

**Co-Editor Decision: Publish subject to technical corrections** (03 Jul 2020) by [Martin Singh](#)

Comments to the Author:

The authors have implemented the reviewers suggestions satisfactorily, and I am pleased to recommend this manuscript for publication.

Non-public comments to the Author:

There are a number of small writing errors in the current version of the manuscript. I detail these below, along with suggested replacement text. I would ask the authors to consider these changes to the manuscript before publication. Further, I would ask the authors to give the manuscript a careful read to ensure that these errors are minimised before publication.

[Many thanks to the co-editor for the very useful suggestions and the careful reading of the last version. We made corrections to all of them and read the manuscript again carefully.](#)

Line 2: causing precipitation of up to 80mm -> causing precipitation accumulations of up to 80 mm

Line 3-6: Suggest shortening these two sentences into one:

This study examines the conditions and processes that made this particular thunderstorm episode exceptional, with a particular focus on the interaction of processes across scales.

Line 60: to release of Convective Available Potential Energy -> to the release of convective available potential energy.

Line 63: important mechanisms for convection -> important mechanism for producing convection

Line 68: But in peripheral locations upstream and downstream of the blocks can also create environmental conditions conducive for deep moist convection development.

-> But blocking can also create environmental conditions conducive for deep moist convection development in peripheral locations upstream and downstream of the block itself.

Line 88: accompanied weather regimes -> accompanying weather regimes

Line 89: PV cut-off -> PV cut-offs

Line 97: associated hazard -> associated hazards

Line 102: Observation data -> Observational data

Line 103: Observation data -> Observational data

Line 104: for a complete thunderstorm detection, but does not discern according to severity -> for complete thunderstorm detection, but this data does not discern according to severity

Line 107: REGNIE has not yet been defined

Line 147: i.e. -> e.g.,

Line 162: extending from 1 km to 12 km above ground level. For the whole period between 2005 and 2018, which is used to relate the storm motions computed for the investigation period to the climatology (Sect. 4.1), data were stored in six reflectivity classes only.

-> extending from 1 km to 12 km above ground level for the whole period between 2005 and 2018. This data is used to relate the storm motions computed for the investigation period to the climatology (Sect. 4.1). Data were stored in six reflectivity classes only.

Line 173: I don't think this can be assumed, but perhaps you can say weaker cells are unlikely to move with higher speeds.

Line 187: wind speed in 500 hPa -> wind speed at 500 hPa

Line 196: the bulk wind shear (BWS; directional shear) as wind difference between 10m and 500 hPa -> the bulk wind shear (BWS; directional shear), defined as the wind difference between 10m and 500 hPa

Line 222: moist, low-tropospheric air masses -> moist, lower-tropospheric air masses

Line 251: number of days, on which a certain -> number of days on which a certain (remove comma)

Line 258: which is fulfilled if both conditions apply -> which is fulfilled if the following conditions apply

Line 259: in context with the strict criterion -> in the context of the "strict criterion" of PIP16

Line 270: most of them reporting heavy rainfall leading to several -> most of the reports described heavy rainfall, some of these heavy rainfall events lead to

line 281: This highest number -> The highest number

Line 295: Does the "half" here refer to the mean, median or standard deviation?

To all; we added this aspect.

Line 318: A second example is on 31 May the exceptionally high -> A second example is on 31 May; the exceptionally high

Line 323: Especially on the last day of the study period, on 12 June, the proportion of gust reports (indicating wind speeds between 25 and 31ms<sup>-1</sup> to 1324 ) to all reports was very large.

-> The proportion of gust reports (indicating wind speeds between 25 and 31ms<sup>-1</sup> to 1324 ) to all reports was very large, especially on the last day of the study period, on 12 June.

Line 408: V500 is almost similar to BWS -> V500 is similar to BWS

Line 411: are relying -> rely

Line 488: It is not clear what "this" is referring to in this sentence.

Here there was a doubling with the sentence before; therefore we have combined the two.

Line 536: a PV cut-off was up -> PV cut-off frequency was up

Line 550: Several studies have identified such a flow to provide convection-favouring conditions

-> Several studies have identified such a flow as providing convection-favouring conditions in this region

Line 565: Or it can generate instability, if an entire column is lifted bodily until complete saturation in case of potential instability

Suggest removing this sentence, as previous sentence is now about CAPE (instability).

line 576: In addition, a high concentration of water vapour at low levels in the presence of strong updrafts, high environmental relative humidity, significant cloud depth below the freezing level contribute to maximize rain accumulations, and potentially weak vertical wind shear, which tend to be correlated with weak mid-tropospheric winds (Markowski and Richardson, 2010). Due to the low propagation speeds, which contributes

-> In addition, a high concentration of water vapour at low levels in the presence of strong updrafts, high environmental relative humidity, significant cloud depth below the freezing level contribute to maximize rain accumulations. Furthermore, weak vertical wind shear, which tends to be correlated with weak mid-tropospheric winds (Markowski and Richardson, 2010), reduces storm propagation speeds. Due to the low propagation speeds, which contribute