

Figure 3a. The relative thermal response of permafrost to climate warming. The proportion of the present permafrost region (excluding areas of water and glacial ice cover) expected to show a low, moderate, or high thermal response is shown in the pie chart. The area calculations consider the entire landmass within the permafrost region rather than the actual area underlain by permafrost.

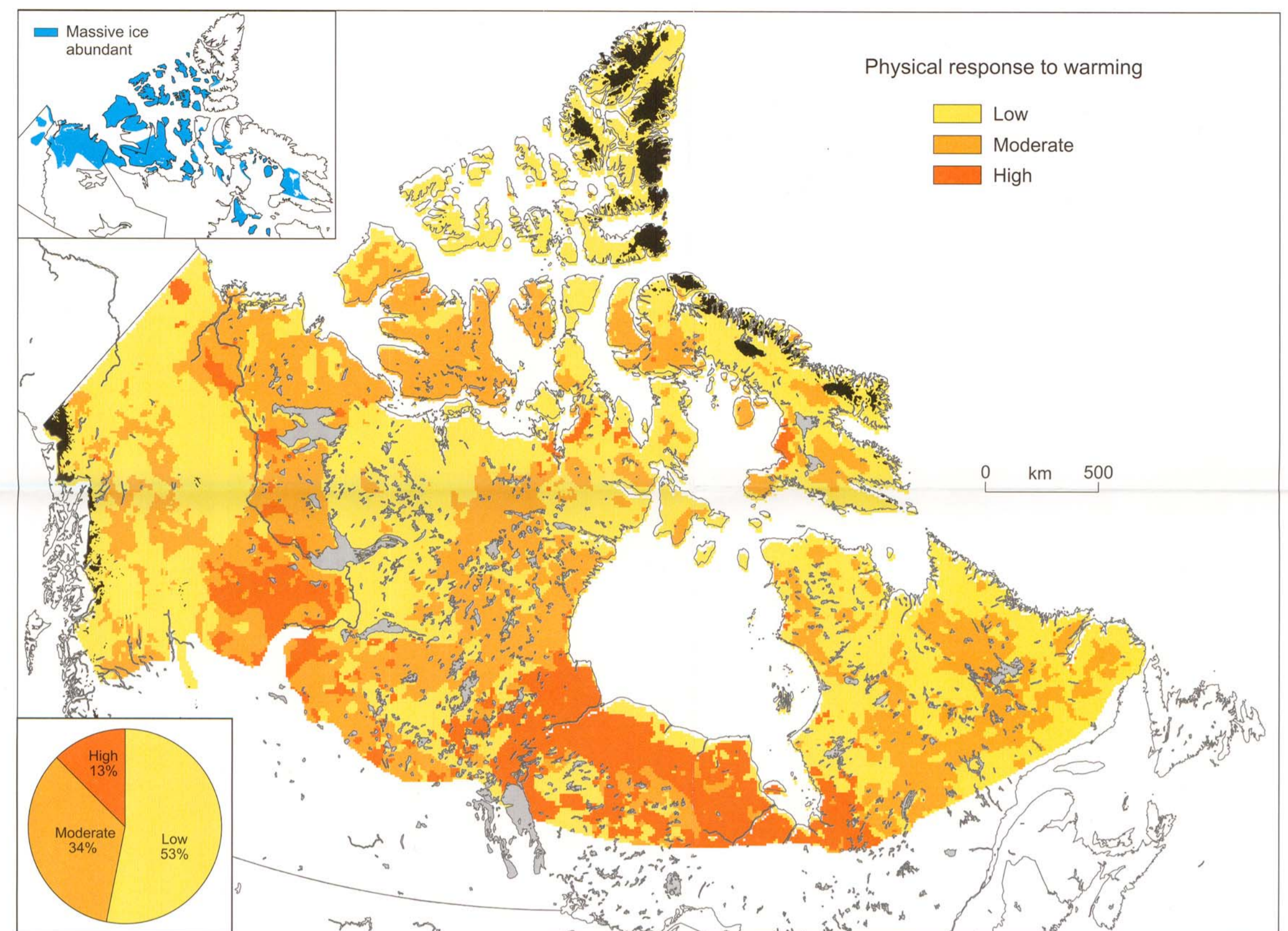


Figure 3b. The relative physical response of permafrost to climate warming. Areas where massive ice is present (shown on inset map) were extracted from the permafrost map of Heginbottom et al. (1995). In areas where massive ice is present, the consequences of permafrost thaw could be more severe than indicated by the shading, which reflects the structural ice content of the surficial materials. The proportion of the present permafrost region (excluding areas of water and glacial ice cover) expected to show a low, moderate, or high physical response is shown in the pie chart. The area calculations consider the entire landmass within the permafrost region rather than the actual area underlain by permafrost.

