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Interactive comment on "Assessment of heavy rainfall-induced disaster potential based on an ensemble simulation of Typhoon Talas (2011) with controlled track and intensity" *by* Y. Oku et al.

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Major comments: Page 4398, line 15- line 22 and page 4401, line 24-25ïijŽPlease clarify the difference between the simulation of NOPVM (with PVI method but no modification on potential vorticity magnitude and position) and the simulation of NOPVI. It appears that the vortex in NOPVM is extracted and put back at the same location, but the meteorological fields of u, v, w, θ is replaced by the fields that are retrieved from PVI method (As you mentioned in Ishikawa et al. 2013). So there DOES exist difference between NOPVM and NOPVI which is caused by the numerical truncation error or the unbalanced component [e.g., the divergent wind. . . Meanwhile, please clarify whether

you add the divergent wind component and the vertical wind as Ishikawa et al. (2013) did?] You may need to revise the sentence in page 4401, line 24-25ïijŽ" Since the vortex is extracted and put it back in the same place again, the result should ideally be identical." Otherwise it doesn't make sense that they have diverse tracks.

From Fig. 6, since the observational maximum hourly rainfall mainly occurs in the coastal areas in Kii peninsula instead of mountain areas, the simulated rainfall accumulated in inland areas may be produced by different mechanisms from observation. However, you only discuss the averaged rainfall amount but not the pattern of the simulated rainfall in the manuscript. It is not convincing to conclude that the difference between model and observation is (solely) due to the different translation speed of the typhoon. And also it is hard to trust the model performance in these experiments. Therefore, some additional discussions are required to elaborate the possible physical processes leading to the different rainfall pattern.

Fig. 7 is one of the most important figures in this study. However, you didn't explain in detail why TCs with slightly eastward shifted tracks have higher R for rainfall and SWI but simply conclude that it is due to the structure of the typhoon. It can be argued that it may be highly related to the interactions between TC and terrain. It is suggested to examine the detailed physical processes that cause such a result. If it is caused by the structure of TC, then you can show some figures of TC structure to support your idea.

Since the main purpose of the study is to describe the potential for the occurrence of heavy rainfall-induced disasters, so maximum rainfall is discussed instead of the accumulated rainfall. I am curious about the TC location when maximum rainfall occurs. Does it happen when the TC is approaching or after it makes landfall? It is helpful to add more description about that.

Minor comments: Fig 1.ïijŽThe shifted TC track of CTRL is misleading. You may show another box with the enlarged simulated track of CTRL instead of shifting it at the same map.

Page 4400, line 20ïijŽIt is helpful to mention the meaning of m,n in N(m,n) and in the Eq.(1).

Fig 3. and fig. 5.ïijŽHow come the landslide locations is indicated in these two figures, but you didn't give much physical interpretation in the manuscript?

Fig. 7 ïijŽWhy do you select 30âĹŸN as the reference latitude? Is it the TC location when observational maximum rainfall occurs?

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 4393, 2014.