

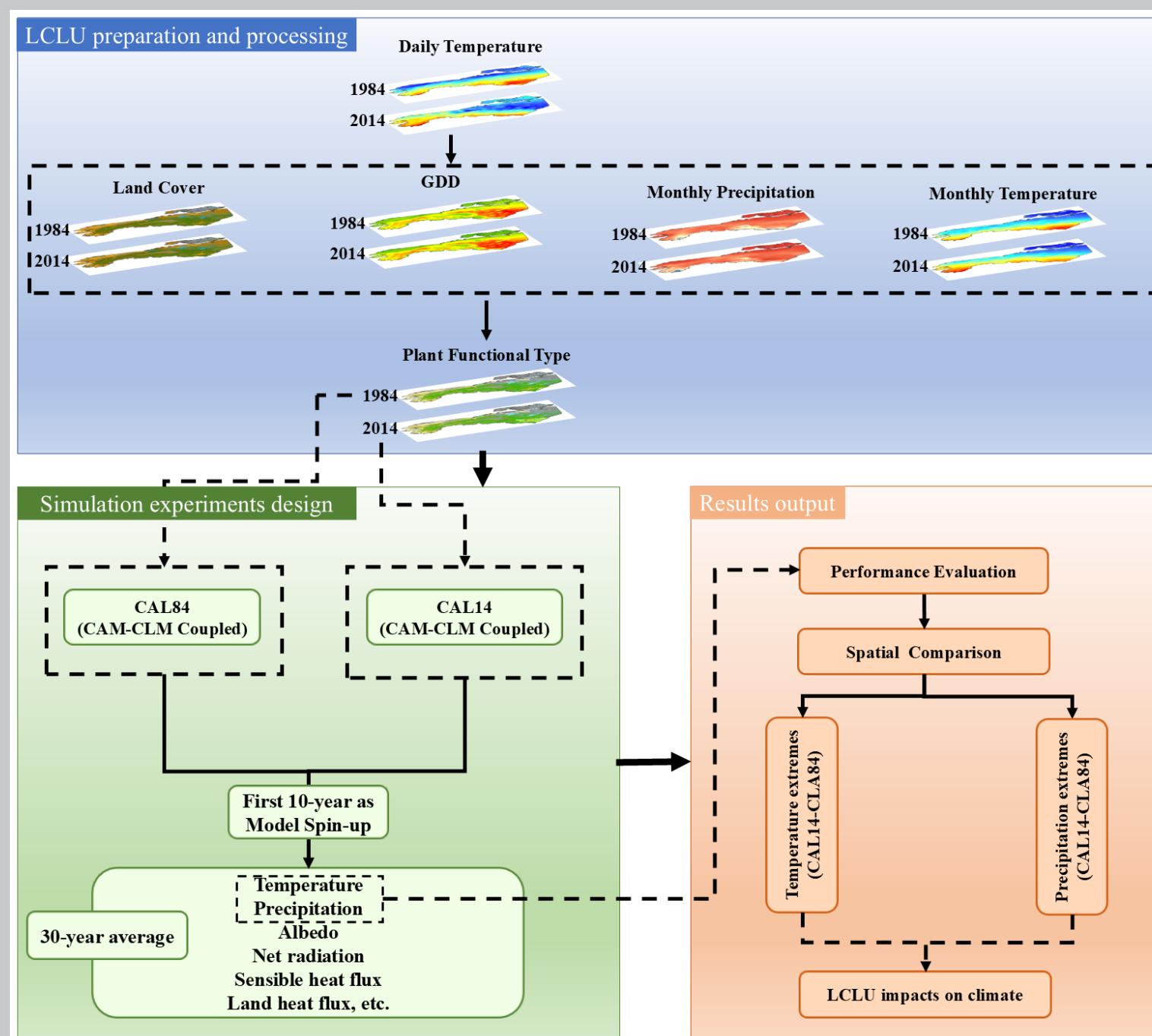
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Introduction

- The Arctic-Boreal region has experienced substantial warming at a rate four times faster than the global [1].
- Significant land cover change (LCC) has been observed because of climate change and wildfires [2].
- Climate feedbacks to real-world LCC is rarely explored in the ABoVE domain, which might amplify or diminish climate change.

