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*Supplement of*

## **Simulated high-latitude soil thermal dynamics during the past 4 decades**

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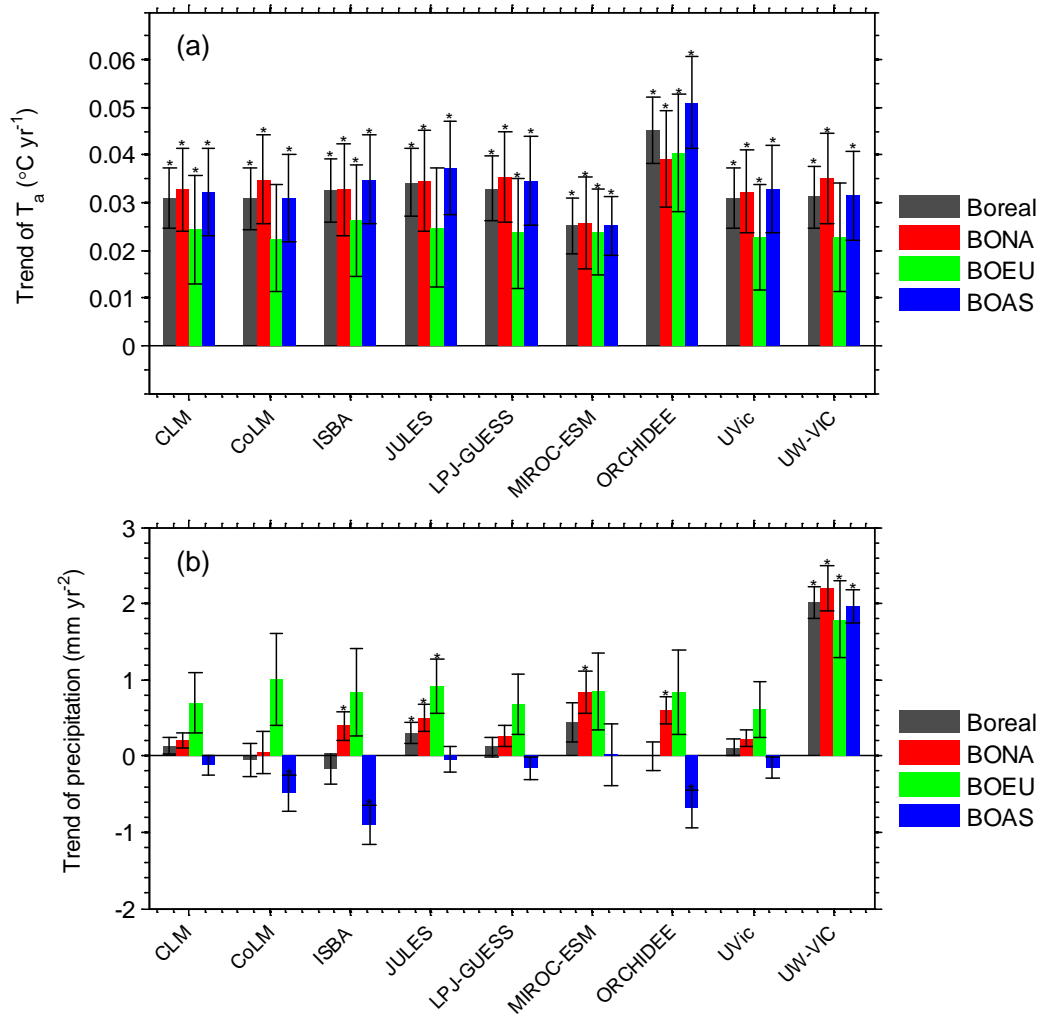
1 Figure S1. Trends of annual (a)  $T_a$  and (b) precipitation in the climate forcing data averaged  
2 over boreal regions and sub-regions from 1960 to 2000.

