

## ***Interactive comment on “Retrieval of cloud liquid water distributions from a single scanning microwave radiometer aboard a mobile platform – Part 2: Observation system simulation experiments” by D. Huang et al.***

**Anonymous Referee #1**

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**General Comments:**

This paper is a nice complement to Part 1, which dealt with real data and retrieval algorithms. In general, the paper is well written and well motivated, and includes realistic scenarios of experiments that could be conducted. My only quibble, and it is a minor one at that, is that the authors do not consider an upward-viewing scanning radiometer. With the Observation System Simulation software that the authors have developed, the extension to upward-viewing aircraft radiometry would be an easy, but profitable, avenue to explore.

**Technical Comments.**

1. P12069, L16. “a typical design of research aircrafts”. Some research aircraft look up. Please

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be more precise.

2. P12071, L17. Should be “convolution of Eqn. (1) with”.
3. P12074, L22. Should be Fig. 3.

**Grammatical Comments:**

1. P12066, L6. Suggest “experiments” instead of “experiment”.
2. P12067, L7. Sentence “In order to evaluate thus to improve” does not make sense. Do the authors mean “In order to evaluate and thus to improve”?
3. P12068, L28. Suggest “platform is passing”.
4. P12069, L4. To distinguish references here, I suggest “Part 1 of our research [insert reference revealed.”
5. P12070, L6. Suggest “Observation System Simulation Experiments are useful tools”.
6. P12071, L6. Instead of “so”, I suggest “Thus”.
7. P12071, L19. Change “with: to “width”.
8. P12072, L56. I suggest “Gaussian quadrature points” and “Gaussian quadrature point”, for the sentence describing the quadrature scheme.
9. P12074, L11. Suggest “linearity under differentiation (Hansen, 1998).”
10. P12075, L6. Suggest “preference as to the scale”.
11. P12075, L 20. Change “yield” to “yields”.
12. P12076, L2 and 3. Suggest “cloud cases and regularization techniques”.
13. P12076, L7. Suggest “Tikhonov retrievals”.
14. P12077, L17,18. Suggest “backgrounds” and “surfaces”.
15. P12078, L1, Change “depended” to “dependent”. L3, suggest “imposed on the sea”.
16. P12079, L27. Suggest “Thus” instead of “So”.
17. P12080, L21. Suggest “radiometer scans faster”
18. P12083, L25. Suggest replace “factors like” with “factors such as”.
19. Pp12084, l13, Suggest “evolve”..

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 12065, 2009.

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