



Thermal state of degrading permafrost in the source region of Yellow River, China.

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A large part of the source area of the Yellow River is widely underlain by perennially or seasonally frozen ground, which faces a rapid loss due to the climate warming. Degradation of the grassland and lowering of the groundwater level are recently resently observed, the major cause of which is attributed to degradation of permafrost.

To investigate the current distribution of the permafrost and the impact of its change for soil water environment, authors have been conducting ground temperature monitoring and geophysical (seismic and geoelectrical) sounding since 2002. In addition, a long-term observatory was established at Madoi, southeastern Qinghai Province (4287m ASL) in August 2004. In this presentation, the first year's results from observatory as well as the results from 1D thermal modelling will be reported.

By the comparison with earlier works, lower boundary of permafrost is considered to have rose for 300-400m in last decades, which may cause significant change in regional water circulation. The data from Madoi Observatory (4273m asl) indicate either the absence or presence of relict permafrost, while DC-resistivity sounding did not detect permafrost clearly. It is also observed that ground water level changes with ground freeze and melt, and soil moisture shows large seasonal variation.