

## ***Interactive comment on “Changing seasonality of moderate and extreme precipitation events in the Alps” by Stefan Brönnimann et al.***

### **Anonymous Referee #1**

Received and published: 28 March 2018

#### General:

Brönnimann et al. analyse the seasonal cycle and temperature dependence of the annual (Rx1day) and decadal precipitation maximum for a catchment in the Swiss Alps under present day and climate change conditions. They evaluate a large ensemble of global and regional model simulations comprising 555,000 simulation years. The more moderate Rx1day events exhibit a change in seasonality from mid-summer towards spring and fall under future climate conditions, especially in models which simulate increasingly dry conditions for the summer season. Meanwhile, decadal maxima remain most frequent during summer and increase in strength. The authors conclude that only the more extreme precipitation events (with return periods of 10-years or higher) are thermodynamically limited. These are also the events with exhibit approx-

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imate Clausius-Clapeyron scaling. More moderate extremes may be affected by less frequent conducive preconditions.

The topic is of relevance to the scientific community and within the scope of NHESS. The paper is well written and easy to follow. The conclusions are sound. I recommend publication after some minor, mostly technical revisions.

Specific comments:

It would be nice to include a figure on the seasonal cycle of Rx1day in the observations in the supplement with a comment in the manuscript.

Technical remarks:

Line 12 : Please state if weaker events show under or over the Clausius-Clapeyron scaling.

Line 107: "bias-correction" instead of "downscaling"

Line 107: The paper of Rajczak et al. 2018 is not accessible

Line 234: one "on" too many

Line 417: ...annual mean temperature (red) ...

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2018-55>, 2018.

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