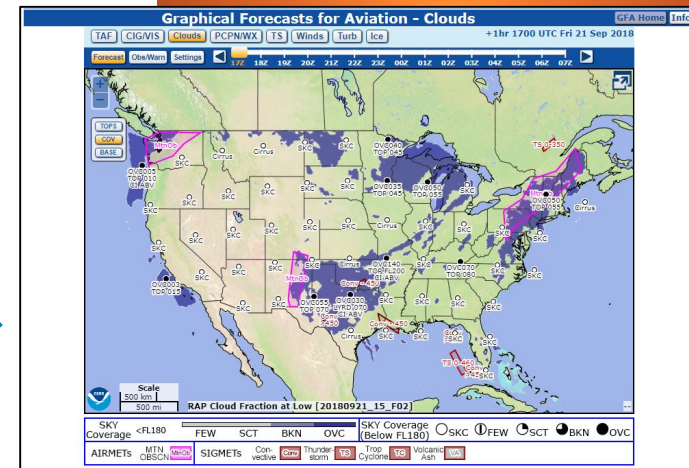
Courtesy Paul Suffern/NTSB



# Pilot Weather Education

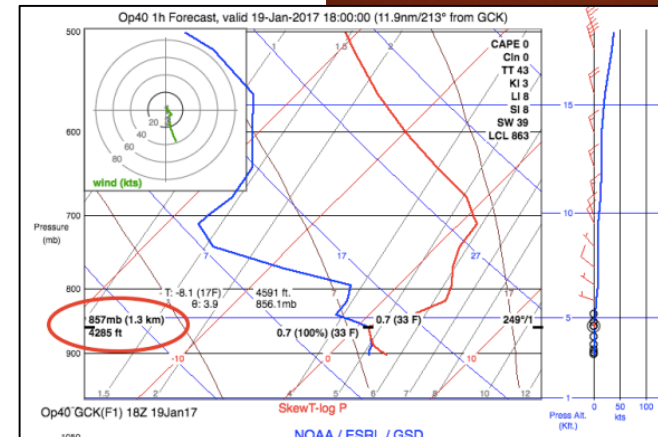
- There are lots of products and ways to look at aviation weather, but how are pilots understanding what they see?

New GFA tool



- Without flight service are they looking at the proper sources of information and interpreting products correctly?

Skew-T diagram?







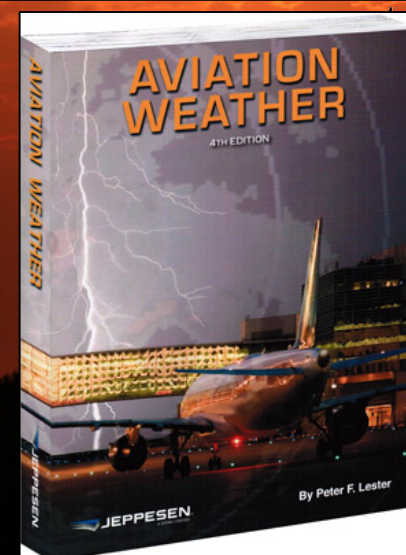
# Pilot Weather Education

**From a FAA VNR study (“VFR not recommend” benefits) involving Alaska pilots:**

- **Only 3 out of 20 pilots had some formal wx interpretation training via classroom**
- **12 out of 20 pilots had no wx interpretation training**

Info:

Courtesy Paul Suffern/NTSB

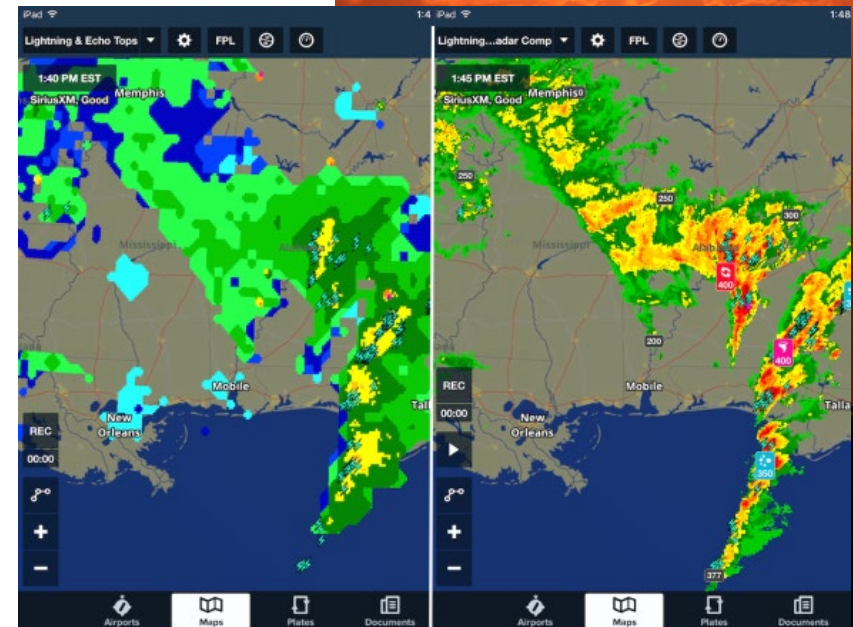
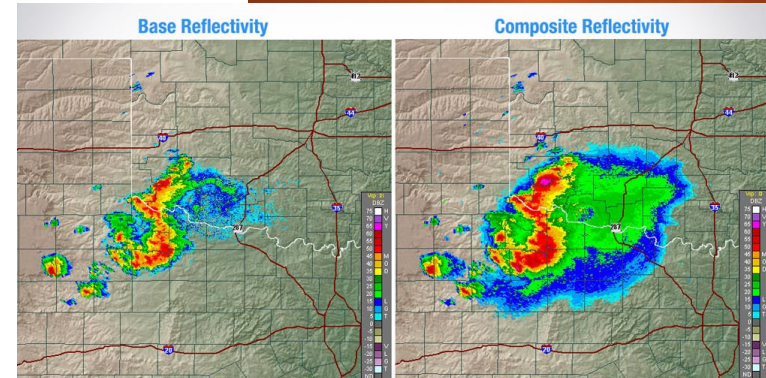