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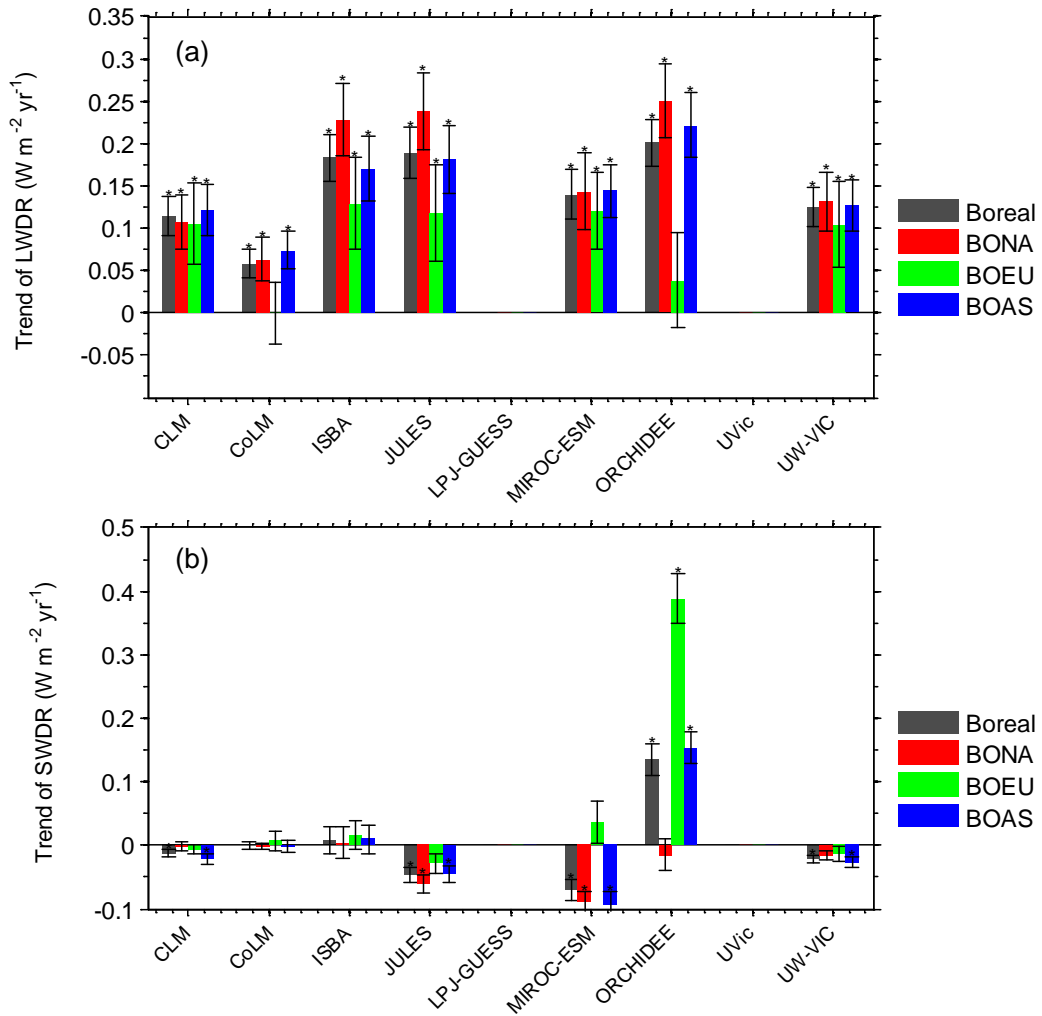
7 Figure S2. Trends of annual (a) LWDR and (b) SWDR in the climate forcing data averaged  
 8 over boreal regions and sub-regions from 1960 to 2000.

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13 Figure S3. Simulated trends of annual  $T_s$  over (a) BONA, (b) BOEU and (c) BOAS as a  
14 function of soil depths 0 - 40 m for the nine models. Note the different total soil depths of the  
15 models.

