

## ***Interactive comment on “High resolution (375 m) cloud microstructure as seen from the NPP/VIIRS Satellite imager” by D. Rosenfeld et al.***

**D. Rosenfeld et al.**

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### Response to Referee #1

RC1: General comments: The paper provides an interesting assortment of examples of effective radius determinations using both VIIRS and MODIS imagery. The big advantage with VIIRS is its higher spatial resolution (over MODIS). However, the authors fail to mention that the better spatial resolution of VIIRS is available even at non-nadir scan angles that would severely degrade MODIS imagery beyond the nadir resolution values. Also VIIRS has complete global coverage every 12 hours, with no gaps between orbital passes as occurs with MODIS.

AC1: The description of these two added VIIRS features was added.

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### Specific comments:

RC2: Page 29847: The reference to “Beta” stage of maturity attributed to Hillger et al is only for the Imagery EDRs, as that’s the focus of that publication. Certainly the Beta stage has been reached for other EDRs as well, but with the applications of VIIRS imagery in this case, the mention is still worthwhile. It just needs to be clarified.

AC2: This clarification was added.

RC3: Page 29850: Several instances of  $_K$  should be changed to merely “K”, as proper SI usage does not associate degrees directly with the kelvin temperature scale. Degrees are only used with Celsius temperatures.

AC3: Corrected.

RC4: Page 29852: Much VIIRS work has been done with a common VIIRS Cloud Mask (VCM), which the authors seem to ignore, using their own version of a cloud mask. Mention of the VIIRS Cloud Mask should at least be made. A publication is planned as part of a special issue of JRG Atmospheres. Contact andrew.heidinger@ssec.wisc.edu for details.

AC4: The following text was added: "The available product of VIIRS Cloud MASK was insufficient for the objectives of calculating valid effective radius from the imager without significant surface contamination."

RC5: Page 29854: A pixel “size” comparison is made, but up to this point only one spatial dimension is mentioned when comparing VIIRS and MODIS. It should be made clear here that the comparison is now an 2-dimensional AREA comparison, when the 1/7th ratio is mentioned. Page 29859, line 26: Typo “they way” to “the way”

AC5: The along track resolution is not compensated for, as stated now at the outset, as noted above. Respectively, the text was corrected to: "The pixel size of the VIIRS Imagery is 1/7th of the MODIS pixel size at nadir, and even smaller, down to nearly 1/20 further away across track."

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AC6: Figure 1 caption: Typo “images sow” to “images show”. RC6: Corrected.

AC7: Figure 13: In this case the color differences appear to be related directly to the size of the associated clouds. Not sure if this is mentioned, or is part of what is expected?

RC7: The size of the clouds is not a factor here.

RC8: Figure 14 caption: Change “less-nosier” to “less-noisy” Figure 22 caption: Typo “Sown are” to “Shown are”

AC8: Corrected.

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Interactive comment on *Atmos. Chem. Phys. Discuss.*, 13, 29845, 2013.

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