

Clim. Past Discuss., author comment AC1  
<https://doi.org/10.5194/cp-2021-33-AC1>, 2021  
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## Reply on RC1

Junpei Hirano et al.

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Author comment on "Analysis of early Japanese meteorological data and historical weather documents to reconstruct the winter climate between the 1840s and the early 1850s" by Junpei Hirano et al., Clim. Past Discuss., <https://doi.org/10.5194/cp-2021-33-AC1>, 2021

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### Response to reviewer1

We greatly appreciate valuable comments and suggestions provided by reviewer #1.  
Below is a list of individual comments and questions followed by our responses:

#### Reviewer1 comment1

Overall Impression:

The paper examines the value of using historical weather records from diaries and pressure data to reconstruct past cold air disturbances (East Asian Winter Monsoon) over Central Japan. Although this seems well-archived to me, I would like to see a stronger outcome from this work. For instance, an historical case study is presented for 1851/52, yet in the conclusion it is argued that we still have much uncertainty about the apparent anomaly in the 1850s. So in that regard, it is disappointing that the paper, despite these efforts, is unable to shed much insight on past climate. I think it would very much strengthen the paper temporally to expand the 19<sup>th</sup> century record(analysis), which could then provide more substantive information on climate of the past—which I feel the current paper does not adequately achieve. For instance, it would be valuable to say something about longer-term changes(shifts) etc concerning the East Asian Winter monsoon-and implications for climate over Japan ...but this is currently not the case with the paper.

The methodological process seems robust enough to me and valuable. But as I argue for above, it really needs more done with it than only a look at 1851/2, and from which not too much is learnt.

#### Author: response to comment 1

Thank you for this helpful suggestion. We completely agree with this comment. In the revised manuscript, we will analyze interannual and intra-seasonal variations in the occurrence frequency of WMD for the period 1839/40 to 1853/54. For this analysis, we will

change the methodology used to detect WMD, owing to the limited availability of pressure data and diary data sets. In the revised manuscript, we plan to detect WMD using two complete diary series for the windward (Sea of Japan) side of Japan and daily temperature data from Tokyo. Although we use only one temperature and two diary data sets, preliminary composite analysis indicates that this method can be used to detect the East Asian winter monsoon outbreak.

### **Reviewer1 comment2:**

Moderate concerns:

This paper is reasonably well written but does require considerable editing with tightening up of text to meet the expectation of an international publication. In some places there are successive short sentences (each not overly informative). In such instances sentences could be combined to form slightly longer and more informative sentences, and thus providing for a better 'flowing' text. One example would be lines 112 to 115...too many short sentences. These could be combined and tightened up into a couple of sentences or so. But this is only an example-the entire paper would need to be carefully edited for this issue. I think very throughout edit is required.

While I do not have a problem writing in the first-person plural-I find there is excessive use of the word "We" in this manuscript... in some cases, 2 or more successive sentences using 'we' several times.

### **Author: response to comment2**

Thank you for your valuable comment. We will edit and revise the manuscript. In addition, the manuscript will be checked by a native English speaker.

### **Reviewer1: comment3**

Written tense:

Too much of the paper is written in the past sense (which is not appropriate). I understand that in section such as 'methodology' one writes in the past tense when referring to data that 'were collected' and specific analysis that 'were' undertaken etc. However, for the most part, the paper should be written in the present tense. Just a couple of examples to illustrate my point (but there are more than only these):

Lines 106/8: "First, we investigated the temporal evolution of circulation fields and synoptic weather patterns for the present day (1968–1980). Subsequently, we investigated the East Asian winter monsoon activity...." it would be better here (and elsewhere – where relevant [e.g. abstract etc]) to write in the present tense as you are currently investigating this through your publication presentation – even though the

analysis in preparation for the paper is past tense. Hence I suggest write as: "First, we investigate the temporal evolution of circulation fields and synoptic weather patterns for the present day (1968–1980). Subsequently, we investigate the East Asian winter monsoon activity...."

Another example from lines 120/1: "The other four locations (red circles in Fig. 1) were in the Pacific Ocean side, where dry weather prevailed." The four locations still exist today, so one cannot write as 'were' but should rather be written as 'are'. Dry weather prevailing on the leeward side is not something that happened only during past climates, but still happens today, hence one cannot write it as past (i.e. 'prevailed') tense. It should read as 'prevails'

**Author: response to comment3:**

Thank you for noting this. We will make the necessary changes in the revised manuscript regarding the use of the correct tense. Additionally, the manuscript will also be edited by a native English speaker.

**Reviewer1: comment4**

Figures

Figure 1:

Needs a scale bar.

**Author: response to comment4**

Thank you very much. We will add a scale bar to this figure.

**Reviewer1: comment5**

Figure 2:

This Figure (map) requires some quality improvement. Please shade terrestrial areas to differentiate from Oceanic areas. If not indicating elevation (as you do in Figure 1), then at least provide a grey scale to differentiate. Add names of Seas/Oceans. Needs a scale bar.

**Author: response to comment5**

Thank you very much for your helpful comment. In the revised manuscript, we will indicate elevation in the figure. In addition, we will add the names of the seas/oceans and a scale bar.

**Reviewer1: comment 6**

Figures 3 & 4:

Need some indication of spatial context....so suggest adding some longitudinal/ latitudinal values.

**Author: response to comment 6**

Thank you for this suggestion. In the revised manuscript, we will add longitudinal/latitudinal values to these figures.

