



PIREPs in Weather Forecasting

Aviation Weather Center

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Reenergized Safety Emphasis



NTSB MOST WANTED LIST

CRITICAL CHANGES NEEDED TO REDUCE TRANSPORTATION ACCIDENTS AND SAVE LIVES

GENERAL AVIATION: IDENTIFY AND COMMUNICATE HAZARDOUS WEATHER

What is the Problem?

The overwhelming majority of aviation-related deaths in the United States occur in general aviation (GA) accidents. In 2011, there were 1,466 GA accidents, of which 263 were fatal. 444 people were killed, and the accident rate per 100,000 flight hours remains substantially higher in GA than in commercial aviation (6.51 for GA compared to 1.5 for on-demand Part 135 operations and 0.162 for scheduled Part 121 operations). Historically, about two-thirds of all GA accidents that occur in instrument meteorological conditions (IMC)¹ are fatal—a rate much higher than the overall fatality rate for GA accidents.

A frequent cause of or contributing factor to these accidents is hazardous weather. For example, on December 19, 2011, a Piper carrying the pilot and four passengers impacted terrain following an in-flight break up near Bryan, Texas. NTSB investigators determined that the probable cause of the five-fatality accident was the pilot's inadvertent encounter with severe weather, which caused a failure of the left wing. One of the issues identified in the investigation was the presentation of weather radar data in the cockpit, obtained through the pilot's subscription to satellite-based weather services.

The NTSB continues to examine the Federal Aviation Administration's (FAA) weather information dissemination practices in recent investigations as well as the consistency of National Weather Service (NWS) weather advisory products for the aviation community. While having weather information available to pilots, air traffic controllers, and meteorologists is crucial, improper understanding (and misutilization) of this information can prove just as dangerous (if not more dangerous) as not having that information at all. Examples include pilots gaining a false sense of confidence that may lead them unknowingly into adverse weather conditions, or air traffic controllers not effectively using the weather information they have to assist pilots in avoiding such conditions.

¹ Meteorological conditions expressed in terms of visibility, distance from clouds, and ceiling less than the minimums specified for visual meteorological conditions.

NTSB MOST WANTED LIST

CRITICAL CHANGES NEEDED TO REDUCE TRANSPORTATION ACCIDENTS AND SAVE LIVES

2014



GENERAL AVIATION: IDENTIFY AND COMMUNICATE HAZARDOUS WEATHER

for more information, visit: www.nts.gov/mostwanted



“...because controllers are the primary recipients of pilot reports (PIREPs), the FAA must have the infrastructure and protocols in place that ensure such vital information is conveyed in the national airspace system (NAS)...”

Primary Need for PIREPs



- Help **VALIDATE** our forecasts and provide immediate feedback, which ultimately improve safety
- Can further increase situational awareness **AND** allow for more timely forecast **AMENDMENTS**
- Allow forecasters to maximize **OPERATIONAL** benefit (reports provide information needed to be more specific or highlight new areas of concern)
- Aloft: No dense observation **NETWORK** that provides consistent, reliable flow of data (like we have at the surface)

Additional Needs for PIREPs



- PIREPs only way to CONFIRM conditions
- Help enable more PRECISE AIRMETs and SIGMETs (size & depth, areal extent)
- VERIFICATION to improve the science and modeling (data is the cornerstone)
- DISSEMINATION critical for aviation safety, pilot and ATC knowledge, and more accurate weather forecasts

