

Interactive comment on “A Synthesis of Three Decades of Eco-Hydrological Research at Scotty Creek, NWT, Canada” by William Quinton et al.

Anonymous Referee #4

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This manuscript presents a summary of the research results from two decades of research at the Scotty Creek basin with a focus on the mechanistic understanding of hydrology in discontinuous permafrost systems that has been developed over this time. It provides a valuable resource that pulls together this important body of literature and highlights the importance of long-term, field-based hydrological studies.

Overall, the paper is well-written and easy to follow. There is a huge amount of information presented, but it flows fairly well throughout. I do recommend that the authors take another careful read through as I found some places where grammar could be improved and text could be clarified, but I did not mark them all here. Although somewhat of a personal style choice, several portions of the paper would be clearer if switched to the active voice. It would also be useful to have a map illustrating the location of in-

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strumentation listed in Table 1, possibly as an additional panel(s) to Figure 1. My other main suggestion would be a careful consideration of the use of terminology. In the early sections, the authors refer to collapse scars and later I think these are referred to as flat bogs. Maybe these are not the same thing, but in any case, I wasn't sure, so a clear and consistent use of terminology will help this. A few additional comments are below.

Page 3, line 15: Are you able to provide an estimate of how much of the subarctic this type of land cover accounts for?

Page 5, lines 15-16: And what is the main difference between these subarctic peatlands and those further south? Further south peatland can act as water sources, transmitters or sinks. Can you be more specific here?

Page 8, line 11: I suggest a hyphen between regions and adapted to make the term clearer – so “cold regions-adapted”

Page 11, lines 4-9: This paragraph doesn't report on the findings, but what was done. Either remove it, or edit to tell the reader the main finding from each study.

Page 12, line 2: When the authors refer to bogs in this sentence, is this the same feature described as a collapse scar in the early sections? If so, please use the same terminology here. See also others instances of the term bogs throughout this section.

Page 14, line 5: Here the authors define “bog-capture”, but it has already been used on several occasions in the preceding paragraphs. Consider moving this definition forward to the first instance of the term bog-capture.

Page 16, line 20: Do you know the density of the linear disturbance in the catchment? Or the total length? That would be a useful addition here if known.

Page 17, summary and conclusions: This section does a good job of illustrating the importance of the research at Scotty Creek to the broader hydrological community, but could also be used to set the stage for what is to come. What are the most important

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remaining knowledge gaps? What should the next 5 years of research priorities look like? Many of the sections of the paper introduce needs for future research, but this section can really highlight what still needs to be done.

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