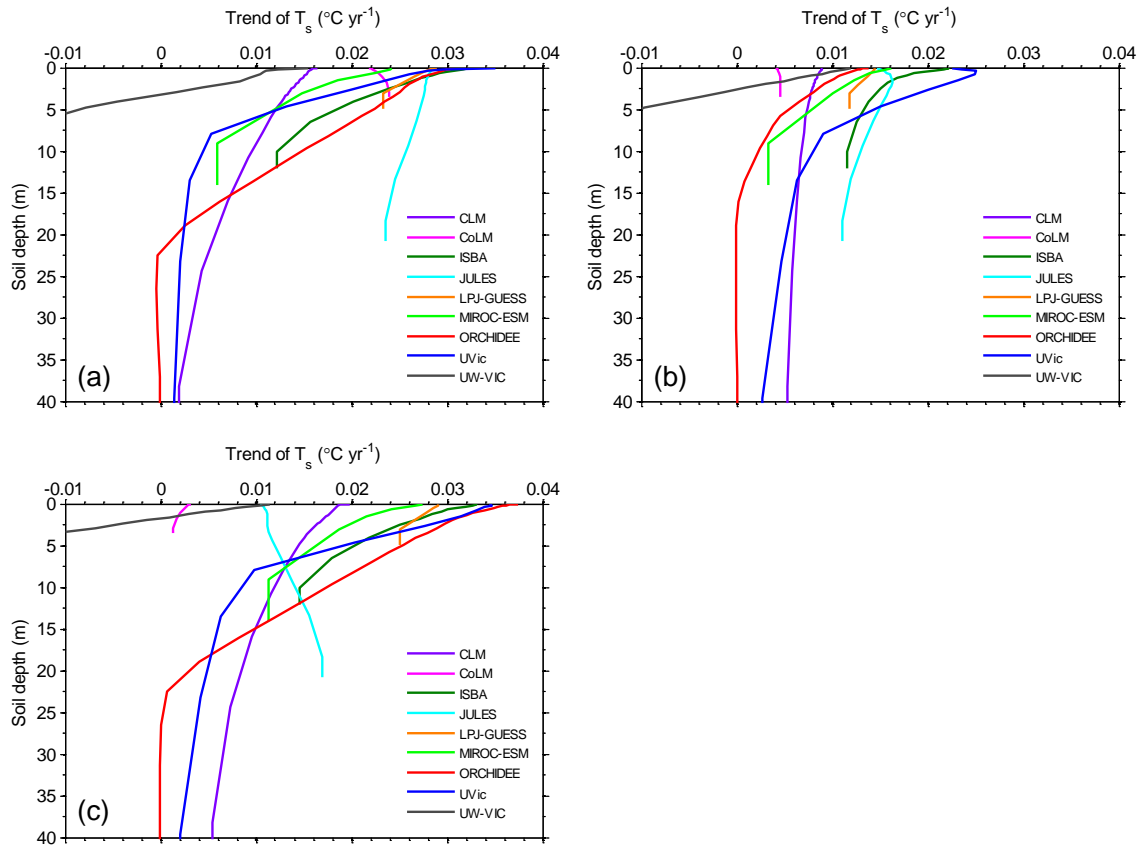
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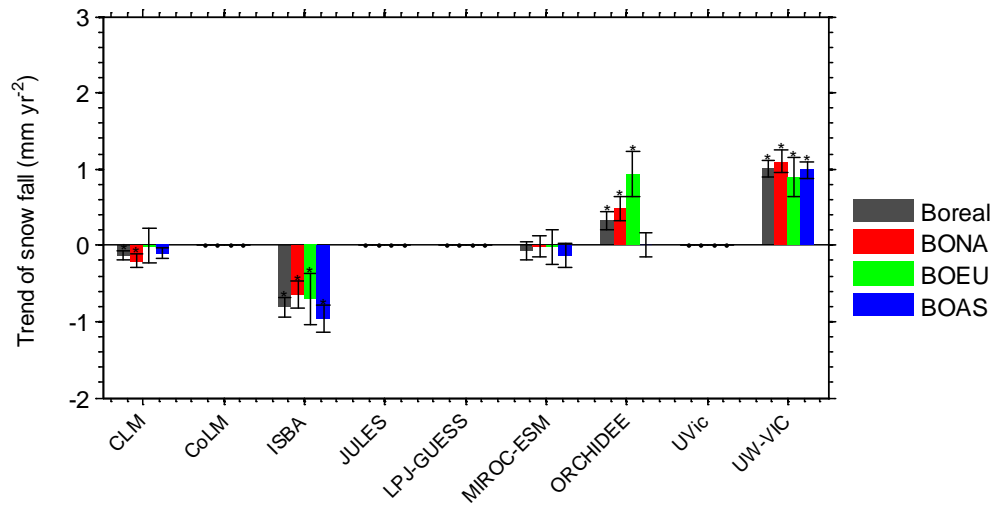
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21 Figure S4. Trends of annual snowfall averaged over boreal regions and sub-regions in the  
22 climate forcing data from 1960 to 2000. CoLM, JULES, LPJ-GUESS and UVic only provided  
23 total precipitation and did not provide rainfall and snowfall separately.