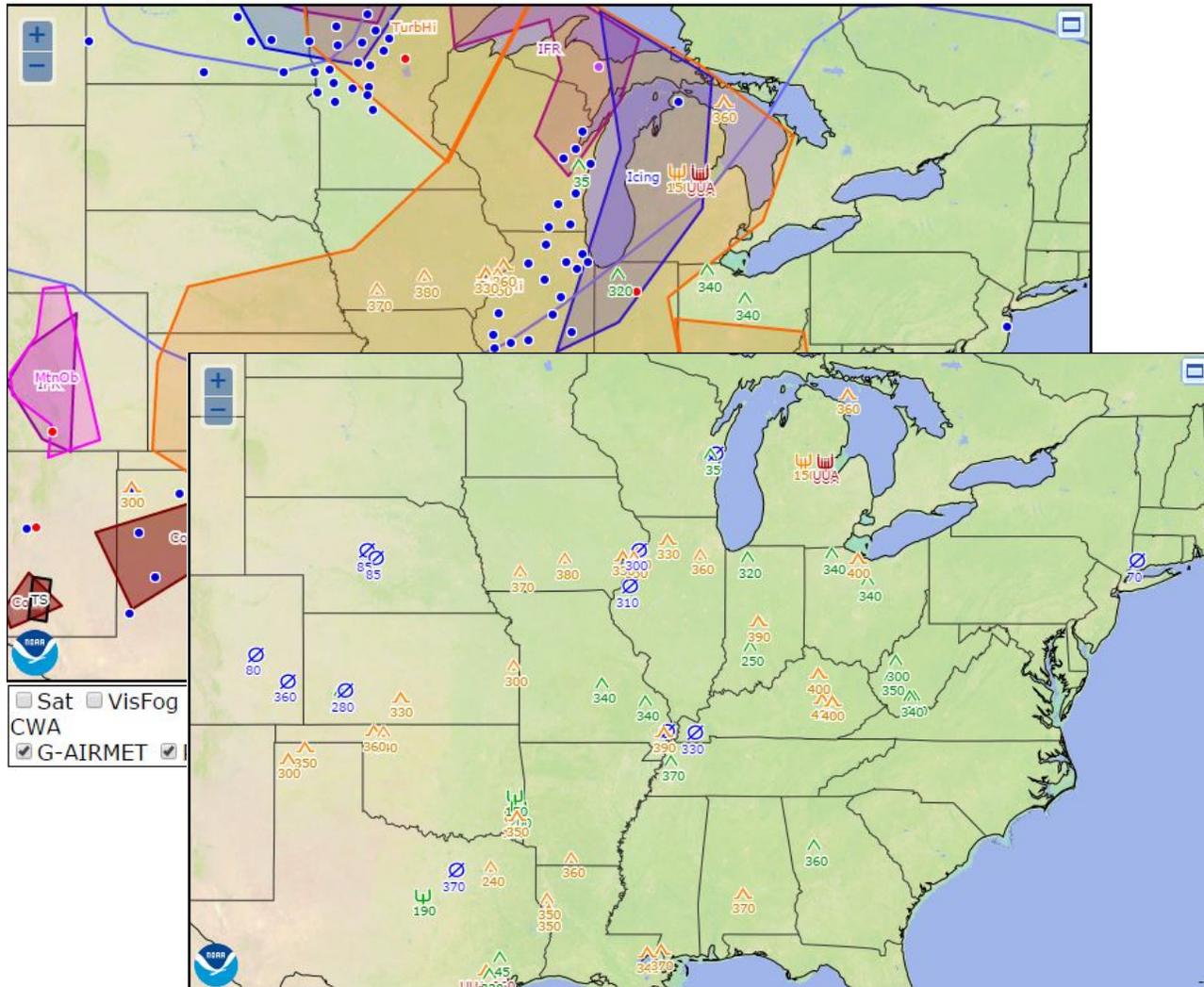
Tips & Reminders



Aviation Weather Overview

INFO

Valid at 1729 UTC 1 Jun 2016



Remarks can be very useful (especially in certain areas, like the Intermountain West)

