Permafrost is a crucial component in landscape formation and function. The presence of permafrost is reflected in geomorphology, hydrology, ecology, but often much less in human-made infrastructure and the climate modeling community. Predictions of permafrost stability over the next 75 years will add to the understanding of landscape changes and will determine the need for infrastructure improvements. Very little research has been done to integrate long-term climate predictions and high-resolution permafrost temperature predictions for future climate. The goal of this research is to utilize high-resolution climate scenarios to estimate the consequences of rising air temperatures on permafrost. Our research domain is the ice-cored land mass of Greenland, where we used climate simulations at a 25 kilometer grid from 1950 till 2080 simulated by HIRHAM 4.0. The Permafrost model, GiPL 2.1 is used to simulate future permafrost conditions. In general, we found that some areas will be losing ground ice over the next 75 years, while some areas will lose all permafrost. A reduction or removal of the organic layer has a very clear warming effect on the permafrost temperatures. Decreasing snow density (thermal conductivity) also affects the permafrost. It was also found that more detailed information is needed for better local predictions of permafrost conditions.

**Conclusions**

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