

Atmos. Chem. Phys. Discuss., referee comment RC2
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Comment on acp-2021-620

Anonymous Referee #2

Referee comment on "Measurement Report: Challenges of Nowcasting the Women's Slope Style Finals at the PyeongChang 2018 Olympic Winter Games" by Paul Joe et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2021-620-RC2>, 2021

1/ General comments

The authors report results from different wind data analysis techniques applied to complex terrain (steep slope in a mountainous region) during and between Winter Olympic sports events. They intend to evaluate the rightfulness of decisions made regarding the cancellation and/or delay of said events. The title clearly reflects the article's content, which is relevant to the ACP publication. The strength of this article lies in the variety of approaches taken to study the wind at a high spatial and temporal resolution. Still, it contains many technical mistakes and could really use more proofreading.

A critical comment to address in priority is the complete lack of literature references in the Discussion, part 4. Moreover, the publication could really take advantage of putting forward the difference between the decisions taken against the data available at that time. It seems that this is an important objective for the paper, but it is only mentioned briefly in the last part.

Another important concern is the lack of details about how the fine-scale terrain structure (presence of features like a half-pipe, trees, etc.) is addressed. The authors recognize that this is an issue for the type of analysis they conduct, but it doesn't seem to be considered in their analysis.

2/ Specific comments

(I.125) I believe the paper would benefit from showing the temperature, pressure, and humidity values. Also, it matters to show the local or average slope angle and total change in terrain elevation when studying slope flows.

(I.141) Can you justify using the 700 mb winds in the present context?

(I. 142) It could be useful to state what length scale was used to define the Froude number here.

The whole part 3, Wind Analysis, does not read easily. It should be more concise and lacks references for using the methods presented in a similar context.

(I.230) missing a reference for MUSIC.

(I.324) Determining the initial value of p by a "trial and error exploration" sounds like a rather weak reasoning and prevents the generalization of this approach.

(I.358) Please elaborate on the following statement: "The winds were similar on both days", i.e., in which aspect were they similar?

(I.445) What does "well behaved" mean in the present context.

Overall, I feel that the hypothesis of a vortex shedding is only weakly substantiated, as it is hard to derive from just the Froude number and Reynolds number in such conditions.

3/ Technical comments

(I.1-12) Abstract: The part of the abstract where the work in the paper is described should be written in the present tense with the passive voice as opposed to using passive voice with the past tense. Using past tense for describing the work in the article may

imply that new results emerged in the literature and the results presented here are no longer valid. I.e., instead of: "For the other events, diurnal variations were observed with a stable atmosphere at night, well mixed in the afternoon and with 2-4 hour transition periods in the morning and evenings.", the author should use: "For the other events, diurnal variations are observed with a stable atmosphere at night, well mixed in the afternoon and with 2-4 hour transition periods in the morning and evenings."

(I.14-15) Introduction: First Sentence can be rephrased so as not to be a repetition of the abstract.

(I.27-28) "It is noteworthy that the field of." → "It is noteworthy **to state** that the field of"

(I.29-30) The author should use one format for presenting units throughout the paper. I.e., instead of "2 kilometers along the slope with less than 1km in vertical extent.", the following may be used: "**2 km** along the slope with less than **1 km** in vertical extent.". There should be a space with the magnitude (the numbers) and the units. A similar issue emerges at (I.85-86: 'meters' or 'm'. And in many instances, such as in I.183-184, I.6: "10 and 1 min averages plus 1-minute maximums".

(I.79-81) The organization description should indicate in which sections the written procedure are handled. I.e., In section 2, the venues and fields of play, the selected events, and available observations are briefly described; in section 3, the results from various advanced analyses are presented, etc. The numerals used within parentheses do not correspond with section numbers, and each item should include a verb or should be formed in a way that none of the items have verbs.

(I.83-84) The author should either use "100 km x 100 km" or "100 km square".

(I.87) Table 1 and Table 2 are not introduced in the text. The first table the author mentions is Table 3. Before presenting the tables, the introduction to those tables should be given.

(I.105) What does "(see below)" indicate? A section, a table? It should be clearly marked.

(I.114) "are described elsewhere (Lee et al., 2021)" → "are described by Lee et al.(2021)".

(l.127) The correct suffix for singular nouns should be used, i.e., "Figure 3 show" → "Figure 3 shows". Such mistakes occur throughout the manuscript and should be proofread for similar errors. Similar to "Details of the following analysis is described in the Appendix." in (l.234 and "The BOKX and BOKSS transects was located" in l.291.

(l.212-213) The following sentence should be made clear: "Many of the same features from the Hovmueller analysis are observed here with a different perspective and include:"

(l.216-217) Please provide a reference for this statement.

(l.219-220) "BOKSS (compare b and d)" and then "BOKX (compare a and c)": please indicate the figure label, i.e., "compare Fig. 6 panel b and panel d).

(l.282) Does "(4)" refer to "Fig.4"?

(l.440) missing the word "as" after "problematic".

(l.449) missing the reference for the "Fig??".

(l.454) "main text has further results" is too general. It may be worth highlighting those results again in 1-2 sentences.

Overall, many figures are too small or contain too much information for comfort (e.g., fig. 2, fig. 6, fig.9).

When they contain several graphs, it could be helpful to label each graph individually (a), b), c), etc.). Most pictures also lack a label for the color bar used (units, variables name?)

Fig. 1 should show regions from the large to the small scale. Also, BOKX and BOKSS are missing from it.

Some acronyms are defined after being used (e.g., AWS at l.117).

Some words put in quotes, whereas a few more words could be used to define them more properly (e.g., "open" l.119)

There are many instances of missing parenthesis (e.g., l.75, l.95, l.263, l.324, etc.)

What are "co-slopes" (e.g., l.158)? Do you mean along slopes?

Some orthographic mistakes could be avoided with more in-depth proofreading. "Slope style" is written "slopestyle", (l.239) "eigen value" is "eigenvalue". I think "Hovmueller" is written "Hövmoller".

In Table 2, "For comparison" is a bit abstract. I would prefer "for reference".

What is the red line in Fig. 4 standing for?

Table 3 is introduced on l.88, but it only showed eight pages later.

In Fig.5, the variable THETA, most likely the potential temperature, should be precisely defined.

In Fig.7, the horizontal axis is inconsistent between the top and bottom figures.

It is hard to distinguish each curve in Fig 14, plus the title overlaps the figure.

There is no description of Fig. 9e in the caption.

The titles fig_009a or b in Fig.10 and Fig.11 should not be left there.

Figure 1 Caption: 100km x 100km —> 100 km x 100 km

Table 1 and Table 3: Units for the Latitude and Longitude unit (degrees) should be given even if common knowledge.

Table 1: Year information for rows 1, 2, and 3 should be given.

Table 2: Full stops (punctuation mark) should be avoided unless in a complete sentence.

The format in references is inconsistent (e.g., I.509, space between initials needed).

Throughout the manuscript: Table captions are not descriptive. They should be as descriptive as the figure captions in the manuscript.

Throughout the manuscript: 'Figure' should be abbreviated x → Fig. x instead of tables.

Throughout the manuscript: The months should not be abbreviated. Feb → February.

Throughout the manuscript: Parentheses with long descriptions should be avoided within the text for clarity.