



Weather Related Accidents Across the Western United States and NTSB Accident Dashboard

Paul Suffern – NTSB Meteorology Investigator

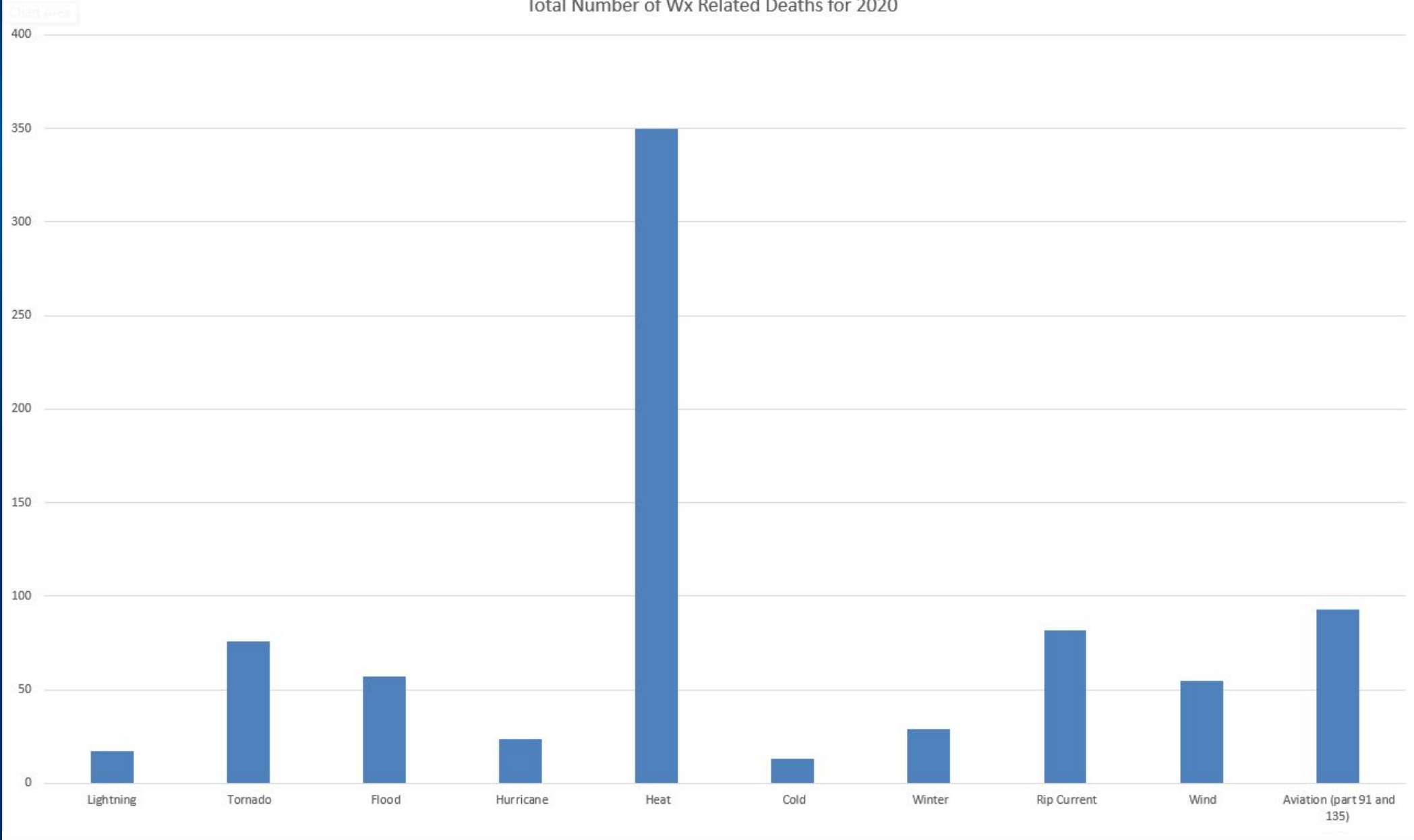


Photo 1 – Main Wreckage as Found

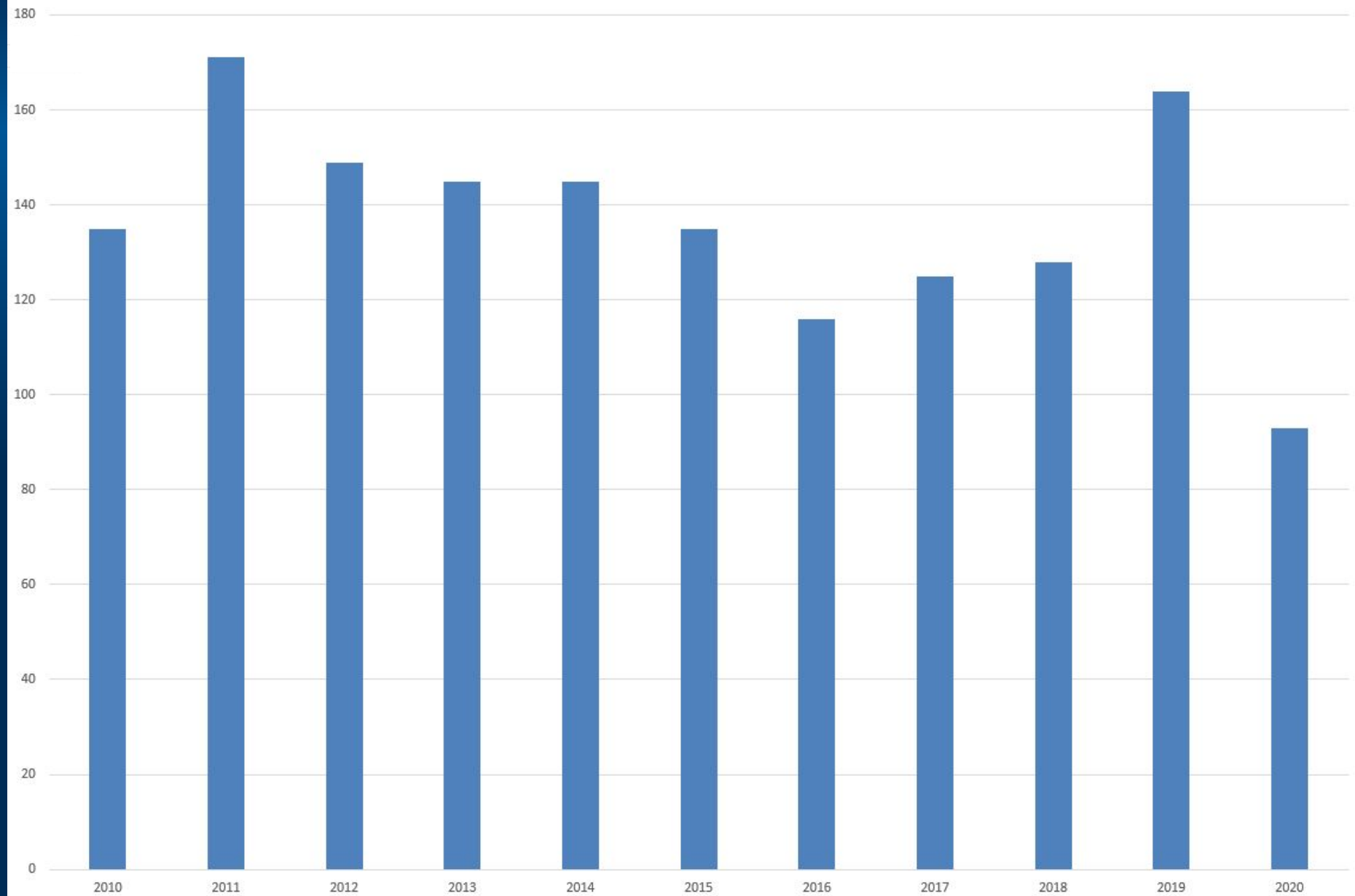


m the right side.

