Answers to the comments of NHESS-2018-357-RC1-supplement

We thank to the reviewer of RC1-supplement for his/her productive comments and thoughtful guide. He/she not only indicated the crucial points in our research but also suggested the way how to improve them. Thanks to the comments, the manuscript has been revised as follows.

Major overarching issues:

- The number of events (clouds) considered in this manuscript should be increased. To validate the efficacy of this approach, images from other months and from both day and night should be considered. The authors' comment about considering daytime only because "the floating population is most active during the daytime" is misinformed. During darkness, many people will be asleep and the lack of direct sunlight may impair the ability of the population to respond to the given hazard effectively. An improvement of lead time during darkness would be a significant contribution to the body of research. As such, it is recommended that both day and night are considered in this analysis.

This is a very helpful comment. Only eight clouds are a small number to show enough conclusions. We selected clouds that occurred during the day and night in July and August 2017. We added a total of 60 cloud cases, 30 per month. Specifically, Table 1 shows information about cloud data. It's a good idea to add 2018 data. However, we didn't have enough time to get the 2018 data. Instead, we used data for two months in 2017 which are July and August, when tropical clouds were frequently observed each year.

Table 1. The observation time and number of observed clouds in this study.

Date	Observation time	Number of observed clouds
July, 2017	03:00 - 06:50 UTC (Day) 21:00 - 24:50 UTC (Night)	20 10
August, 2017	03:00 - 06:50 UTC (Day) 21:00 - 24:50 UTC (Night)	20 10

Specific comments:

The new manuscript has changed the number of lines and pages. The answer below is accompanied by the number of pages and lines.

- P1 L10: suggest using the term 'significant damage' instead of 'heavy damage'.

Corrected as below

p. 1 line 10 : Tropical thunderstorms cause significant damage to property and lives

- P1 L27: change 'lost' to 'loss'.

Corrected as below

p. 2 line 6-7 : These severe events lead to extensive economic losses, environmental degradation, and subsequently, damage to human life.

- P2 L3: what about storm surge and coastal inundation?

Corrected as below and written the reference

p. 2 line 2-4 : Impacts from recent climate-related extremes, such as heat waves, droughts, floods, cyclones and wildfires, reveal significant vulnerability and exposure of some ecosystems and many human systems to current climate variability (Pachaurim and Meyer, 2014).

- P2 L11: what do you mean by "grounded"? Do you mean ground-truthed?

Removed

- P3 L5: suggest changing "growing" to "developing".

Corrected as below

p. 3 line 19 : convective clouds which are developing within 2 hours

- P3 L6: why is only August considered? This needs to be clarified. The review recommends considering other months in this analysis.

- P6 L2: This study is validated using a small number of clouds, over a small range, during daylight hours. This needs to be clarified in this sentence.

It is a common answer to the above two questions.

We added a total of 60 cloud cases. Table 3 shows the result of lead time according to imager; No. 1-20 occurred during the day of July, No. 21-30 occurred during the night of July, No. 31-50 occurred during the day of August and No. 51-60 occurred during the night of August.

Table 3. The lead time according to imagery for cloud No. 1-20 occurred in the daytime of July 2017, No. 21-30 in the nighttime of July 2017, No. 31-50 in the daytime of August 2017, and No. 51-60 in the nighttime of August 2017.

No.	Cloud scale (km)	Lead time (min)		Lead time difference (min) (A – B)
		2 km and 10 min imager (A)	4 km and 30 min imager (B)	
1	120	180	60	120
2	104	160	30	130
3	120	140	30	110
4	120	180	30	150
5	120	180	60	120
6	40	130	30	100
7	40	140	0	140
8	44	120	0	120
9	64	120	30	90
10	40	180	60	120
11	40	130	0	130
12	48	90	0	90
13	96	180	60	120
14	104	120	0	120
15	120	140	30	110
16	80	180	60	120
17	56	100	0	100
18	80	180	30	150
19	96	180	0	180
20	56	100	0	100
21	40	160	0	160
22	72	150	30	120
23	120	140	30	110
24	96	120	30	90
25	84	130	0	130
26	100	180	60	120
27	60	100	0	100
28	100	130	0	130
29	104	120	0	120
30	96	180	60	120
31	100	120	30	90
32	32	100	0	100
33	48	120	30	90
34	100	180	30	150
35	112	180	60	120
36	64	120	30	90
37	100	180	60	120
38	96	140	0	140
39	68	120	0	120
40	80	130	30	100
41	44	90	0	90
42	60	100	0	100
43	100	120	0	120
44	96	120	30	90
45	68	100	0	100
46	88	140	30	110
47	108	180	30	150

