REVIEWER 1

The data paper Nineteen months of daily weather logging on the U.S. east coast: The WFIP3 event log is an indispensable and important resource to support a very relevant and novel dataset from the WFIP3 field campaign. The WFIP3 field campaign yielded long-term coastal and offshore measurements aimed at advancing the scientific understanding and forecasting of the offshore atmospheric boundary layer. Given its exceptional relevance, the unique dataset of WFIP3 will be used by researchers interested in the atmospheric conditions in the atmospheric boundary layer on the US East Coast; This data paper and the event log will be a first read for those using the data.

The paper is very well written (I couldn't find any typos or mistakes), very well structured, and includes the necessary information, references, and links.

We are grateful for the reviewer's positive feedback and their recognition of the scientific relevance of our data paper. We have addressed all specific comments below.

Here are a few questions and comments that might improve the data paper:

Can you briefly explain why ocean quantities were not logged? The paper's title does include "weather logging", but since understanding the ocean processes and their influence on the atmosphere were a crucial part of the WFIP3 campaign and ocean processes are listed in Table 1, the reader is left wondering why they were not included in the log. Is there another publication planned that discusses the ocean processes?

The reviewer raises a fair point. The omission of oceanographic quantities from the event log reflects two complementary considerations. First, the automated component was built around the scanning lidar data streams, which are atmospheric by design and provided the only standardized, real-time observations available consistently across three sites throughout the campaign. Oceanographic measurements collected during WFIP3 were largely non-real-time datasets, which made systematic daily automated logging impractical.

Second, the manual logging effort was scoped primarily to atmospheric processes, as the event log was designed to characterize the atmospheric forcing of turbine-level winds - which, in most cases, provided adequate context for the observed wind evolution. From a physical standpoint, the primary exception would be post-frontal and cold-air outbreak events, where large surface fluxes over water become an obvious first-order forcing mechanism; however, such conditions were generally noted in the narrative sections of the manual log, even when not quantified explicitly.

A comprehensive description of WFIP3's oceanographic measurement strategy and datasets, including those not available in real time during the campaign, is provided in the WFIP3 BAMS overview paper (Kirincich et al., in review), to which we direct readers seeking that broader context.

We have added the following text in Section 3:
"While oceanographic processes were highly prioritized by the research team due to their critical role in air-sea interactions, they were ultimately excluded from the daily event log. This decision was driven by the operational requirement of the logging effort, which relied heavily on real-time data streams (e.g., scanning lidars and operational forecast models). The majority of the oceanographic variability captured during WFIP3 utilized non-real time datasets that were recovered periodically. Consequently, the log focuses on atmospheric forcing, which provided the most immediate context for evaluating day-to-day turbine-level wind evolution. Comprehensive analyses of the oceanographic measurements and their influence on the offshore boundary layer are detailed in the broader WFIP3 overview literature (e.g., Kirincich et al. 2026). This limitation also highlights a key learning from the WFIP3 campaign: the critical need for advanced sensor-cloud-AI integration in future offshore field experiments. Developing the infrastructure to stream, synthesize, and automatically flag complex oceanographic data in real time will be essential for capturing two-way air-sea interactions in future event-logging frameworks."

Can you cite the reasons why the particular ramp rates were chosen? Do they align with what has been used in the literature?

The ramp thresholds used in the automated log were chosen based on conversations with the industrial partners of the WFIP3 project. To clarify this and the fact that a universal definition of wind ramp events does not exist and depends on the specific application (Bianco et al., 2016, Weather and Forecasting), we have added the following to Section 4.1: "These thresholds and timescales were established through consultation with WFIP3 industry partners, acknowledging that no universal definition of wind ramps exists and that criteria are highly application-dependent (Bianco et al. 2016)."

It might be beneficial for a prospective user of the event log and WFIP3 data to see how the event log can be used in practice. For this paper, it could therefore be beneficial to list an example or two in the appendix of how someone might use the event log. For example, pick a research question, demonstrate how a user might use the various columns in the event log or search through the content, and what the benefit of that might be for this particular research question.

We thank the reviewer for this highly practical suggestion and agree that additional examples will substantially lower the barrier to entry for new users of the dataset. In response, we have added two new figures and an accompanying paragraph to Section 6 of the revised manuscript that together demonstrate how a prospective user would combine the manual and automated log components to address a specific research question. Rather than placing these as a standalone appendix, we chose to integrate the material into the main body of Section 6 so that it sits alongside the other event log statistics and is immediately accessible to all readers.