Null or "good weather" PIREPs are just as valuable

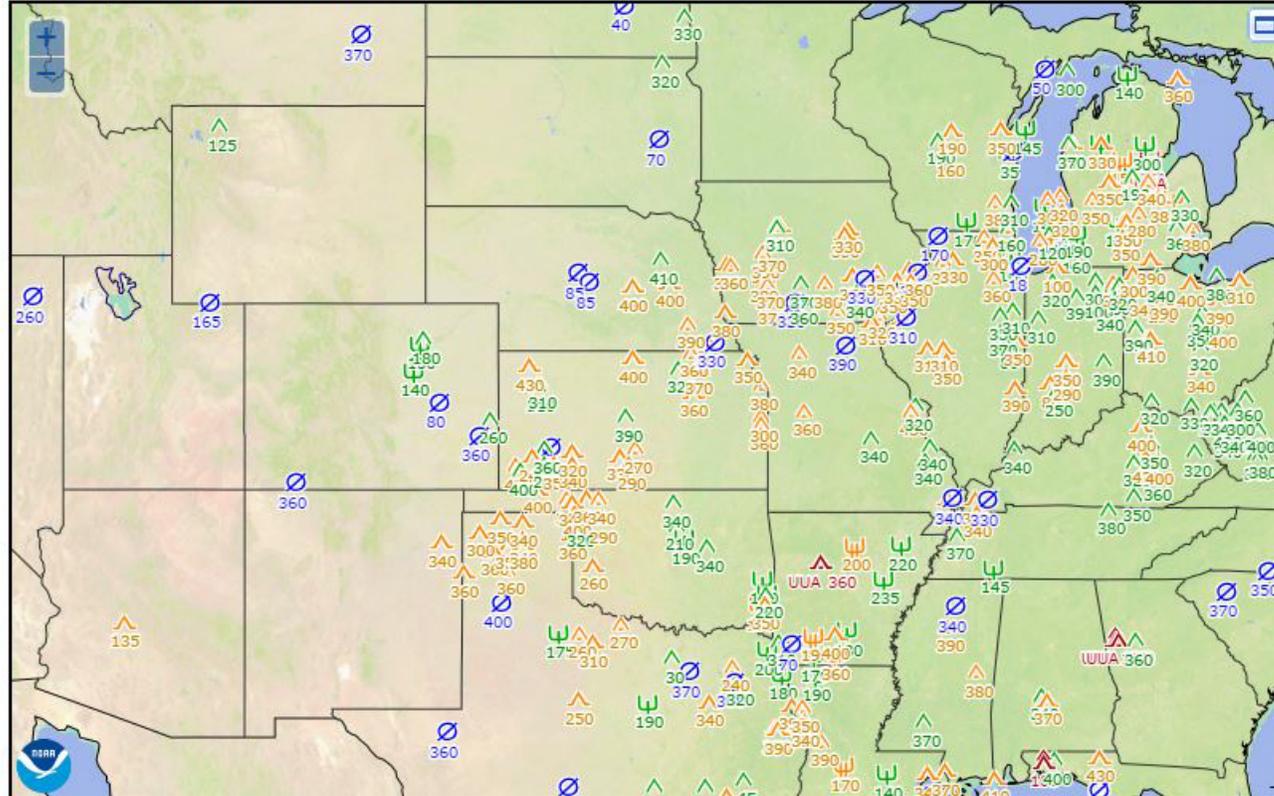
Delayed reports are also beneficial (although timeliness preferred and efforts to reduce dissemination time must be investigated)

Reports needed at *ALL times* and not just in/near active AIRMETS/SIGMETs

By the Numbers



AIREPs/PIREPs valid 2027UTC 1 Jun 2016



Map: <input checked="" type="radio"/> Light <input type="radio"/> Dark <input type="radio"/> Simple	Data Overlays: <input checked="" type="checkbox"/> Turb <input checked="" type="checkbox"/> Icing <input type="checkbox"/> Weather	Data Options: Undef Top 12hr Age Undef All Bottom Intens <input type="checkbox"/> Hover	Map Overlays: <input type="checkbox"/> Highways <input type="checkbox"/> Top Jetroutes <input type="checkbox"/> ARTCC/FIR Bounds
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PIREP Turb: ▲ LGT ▲ MOD ▲ SEV PIREP Ice: 🍷 LGT 🍷 MOD 🍷 SEV Temp -13 55 CTop
 Cover 030 Level Windbarb 4 CBase

