

Interactive comment on “Seasonality in the alpine water logistic system on a regional basis” by D. Vanham et al.

Anonymous Referee #2

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General comments

The paper's subject is the seasonal variability of water supply and demand in an alpine region. The subject is of high practical relevance. Although the paper has an interesting subject of high public attention and on which not much literature is published, it is not acceptable for publication in its current form, due to several reasons:

First, it is not really clear, why we need a paper on this specific topic of how to calculate the start and end date of the winter period. Why it is so important to have two separate seasons? Please discuss implications and use of your results.

On P 2715 the authors define the goal of this study to determine an optimal winter

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season, for which the water balance variability is reduced to a minimum. I do not see, if the adopted methodology is suitable to obtain this goal. Please show the water balance variability for different periods.

Most of the text is rather general information of alpine water resources in the Kitzbuehel region, which may be interesting for the reader, but not needed to understand the methodology adopted or the results presented. For example chapter 1.2 to 1.4 are, of course, related to the topic but not really necessary. Due to the plethora of such general information, it is not possible to follow the central theme. On the other hand, it is not really clear, what the authors have done. To my understanding, the core of the paper are Eq. 1-3. But all of them are not really clear to me.

For example, Eq.1: Is T_{snow} calculated for each day or time interval? Are A_i and A_{snow} different for each day?

Eq.2 What does the weights (Q_j/Q_k) and (O_k/O_{tour}) really mean. Please explain in more detail.

Eq.3 How to calculate D ? Please give equation or clearly relate to text (Table 2??)

How is the optimal start and end day really calculated? By finding the day where T_{log} is a minimum/maximum?

The most important point to improve the quality of the paper is a clear focus on what information should be given in such a paper and how the information is organised in the text. The authors should focus on what is really necessary, but give this in detail. In its current form the manuscript is not acceptable for publication in Hydrology and Earth System Sciences.

Specific comments

Title: What does the title mean? Please do not use terms (water logistic system), which are not clear and have to be defined in the abstract.

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Chapter 1.2 to 1.4: Not really needed to understand the methodology adopted or the results presented. Please remove.

p2719: It seems that the authors use the approach of Schoener and Mohn (2003) to produce their snow cover duration map. But as Schoener and Mohn (2003) already cover the Kitzbuehel area, why it is necessary to produce a new map. Better resolution, more station data? p2719 I5-I14: I think this is not needed to understand the methodology. Please remove p2721 I16-28: Is this really the right place for the chapter (inbetween snow making)? p2721 I16: What does GIS-multicriteria approach mean? Please stress out what are the different alternatives and criteria in your study. p2723 I1 SCOV5190_s and SCOV5190_e are not intuitive terms for start and end date maps. P2723 I14: Which procedure is visualised? A map of water supply is given. p2724 What is the time step used in the procedure? SCOV5190_s and SCOV5190_e are on a daily basis, Eq.3 is calculated on half-month intervals. p2726, I3: Why are start and end date calculated only from Eq. 1, or should it be Eq. 3. p2726, I5: " results in a weighted start of the winter seasons of 0.88 to 1.." What does it mean? p2732 Table 3 What are "seasonality results"? Please explain what single numbers mean. p2734 Fig. 2 Where can i see the ski regions used in Eq.2? p2734 - p2735: It is not clear, why Fig.2 and Fig.3 are necessary. They are just two maps of ski slopes and water infrastructure. If there is something special, please explain.

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