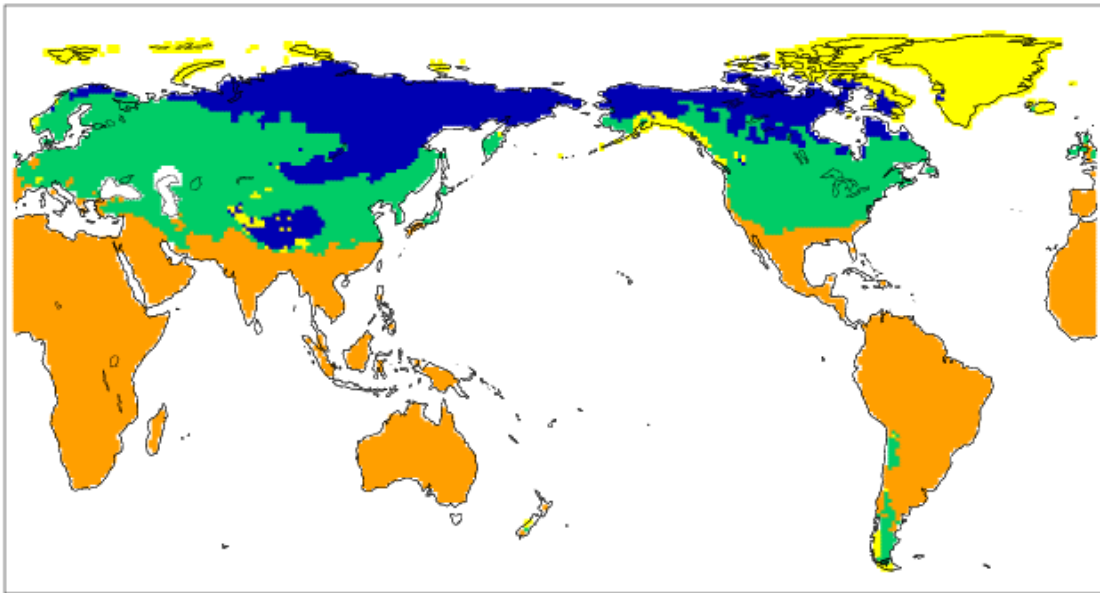
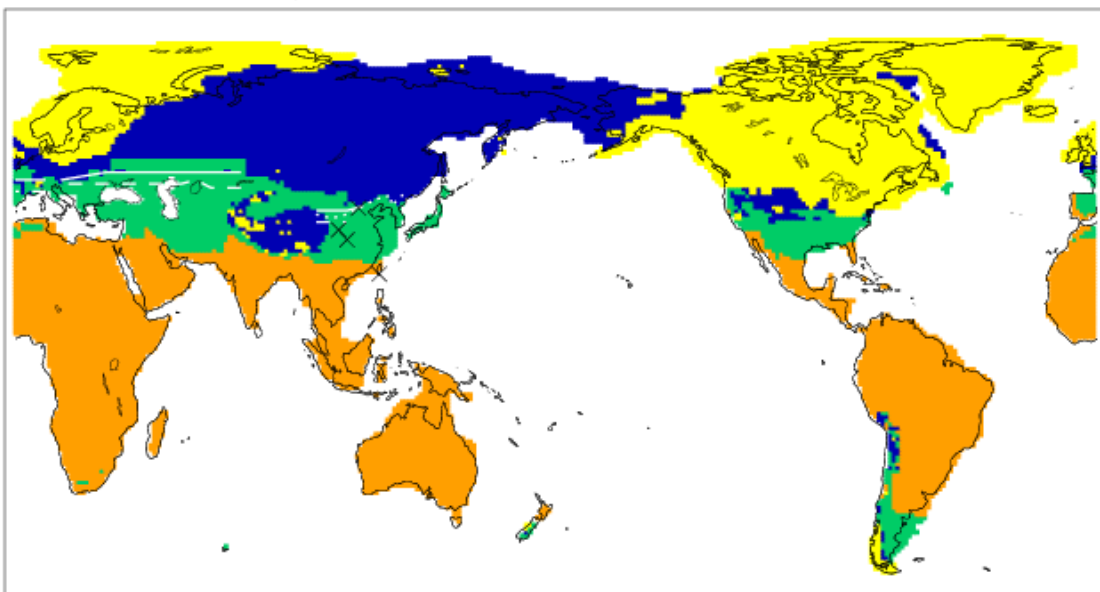