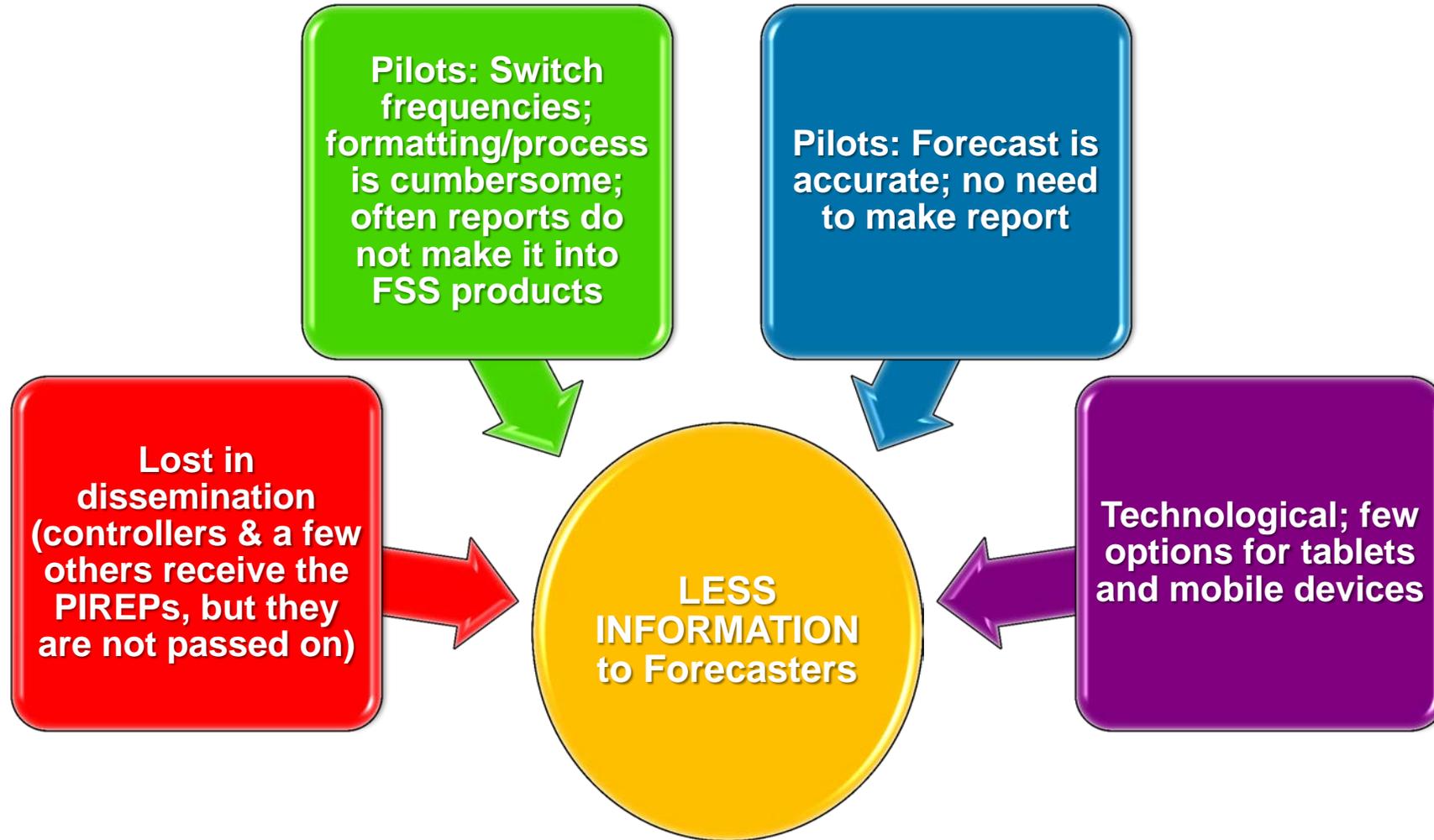
The number of PIREPs received has been fairly stable since 2014 (U.S., Canada, and adjacent waters)
 Turbulence: avg. 791 / day
 Icing: avg. 514 / day
TOTAL: avg. 1305 / day
(more reports in cold season)