The two new figures are:

- *Figure 7: Conditional co-occurrence heatmap. A 5×5 matrix showing, for each pair of categorical phenomena tracked in the manual log (LLJs, sea breezes, fog/low stratus, convection, precipitation), the percentage of days flagged for the row phenomenon that were also flagged for the column phenomenon. This figure directly illustrates how a user can exploit the structured categorical columns to isolate or combine events: for example, a researcher studying LLJ physics can immediately see that 56.8% of sea-breeze days also feature an LLJ, while only 10.2% of LLJ days involve a sea breeze, a strongly asymmetric coupling that motivates filtering on the sea-breeze column when building an "LLJ-without-sea-breeze" case study catalogue.*
- *Figure 8: Monthly LLJ–sea breeze co-occurrence. A stacked bar chart showing the fraction of each calendar month's days on which both phenomena were observed simultaneously, only an LLJ was observed, or only a sea breeze was observed. This figure illustrates the strongly seasonal nature of their coupling (confined almost entirely to June–September) and demonstrates how filtering by month further refines the case study selection workflow described for Figure 7.*

The new paragraphs added in Section 6 walks through the physical interpretation of the most notable co-occurrence patterns and explicitly notes how each finding maps to a concrete filtering operation on the log's columns:

"Beyond the individual frequencies of each phenomenon, the manual component of the event log also makes it straightforward to examine how meteorological events co-occur. Figure 7 shows the conditional co-occurrence rates among the five key categorical phenomena tracked in the manual log — LLJs, sea breezes, fog/low stratus, convection, and precipitation — computed across all 578 days of the manual record (1 February 2024 -- 31 August 2025). Each cell reports the percentage of days flagged for the row phenomenon that were also flagged for the column phenomenon,

revealing several physically informative asymmetries. The most striking asymmetry involves LLJs and sea breezes. Sea-breeze days carry a 56.8% chance of co-occurring with an LLJ, whereas only 10.2% of LLJ days also feature a sea breeze. This asymmetry is physically consistent with the stable, cold marine air advected onshore by sea-breeze circulation, which promotes the low-level wind maximum and directional shear characteristic of coastal LLJs. The seasonal dimension of this coupling is illustrated in Fig. 8: LLJ--sea breeze co-occurrence is confined almost entirely to the summer and early fall months (June--September), when sea-surface temperatures are sufficiently cool relative to the overlying air to sustain the marine stable layer that supports both phenomena simultaneously.

Fog/low stratus and precipitation are also strongly linked: 62.0% of fog days coincide with precipitation, consistent with the prevalence of frontal and low-pressure systems that simultaneously moisten and destabilize the marine boundary layer in this region. Convection, on the other hand, is almost invariably accompanied by precipitation (90.7% of convective days), whereas only 32.4% of precipitation days include convection -- confirming that the majority of precipitation events in the southern New England offshore region are stratiform or frontal rather than convective in nature. These co-occurrence statistics demonstrate that the WFIP3 event log can support not only single-phenomenon case study selection but also research into compound meteorological events. They further underscore the value of the log's structured categorical columns: a researcher interested in, for example, LLJ cases uncontaminated by sea-breeze forcing can trivially exclude the relevant dates by filtering a single column, while a researcher studying marine fog genesis can readily identify the large subset of fog days that also featured precipitation. Such event-log-guided filtering thus serves as an efficient first-pass triage step before retrieving and analyzing the full high-resolution lidar, meteorological, and oceanographic datasets archived for the WFIP3 campaign on the Wind Data Hub."

REVIEWER 2

The paper is an excellent summary of the daily event log captured during the WFIP3 project. The WFIP3 field campaign is an impressive collection of both atmospheric and oceanographic measurements taken as part of a state of the art investigation of the air-sea interactions and mesoscale phenomenon in the offshore waters off of Southern New England. The identification of important meteorological and oceanographic features and the ability of NWP models to accurately predict these features will lead to model improvements that will improve public forecasts for millions of people, as well as allowing for the more smooth integration of the proposed multiple GWs of offshore wind capacity in the region to the grid.

The text is well organized, provides an adequate description of the purpose of the daily log and methodology employed and criteria used to determine days of interest. Researchers and wind energy professionals will find these logs to be an excellent starting point when investigating the different datasets available and when for identifying periods requiring additional attention. All technical items of the paper look to be in order and well documented.