Total Number of Wx Related Deaths for 2020



Aviation (part 91 and 135) Wx Related Deaths by year



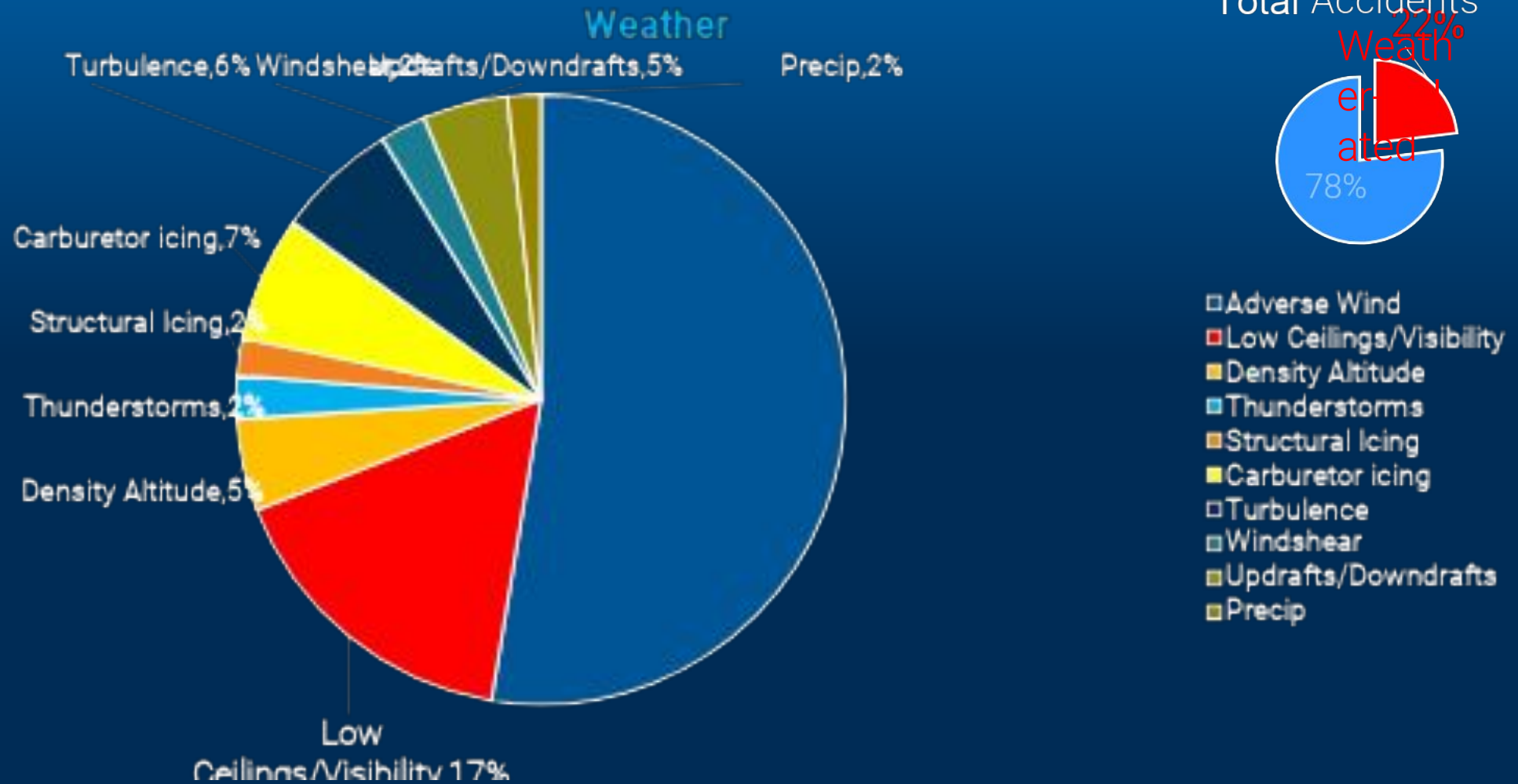
Part 91 Weather-Related Accidents 2008-2020

	Weather-Related	Non Weather-Related	Total Events	Weather-Related Percentage
Accidents	3,637	12,108	15,745	23%
Fatal Accidents	823	2,027	2,850	27%

