Atmospheric
Chemistry
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Discussions

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comment

Interactive comment on "Linking large-scale circulation patterns to low-cloud properties" *by* Timothy W. Juliano and Zachary J. Lebo

Anonymous Referee #2

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1   General review

This study introduces an analysis of cloud properties in the north-east Pacific region based on an unsupervised classification of 850hPa-pressure situations.

The paper is well-written, has a clear structure, and figures are of good quality. The approach appears useful and promising in principle. In my view, the major potential for improvement lies in strengthening the link between the unsupervised classification obtained from the SOM analysis and the physical system. More in the details below.

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Discussion paper

2   Details

- line 9: "must be accounted for" – why?

- 20: The literature cited here is several years old. What is the current state?

- 28: offshore flow – where / what region?

- 28: offshore flow – wind?

- 31: why 'trapped'?

- 34: Is this about pollution aerosol from land? Please state explicitly.

- 41ff: This paragraph seems to belong in the methods section

- 43ff: Are the definitions relevant here?

- 46: How is N estimated and what are the uncertainties?

- Footnote page 2: model output are 'data' as well.

- 56: Why SOM?

- 59: Explain "neighbourhood radius"

- 60: Explain "greates eigenvectors"

- 61: To what end?

- 62: On which basis?

- 66: How is n determined?

- 101: which cloud information? Which product level and collection?

- Figure 2 etc.: You address the 20 different situations displayed here as "regimes". What is your definition of regime in this context? I am not convinced that all of these 20 situations are really fundamentally distinct in terms of processes. Are you? Why? Why do you see this as a useful categorization for your study? Beyond your study?

- 177: What is 'sufficient accuracy' to you? The analysis you present above this statement is mostly a qualitative discussion. Can you generalize these findings?

3 Technicalities

- 27: meanders – moves?

- 36: ... motivate the present study. We consider...

- 43: remove "passively"

- 45: remove "passive"