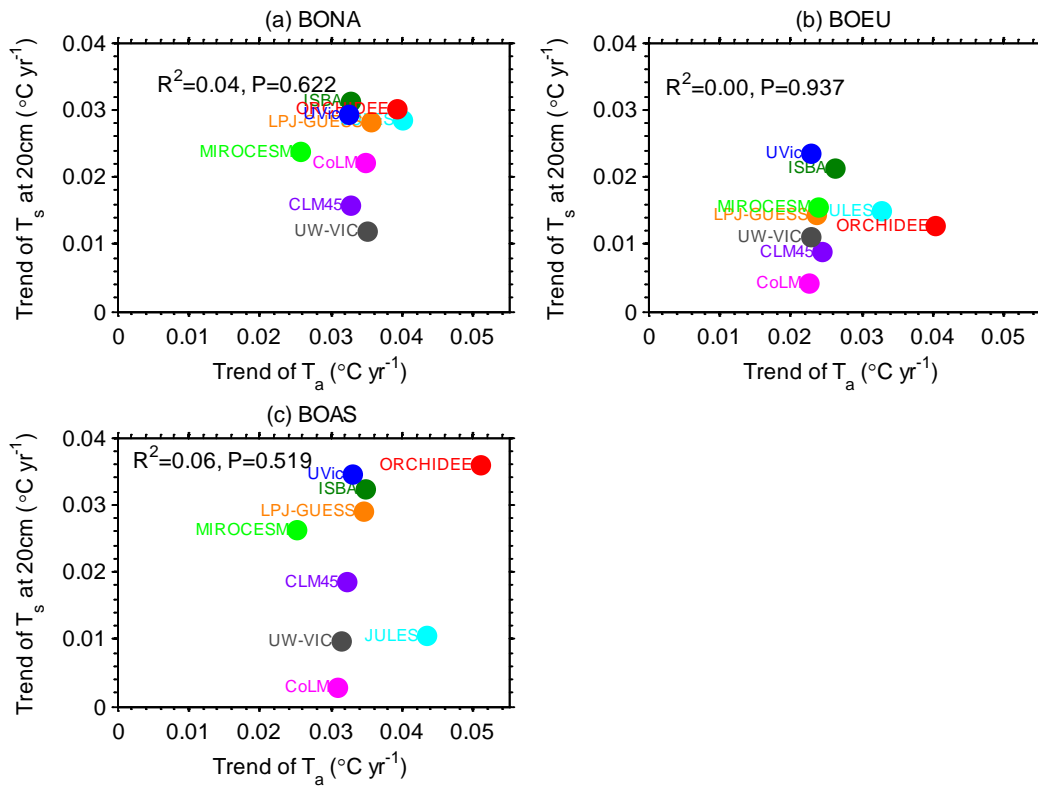


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27 Figure S5. Trends of simulated annual  $T_s$  at 20 cm and  $T_a$  in the climate forcing data over (a)  
 28 BONA, (b) BOEU and (c) BOAS across the nine models.



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34 Figure S6. Trends of simulated annual  $T_s$  at 20 cm and annual (a) SWDR and (b) precipitation  
35 in the climate forcing data over boreal regions across the models.