*D.Eick/
E.Emer
y NTSB
2022*

- Based on the average

GA – Weather-Related Accidents, 2008-2020

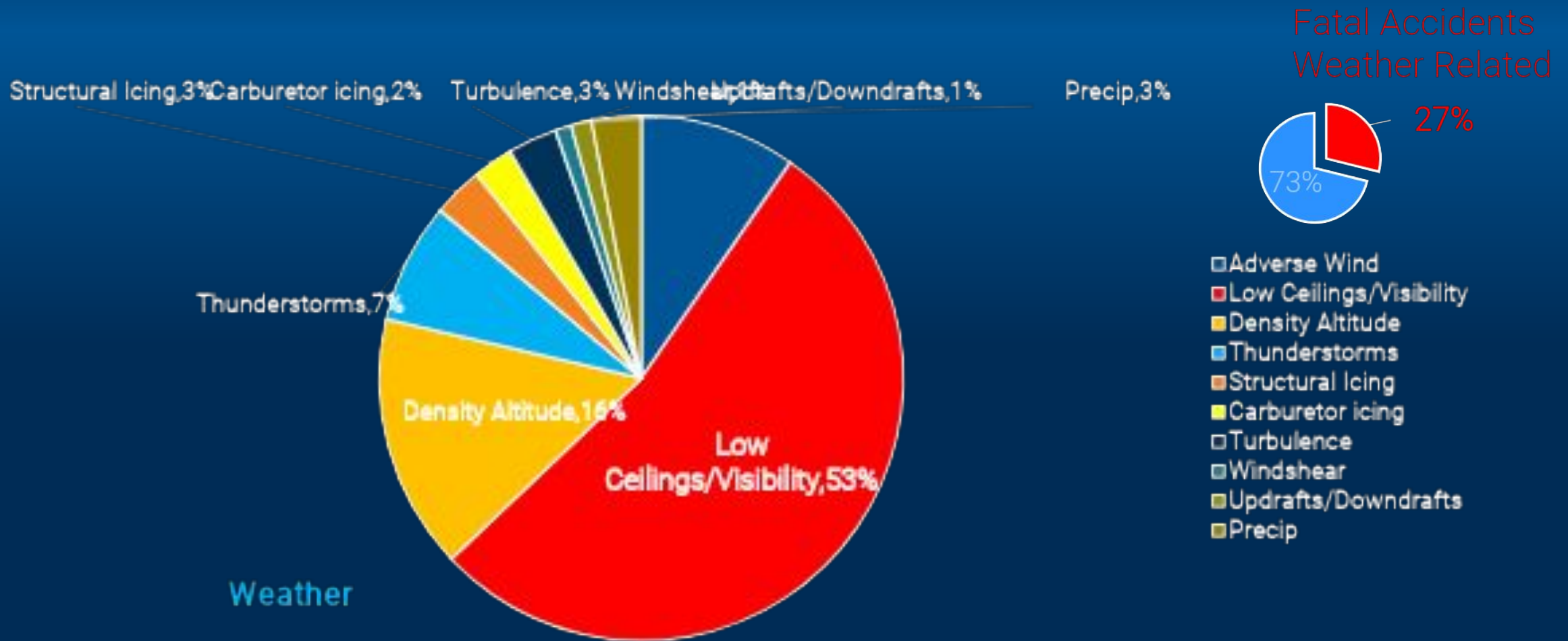


D.Eick/E.Emery NTSB 2022

Note -
Light

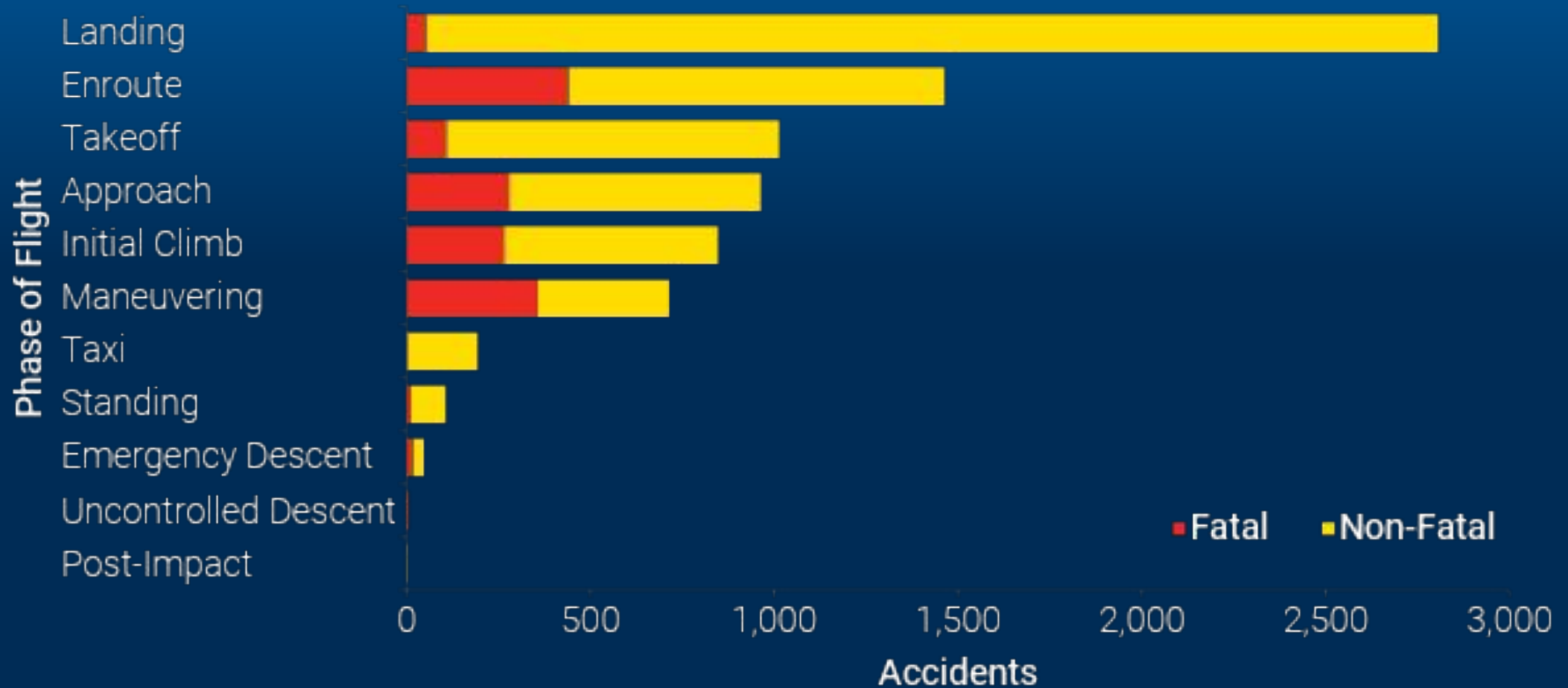
NTSB

GA– Fatal Weather-Related Accidents, 2008-2020



D.Eick/E.Emery NTSB 2022

Phases of Flight for GA Personal Flying Accidents 2012-2021



WPR19FA103

Cirrus SR22, N173CT

Farmington, New Mexico

March 2019



VFR flight following part 91

Pilot, not instrument rated, ~370 hrs, ~100 hours make/model

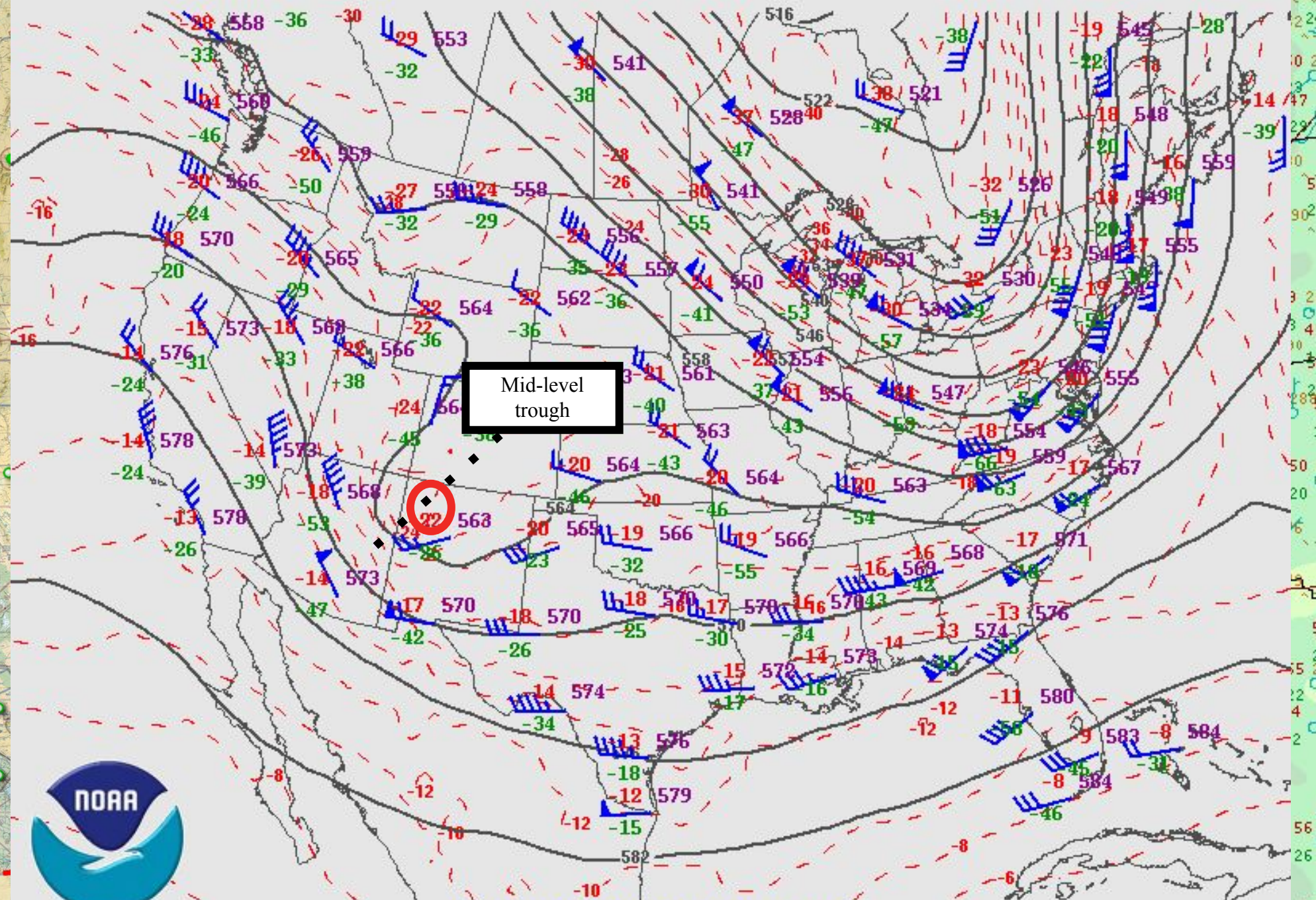
Halls Crossing, Utah (U96) to Big Springs, Texas (BPG)

ForeFlight weather briefing requested day before flight

Told Flight Service had AIRMETs shortly after departure

1-Fatal

***METAR KFMN 312153Z 33020G26KT 10SM -RA FEW044 OVC065 05/M01
A3012 RMK AO2 PK WND 33029/2128 RAB48 SLP197 P0000 T00501006=***



Mid-level
trough



National Weather Service
Storm Prediction Center

190401/0000 500 MB UA OBS, HGHTS, and TEMPS

FORECASTED POINTS MAY NOT REPRESENT CONDITION IN PROXIMITY

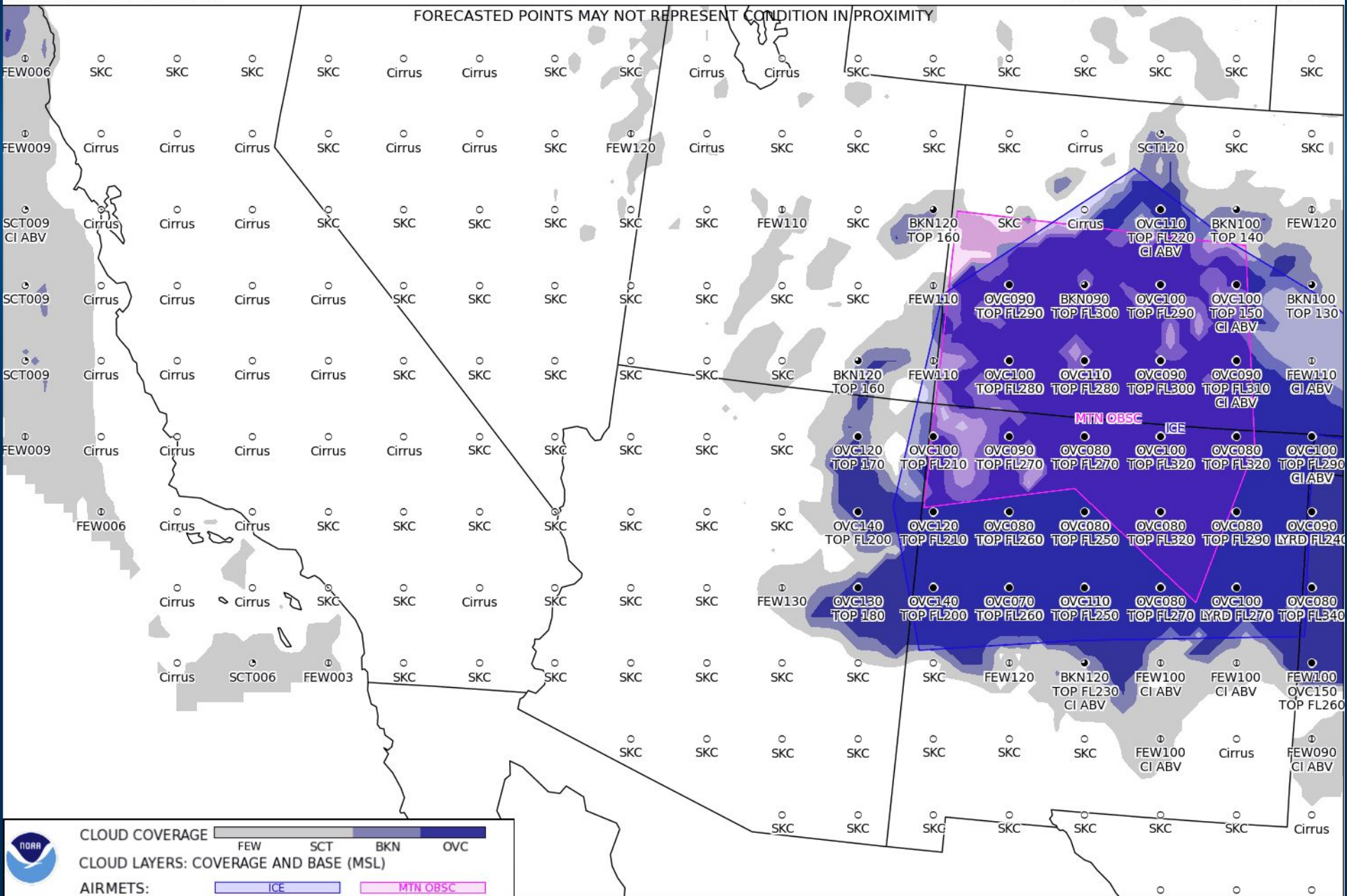
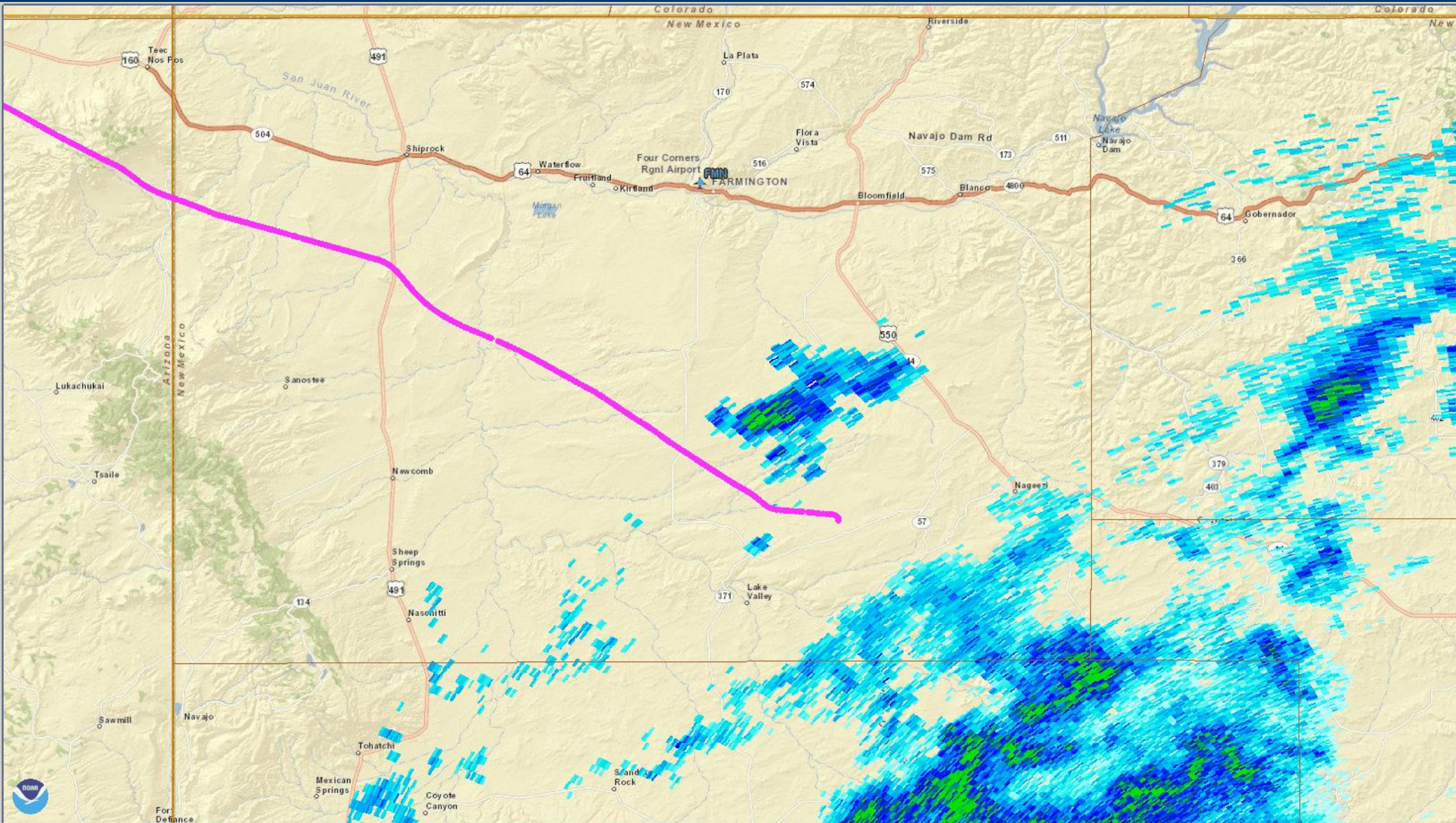




