Natural Hazards
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Discussions

Interactive comment on "Assimilation of Himawari-8 Imager Radiance Data with the WRF-3DVAR system for the prediction of Typhoon Soulder" *by* Dongmei Xu et al.

Anonymous Referee #1

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General comments, This study implemented the assimilation of JMA himawari-8 AHI radiance with the framework of the mesoscale numerical model WRF and its three-dimensional variational assimilation system (3DVAR) for the analysis and prediction of typhoon "Soudelor". The results are impressive in terms of the AHI radiance simulation and the forecast skill of the tropical cyclone for both the track and intensity. This action is meaningful, when geostationary meteorological satellite radiances provide valuable information of the weather systems with high spatial and temporal resolutions. However, there are several issues to be fixed to better clarify the methodologies and results. Specific comments,

1) section 4.1 Please explain why there is some oscillation in the variation of the gradient with increasing iteration? 2) This study assimilates clear-sky radiances. However, Figure 6 gives a very confusing picture. The data over the cloudy regions are presented in the observations. Radiances over the cloudy region are still calculated. Please provide the procedure for the verification results in Fig.6 with all the data shown as only clear-sky data are applied. 3) Please point out the reason channel 10 yield smaller RMSE?

Technical corrections 1) L35 use accurate instead of exact 2) L39 together with the microphysics and .. 3) L54 radiance data are .. 4) L104 positive impact 5) L106 Please reorganize the sentence "Wang, et al (2018). . ."and check this kind of problem thoroughly for the whole manuscript 6) L112 previous researches 7) L147 This work focuses. . . Please check this problem for the whole manuscript 8) L243 Please change the word rarefy 9) L261 Fig. 6a shows or provides. Please fix this problem for the whole manuscript 10) L262 of channel 8 11) L332 after the bias correction. 12) L350 are also calculated 13) L427, this manuscript. . .