48	124	180	60	120
49	104	140	0	140
50	100	120	0	120
51	120	130	30	100
52	66	110	0	110
53	80	130	0	130
54	120	180	60	120
55	120	100	0	100
56	40	180	30	150
57	56	180	0	180
58	56	100	0	100
59	88	160	0	160
60	92	180	30	150

- P3 L22: check the date for Schmit et al., reference.

Corrected as below

p. 4, line 6 : (Schmit et al., 2005).

- P3 L29: change "statuses" to "status".

Corrected as below

p. 4, line 14 : the current status of clouds

- P4 L15: check the date for Housze reference.

Corrected as below

p. 4, line 11 : (Houze, 2004)

- P4 L18-L19: check grammar.

"grammar check is completed"

p. 5, line 6-7 : The interesting point of Figure 2 is the pattern of temporal changes in minimum BT11 among the thunderstorm pixels for high-resolution imagery. One can expect that BT11 of a thunderstorm might gradually decrease, but the BT11 of the targeted thunderstorm firstly decrease from the initial state to −70 minutes and increase slightly from −70 minutes to −30 minutes. We inferred that the decline of BT11 relates to the vertical growth of the cloud, while the increase of BT11 after reaching the mature state relates to the horizontal expansions of the cloud. This is commonly observed in the life cycle of tropical thunderstorms. It is notable that BT11 for low-resolution imagery is too simple to monitor the status of clouds in detail.

- P5 L5: Is "100 min" a typo? Do you mean 10 min?

10 minutes

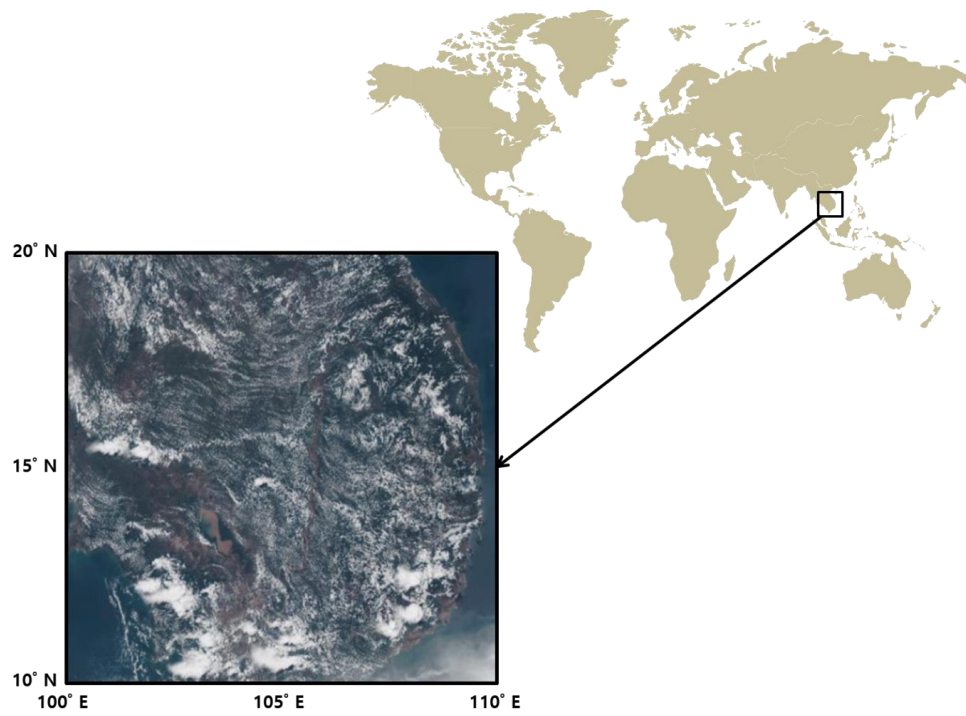- Fig 2a: Including coordinates and a continent basemap would be useful.

Figure 1. Himawari-8 AHI RGB image taken for this study area on 19 August 2015, 05:50 UTC. Several convective clouds (white color) are shown in the southern part of the area