This paper presents and evaluates a methodology to derive liquid water content from w-band radar and microwave radiometer liquid water path retrievals. Using optimal estimation, they attempt to evaluate the widely used power law relationship between radar reflectivity and liquid water content. The paper is reasonably well written but could do with editing for grammar as there were a few grammatical errors (not a big distraction). I noted no technical errors with the retrieval development, implementation, and evaluation. I found the use of synthetic data to be a strong aspect of their work. The case study they present with the tethered balloon data was interesting and shows the limitations of the algorithm and comparison methodology. I was hoping that they would use the tethered balloon and CDP in an actual cloud instead of fog but perhaps the practical aspects of that make it too difficult.

Even though it is well presented, I would say that the paper does not present much new. Radiometer and radar synergistic retrievals on liquid clouds implemented via optimal estimation has been in wide use for some time. I don’t particularly see that the present paper goes much beyond what we already know. I think it would have been better to have minimized the algorithm aspects and focus on what can be learned about cloud processes.