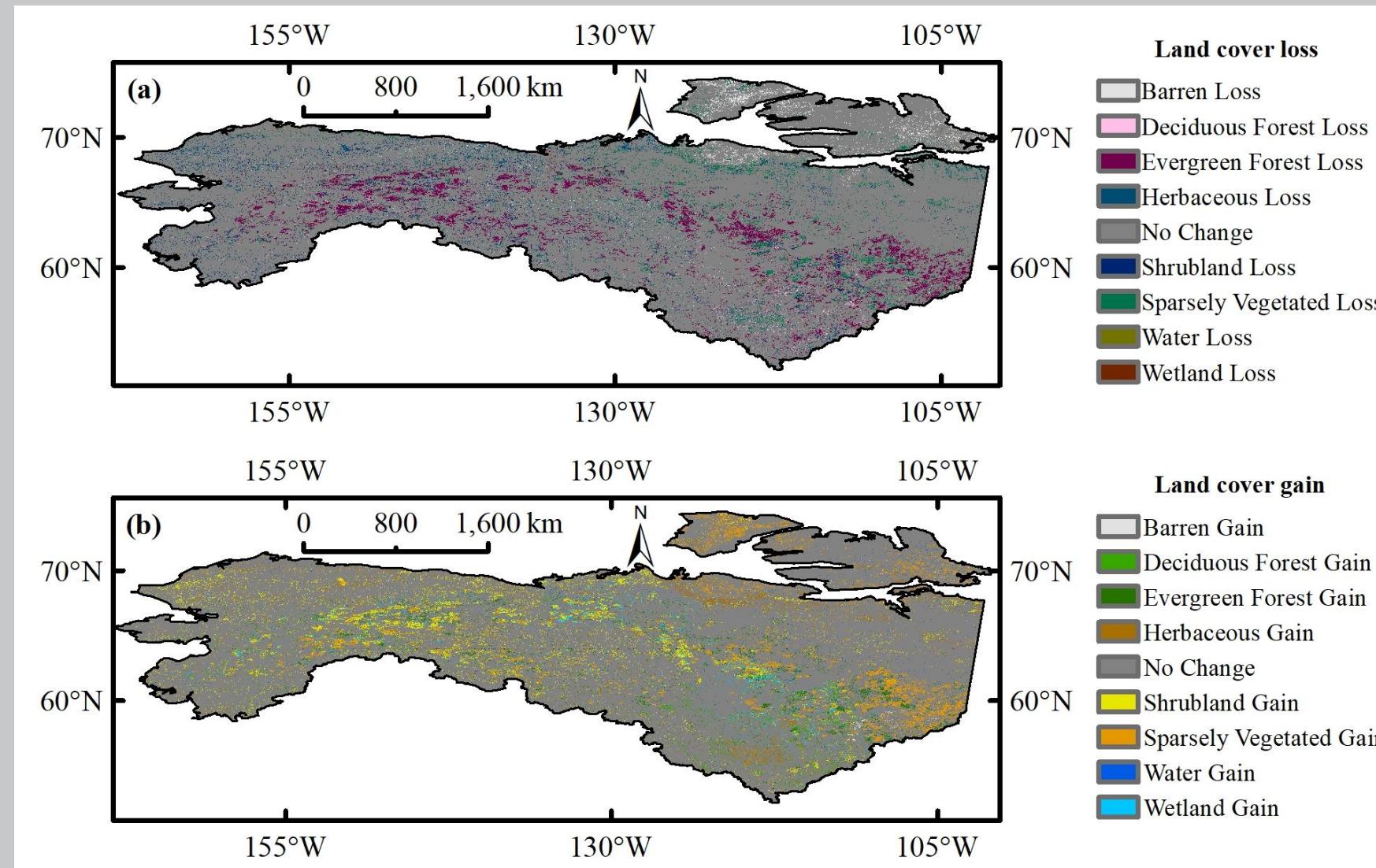
Methods

CESM Experiment	Land Cover [3]	Component	Years of Running
CAL84	1984	CAM-CLM coupled	40
CAL14	2014	CAM-CLM coupled	40

