

From: [REDACTED]
To: [REDACTED]
Subject: Re: icing request for 2/6/2025 for Alaska
Date: Monday, March 3, 2025 9:47:52 PM
Attachments: [REDACTED]

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Hi [REDACTED]

Here are those radar results I mentioned on the phone--they took longer than expected because of some data problems and a software engineer being on vacation. Anyway, this is from the [Radar Icing Algorithm \(RadIA\)](#). The profile at the crash site suggests they were flying between two layers of cloud with high likelihood of freezing drizzle, and then they would have descended right into the lower cloud on approach.

[REDACTED]

My working day may not be your working day. Please do not feel obliged to reply to this email outside of your normal working hours.

On Wed, Feb 12, 2025 at 6:30 PM [REDACTED] wrote:

Thank you so much! Fantastic information. Your timing couldn't be better as I'm in anchorage right now and head to Nome tomorrow for interviews. I'll review the data and get back to you with any questions. Such a big help. Thank you!

Paul

From: [REDACTED] >
Sent: Wednesday, February 12, 2025 3:31:17 PM
To: [REDACTED]
Cc: [REDACTED]
Subject: Re: icing request for 2/6/2025 for Alaska

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IcingImages.zip

Hi [REDACTED]

There are a lot of images here since we have IPA-D, IPA-F, and FIP2-AK, plus I did some extra analysis with satellite and the HRRR-AK since this is a big and somewhat puzzling case. Hopefully the files are organized and named intuitively--let me know if you have questions. I also organized my own thoughts in the attached ppt. Unfortunately, it's all very inconclusive.

The icing products generally show an area of high icing probability and light-moderate severity just South of the flight track at 0000 UTC, and reaching the flight track around 0100 UTC. I compute ice accretion from the HRRR-AK explicit liquid water content (LWC, rain+cloud water), and the nearest match (a 3-hour forecast valid at 0000 UTC) shows no LWC, so that means no ice accretion.

BUT, considering that models are often off in the timing or placement of things, I came up with a distribution of possible ice accretion values (histogram included in the zip file and powerpoint). I did this by considering 20 possible cross sections (included in the images) and 3 collection efficiencies. The 20 different cross sections come from 4 different model outputs (different forecast lengths and valid times), and 5 different flight tracks--the one you provided along with 4 shifted 25, 50, 75, and 100km. These shifts put the flight track further into high-confidence icing area to mimic a scenario where the model had it too far to the southwest. Of the 60 ice accretion values, 19 are still 0 because there is no model LWC. Of the remaining 41 values, the mode, mean, and median are all between 2 and 2.5 mm for the whole flight. The maximum is 7.5 mm.

All in all, I'd say it's about 50/50 whether they encountered significant icing. If they did, they probably got 2 to 2.5 mm of accretion with a reasonable upper bound of 7.5 mm.

Let us know if we can help more. We're very interested to hear what your investigation finds.

Cheers,

[REDACTED]

[REDACTED]

[REDACTED]

On Fri, Feb 7, 2025 at 3:48 PM [REDACTED] wrote:

Hi [REDACTED],

Thanks for reaching out and I'm sure it is a busy Friday for y'all!

So definitely would like the #1 and #2 that you mention below.

If the #3 data pull isn't too much work? And also you and [REDACTED] think it provides improved information that would be fantastic. But given AAWU doesn't use it yet, not as important right now. I could add to my report to get awareness out that something like this is coming down the pike if would be helpful too.

The work [REDACTED] did for the Cessna 208 accident near Fairbanks in summer 2021 was fantastic but I don't know if the dataset(s) are as good near Nome as Fairbanks?

Again, I appreciate all y'all do! Since some NTSB folks are traveling up there on scene through the weekend I'll be around if either of y'all have questions anytime this weekend... but can definitely wait until y'all can fit into your schedule in February. Have a good evening,

Paul

From: [REDACTED]
Sent: Friday, February 7, 2025 4:21 PM
To: [REDACTED]
Cc: [REDACTED]
Subject: Re: icing request for 2/6/2025 for Alaska

[CAUTION] This email originated from outside of the organization. Do not click any links or open attachments unless you recognize the sender and know the content is safe.

Hi [REDACTED],

Just writing to acknowledge your request. Thanks for sending the track data. We are collecting data and will begin sifting through it shortly. I wanted to clarify what we have available in this instance, and give you a chance to ask any questions.

We will be able to provide output from:

1. 13-km WRF-RAP based Icing Product Alaska Forecast (IPA-F, "FIP" equivalent for Alaska). Icing Probability, Icing Severity, SLD Potential. The AAWU gets this product from us in realtime, and it has been for awhile. The product has not seen any major updates in several years.
2. 13-km WRF-RAP based Icing Product Alaska Diagnosis (IPA-D, "CIP" equivalent for Alaska). Icing Probability, Icing Severity, SLD Potential. The AAWU gets this product from us in realtime, and it has been for awhile. The product has not seen any major updates in several years.
3. 3-km "FIP2-AK". Icing Probability, Icing Severity, SLD Potential. This is being run in realtime by NOAA's EMC using the Unified Post Processor (UPP) implementation of a FIP designed to use the HRRR model over the CONUS (aka: "FIP2"), but this flavor uses the HRRR model over Alaska. The HRRR model over Alaska only runs every 3h (0,3,6,...21Z) each day, and thus "FIP2-AK" is only available from those runs. It is considered experimental right now, and is running because it will be evaluated against the 13-km WRF-RAP IPA-D product to see if it can replace that product as NOAA moves away from the 13-km models (i.e. similar to CONUS). I am unclear who has access to this product within NOAA/NWS, but I don't think the AAWU is using it because it is slated to be evaluated first.

██████ can confirm, but I believe we will also provide the accretion data similar to what was provided for Wyoming.

There is currently no 3-km "CIP2-AK" (i.e. IPA-D equivalent).

Do you have any questions or wish to amend your request in any manner given what we have available?

████████████████████

On Fri, Feb 7, 2025 at 9:14 AM Paul Suffern <████████████████████> wrote:

| Here is a better dataset I just received... if it is helpful!