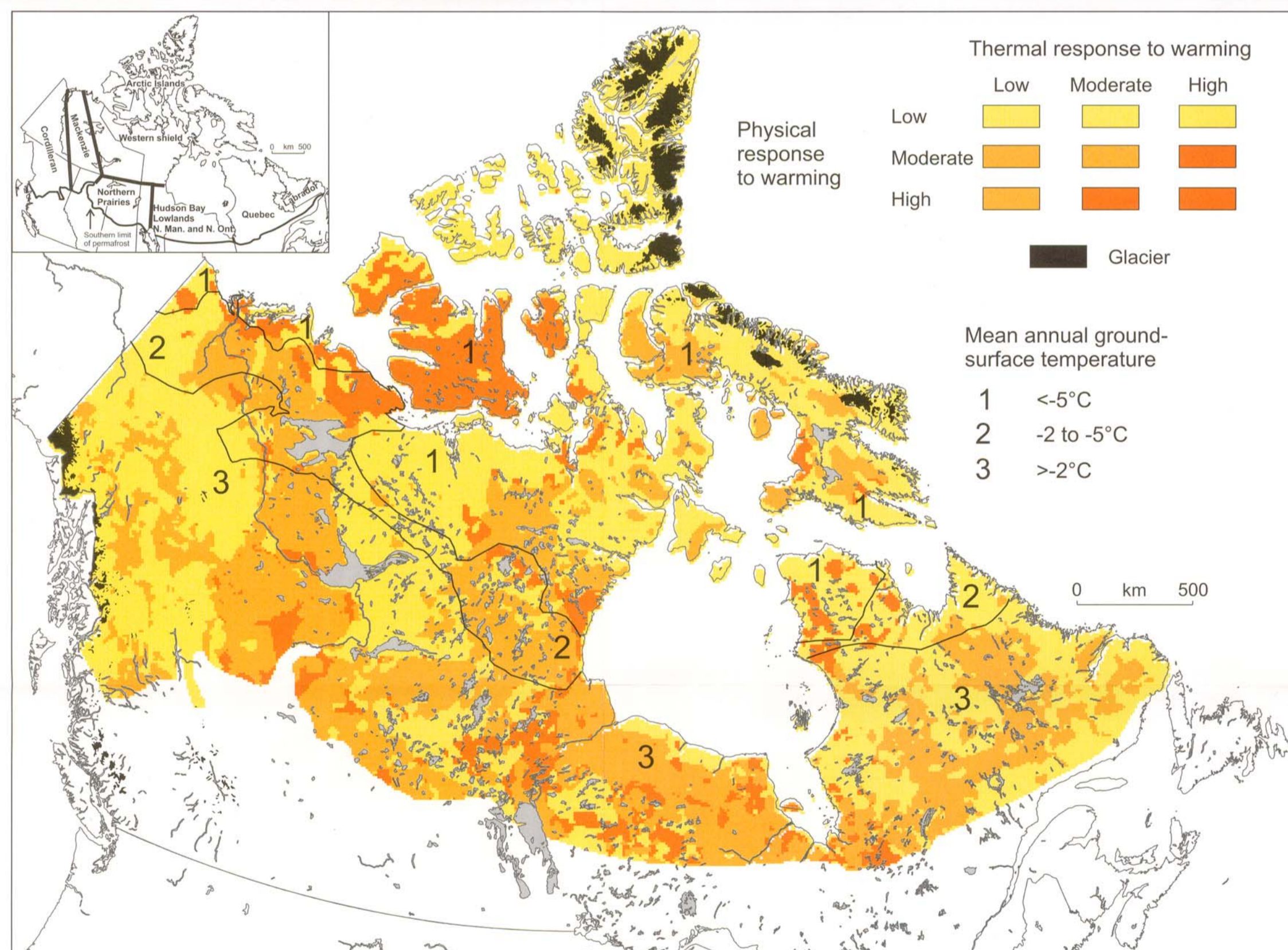


Figure 3c. The thermal and the physical response of permafrost to climate warming have been combined into a single sensitivity matrix. Ground temperature zones are also shown on the map. The inset map shows the broad zones referred to in the text.

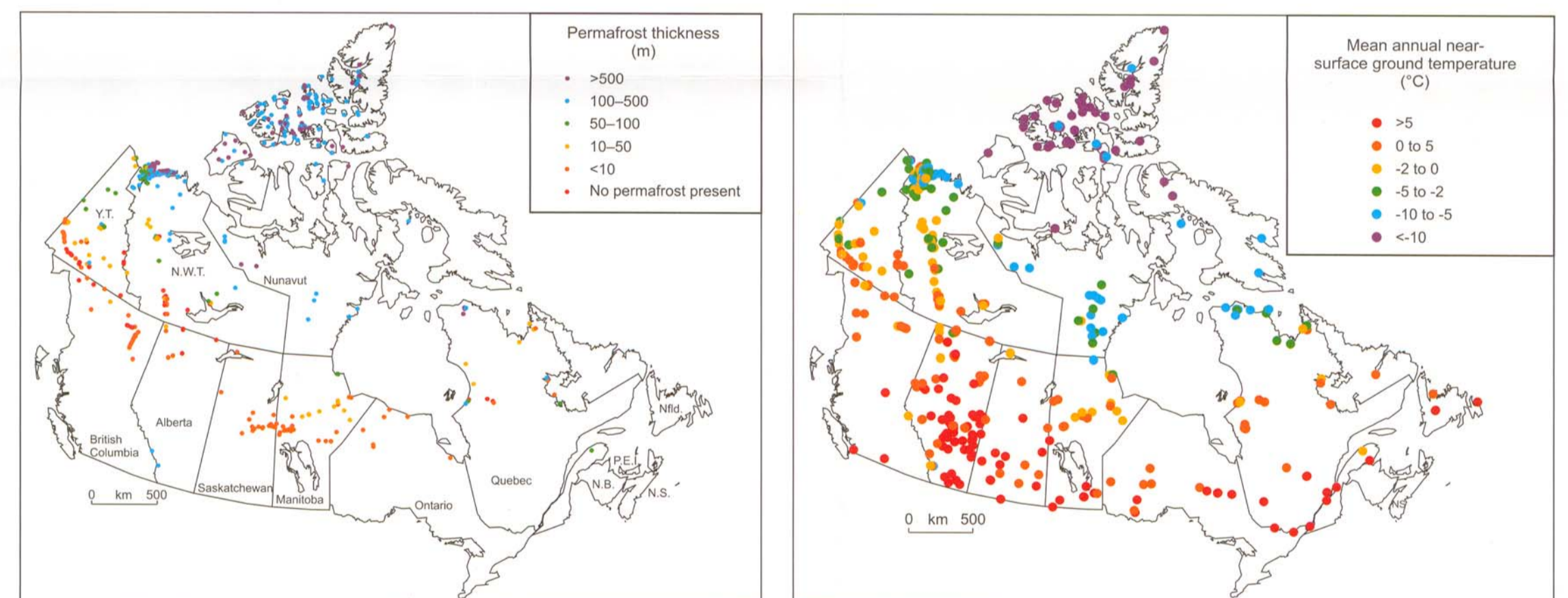


Figure 3d. Permafrost thickness determined at over 600 sites in the Canadian permafrost region. The data are from various sources and are compiled in a GSC database (Smith and Burgess, 2002). Permafrost thickness was determined either by using geophysical techniques to determine the base of ice-bearing permafrost or by analysis of ground-temperature profiles.

