

Interactive comment on “Early Morning Peaks in the Diurnal Cycle of Precipitation over the Northern Coast of West Java and Possible Influencing Factors” by Erma Yulihastin et al.

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General comment from Anonymous Referee #1 (hereafter Comment) #1: This manuscript investigated the diurnal cycle of precipitation over the northern coast of West Java with a focus on early morning precipitation and influence from SCS-CT and CENS. Well-chosen classification method has clarified the seasonally changing diurnal cycle pattern. Strong correlation between CENS and extreme EMP is also clarified, however, there is no clear link between SCS-CT and variation of diurnal cycle patterns. Therefore, the reviewer would suggest accepting the manuscript for publication after minor revisions.

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Response by Authors (hereafter Response) #1: The authors greatly appreciated the constructive comments from the Reviewer. With regard to the link between SCS-CT and diurnal cycle patterns over the northern coast of West Java, we have actually pointed out as follows: For all months from November to March, the diurnal precipitation pattern is characterised by a main peak during evening to night time. However, in January and February prominent secondary peaks are also observed in the morning time (Figure 2a). SCS-CT generally prevails in January and February and morning precipitation events over the northern coast of West Java mainly occurred when there was more enhanced SST cooling in the South China Sea (Abstract: Lines 27-28). In this study, we further classified morning precipitation events into early morning and late morning phase groups. We found that the early morning precipitation events were more strongly correlated with CENS, whereas CENS is positively correlated with SCS-CT. Therefore, we can say that SCS-CT has the role to induce morning precipitation over the coastal region of West Java (in agreement with Koseki et al., 2012). SCS-CT also play a role as background condition for the occurrence of CENS that in turn induced early morning precipitation events.

Comment #2: P1, L20: “characterized by seaward (as well as landward) propagation” As is shown in P6, L10, landward propagating oceanic convection is major determinant of EMP in the northern coastal area, though seaward propagation in the inland area in the nighttime may have some linkage. There is a gap in this description and different from the fact in Figs 10 and 11.

Response #2: We thank the Reviewer for the comment regarding a gap between depiction of figures and the figures themselves. However, we would like to clarify that Figures 10 and 11 mentioned by the Reviewer are actually Figures 5 and 6. The gap as mentioned by the Reviewer seems to refer to direction of propagation in Figures 5 and 6, which also applies to Figures 2b-f. Please note that the 24-hourly precipitations data are sorted from 1300 LT to 1200 LT in the following day. Therefore, in those figures, time increases from top to bottom. In this case, seaward as well as land-

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ward propagation of precipitation systems could be misinterpreted if time direction is reversed. To minimize such misinterpretation, we have added annotation for time directions and also white lines with arrows that can guide readers to follow the direction of propagation (following Mori et al., 2004) in Figure 5 (a) - (b). Comment #3: P4, L24: -4.5m-2 -> m s-1

Response #3: We thank the Reviewer for the typo correction in P4, L24. We have already changed the unit of wind from: Previous unit: $-4.5 \text{ ms}^{(-2)}$ Current unit: $-4.5 \text{ ms}^{(-1)}$

Comment #4: P5, L7: "Figures 2c-f also show weak signals of land-to-sea propagation of precipitation over coastal region during the night-to-morning transition between 2300LT and 0300LT on the following day." It is hard to recognize land-to-sea propagation in Figs 2e and 2f.

Response #4: The author thanks the Reviewer for the thoughtful comment. We recognize that regarding Figures 2 (e) and 2 (f), it is indeed difficult to argue that there is a weak signal of propagation between land and sea. This statement is based on a visual interpretation that precipitation intensity for larger than 0.2 mm of landward propagation of precipitation which is occurred from late afternoon to late night, and continuing from midnight to early morning in the following day. To clarify the connection between land and sea convection systems, we add contour lines to Figure 2 (b) - (f).

Comment #5: P5, L11: (see Fig. 1) -> Fig. 2a

Response #5: We thank the Reviewer for the typo correction in P5, L11. We have already changed the word from: Previous: (see Fig. 1) Current: (see Fig.2a)

Comment #6: P6, L36: In Figures 8b and 8c, -> In Figures 9b and 9c

Response #6: We thank the Reviewer for the typo correction in P6, L36. We have already changed the word from: Previous: In Figures 8b and 8c Current: In Figures 9b and 9c

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Comment #7: P6, L37: “relatively closer towards the equator that indicates the strengthening of the SCS-CT when associated with morning precipitation over the northern coast of Java.” The difference between the three figures (9a-c) is indistinguishable.

Response #7: The authors would like to thank the Reviewer for the constructive comment. The authors are aware that there is no significant difference between SCS-CT changes in the diurnal AEP, EMP, LMP which are exhibited in Figures 9 (a) - (c). Therefore, we consider further analysis of the variation in the spatial pattern of SCS-CT events between no CENS (NCENS) and CENS in the EMP samples. This analysis shows spatially the SCS-CT composite between NCENS and CENS which described that while CENS occurred, SCS-CT appeared wider and relatively closer to equator. Differences in spatial patterns between both of SCS-CT NCENS and CENS are depicted in Figure 10.

Comment #8: P13, Figure 9: The red solid rectangle -> The dark-blue solid rectangle.

Response #8: We thank the Reviewer for the correction of wrong word in caption of figure 9 (P13). We have already changed the word from: Previous: The red solid rectangle Current: The dark-blue solid rectangle

Please also note the supplement to this comment:

<https://www.ann-geophys-discuss.net/angeo-2019-107/angeo-2019-107-AC1-supplement.pdf>

Interactive comment on Ann. Geophys. Discuss., <https://doi.org/10.5194/angeo-2019-107>, 2019.

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