a) [PMIP3] 0k Tsl-based: mode



b) [PMIP3] 21k Tsl-based: mode



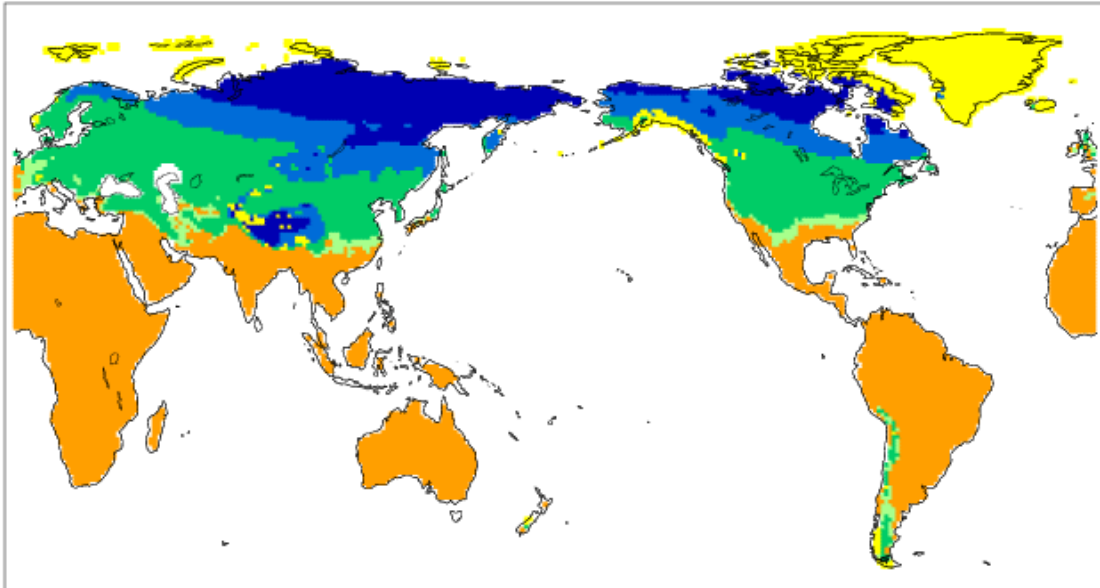
Land Ice

No Freeze

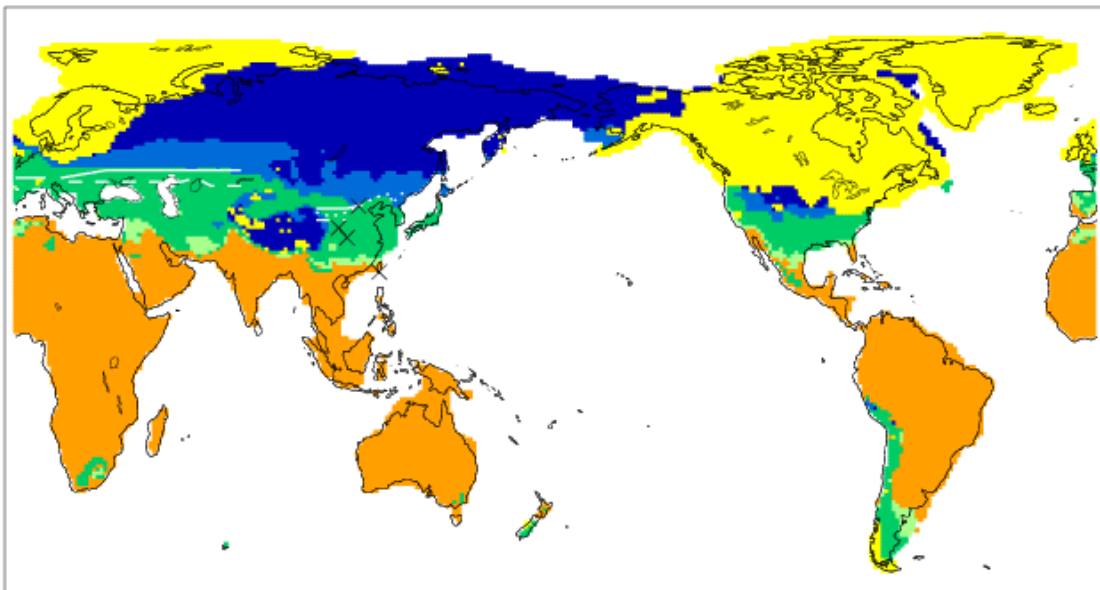
Seasonally

Permafrost

c) [PMIP3] 0k Tas-based: mode

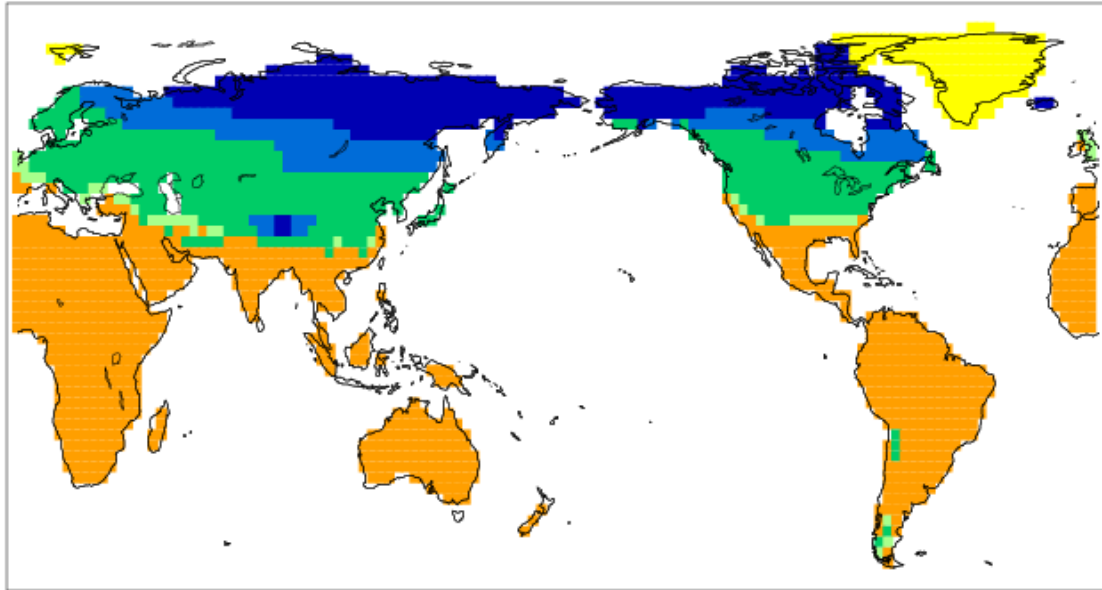


d) [PMIP3] 21k Tas-based: mode

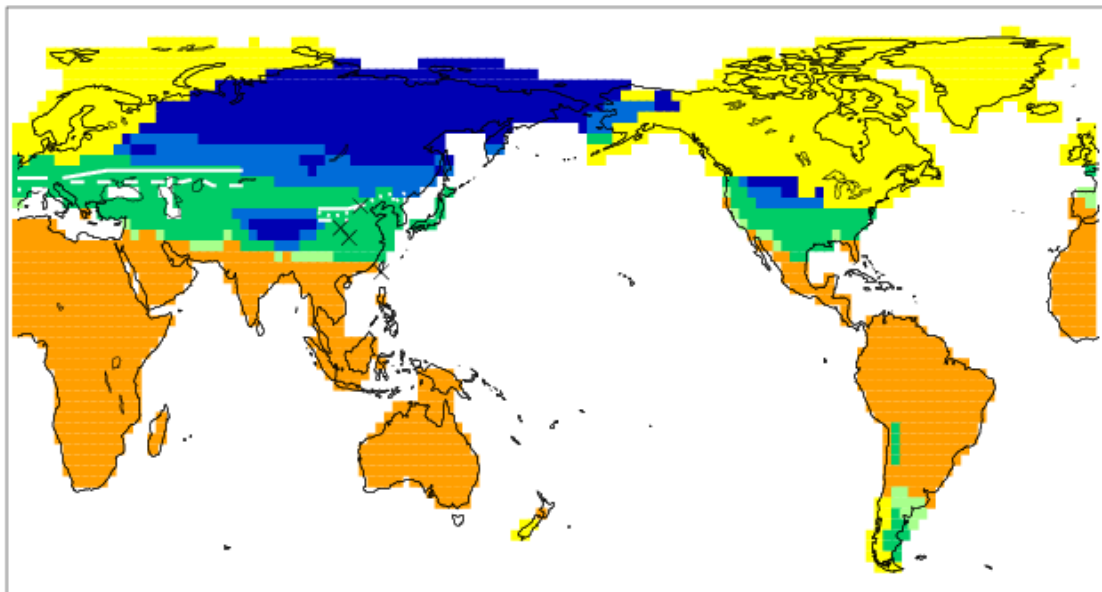


Land Ice      No Freeze      Intermittent      Seasonal      Environmental      Climatic

