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Interactive comment on "Microphysics parameterization sensitivity of the WRF Model version 3.1.7 to extreme precipitation: evaluation of the 1997 New Year's flood of California" *by* Elcin Tan

Anonymous Referee #3

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This paper has potential to be a very useful contribution to the use of high-resolution NWP models, in particular for the forecasting of extreme precipitation events. It is well-written and clearly presented and oviously represents a great deal of work.

However, to be publishable I think the paper requires some further work. The study shows which microphysics (MP) schemes perform the best for this particular event. A key point (and one which would make this paper original, and significant) would be to find the common factors among the "successful" MP schemes, in other words, Why do these particular schemes perform the best? This "Why" is not addressed in

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the paper. Without this cause-and-effect relationship being established, it is difficult to know whether the current findings are applicable to other extreme events. Thus, I recommend a major revision.

Minor comments. At the beginining of the manuscript, the model simulations are described as having 28 levels. Later in the manuscript this appears to be 41 levels. Which is true? In either case, is this number of vertical levels sufficient to model events of this type? I think a few sentences here would be useful.

P22, L25ff. "Model uncertainties..." I think the author is rather opening a "can of worms" here. It is not evident whether differences in model results associated with differing MP schemes are comparable with, or greater than, the differences in, say, horizontal resolution. This would represent a significant undertaking, however, with many degrees of freedom. I wonder if using WRF in some idealised framework may be one way to deal with this.

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