Atmos. Meas. Tech. Discuss.,
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Atmospheric Measurement Techniques Discussions

Interactive comment on "Global Cloud Property Models for Real Time Triage Onboard Visible-Shortwave Infrared Spectrometers" *by* Macey W. Sandford et al.

Anonymous Referee #2

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General comments:

This manuscript introduces a new onboard data analyzing method to increase the value of downlinked data by screening out cloud-contaminated data. An obvious advantage of the present work is that the thresholds used are surface-type dependent. The algorithm and results are tested to be robust and promising. Therefore, I recommend that this manuscript could be accepted once the authors could make some minor changes and provide more details (see specific comments).

Specific comments:

1. Section 2.1 (page 4): what is the pixel size of the Hyperion instrument? How do you

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consider the instrumental differences between Hyperion and EMIT instrument (such as pixel size, wavelength, etc.)?

2. Section 2.2 (page 4): it is unclear to me how to manually label the 102 Hyperion images (7.7km x 42km)? Could you please provide more details?

3. Figure 2 (and also Figure 4): Could you please explain the meaning of colors and give a color bar on the side?

4. One of my major concern is that since this work could be potentially used in the EMIT mission, the authors should also consider the impact of dust aerosols. With the three channels selected in this study, it is possible that heavy dust cases were detected as clouds. I strongly suggest the authors use a case study to demonstrate the defined thresholds are also good for aerosols, in particular dust plumes.

5. Please consider cite a recent publication, which developed surface-type based machine learning models for cloud masking and cloud phase classification.

Wang, C., Platnick, S., Meyer, K., Zhang, Z., and Zhou, Y.: A machine-learning-based cloud detection and thermodynamic-phase classification algorithm using passive spectral observations, Atmos. Meas. Tech., 13, 2257–2277, https://doi.org/10.5194/amt-13-2257-2020, 2020.

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