e) [PMIP2] 0k Tas-based: mode



f) [PMIP2] 21k Tas-based: mode



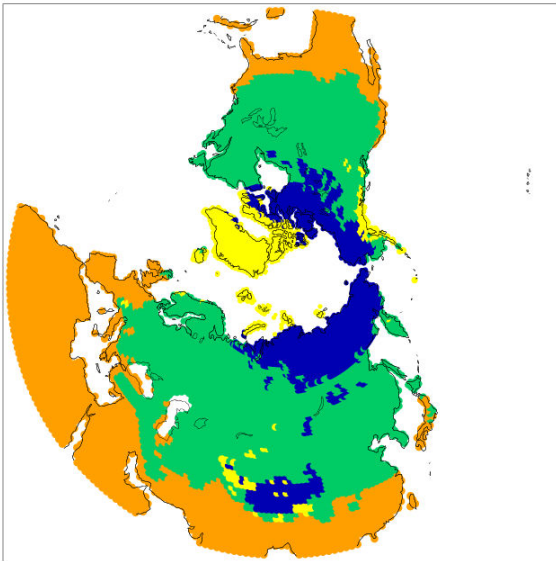
Land Ice    No Freeze    Intermittent    Seasonal    Environmental    Climatic

1

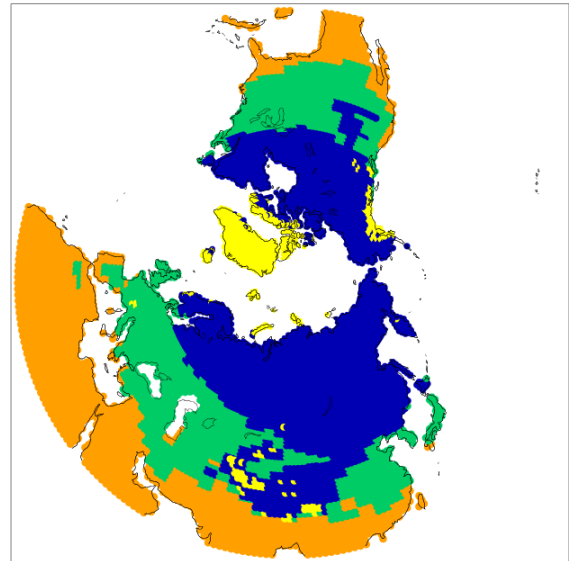
2 Supplementary Figure 1. Global maps of frozen ground distribution diagnosed by PMIP3 soil  
3 temperature (direct method) for a) the pre-industrial (0k) and b) the LGM (21k) periods. c)  
4 and d) same as a) and b), except for diagnosis by PMIP3 surface air temperature (indirect

- 1 method). e) and f) same as c) and d), except for PMIP2. Color scheme for frozen ground types
- 2 is the same as in Figure 2.
- 3

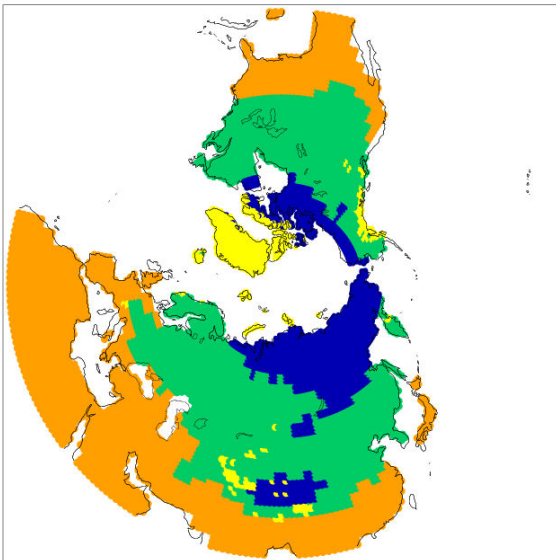
a) PMIP3 0k Tsl-based (CCSM4)



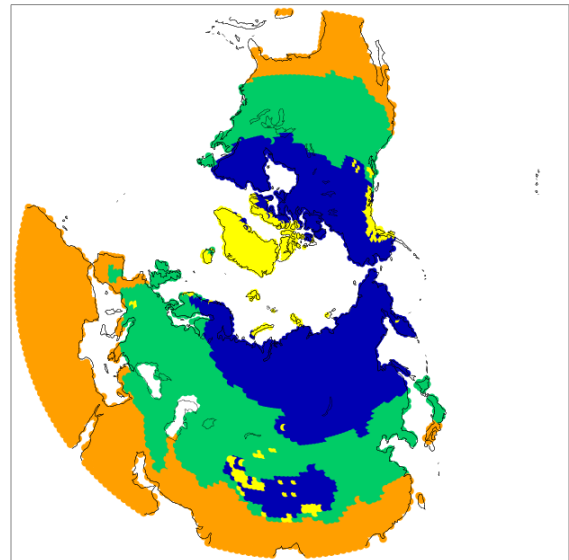
b) PMIP3 0k Tsl-based (IPSL-CM5A-LR)



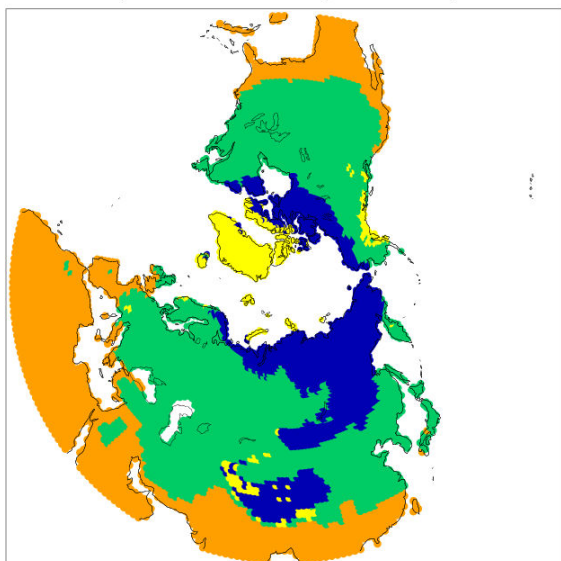
c) PMIP3 0k Tsl-based (MIROC-ESM)



d) PMIP3 0k Tsl-based (MPI-ESM-P)



e) PMIP3 0k Tsl-based (MRI-CGCM3)