We thank Reviewer 2 for the thorough and supportive review. We address their specific suggestions below.

While not required, the paper could be significantly improved for the reader with some additional examples, perhaps some statistics regarding phenomena which were concurrent?

We thank the reviewer for this suggestion, which aligns closely with the practical-use comment raised by Reviewer 1. In response, we have added two new figures and an accompanying paragraph to Section 6 of the revised manuscript that together demonstrate how a prospective user would combine the manual and automated log components to address a specific research question.

The two new figures are:

- ***Figure 7: Conditional co-occurrence heatmap. A 5×5 matrix showing, for each pair of categorical phenomena tracked in the manual log (LLJs, sea breezes, fog/low stratus, convection, precipitation), the percentage of days flagged for the row phenomenon that were also flagged for the column phenomenon. This figure directly illustrates how a user can exploit the structured categorical columns to isolate or combine events: for example, a researcher studying LLJ physics can immediately see that 56.8% of sea-breeze days also feature an LLJ,*** *while only 10.2% of LLJ days involve a sea breeze, a strongly asymmetric coupling that motivates filtering on the sea-breeze column when building an "LLJ-without-sea-breeze" case study catalogue.*

- *Figure 8: Monthly LLJ–sea breeze co-occurrence. A stacked bar chart showing the fraction of each calendar month's days on which both phenomena were observed simultaneously, only an LLJ was observed, or only a sea breeze was observed. This figure illustrates the strongly seasonal nature of their coupling (confined almost entirely to June–September) and demonstrates how filtering by month further refines the case study selection workflow described for Figure 7.*

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Additional information from the remaining measurements and oceanographic measurements would have been ideal, but I am left to assume that this omission has to do with external factors which have unfortunately closed off public access to the data.

The reviewer raises a fair point. The omission of oceanographic quantities from the event log reflects two complementary considerations. First, the automated component was built around the scanning lidar data streams, which are atmospheric by design and provided the only standardized, real-time observations available consistently across three sites throughout the campaign. Oceanographic measurements collected during WFIP3 were largely non-real-time datasets, which made systematic daily automated logging impractical.

Second, the manual logging effort was scoped primarily to atmospheric processes, as the event log was designed to characterize the atmospheric forcing of turbine-level winds - which, in most cases, provided adequate context for the observed wind evolution. From a physical standpoint, the primary exception would be post-frontal and cold-air outbreak events, where large surface fluxes over water become an obvious first-order forcing mechanism; however, such conditions were generally noted in the narrative sections of the manual log, even when not quantified explicitly.

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"While oceanographic processes were highly prioritized by the research team due to their critical role in air-sea interactions, they were ultimately excluded from the daily

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There are a few minor suggestions regarding some improvements which could be made for future analysis that would be of added value to the offshore wind community, namely a deeper investigation of very low level jets which can occur at lower altitudes than are being used in the analysis…

We agree this is a fruitful avenue for future analysis. We also note that two manuscripts currently under review provide a broader characterization of LLJs - including lower-altitude events - at the various WFIP3 sites: Bodini et al. (under review in Geophysical Research Letters) and Adler et al. (under review in Geoscientific Model Development, with a preprint already available online).

… and an increased cut-out wind speed which is more relevant for Offshore US wind projects.

We thank the reviewer for raising this point. The 25 m s $^{-1}$ cut-out threshold used in the automated log reflects a commonly cited generic value found in the literature. However, the reviewer is correct that many modern offshore turbines have rated cut-out wind speeds that may differ. Furthermore, some of the most modern turbine designs move away from the traditional binary cut-out concept entirely, instead gradually reducing power production at high wind speeds. Because the event log is provided as a structured spreadsheet with all underlying 10-minute lidar wind speeds preserved in the WFIP3 Wind Data Hub archive, users can readily recompute the strong-wind occurrence metric using any threshold appropriate for their turbine class or power curve. We have added a note in Section 4.1 making this explicit and recommending that users working with specific turbine models apply thresholds appropriate for those designs ("We note that the strong wind speed threshold of 25 m

s $^{-1}$ used here reflects a typical cut-out value commonly referenced in the literature; however, modern offshore turbines often have higher rated cut-out speeds, and some advanced designs gradually curtail power production at high wind speeds rather than applying a discrete cut-out. Users are therefore encouraged to recompute the strong-wind occurrence metric from the underlying 10-minute lidar profiles archived on the Wind Data Hub using thresholds appropriate for their specific turbine model or power curve”).