AIREPs (automated reports) much more frequent

More reports *WILL* make a difference



Failing to Provide PIREPs: Reasons Given



AWC *Experimental* PIREP Submit Form



Pilots, operators, dispatchers may submit PIREPs electronically

- Users required to register and each account is validated (based on pilot's license, e-mail address, and/or airline ID number)
- Enables registered users to directly enter pertinent information to increase reports and assist other pilots, dispatchers, and flight planners

PIREP Entry Form
[FAQ](#)

Pilot Weather Report → = Space Symbol

NOTICE: The location lookup tool has been updated to accept 5 character intersection/fix locations. The locations will be verified on the server and the SA and OV computed based on the location. Also, the system will attempt to lookup unknown VORs entered in the OV field as airports and update the entry if a valid airport is found. The PIREP entry form is under continual improvement, please [The PIREP entry form is under continual improvement, please let us know](#) if you are experiencing any problems.

<p>3-Letter SA Identifier</p> <div style="border: 1px solid gray; width: 100px; height: 20px; margin: 5px 0;"></div> <p>Nearest weather reporting station</p>	<p style="text-align: center;">Location Lookup</p> <p>Intersection/Fix: <input style="width: 100%;" type="text"/></p> <p style="text-align: center;">OR</p> <p>Lat: <input style="width: 30px;" type="text"/> DD <input style="width: 30px;" type="text"/> MM <input style="width: 30px;" type="text"/> N/S</p> <p style="text-align: center;">DDD MM E/W</p> <p>Lon: <input style="width: 30px;" type="text"/> <input style="width: 30px;" type="text"/> W</p> <p>VOR : <input style="width: 100%;" type="text"/> <input type="button" value="Insert"/></p> <p>ARPT : <input style="width: 100%;" type="text"/> <input type="button" value="Insert"/></p>
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1.	<input checked="" type="radio"/> UA (Routine Report) <input type="radio"/> UUA (Urgent Report)
2. /OV →	<p>Location: <input style="width: 150px;" type="text"/></p> <p style="font-size: small;">Site, Bearing/distance from VOR, Route (ex: KTPA, KMCI030025, KOKC-KDFW)</p>
3. /TM →	<p>Time: <input style="width: 50px;" type="text"/> <input type="button" value="Current Time"/> 4 digits UTC (ex: 0915, 2330)</p>
4. /FL	<p>Altitude/Flight Level:</p> <p><input style="width: 50px;" type="text"/> <input type="radio"/> climb 3 digits for hundreds of feet MSL. (ex: 095, 210) <input type="radio"/> descent If unknown check box, select 'climb' or 'descent' if applicable</p> <p><input type="checkbox"/> Unknown <input type="button" value="Erase"/></p>
5. /TP →	<p>Aircraft Type: <input style="width: 100px;" type="text"/></p> <p style="font-size: small;">4 characters max. If unknown, use UNKN (ex: C210, P3, UNKN)</p>