Land Ice

No Freeze

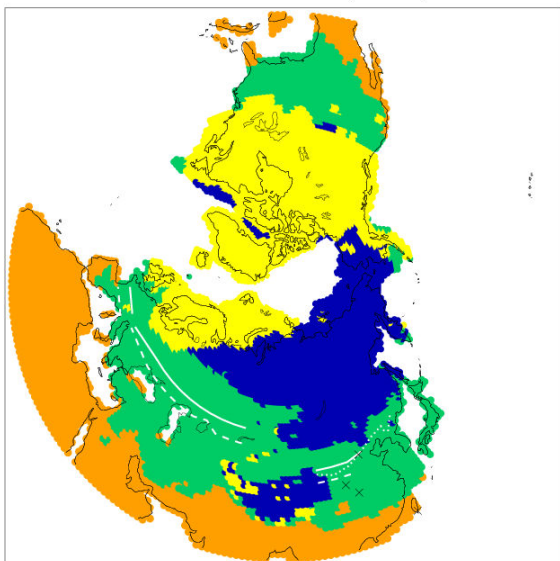
Seasonally

Permafrost

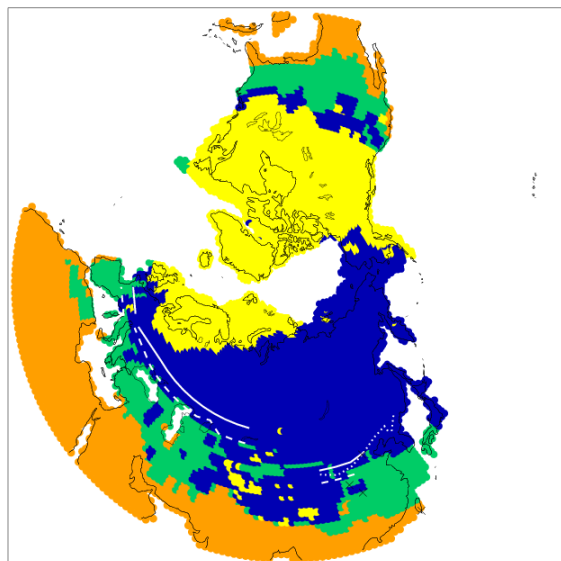
1  
2 Supplementary Figure 2. Individual maps of pre-industrial frozen ground distribution  
3 diagnosed from soil temperature for PMIP3 models. Model names are shown on the top of  
4 each figure. Color scheme for frozen ground types is the same as in Figure 2.

5

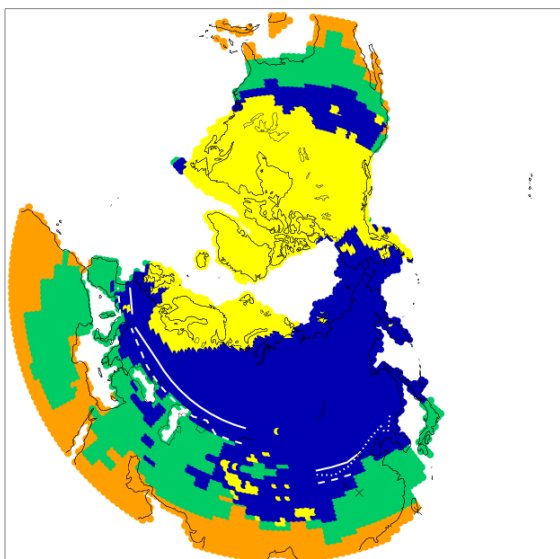
PMIP3 21k Tsl-based (CCSM4)



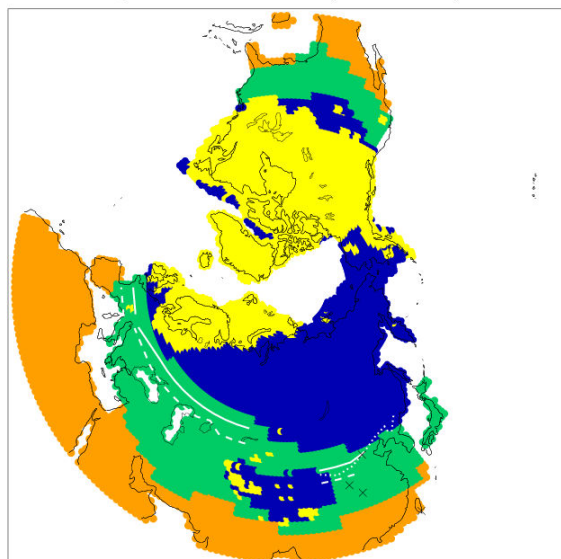
PMIP3 21k Tsl-based (GISS-E2-R)

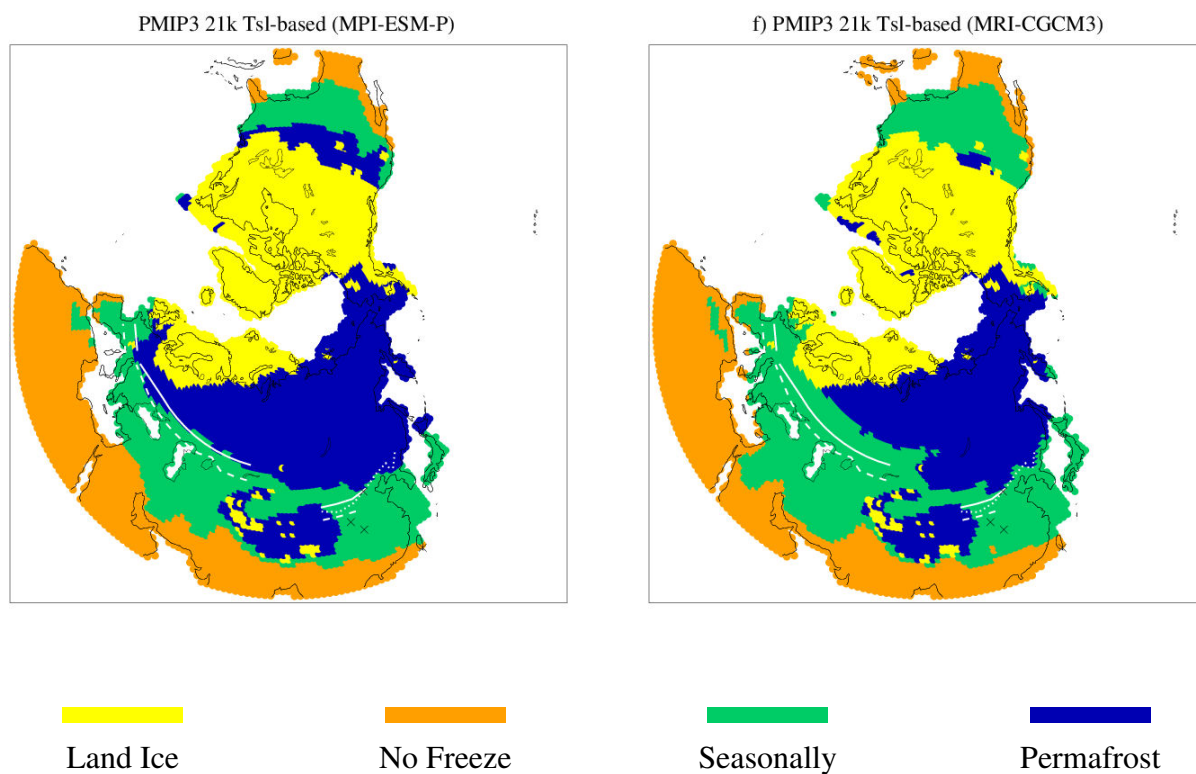


d) PMIP3 21k Tsl-based (IPSL-CM5A-LR)



e) PMIP3 21k Tsl-based (MIROC-ESM)

