

Answers to the comments of NHESS-2018-357-SC1-supplement

We thank to reviewer of SC1-supplement for his/her thoughtful comments and clear suggestions. 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.

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.

- L15, page 3. How did you convert and smooth data by the time dimension? Is it the average of four 2 km pixels and 30 min?

Right. In order to carry out this study, we make virtual data whose resolution is similar to the MTSAT. Specifically, four pixels of 2 km were converted into one pixel of 4 km, and the time interval was increased from 10 minutes to 30 minutes, which is the same as the former spatial resolution and time cycle. In other words, it is calculated as the average of four 2 km pixels every 30 min. To better understating, we added illustration about the difference in the number of detected cloud pixels by resolution.

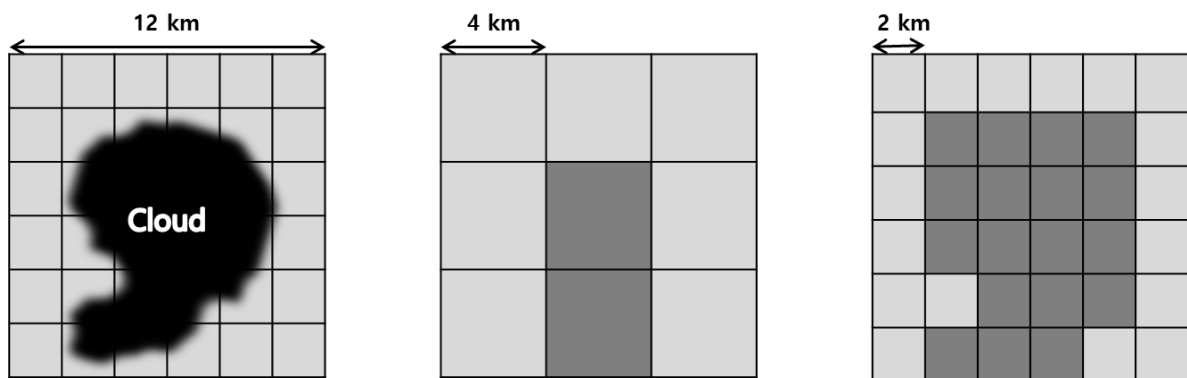


Figure 4. Illustrations of 12×12 km pixels with different resolutions. The dark grey indicates the cloudy pixel, and the light grey indicates the clear-sky pixel. Only 2 cloudy pixels can be detected with the 4 km resolution imagery; in contrast, 18 cloudy pixels can be detected with the 2 km resolution imagery. The number of pixels at the cloud boundary varies depending on the resolution.

- L26, page 3. Why did you convert brightness temperature to integer?

We simply call the brightness temperature at 10.45 into BT11 for readability. To better understanding, please look at Figure 3.

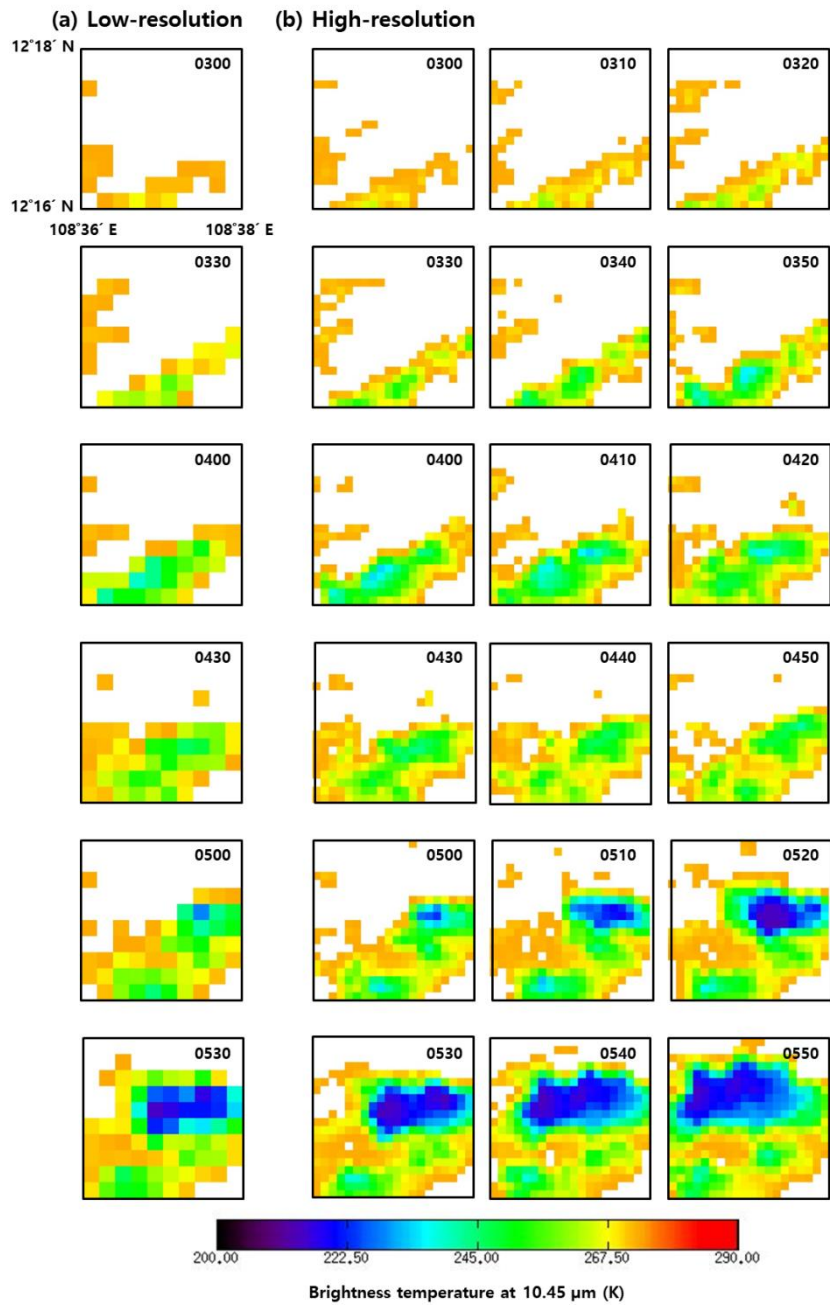


Figure 3. An example of the thunderstorm development process through BT11 images (10 August 2017, 03:00-05:50 UTC); (a) the low-resolution (4 km and 30 minutes) imagery and (b) the high-resolution (2 km and 10 minutes) imagery