# Product Consistency

**Are all airmen looking at the same weather product?**

- Are there inconsistencies between current available digital graphics and presentations that could lead to errors in judgment?
- Ex: You are looking at “radar”
  - what does that mean?
    - Base Reflectivity?
    - Composite?
    - Echo Tops?
    - Time?

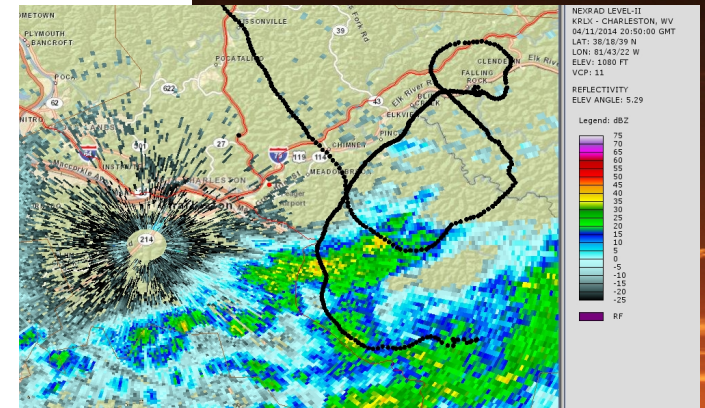


# Controller Coordination

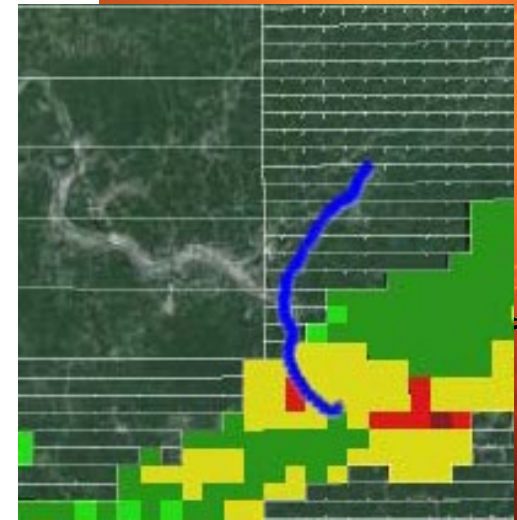
- How does the weather data and guidance available to a controller compare to that of pilots in the cockpit?
- How do discrepancies affect safety and efficiency of the NAS?
- Two parts to this:
  - How displays of current weather information differ
  - Types of products/displays available to today's pilot vs. the controller

Imagery:  
Courtesy Paul Suffern/NTSB

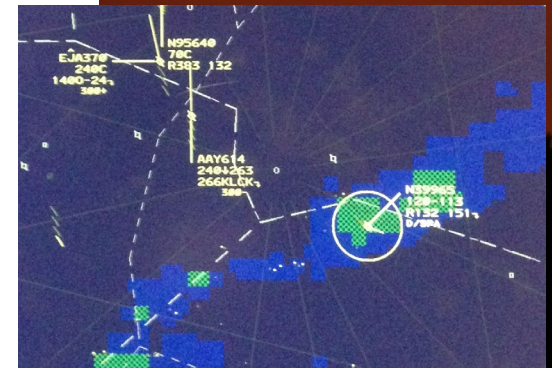
**NEXRAD**



**Cockpit**



**Controller**



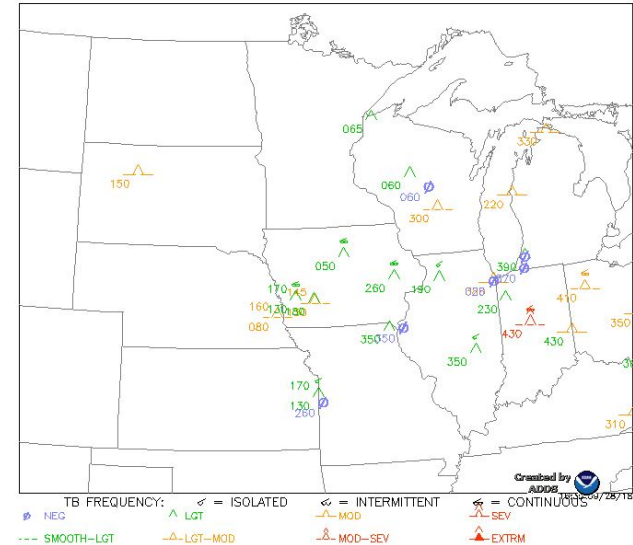




# Controller Coordination

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Pilot Reports (PIREPs) of Turbulence  
1506z – 1627z 09/28/18



## AWC PIREPs



Flight Viewer

**THANK YOU**



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