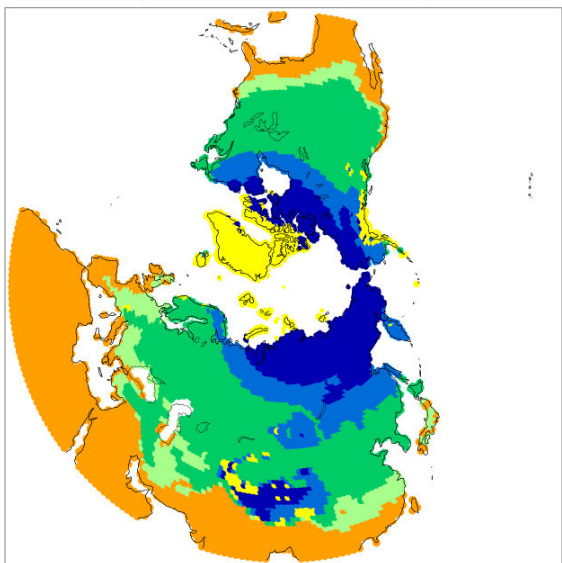




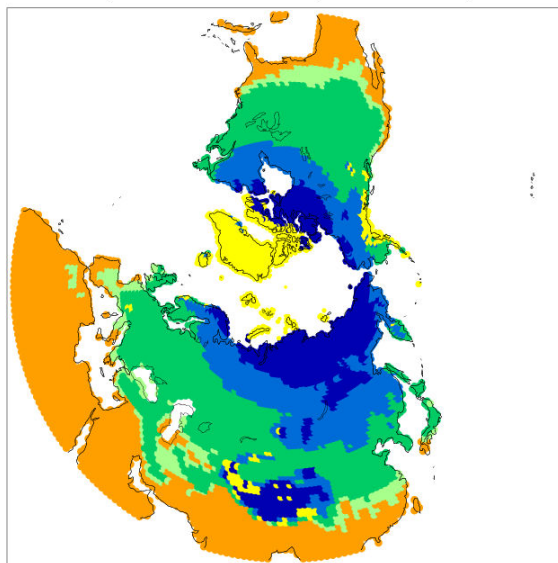
Supplementary Figure 3. Same as Supplementary Figure 2, except for LGM.



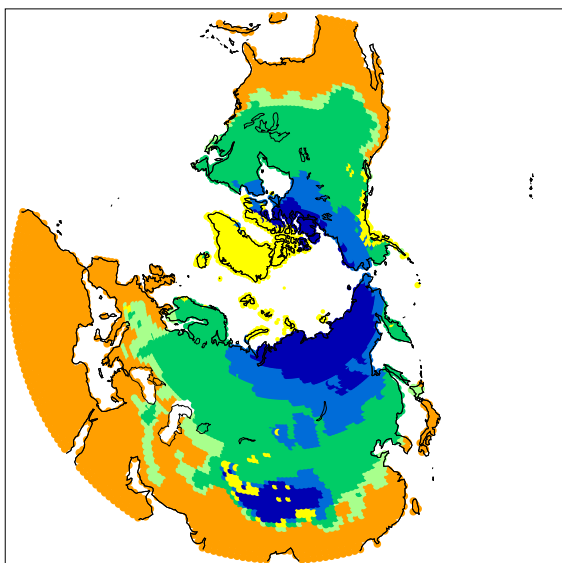
a) PMIP3 0k Tas-based (CCSM4)



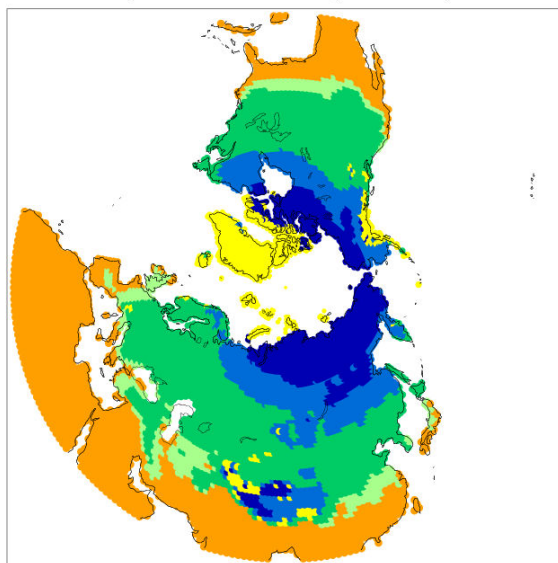
b) PMIP3 0k Tas-based (IPSL-CM5A-LR)



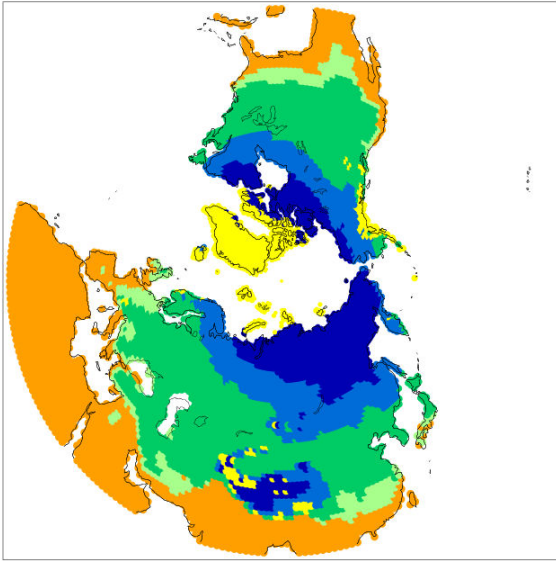
c) PMIP3 0k Tas-based (MIROC-ESM)