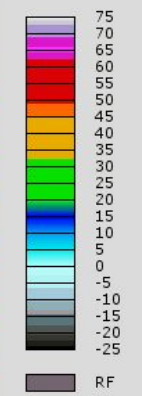
Figure 1. ADS-B-derived flight track. Final turn inset



NEXRAD LEVEL-II
KABX - ALBUQUERQUE, NM
03/31/2019 20:15:37 GMT
LAT: 35/08/58 N
LON: 106/49/23 W
ELEV: 5870 FT
VCP: 215

REFLECTIVITY
ELEV ANGLE: 0.48
SWEEP TIME: 20:15:45 GMT

Legend: dBZ

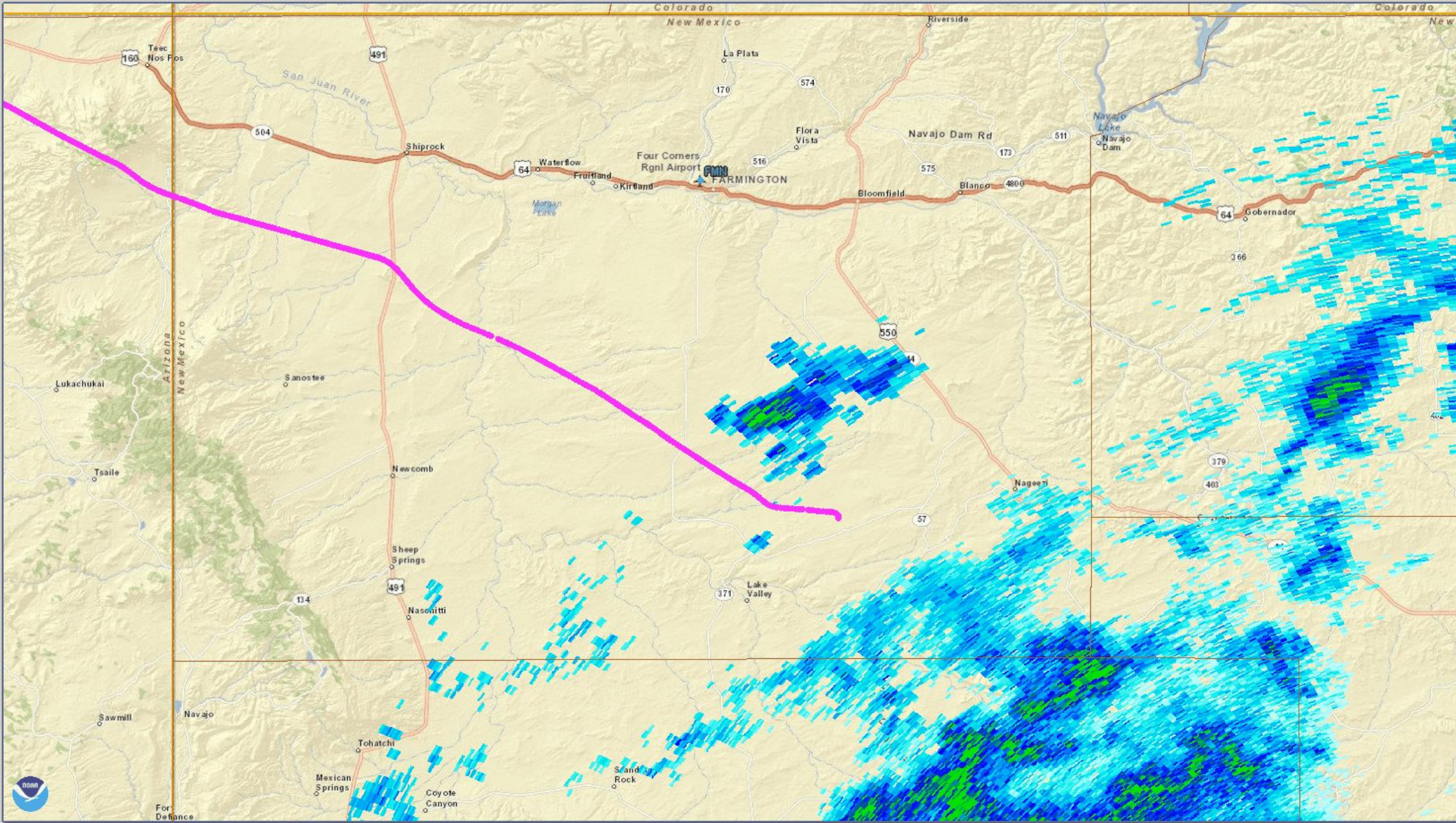


Convective SIGMET valid for the region along with AIRMETs Sierra and Zulu

Between 1428 and 1439 attempted leveled off ~1,000 ft below cloud base

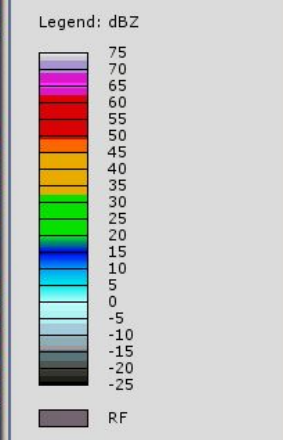
Pilot had an active subscription to commercial satellite weather service and plane was also equipped with multiple avionics devices capable of receiving and displaying weather information