**Reviewer1: comment7**

Smaller technical items:

Title: Instead of "Combined analysis of...." – I suggest rather say "Analysis of....."

**Author: response to comment7**

Thank you for this suggestion. In the revised manuscript, we will modify the title to "Analysis of early meteorological data and historical weather documents for winter climate reconstruction in Japan from the 1840s to early 1850s".

**Reviewer1: comment8**

Line 39:

"....an effective detection of outbreaks arising ...." = a rather vague sentence. What type of outbreaks? Cold air outbreaks? Please specify.

**Author: response to comment8**

Thank you for this comment and apologies for the lack of clarity. In the revised manuscript, we will rewrite this as "outbreak of the winter monsoon."

**Reviewer1: comment9**

Line 74:

would read better as: "Historical Weather Data bank, based on information..."

**Author: response to comment9**

Thank you for this helpful comment. As suggested, we will rewrite this as "Historical Weather Data Base, based on information..." in the revised manuscript.

**Reviewer1: comment10**

Lines 78/9:

"Daily weather documents were documented simultaneously at various locations in Japan. Therefore, they are useful for reconstructing daily synoptic weather patterns." This is all a bit vague. It is not clear if these 'weather documents' are something the paper aims to present or if reference is made to a previous study that has documented these records ...and if so, what are these documents and who presented them?

**Author: response to comment10**

Thank you for this suggestion. In the revised manuscript, we will explain the use of data obtained from diaries in detail. This explanation includes descriptions of the documents and information on the authors of the documents.

**Reviewer1: comment11**

Line 84:

"..... in the Sea of Japan side." – would read better as: "..... on the windward (Sea of Japan) side of Japan." This may need to be addressed elsewhere in the paper where reference is made to 'Sea of Japan side'

**Author: response to comment 11**

Thank you for this suggestion. We follow your advice and rewrite this as "... on the windward (Sea of Japan) side of Japan."

**Reviewer1: comment12**

Lines 92/3:

"Meanwhile, we recovered several early instrumental surface pressure series during the 19th century in Japan (Könen et al., 2003; Zaiki et al., 2006, 2018)." This is again a bit vague

here.....would be good to say more precisely for WHEN exactly (covering which years?) ....and broadly for which area(s) of Japan? – is it central Honshu for instance

**Author: response to comment12**

Thank you very much for this comment. My apologies for the confusion. In previous studies, early pressure and temperature data were recovered for Hakodate, Tokyo, Yokohama, Osaka, Kobe, and Nagasaki (Können et al., 2003; Zaiki et al., 2006, 2018). Except for Hakodate, most of these cities are in central and western Japan. Although there are several gaps, these early meteorological data cover the period from 1819. We will set out the explanation in more detail in the revised manuscript.

**Reviewer1: comment13**

Lines 94/6:

"Recently, we newly recovered surface air pressure observations in Beijing for the period 1841–1855, reported in "Annuaire 95 magnétique et météorologique du Corps des ingénieurs des mines de Russie" and "Annales de l'observatoire physique central <https://doi.org/10.5194/cp-2021-33> Preprint. Discussion started: 12 April 2021 c Author(s) 2021. CC BY 4.0 License.4 de Russie" (Zaiki et al., 2008)." All this detail is not necessary as it can be obtained from the reference list. So rewrite as: "Recently, we newly recovered surface air pressure observations in Beijing for the period 1841–1855 (Zaiki et al., 2008)."

**Author: response to comment13**

Thank you for this comment. We will delete the unnecessary detail and rewrite this as "Recently, we newly recovered surface air pressure observations in Beijing for the period 1841–1855 (Zaiki et al., 2008)" following the reviewer's advice.

**Reviewer1: comment14**

Line 145:

should be 'Dutch'.

**Author: response to comment14**

Apologies for spelling the word incorrectly. We will rewritten it as "Dutch."

**Reviewer1: comment15**

Line 180/1:

should rather read as: "observations to compare with those in the....."

**Author: response to comment15**

Thank you for this suggestion. We will rewrite this as "observations to compare with those in the..." as suggested by the reviewer.

**Reviewer1: comment16**

Line 191:

I would suggest rather write it as: ".....selected 1 January 1868 to 31 December 1980 as the analysis period."

**Author: response to comment16**

Thank you for this comment. In the revised manuscript, we will analyze weather data from 1 December 1868 to 28 February 1980. We will delete data for January 1968, February 1968, and December 1980, as there are no complete data sets available for the winter season (December–February) of these years. Therefore, we will rewrite this section as "... selected 1 December 1868 to 28 February 1980 as the analysis period."

**Reviewer1: comment17**

Lines 204/5:

"three types: snowfall, rain, and fine or cloudy, according to the methodology of Yoshimura

(2013)." Strictly speaking this is not correct as a fine (i.e clear sunny) day is not the same weather type as a 'cloudy' day. So, it should really be four types, not three.

**Author: response to comment17**

Thank you for pointing this out. We will rewrite this as "four types."

**Reviewer1: comment18**

Sub-section title: 3.2:

Analysis of sequence of circulation fields and weather pattern for the present day

This seems a bit longwinded – needs a tightened up sub-section title. In fact, the titles of other sections and sub-sections could all do with some careful editing and tightening up.

**Author: response to comment18**

Thank you for your comment. I agree with your suggestion. In the revised manuscript, we will change the heading of this sub-section to "Analysis of circulation field associated with outbreak of winter monsoon." In addition, we will also rewrite the headings of other sections and sub-sections.