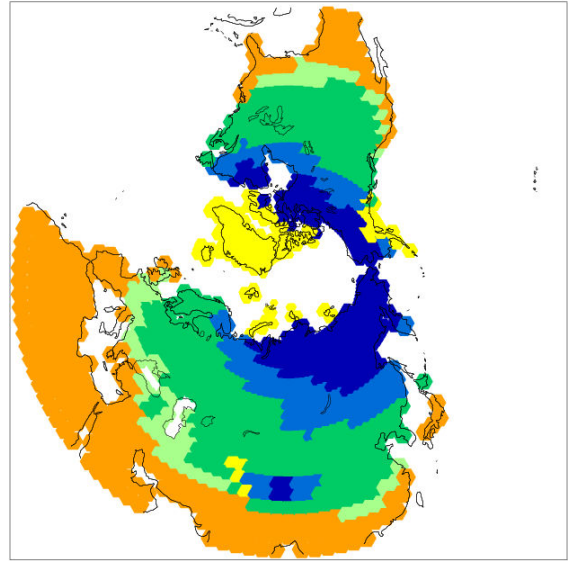
d) PMIP3 0k Tas-based (MPI-ESM-P)



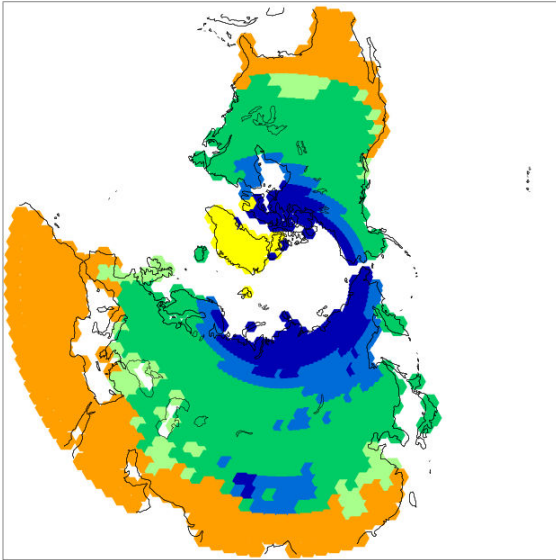
e) PMIP3 0k Tas-based (MRI-CGCM3)



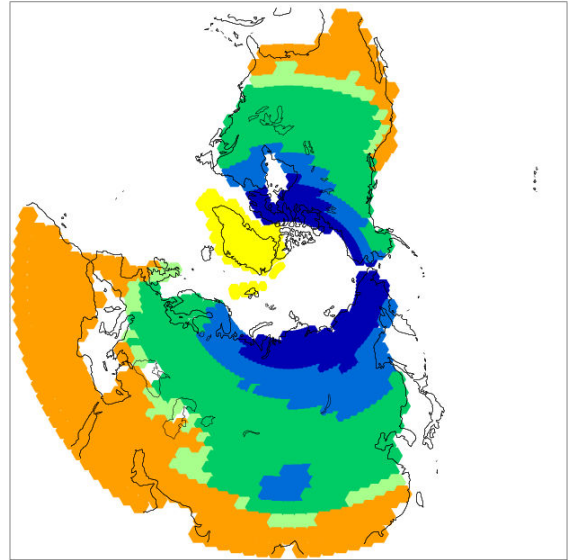
f) PMIP2 0k Tas-based (CCSM)

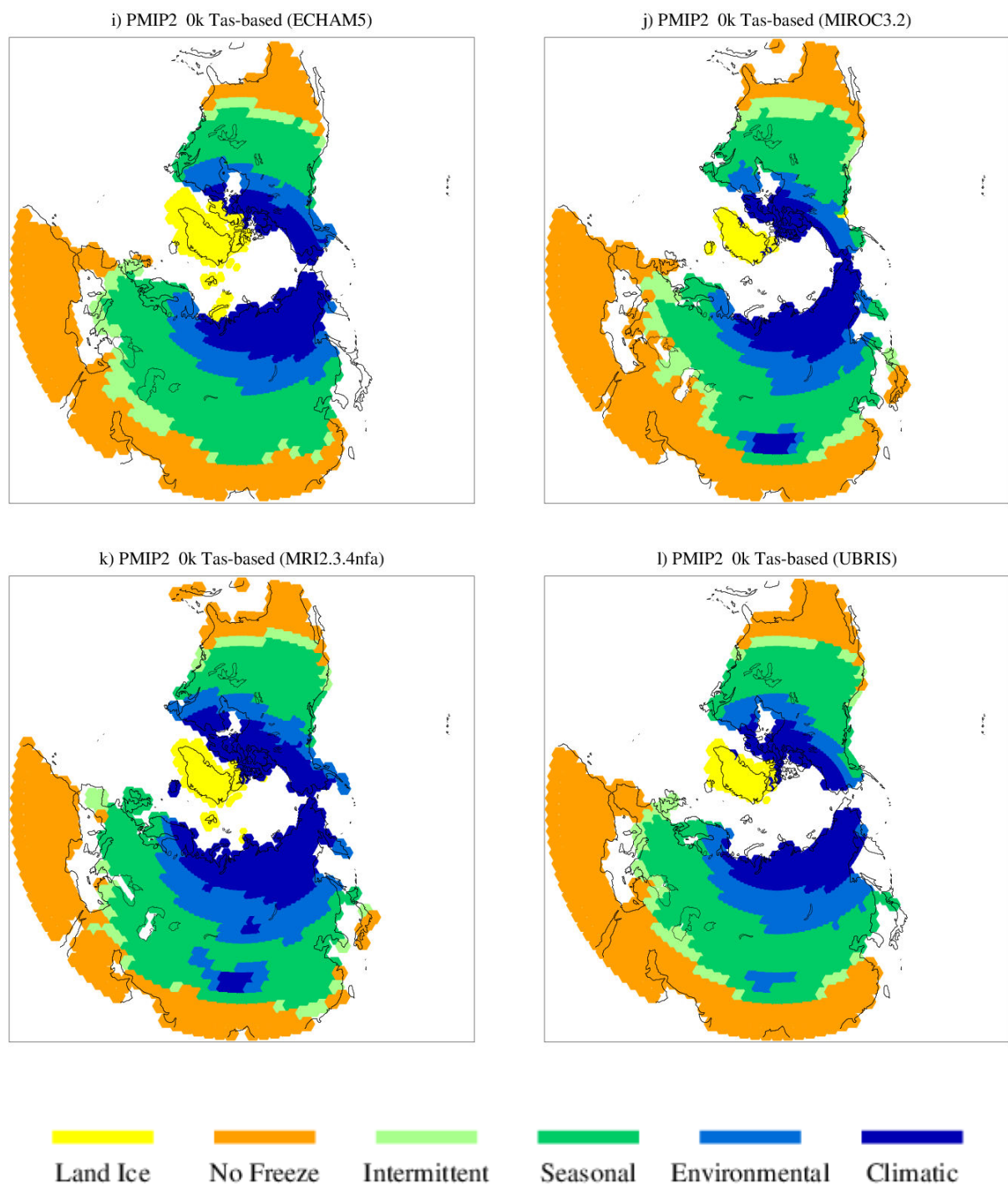


g) PMIP2 0k Tas-based (CNRM-CM33)