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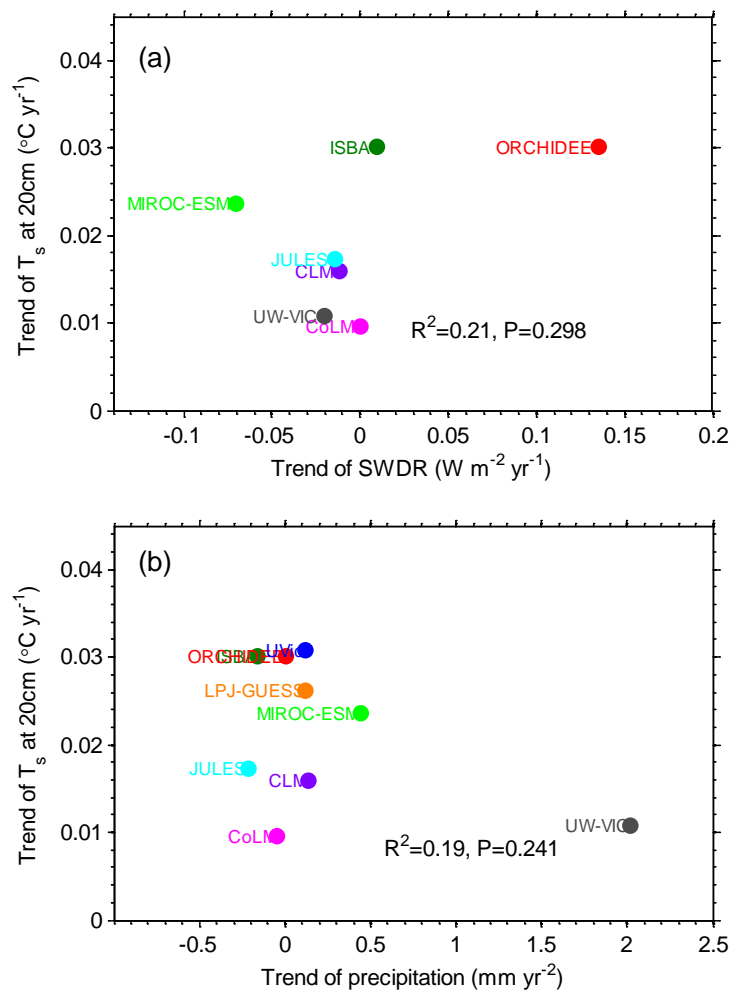
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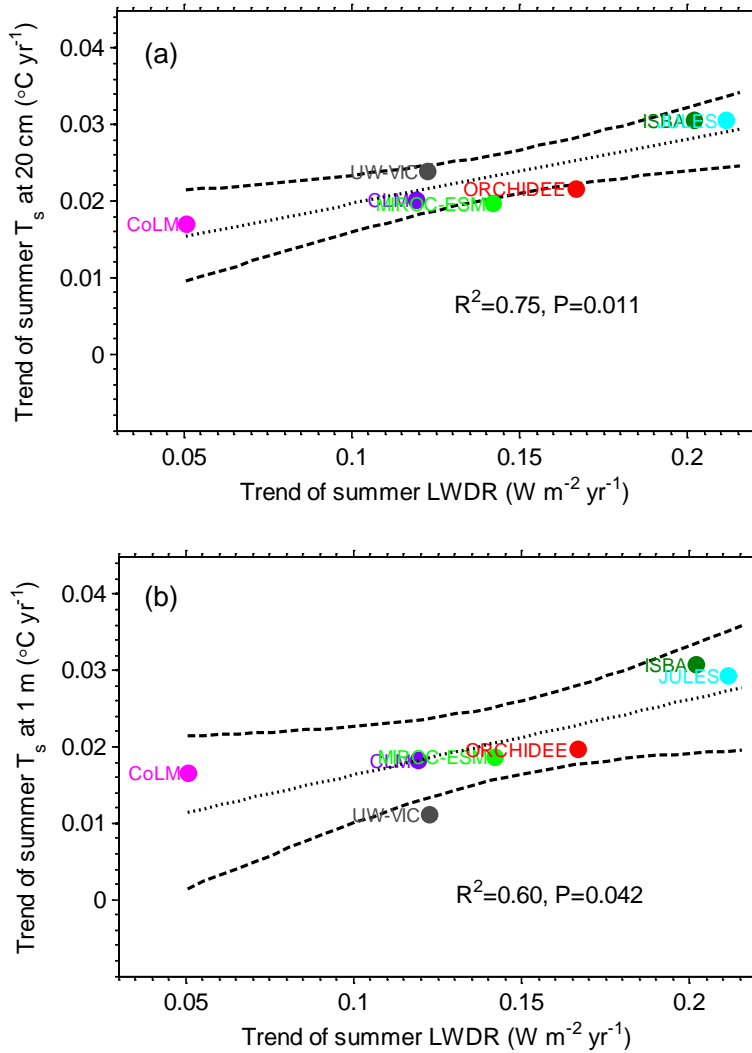
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42 Figure S7. Trends of simulated summer  $T_s$  at (a) 20 cm and (b) 1 m and summer LWDR in the  
43 climate forcing data over boreal regions across the models.

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48 Figure S8. Trends of simulated winter  $T_s$  at (a) 20 cm and (b) 1 m and winter LWDR in the  
49 climate forcing data over boreal regions across the models.

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