Figure 3e. Mean annual near-surface ground temperature for over 500 Canadian sites. Data are from various sources and are compiled in a GSC database (Smith and Burgess, 2000). Temperatures were either determined directly in the upper metre of the ground or extrapolated from the mean annual temperature profile at depth below the depth of zero annual amplitude when only deeper temperatures were available.

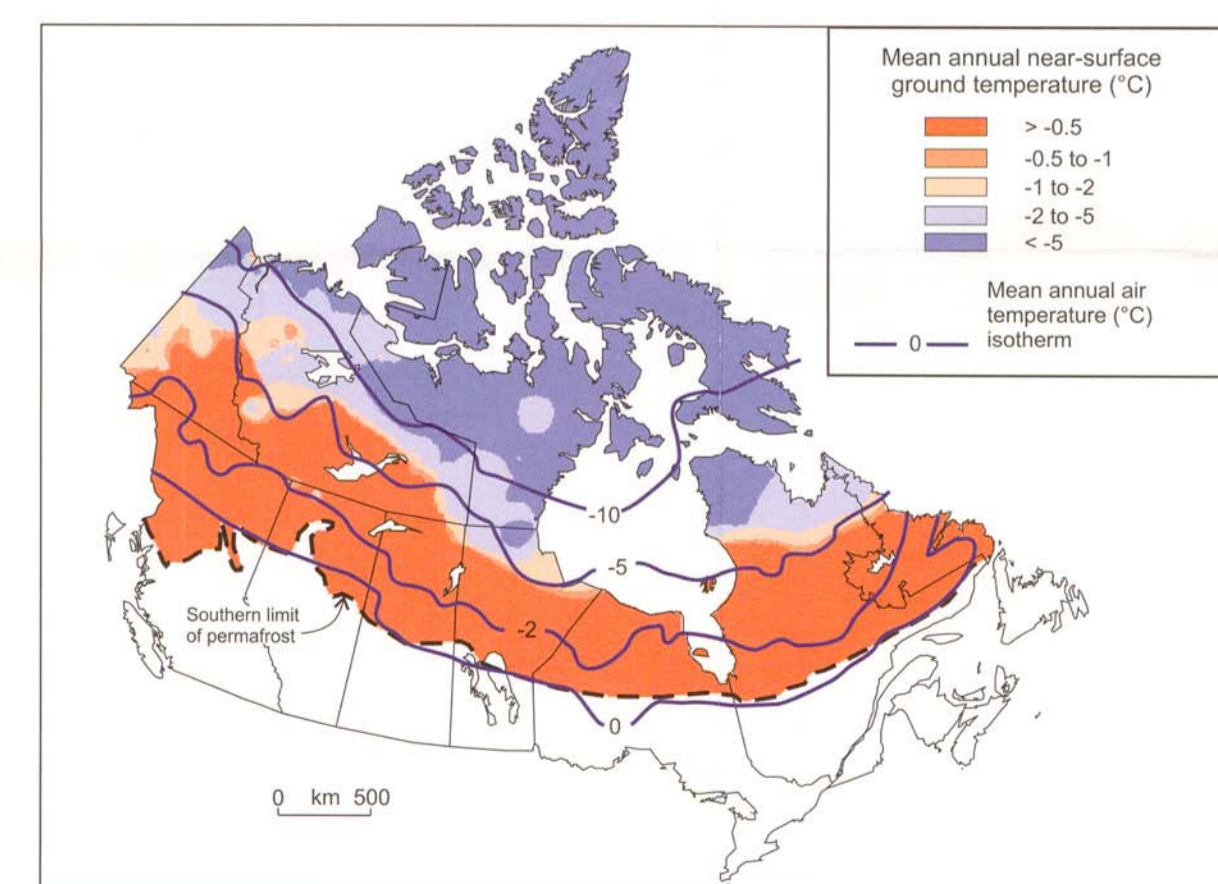


Figure 3f. Spatial variation in mean annual air temperature and near-surface ground temperature within the Canadian permafrost region (after Smith and Burgess, 1998). Air-temperature data are from the Atmospheric Environment Service climate normals for 1950-1981. Ground temperature within the zone classified as greater than -2°C will only be colder than 0°C where permafrost is present. This zone is within the discontinuous permafrost zone.