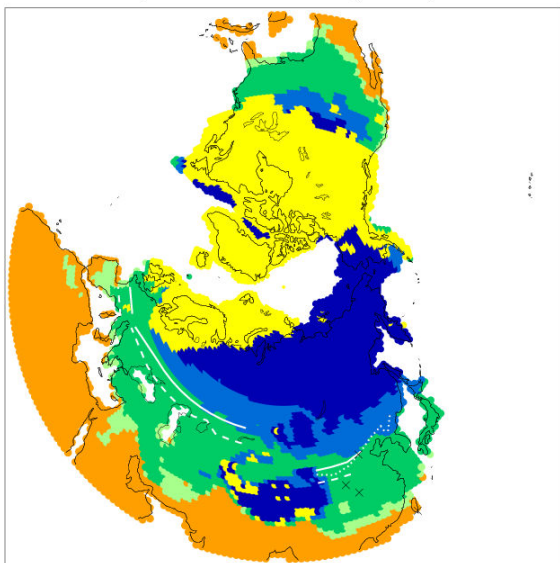
h) PMIP2 0k Tas-based (CSIRO1.1)



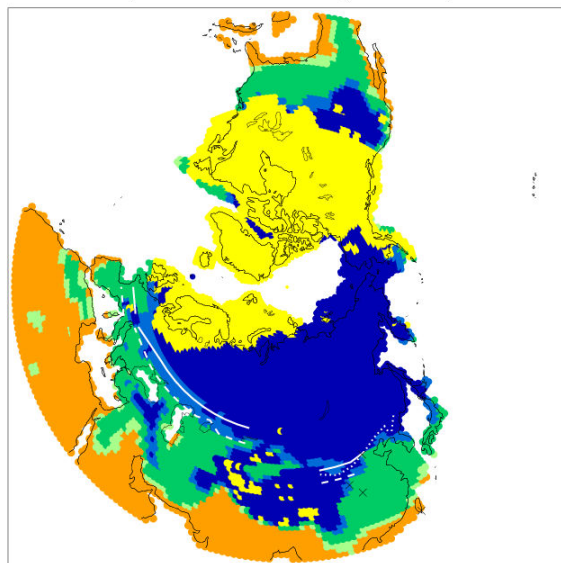


Supplementary Figure 4. Individual maps of pre-industrial frozen ground distribution diagnosed from surface air temperature for PMIP3 and PMIP2 models. Model and experiment names are shown at the top of each figure.

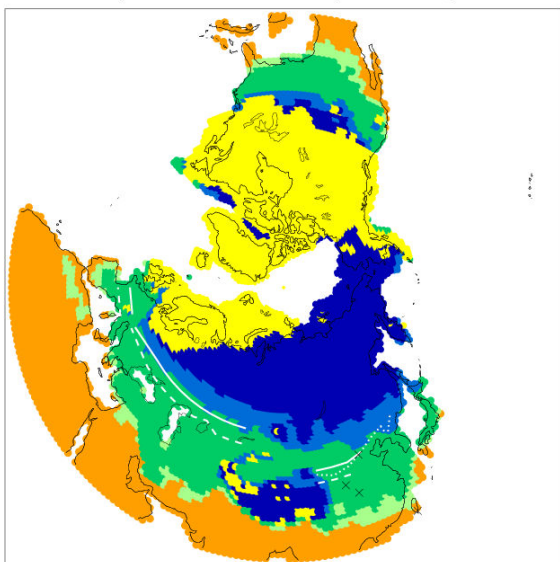
a) PMIP3 21k Tas-based (CCSM4)



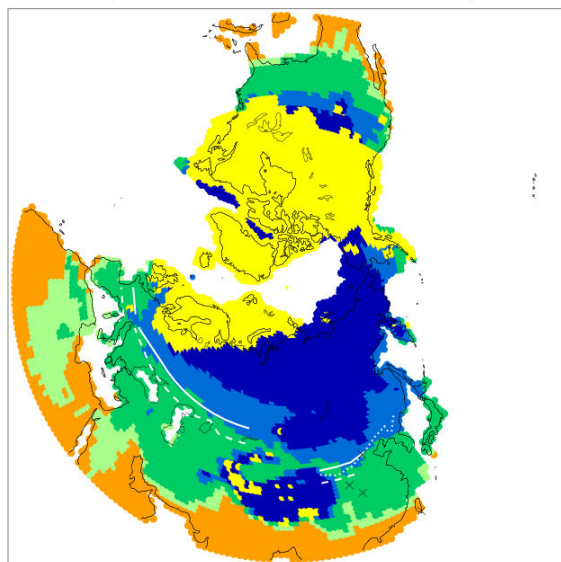
b) PMIP3 21k Tas-based (GISS-E2-R)



c) PMIP3 21k Tas-based (MPI-ESM-P)

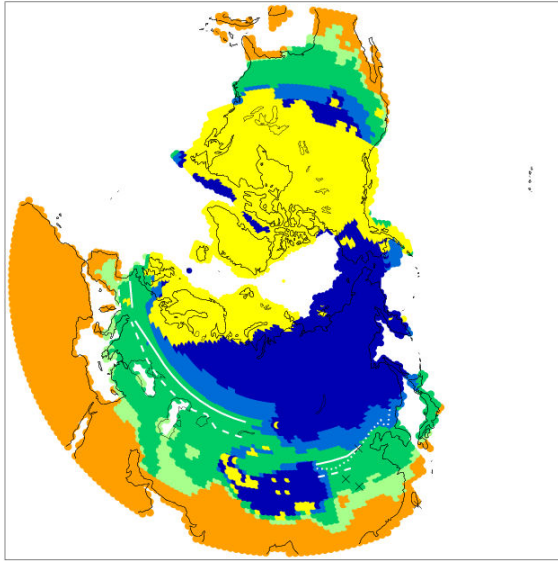


d) PMIP3 21k Tas-based (IPSL-CM5A-LR)

