

## ***Interactive comment on “Summary and synthesis of Changing Cold Regions Network (CCRN) research in the interior of western Canada – Part 2: Future change in cryosphere, vegetation, and hydrology” by Chris M. DeBeer et al.***

**Anonymous Referee #1**

Received and published: 23 November 2020

General comments This paper reports results of the multi-disciplinary CCRN, which has examined recent and future ecological, cryospheric, and hydrological change in relation to projected 21st century climatic change over the interior of western and northern Canada. Based on field studies and understanding from the observatories, key insights into the mechanisms and interactions of Earth surface process responses are presented, as well as the developed fine-scale and large-scale hydrological models and their projected results. I think this is a monumental summary work in the western and northern Canada, and it is also benefit for the development of Earth surface process

C1

research in the world. In addition, this manuscript is well-written and technical sound, and the topic is interesting for the readers of Hydrology and Earth System Sciences. I recommend publication after minor revision.

Specific comments Page 9, Line 46: Just an advice: Here only the results under RCP 8.5 are described, other results may need to be presented such as under RCP 4.5, or 1.5 or 2.0 degree temperature rise scenarios that would happen more possibly. Page 13, Line 4-5: As a result of warming and shallower re-freeze depths during winter, active layer thickness has been decreasing. Please check.

Technical corrections Page 8, Line 30, “a nd” should be “and”

---

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2020-491>, 2020.

C2