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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Atmospheric processes triggering the Central European floods in June 2013" *by* C. M. Grams et al.

Anonymous Referee #2

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Summary

The paper discusses the June 2013 flood event in Central Europe in terms of large-scale diagnostics based on the concepts of Rossby wave breaking, potential vorticity anomalies, and warm conveyor belts. The diagnostic results, such as the identification of continental moisture sources upstream of the affected area, are informative and they are convincingly presented. My recommendation is to accept the paper, taking into account some minor comments below.

Minor comments

Page 429, lines 22-24: The flood in 2002 consisted of two distinct events, separated by a 1-2 day break period. The first part of the event was associated with a small-scale

cyclone which was not of classical Vb type since it did not originate south of the Alps and did not follow the typical Vb track.

Page 441, line 2: The authors stress the importance of their finding that 'upside down' warm conveyor belts (WCBs) are essential for heavy precipitation events. I wonder whether the notion of 'upside down' warm conveyor belts (WCBs) is scientifically useful. WCBs naturally vary in their orientation depending on the orientation of the associated baroclinicity. It seems to me that the specific WCB which occurred during this event is different by degree but not in principle. Where would the boundary between 'upside down' and 'normal' WCBs be? At an east-westerly orientation?

Page 456, Figure 6b: The WCB trajectories starting 31/12Z have attained a height of about 500 hpa when they reach the northern alpine areas where the heaviest precipitation occurred. Since the bulk of precipitable water originates in the lower half of the troposphere, I wonder how relevant these trajectories are in explaining the large precipitation amounts observed there. Did you do a similar trajectory computation for, say, air parcels which have reached a height of 700-800 hPa at the northern side of the Alps, to determine their origin and humidity source region?

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 427, 2014.