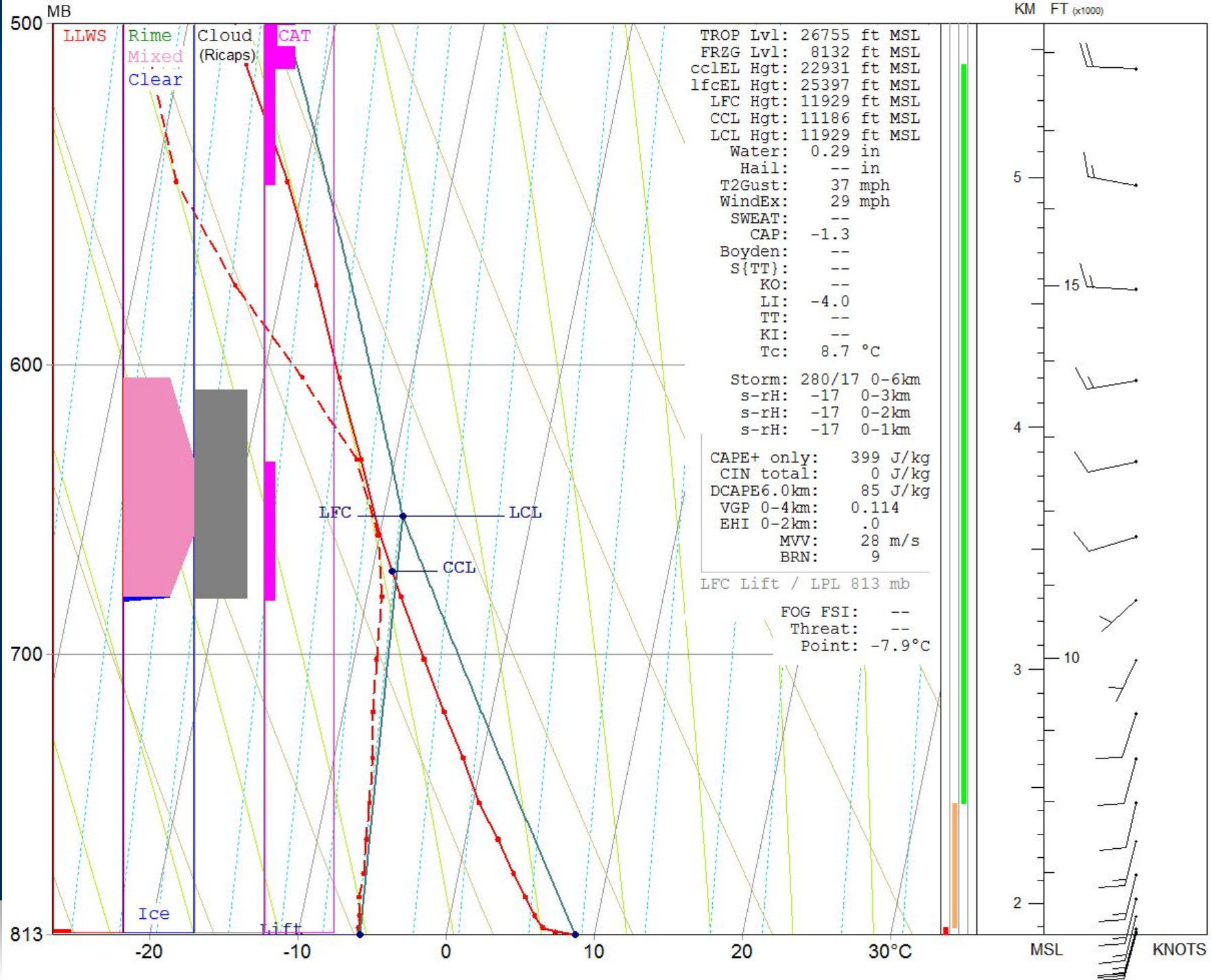
What extent the pilot accessed weather imagery in-flight could not be determined



NEXRAD LEVEL-II
KABX - ALBUQUERQUE, NM
03/31/2019 20:15:37 GMT
LAT: 35/08/58 N
LON: 106/49/23 W
ELEV: 5870 FT
VCP: 215

REFLECTIVITY
ELEV ANGLE: 0.48
SWEEP TIME: 20:15:45 GMT







The National Transportation Safety Board determines the probable cause(s) of this accident as follows:

The noninstrument-rated pilot's continued visual flight rules flight into an area of forecast instrument meteorological conditions, which resulted in spatial disorientation and a subsequent loss of control

WPR20LA304

Cessna 172H, N3720R

Seeley Lake, Montana

September 2020



Night VFR part 91

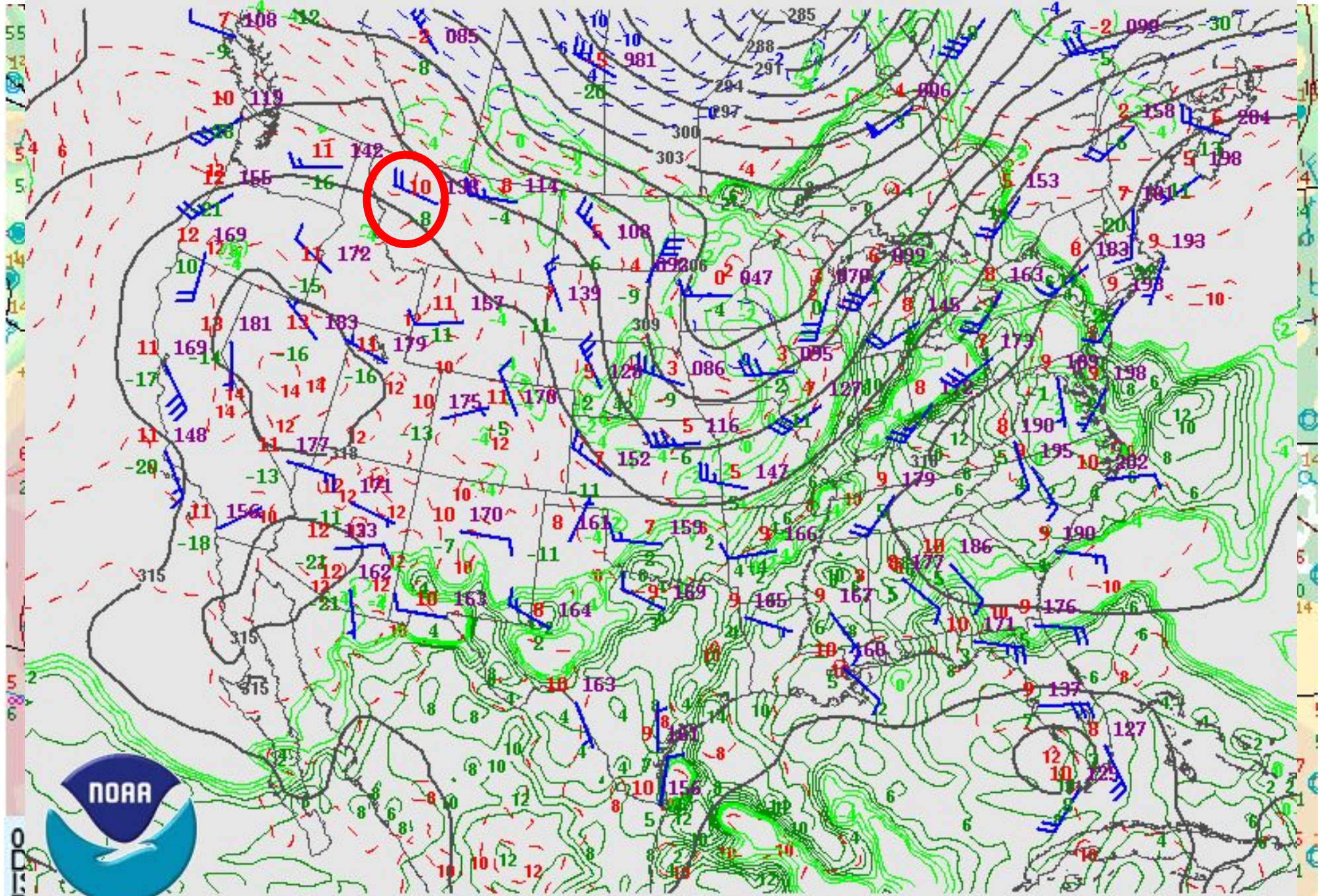
Pilot, not instrument rated, ~569 hrs, ~330 hours make/model

