

Interactive comment on “Cloud speed sensor” by V. Fung et al.

Anonymous Referee #2

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The manuscript “Cloud Speed Sensor” by Fung et al., provides interesting and simple method to estimate the cloud motion, however, the weakest party is insufficient data validation analysis. I suggest add more data for different cloud speed because in this version of manuscript the cloud speed is in the narrow range of variation (3–6 m/s).

Specific comments:

Page 9041, line 17–19: The meaning of this sentence does not fit this section, my suggestion it to remove it.

Page 9021, line 3: Why the FOV of the sensor is only 30deg? What in case when the sun zenith angle is larger than 15 deg? At San Diego latitude the minimum solar zenith angle is about 10 deg which means that this instrument can be used only during Summer and close to noon time. Maybe it is not FOV but half field of view? Anyway

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the real FOV of sensor should be provided. What is a tilt error for each sensor? Is it in order of 1 deg or larger? Could you add same discussion of that issue on the uncertainty of wind speed and direction? The same for the cosine error of detector

Page 9042, line 6: Why the criterion of the signal reduction by cloud passing the sun is only 7% ? This means that CSS is sensitive to very thin clouds such high level cirrus and low level stratus fractious. In the last case I expect large error due to fact that shape of this cloud is very complicated and not well defined. In my opinion this threshold should at least 30% of the clear sky solar flux

Page 9058, Fig5: I propose to remove all data from top panel except for the central sensor because it is impossible to read some difference between sensors. In case of cloud direction and speed the lines should be replace by the dots or different points. In current version the long blue (green) strait line is misleading The same for fig. 6.

Page 9058, capture to Fig.5: It suppose noted that calibration of the central sensor of CSS versus pyranometer has some limitation due to different FOV. In case of pyranometer it's 180 and CSS only 30 deg. Therefore such calibration overestimate the solar radiaion in the CSS. Probably because of that the solar irradiance (top panel) during overcast condition since 14:00 PST is unrealistic high. If case of low level clouds the solar flux cannot by 800-700 W/m² for 100% cloud cover!!!.

Page 9059: Fig. 6: Data presented in these plots are inconsistent with the information about FOV of the CSS. For example: at 16 PST the solar zenith angle is about 60 deg thus the CSS cannot see the sun. The information about sensor FOV should be reviewed.

Interactive comment on Atmos. Meas. Tech. Discuss., 6, 9037, 2013.

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