Hydrol. Earth Syst. Sci. Discuss., 6, C407–C410, 2009
www.hydrol-earth-syst-sci-discuss.net/6/C407/2009/

Hydrology and Earth System Sciences Discussions

Interactive comment on "Characteristics of precipitation system accompanied with Changma front at Chujado, Korea, 5 to 6 July in 2007" *by* C.-H. You et al.

Anonymous Referee #2

Received and published: 24 April 2009

Evaluation

The paper details a data set collected from a variety of meteorological instruments deployed for three weeks in south Korea during the rainy season (called Changma), and a preliminary analysis of those in terms of mesoscale dynamics and microstructure of rainfall associated with rain systems during Changma. This particular aspect of precipitation in this particular area has not been extensively studied and hence is of potential interest for HESS readers. However, the motivation and the scientific objectives of this paper are not clearly explained. Because data do not grant publication by themselves, I recommend to send the manuscript back to the authors for major re-

Full Screen / Esc
Printer-friendly Version
Interactive Discussion
Discussion Paper

visions. Please see the general and specific comments in the following sections for suggestions/recommendations to improve the quality of the present manuscript.

General comments

I would like to point out the fact that my domain of expertise is rainfall and its microstructure and not atmospheric dynamics. Therefore my review will mostly focus on the sections of this paper dealing with rainfall and drop size distributions (DSDs).

1. The english in the paper must be improved. The authors cannot be blamed because they are not native speakers (neither am I...), but they definitely need to find someone to correct for the numerous mistakes and errors in the paper.

2. In the introduction, the main scientific motivations of the paper are not clearly explained and described. What are the scientific questions that the paper aims to address? Why are they relevant? The whole paper is a bit fuzzy to this respect: it appears more like a list of values of different meteorological variables in this particular area than a paper tackling a precise research question.

3. The authors tend to draw conclusions about the local mesoscale characteristics of the rainfall associated with the Changma front over south Korea from data with limited representativity: in particular they use DSDs from one POSS, so about a few m^3 sampling volume, and measurements from radiosoundings (local profile). Moreover, the authors focus on 3 rain events (from the same rain system more or less). The representativity of these rain events for the local climatology must be established (or at least discussed).

HESSD

6, C407–C410, 2009

Specific comments

1. Page 1527, line 1: to clarify the meaning, I suggest to add “using the same relationship as” between “... from the reflectivity” and “(Biggerstaff and Houze...”.
2. Page 1527, line 16: the authors should indicate what u,v,î,ĵ denote. k is the vertical layer index I presume... Units should be also given.
3. Page 1527, line 21: it should be N_0 instead of N. Please indicate the units of the variables.
4. Page 1528, lines 8-11: it is not clear how the three rain events have been categorized or selected.
5. Page 1528, line 24: Jejudo is not indicated on the map in Figure 1.
6. Page 1529, line 9: please define the K-index (or give appropriate references).
7. Page 1530, lines 28-29: it is not obvious (at least to me) to identify the differences in the number of drops larger than 2 mm in the three panels of Figure 11. Moreover, why highlighting this value of 2 mm?
8. Page 1531, line 3: by definition, the gamma DSD model exhibits an exponential tail, so nothing surprising there...
9. Page 1531, line 5: again why focusing on this particular value of 2 mm for the (equivolumetric) drop diameter?
10. Page 1531, lines 11-16: the units in which the DSD parameters values are expressed should be given (mentioning the fact that the shape parameter is dimensionless).
11. Page 1531, lines 12-14: I do not understand this sentence.

HESSD

6, C407–C410, 2009

12. Page 1531, line 17: the authors should explicitly present the link between these characteristics of the rainfall DSD and the description of the warm and cold convection previously given in this section. To my opinion, this could be the innovative part of this paper that could be worth publication. But this requires to significantly improve this section...

13. Pages 1531-1532: this is not a summary! The details should go in Section 3, and only the main features should be mentioned in Section 4.

14. Page 1536, Table 1: the caption must explain what is given in the table. In addition, the units should be given.

15. Figures: the pictures are of bad quality and barely readable in general.

16. Page 1538, Figure 1: the location of the POSS is not indicated on the map.

17. Page 1542, Figure 5: unreadable!

18. Page 1543, Figure 6: why do the profiles in panel b stop at about 10 km, while the profiles go up to 15 km in the other panels?

19. Page 1545, Figure 8, panels b and d: the color scale is not appropriate. There is "saturation" between 15 and 20 km (x-axis).

20. Page 1548, Figure 11: the legend of the color bars on the right of the pictures are not readable.

21. Page 1549, Figure 12, upper picture: the blue line (case I) has a strange sharp decrease (starting from D=0.5), what is it?

HESSD

6, C407–C410, 2009