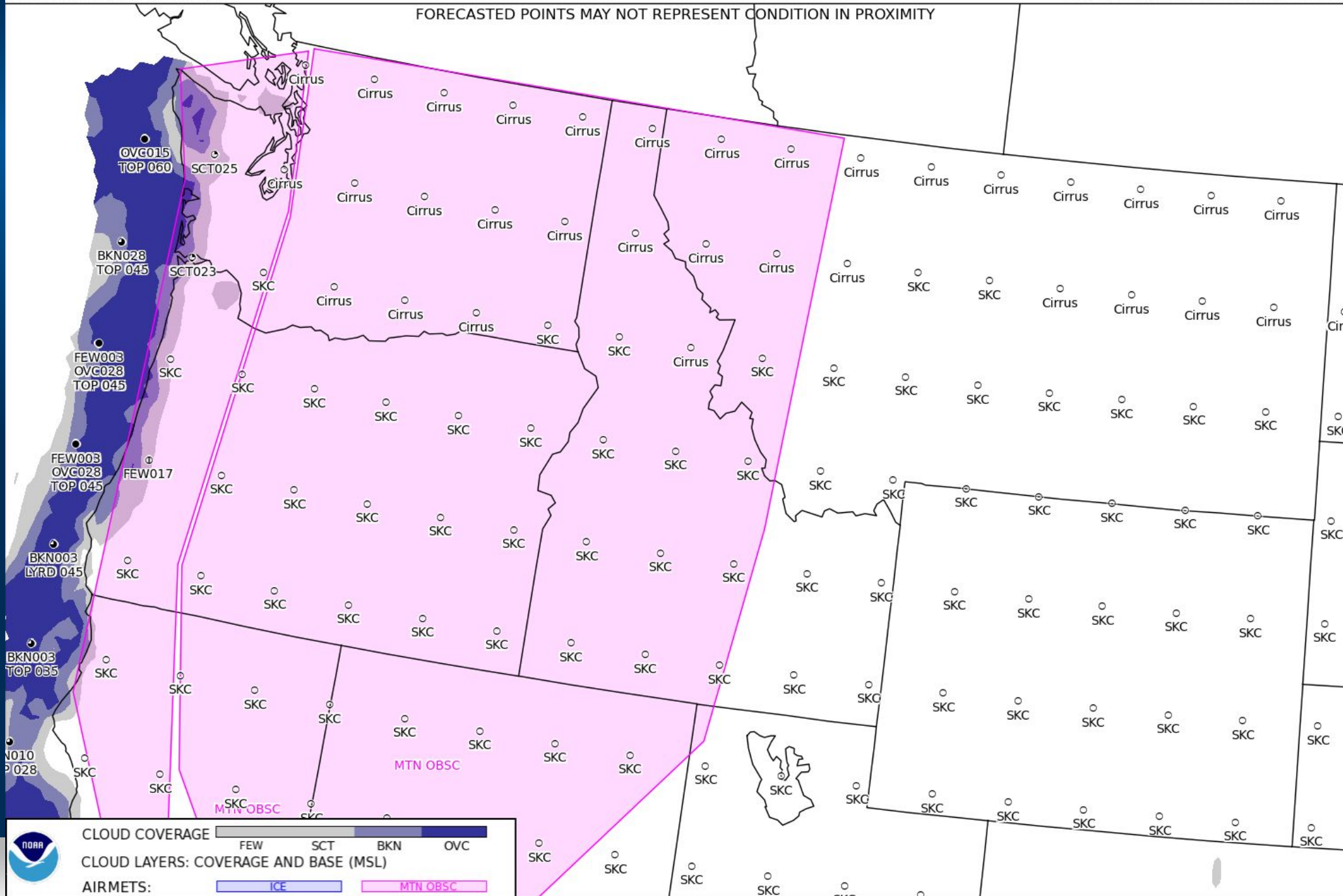
Return flight from Anaconda, MT (3U3) to Seeley Lake, MT (23S) after golf event

No known weather briefing

2-Fatal, 1-Serious

*METAR KMSO 130353Z AUTO 00000KT 6SM HZ CLR 16/03 A2999 RMK
AO2 SLP146 T01610033 \$=*



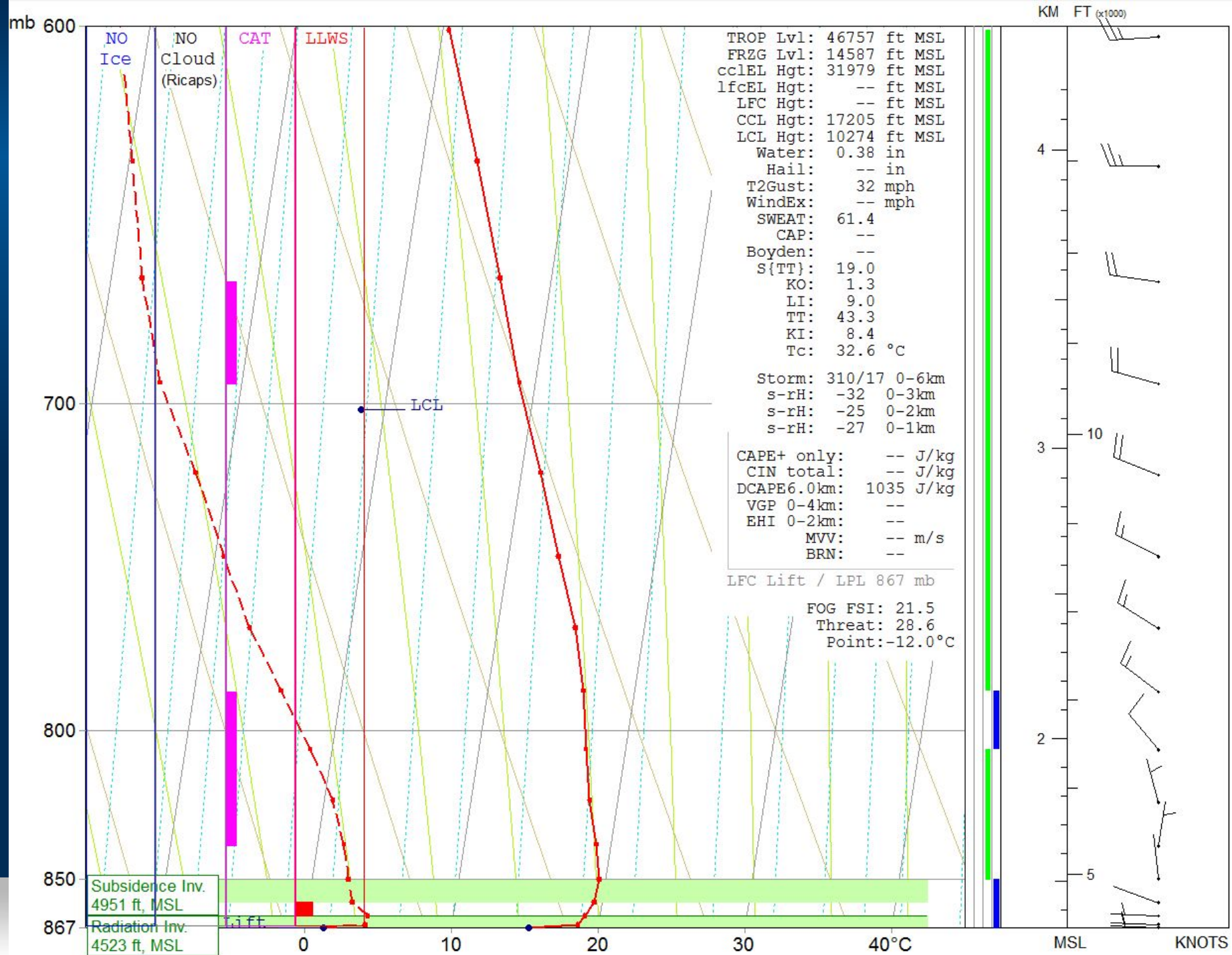


Pilot flying back at night to home airport after golf event

Approached destination airport, but then overflowed it and crashed $\frac{3}{4}$ miles north

The distance the airplane traveled through the trees was consistent with controlled flight into terrain, and the heading was consistent with a final approach to the airport's south runway

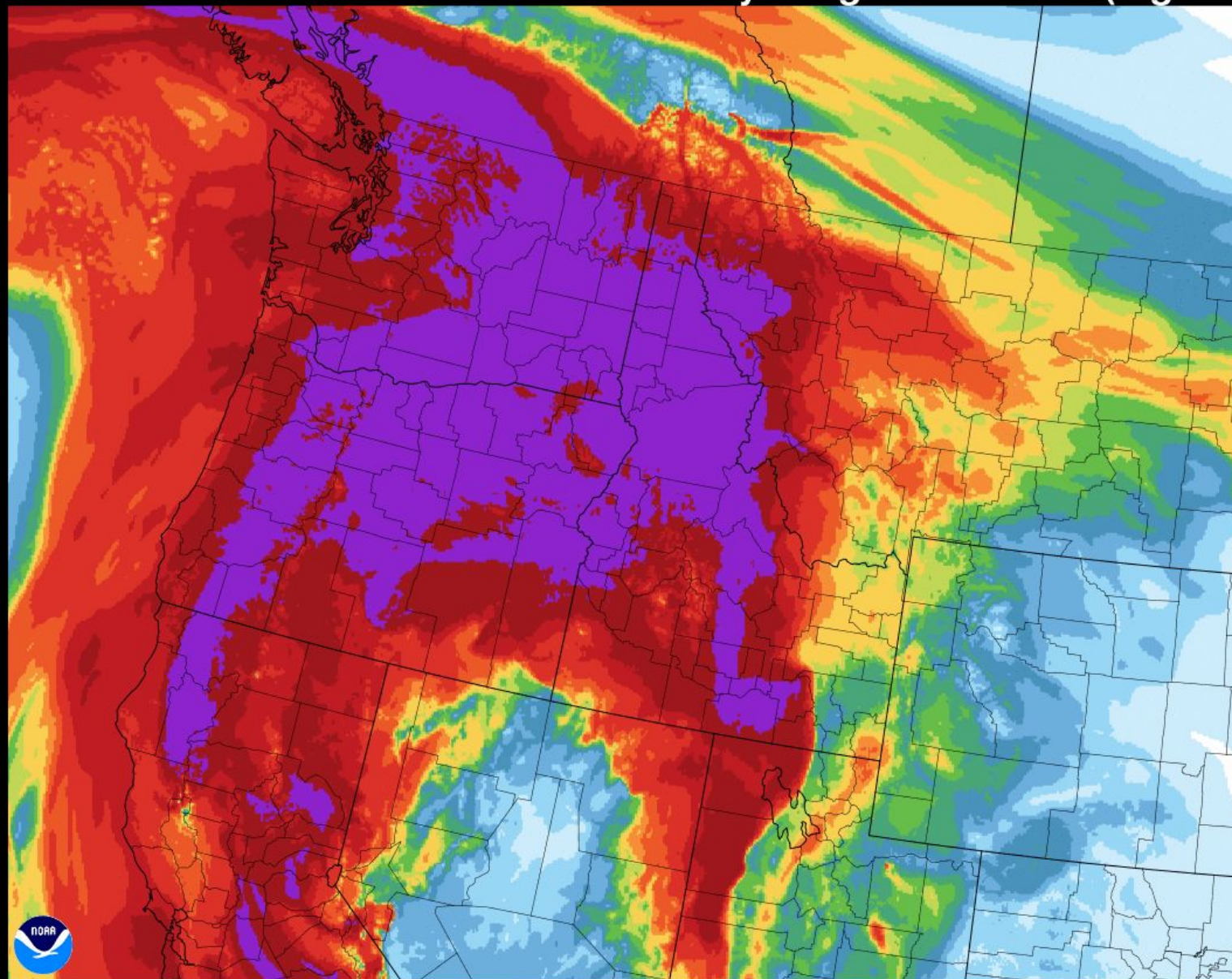
Many wildfires were occurring in the Pacific Northwest at the accident time