**Figure 1.** Flowchart

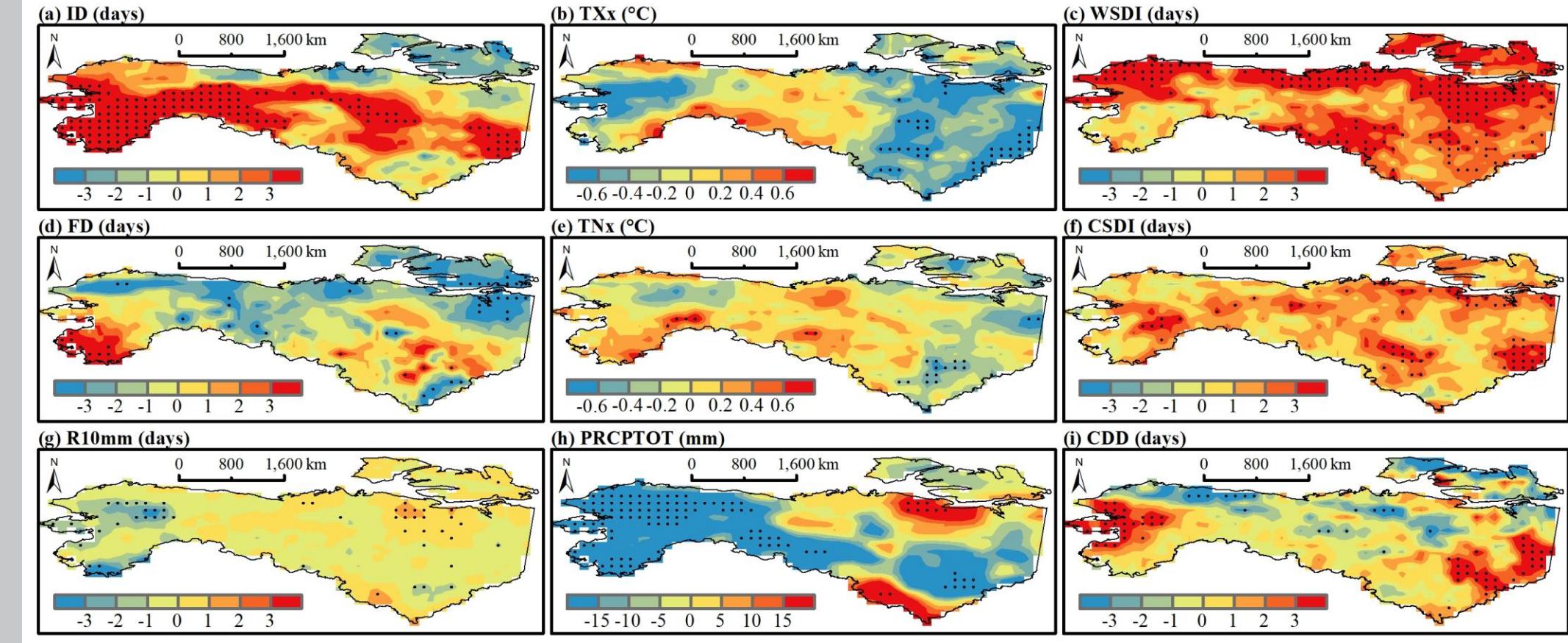
Results

Land cover change in the ABoVE domain

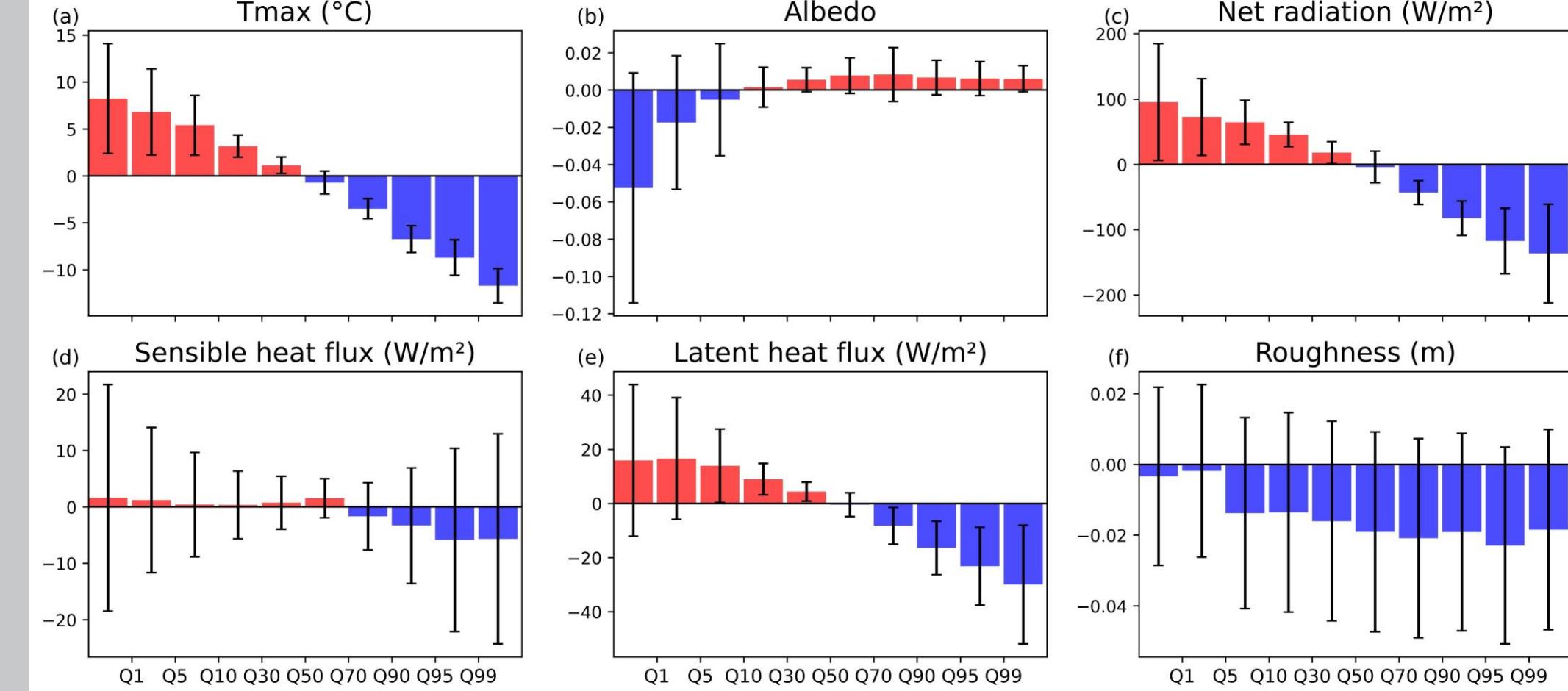
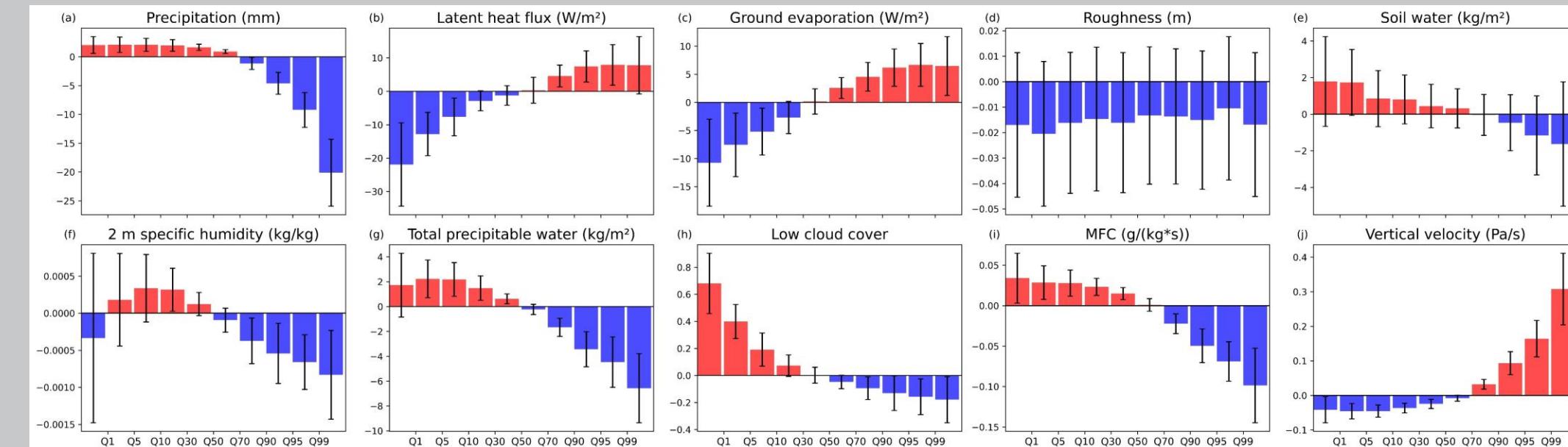
**Figure 2.** Land cover loess and gain from 1984 to 2014

Results

Impacts on temperature and precipitation extremes

**Figure 3.** LCC impacts on temperature and precipitation extreme variables.

Potential physical processes

**Figure 4.** Physical process related to LCC impacts on temperature extremes.**Figure 5.** Physical process related to LCC impacts on precipitation extremes.

Conclusion

- Compared to the minimum temperature (Tmin), the maximum temperature (Tmax) changed more significantly.
- The intensity, frequency, and duration of extreme precipitation were affected to varying degrees, with reduced precipitation being the main characteristic.
- The radiative forcing determined by albedo narrowed the distribution range of Tmax by decreasing it at the upper tail and increasing it at the lower tail, while the combined effects of water vapor supply and atmospheric dynamics altered precipitation magnitude..

Reference

[1] Rantanen et al., (2022). The Arctic has warmed nearly four times faster than the globe since 1979. *Communications earth & environment*, 3(1), p.168.
 [2] Wang et al., (2020). Extensive land cover change across Arctic-Boreal Northwestern North America from disturbance and climate forcing. *Glob Chang Biol*, 26(2), 807-822.
 [3] Wang et al., (2019). ABoVE: Landsat-derived Annual Dominant Land Cover Across ABoVE Core Domain, 1984-2014. ORNL DAAC, Oak Ridge, Tennessee, USA..

Acknowledgments

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