

***Interactive comment on* “Cluster analysis of
midlatitude oceanic cloud regimes – Part 1: Mean
cloud and meteorological properties” by
N. D. Gordon and J. R. Norris**

Anonymous Referee #2

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I found the results shown in this manuscript interesting to improve our understanding of mid-latitude cloud systems. However, some of the methods do not have exact explanation with data. Because of this, there remains a question whether the results the authors obtained change if the authors change their method.

1. I'm not convinced with the explanation about the restriction of their sampling to only one time point per day only from the description in the manuscript. It indicates that the authors regard that polar orbital data (one day at noon) is much better than geostationary satellite data. Basically we expect the data statistics would be more robust if we could get more data.

Clear explanation will be needed how the sampling biases in different region associated with the number of daylight hours affects the results, how significant it is compared to the bias caused by the uniform small number of sampling all over the region.

2. ISCCP cloud forcing

Although the authors try to avoid variability of shortwave cloud forcing over season and location,

their method multiply diurnal daily mean downward shortwave radiative flux in each month. Because the diurnally averaged value of downwelling shortwave flux at TOA has variability over season and location, the estimated shortwave cloud radiative forcing still contains variability over season and location.

By the way, cloud radiative forcing is defined prior to Ramanathan et al.(1989) by Charlack and Ramanathan [1985] JAS, 42. 1408-1429.

2. Usage of ISCCP-FD data

According to my understanding, ISCCP-FD data by Zhang et al.(2004) are 2.5 deg. gridded and only monthly data are available from the NASA webpage.

The authors sample up to 80 pixels in 280 km grid of noon-time from 3 hourly ISCCP D1 data, and assign a cluster to the grid. But corresponding cluster must change day by day.

Because it is not obvious in the current manuscript how they used the data to estimate the corresponding radiative flux from monthly ISCCP-FD data, please describe it in detail.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 1559, 2010.

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