HRRR-SMOKE 2020-09-13 00 UTC 4h fcst - Experimental

Valid 09/13/2020 04:00 UTC

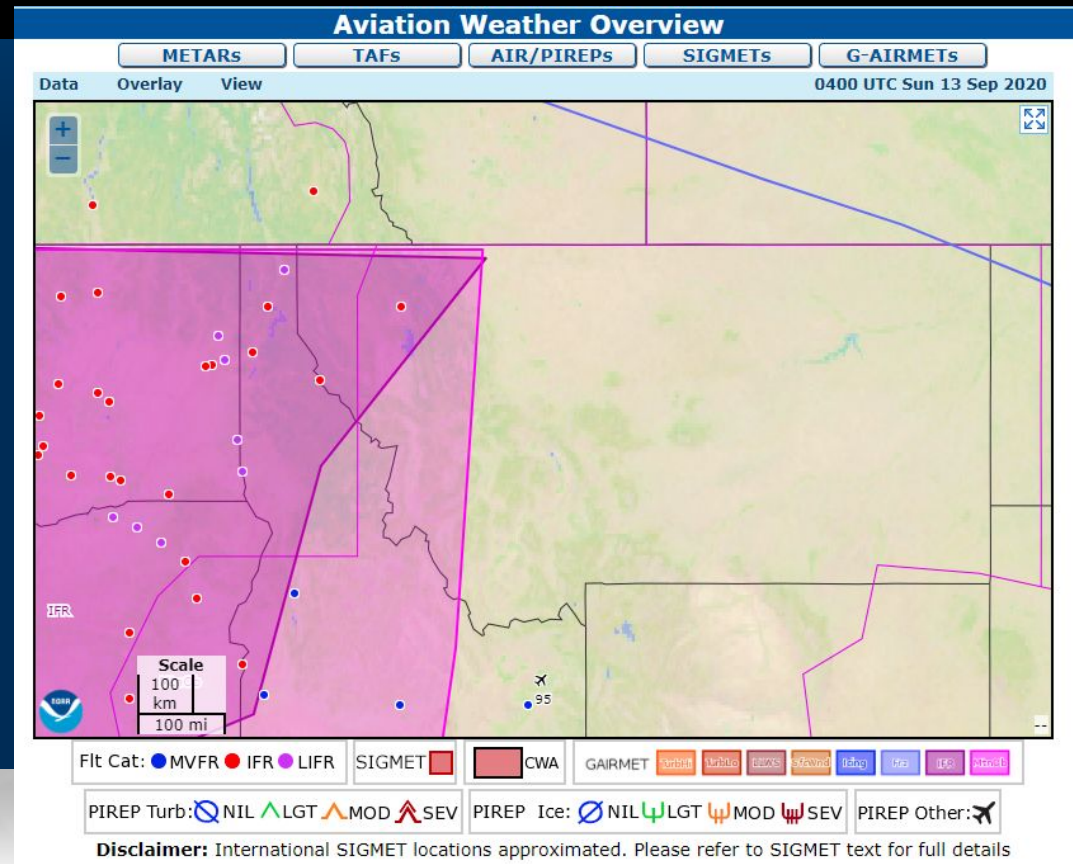
Vertically Integrated Smoke (mg/m^2)



Aviation section AFD:

.AVIATION...Satellite loops this afternoon show smoke moving into the Northern Rockies. Surface observations in Washington, Oregon, and northern Idaho show low visibility with 1/2 to 1SM common.

This low visibility smoke is forecast to overtake central Idaho tonight and western Montana during Sunday morning. Widespread visibility reductions are expected during Sunday which may remain for many days.





The National Transportation Safety Board determines the probable cause(s) of this accident as follows:

The noninstrument-rated pilot's encounter with instrument meteorological conditions during a night visual approach due to wildfire smoke, which resulted in controlled flight into terrain.

What about ForeFlight or other Apps?

BRIEFING SUMMARY

KVNY to KEUG
15,000' MSL in N123SB
Depart **Apr 07, 1415z**
GMN CZQ

• 15 unread sections

STANDARD BRIEFING

⚠ Adverse Conditions

📄 Synopsis

🌤 Current Weather

📅 Forecasts

• 📌 NOTAMs

📶 Flow Control

• ⋮ Miscellaneous

• ⚠ Legacy Briefing

ZOA 7/3380 TFR
Apr 02, 2200Z - Apr 09, 2159Z
FDC 7/3380 ZOA CA..AIRSPACE BEALE AFB, CA..TEMPORARY FLIGHT RESTRICTIONS.

ACTIVE DURING PASSING TIME
Apr 07, 1631Z - Apr 07, 1638Z

ZOA 7/3756 TFR
Apr 07, 1400Z - Apr 08, 0300Z
FDC 7/3756 ZOA CA..AIRSPACE OROVILLE, CA..TEMPORARY FLIGHT RESTRICTIONS WI AN...

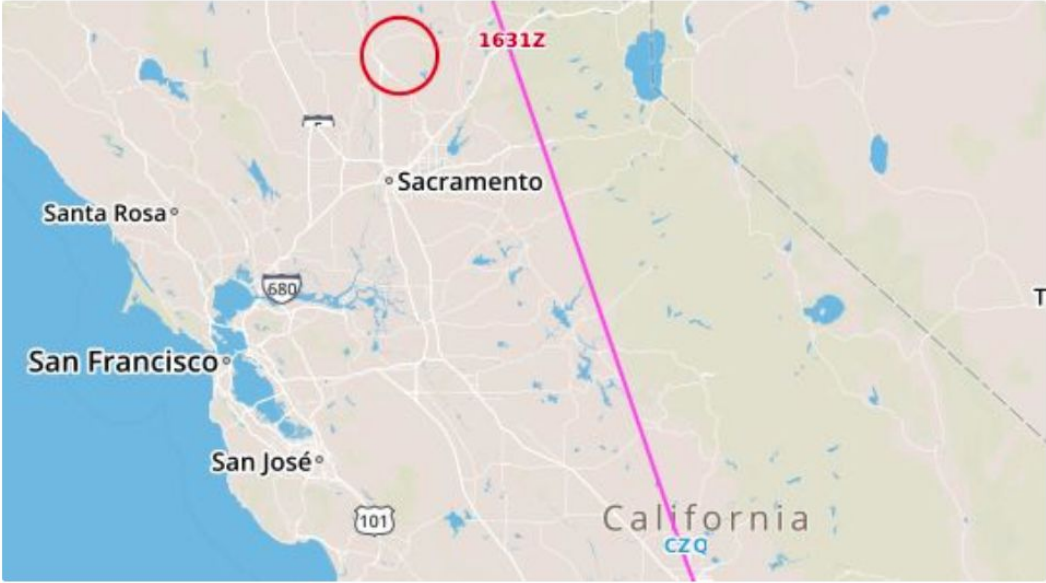
ACTIVE DURING PASSING TIME
Apr 07, 1643Z - Apr 07, 1644Z

NEXT: IFR Airmets

Temporary Flight Restriction
ZOA 7/3380 TFR

Apr 02, 2200Z - Apr 09, 2159Z
ACTIVE TIME

Apr 07, 1631Z - Apr 07, 1638Z
ACTIVE DURING PASSING TIME



RAW TEXT

FDC 7/3380 ZOA CA..AIRSPACE BEALE AFB, CA..TEMPORARY FLIGHT RESTRICTIONS.
APRIL 2-9, 2017 LOCAL. PURSUANT TO 49 USC 40103(B), THE FEDERAL AVIATION ADMINISTRATION (FAA) CLASSIFIES THE AIRSPACE DEFINED IN THIS NOTAM AS 'NATIONAL DEFENSE AIRSPACE'. ANY PERSON WHO KNOWINGLY OR WILLFULLY VIOLATES THE RULES CONCERNING OPERATIONS IN THIS AIRSPACE MAY BE SUBJECT TO CERTAIN CRIMINAL PENALTIES UNDER 49 USC 46307. PILOTS WHO DO NOT ADHERE TO THE FOLLOWING PROCEDURES MAY BE INTERCEPTED, DETAINED AND INTERVIEWED BY LAW ENFORCEMENT/SECURITY PERSONNEL. PURSUANT TO TITLE 14 CFR SECTION 99.7, SPECIAL SECURITY INSTRUCTIONS, ALL AIRCRAFT FLIGHT OPERATIONS ARE PROHIBITED WITHIN AN AREA DEFINED AS 10NM RADIUS OF 390803N1212615W (MYV055006.7) 4100FT MSL-FL180 EFFECTIVE 1704022200

