Readme for the NIEER Permafrost datasets

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The permafrost datasets over the Northern Hemisphere (north of 25°), produced by Northwest Institute of Eco-Environment and Resources (NIEER), Chinese Academy of Sciences (CAS), include the mean annual ground temperature (MAGT) at the zero annual amplitude (ZAA) depth and active layer thickness (ALT) with 30-seconds (~1 km) resolution represent the period of 2000–2016 as well as estimates of the probability of permafrost occurrence and permafrost zonation based on hydrothermal conditions (Table 1). The datasets integrate unprecedentedly large amounts of field data (1,002 boreholes for MAGT and 452 sites for ALT) and multisource geospatial data, especially remote sensing data, using data driven ensemble simulation technology. The details of the method and validation can be found in Ran et al. (2022). The MAGT, ALT, and permafrost probability in GeoTiff format and the permafrost hydrothermal zonation map in ESRI shapefile format can be used with GIS software.

Table 1: The list of permafrost datasets for the Northern Hemisphere.

Name	Unit	Format
MAGT	℃	GeoTiff, Nodata is -9999
ALT	cm	GeoTiff, Nodata is -9999
Permafrost probability	%	GeoTiff, Nodata is -9999
Permafrost zonation (hydrothermal conditions)	-	ESRI shapefile

Ran, Y., Li, X., Cheng, G., Che, J., Aalto, J., Karjalainen, O., Hjort, J., Luoto, M., Jin, H., Obu, J., Hori, M., Wu, Q., Yu, Q., and Chang, X.: New high-resolution estimates of the permafrost thermal state and hydrothermal conditions over the Northern Hemisphere. Earth System Science Data, 2022, 14, 865–884, DOI: 10.5194/essd-14-865-2022.