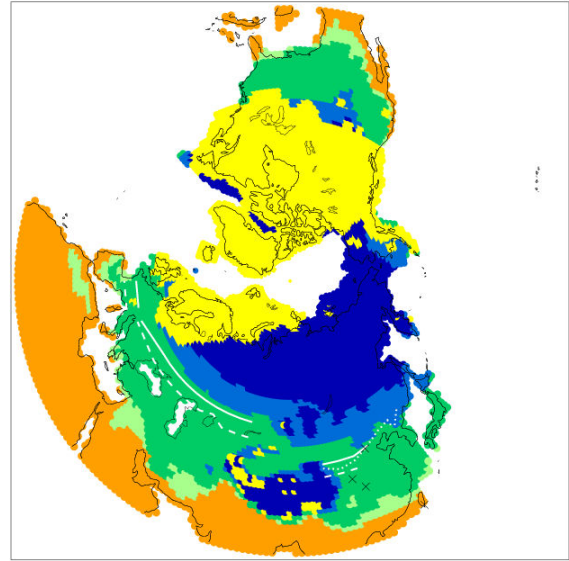




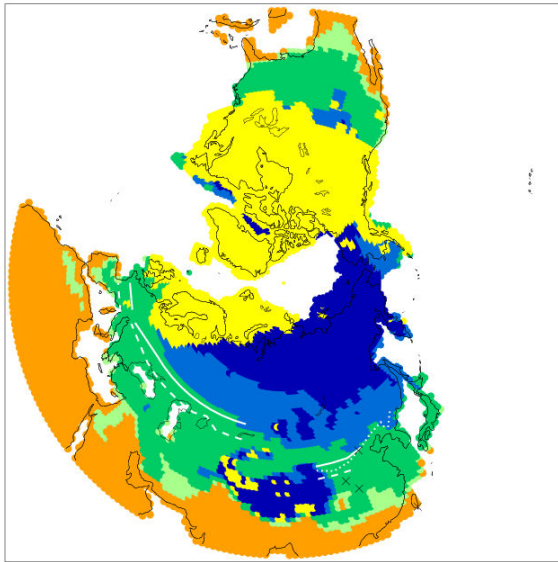
e) PMIP3 21k Tas-based (MIROC-ESM)



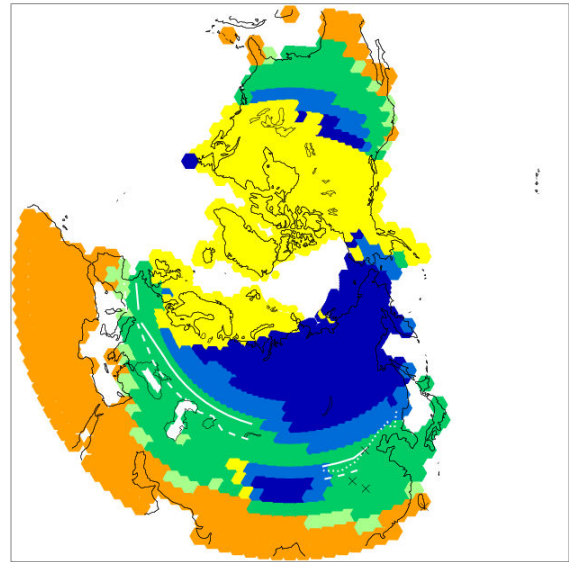
f) PMIP3 21k Tas-based (MRI-CGCM3)

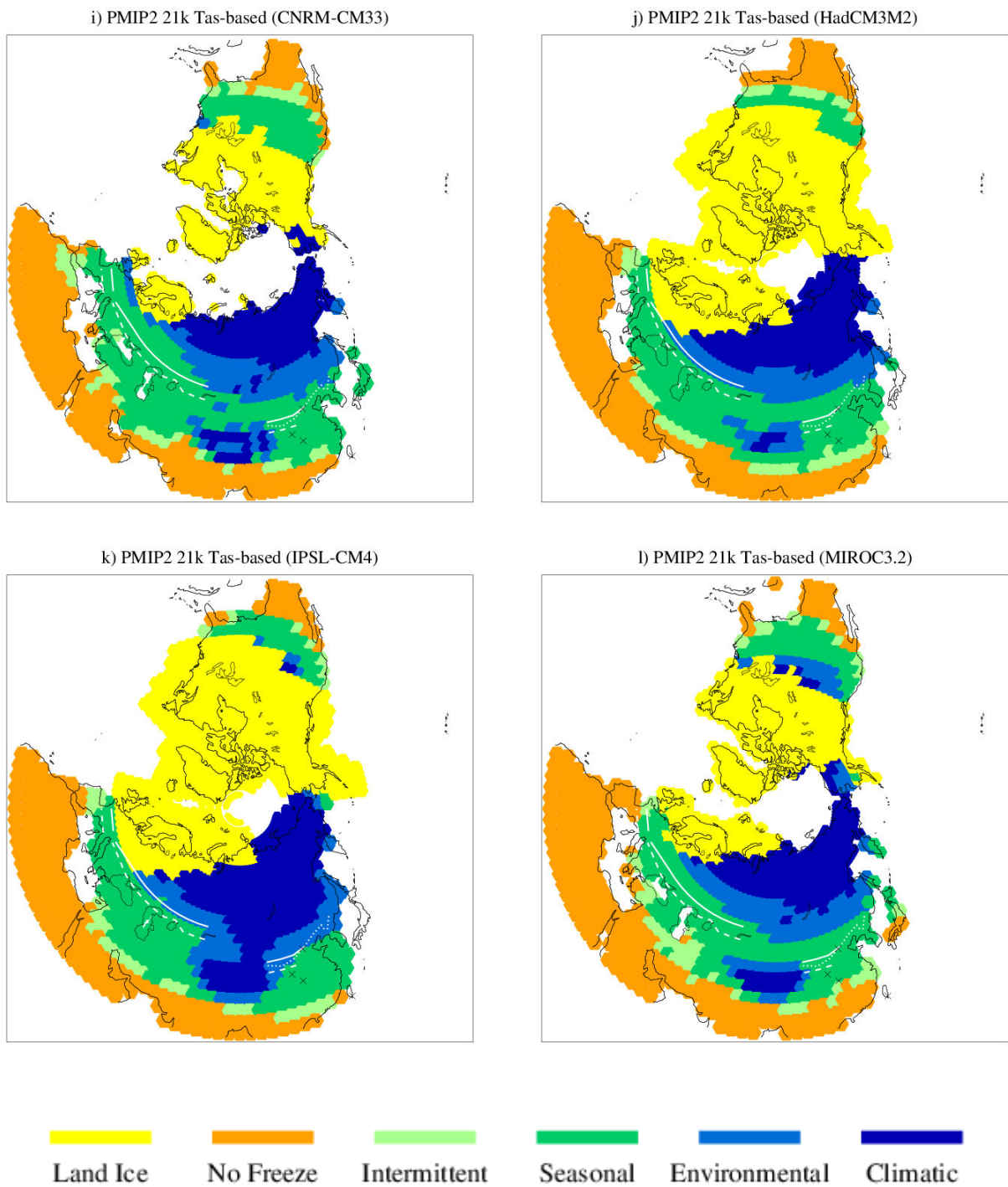


g) PMIP3 21k Tas-based (CNRM-CM5)



h) PMIP2 21k Tas-based (CCSM)





Supplementary Figure 5. Same as Supplementary Figure 4, except for LGM.