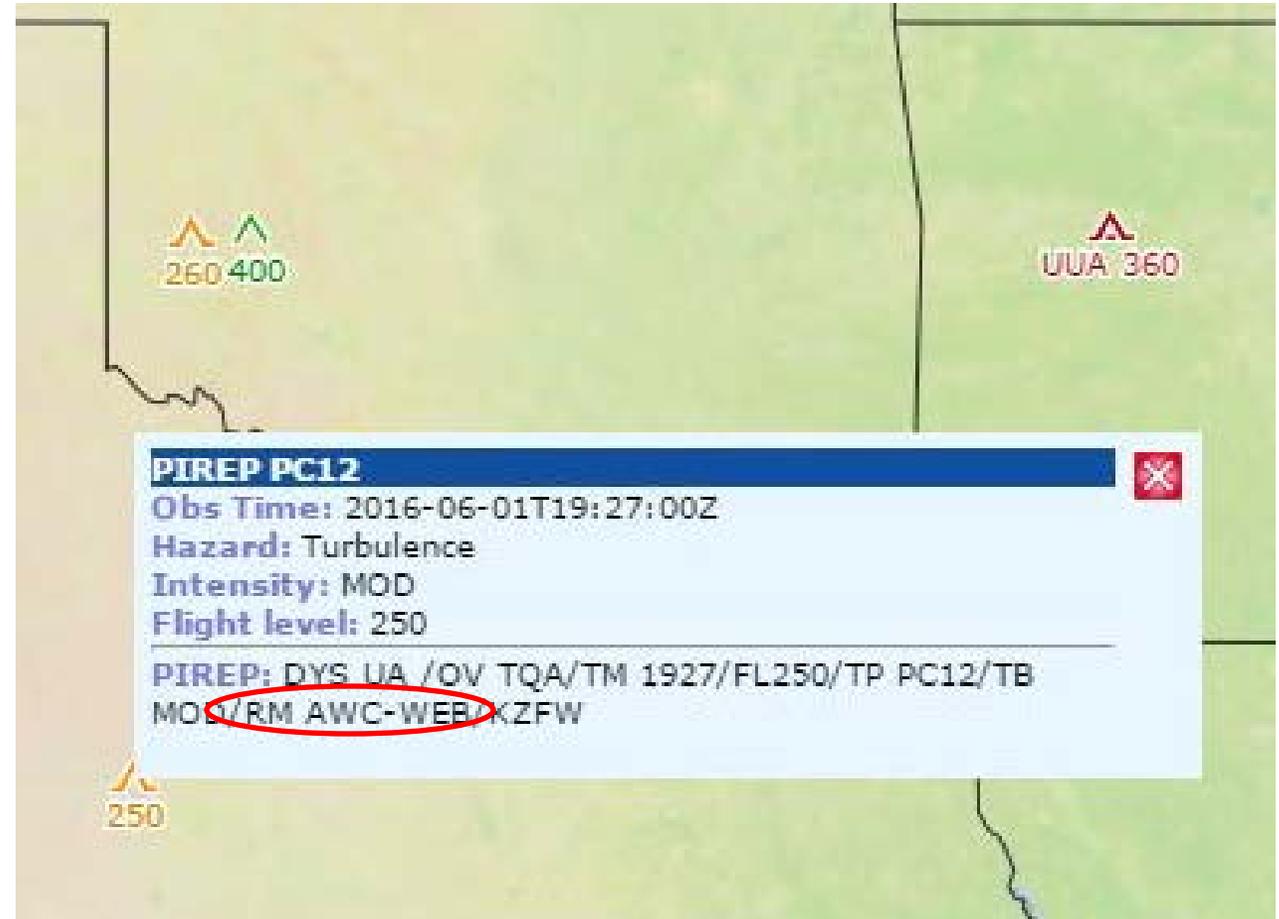
Items 1 through 5 are mandatory for all PIREPs

AWC *Experimental* PIREP Submit Form



Pilots, operators, dispatchers may submit PIREPs electronically

- Just like all PIREPs, these are integrated into the AWC forecast production process
- Will be automatically formatted, distributed, and displayed graphically on www.AviationWeather.gov



Wish List



More reports, even at night, and regardless of weather conditions

Timely and accurate reports

Standardized PIREPs that are more objective in nature

In situ observations (a more streamlined approach with automated dissemination)

Possible “Call For PIREPs” during more critical periods



Questions? Please contact....

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