<https://www.nts.gov/Advocacy/safety-alerts/Documents/SA-017.pdf>

<https://www.nts.gov/Advocacy/safety-alerts/Documents/SA-064.pdf>

<https://www.nts.gov/Advocacy/safety-alerts/Documents/SA-082.pdf>

<https://www.nts.gov/safety/safety-studies/Pages/DCA18SS003.aspx>

**SAFETY
ALERT** 082

NTSB National
Transportation
Safety Board

September 2020



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

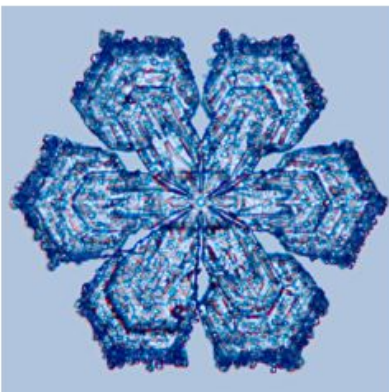
Flight in Snow

Assess the risk of flight in wet snow conditions, especially at low altitudes

The problem

Flight in wet snow and associated icing conditions can lead to deadly consequences. While snow is typically thought to consist of all-frozen water, snowfall can also contain liquid particles either on the flakes or liquid particles falling amongst the snowflakes. This is what is commonly referred to as wet snow (see figure 1). The liquid portions of wet snow have the potential to freeze onto surfaces that the snow comes in contact with (for example, aircraft) and pose a significant hazard to safety of flight through structural, engine, and windshield ice accumulation.

Although Federal Aviation Administration (FAA) Advisory Circular (AC) 91-74B states "dry snow" is unlikely to pose an icing hazard while "wet snow" could, the FAA does not define either term. It is imperative that pilots and dispatchers review all potential snow forecasts for an icing threat in addition to potential instrument meteorological conditions (IMC).



SOURCE: GREGORY THOMPSON, IN THE CLOUDS PHOTOGRAPHY

Figure 1. A snowflake containing liquid particles

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Pilot W

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The problem

- Sparse reporting of PIREPs (brief reports of pilot weather observations) improving weather
- Pilots submit relatively good or "as good as" reports
- Pilots may use different methods.
- Pilots may use different methods.



Safety Research Report

NTSB/SS-21/01
PB2021-100927



**National
Transportation
Safety Board**



Accidents

Findings

Safety Recommendations

Accidents by Investigative Findings

Category

Environmental issues

Subcategory

Conditions/weather/phenomena

Section

Ceiling/visibility/precip

Subsection

Accident Details

NTSB Number	Date	City	State or Region	Country	Latitude	Longitude	Fatal Injuries	Serious Injuries	Aircraft Registration	Aircraft Category
WPR19FA084	2/15/2019	Ely	Nevada	United States	39.334167	-114.780550	2		N917SR	Airplane
CEN19FA088	2/28/2019	Shreveport	Louisiana	United States	32.548610	-93.761390	2		N428CD	Airplane
ERA19FA113	3/1/2019	Louisburg	North Carolina	United States	36.001945	-78.354721	3		N26617	Airplane
ERA19FA163	5/4/2019	Kent Island	Maryland	United States	38.815834	-76.383056	2		N572MD	Helicopter
CEN19FA140	5/11/2019	Eagle Lake	Texas	United States	29.516111	-96.397781	1		N713LA	Airplane
ERA19FA191	6/10/2019	New York	New York	United States	40.761665	-73.981941	1	0	N200BK	Helicopter
WPR19FA175	6/17/2019	Two Harbors	California	United States	33.462776	-118.574720	1		N7187D	Helicopter
CEN19FA177	6/20/2019	Elida	Ohio	United States	40.846389	-84.158332	2		N6150X	Airplane
CEN19FA247	8/3/2019	Ontonagon	Michigan	United States	46.699165	-89.472778	1		N5167L	Airplane
WPR19FA263	9/19/2019	Nixon	Nevada	United States	47.230861	-122.360084	2		N1891X	Airplane
ERA20FA021	10/30/2019	Atlanta	Georgia	United States	33.856945	-84.290557	2	0	N56258	Airplane
ERA20LA262	7/28/2020	Malbis	Alabama	United States	30.713333	-87.705001	2		N3156W	Airplane
CEN20LA354	8/20/2020	Ely	Minnesota	United States	47.894165	-91.771385	1		N997S	Airplane
WPR20LA304	9/12/2020	Seeley Lake	Montana	United States	47.197223	-113.445550	2	1	N3720R	Airplane
ERA21LA028	10/21/2020	Point Lookout	New York	United States	40.598289	-73.562090			N716VL	Helicopter
CEN22FA058	12/3/2021	Bonnerdale	Arkansas	United States	34.344821	-93.359793	1		N182NS	Airplane
CEN22FA067	12/8/2021	Houston	Texas	United States	29.778000	-95.673000	2		N3865K	Airplane

Accidents with
11,739

Preset Filters

Aircraft Control Findings

Power Plant Findings

Weather Findings

Additional Filters

Injury Level

- Select all
- Fatal
- Non-Fatal

Year

All

Flight Operation Type

All

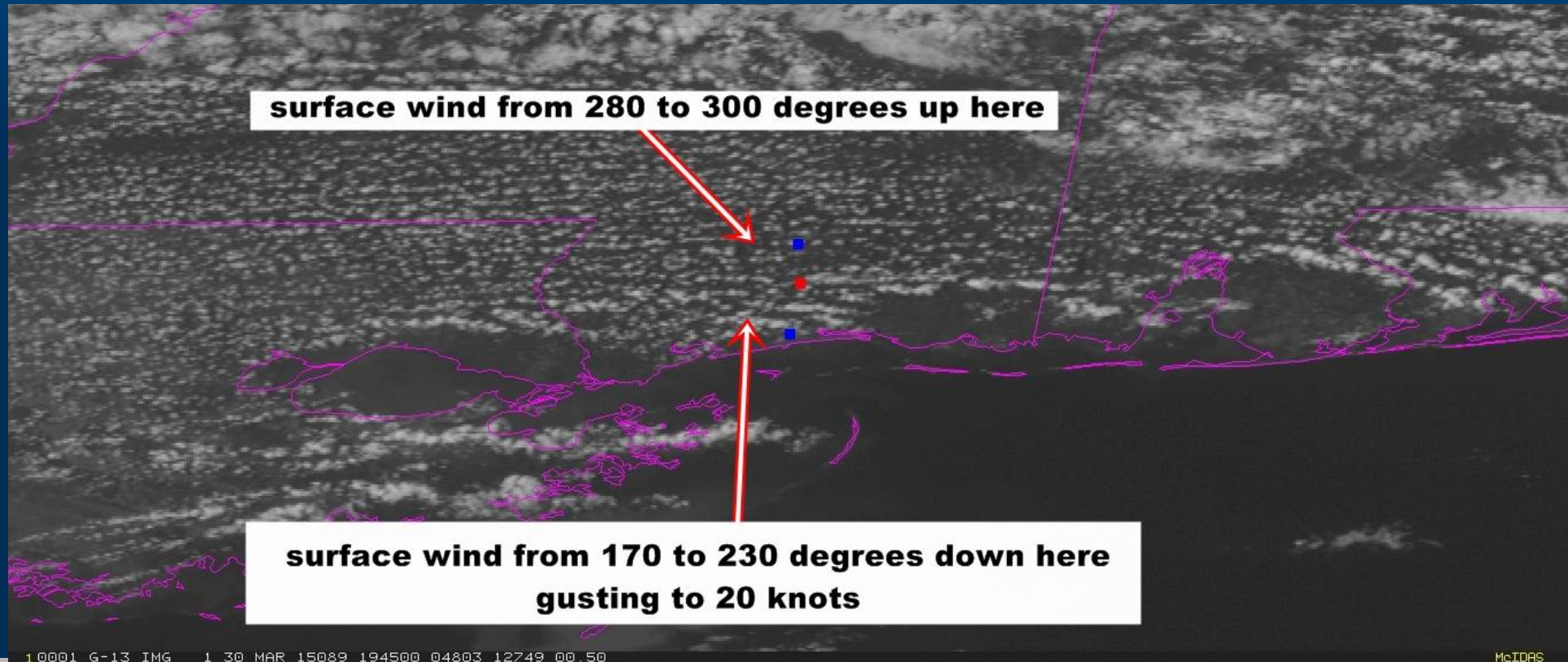
View Details

Clear Filters

Any Questions?

My email: paul.suffern@ntsb.gov

[General Aviation Accident Dashboard: 2012-2021 \(ntsb.gov\)](https://www.ntsb.gov/general/aviationaccidentdashboard/)





[nts.gov](https://www.nts.gov)