



Characteristics of discontinuous permafrost, Southern Yukon Territory, Canada

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Two-dimensional DC resistivity profiling was used to examine the characteristics of shallow permafrost at three lowland and eight mountain sites in the southern Yukon Territory. Ground temperatures from logged thermistor cables or annual manual readings were available for most of the sites. Frost table depths along the transects also helped constrain the interpretations. Ground temperatures at or close to the depth of zero annual amplitude were all warmer than -0.5°C . Interpreted permafrost depths were generally less than 10 m but reached 25 m at one location. Sites with coarse materials showed sharp transitions in resistivity values at the base of permafrost while those in fine-grained materials showed gradational boundaries, interpreted as being due to progressively increasing unfrozen moisture contents close to 0°C . There were large differences in the relative resistivity values for frozen and unfrozen ground but the absolute values for permafrost were lower than many others reported in the literature for mountain sites. The DC resistivity technique proved to be extremely useful in characterizing the distribution and continuity of frozen ground at these shallow and sensitive permafrost sites and provided a baseline data-set for monitoring future change.