

Maps of Geocryological Regions and Classifications in China, Version 1

USER GUIDE

How to Cite These Data

As a condition of using these data, you must include a citation:

Qiu, G., Y. Zhou, D. Guo, and Y. Wang 2002. *Maps of Geocryological Regions and Classifications in China, Version 1*. [Indicate subset used]. Boulder, Colorado USA. NSIDC: National Snow and Ice Data Center. <https://doi.org/10.7265/matk-cw38>. [Date Accessed].

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National Snow and Ice Data Center

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1 DATA DESCRIPTION

This data set includes digital versions of “*The Map of Geocryological Regionalization and Classification in China*” from Geocryology in China by Y. Zhou, D. Guo, G. Qiu, G. Cheng, and S. Li. Included are ESRI Shapefiles of meteorological stations, permafrost regions, and classification of frozen ground, and binary arrays of 25 km EASE-Gridded permafrost regions and classifications.

The maps delineate three major geographic areas divided into regions and subregions based on geographic and climatic conditions affecting the formation and spatial variability of permafrost and frozen ground. The maps also illustrate eight land classifications based on permafrost coverage and seasonal frozen ground depth. Station data include some information on air temperature, active layer thaw depth, and seasonal frozen ground depth.

1.1 Parameters

Spatial variability of permafrost and frozen ground; air temperature; active layer thaw depth; seasonal frozen ground depth.

1.2 File Information

1.2.1 Format

Maps of meteorological stations, geocryological regions, classification of frozen ground, rivers, and lakes are in a vector format stored as ESRI Shapefiles. These are most easily imported into ESRI's ArcView, but most other GIS packages can import Shapefile data. ESRI also provides a free basic GIS package, ArcExplorer, on the ESRI web site.

Maps of geocryological regions and classification of frozen ground are also provided as grids in two flat binary files. The grids are in NSIDC's 25 km EASE-Grid format for the Northern Hemisphere in an Azimuthal Equal Area projection (the NL EASE-grid). Grids are arrays of 1-byte unsigned integers with 721 columns and 721 rows. Grid and projection parameters for the NL EASE-grid can be found in the table "Original 25km and 12.5km Grids" on NSIDC's [All About EASE_Grid](#) web site. Header (.hdr) and projection (.prj) files that were generated when original ESRI Shapefiles were converted to grids using ArcGIS are included for both grids. These extra files are required to view grids in ArcGIS, ArcView or ArcInfo.

1.2.1.1 Geocryological Land Classifications

1. predominantly continuous permafrost (70% - 90%)
2. predominantly continuous and island permafrost (30% - 70%)
3. sparsely island permafrost (<30%)

4. mountain permafrost
5. middle-thick seasonally frozen ground (>1 m)
6. thin seasonally frozen ground (<1 m)
7. short duration frozen ground
8. non-frozen ground
0. missing

1.2.1.2 Geocryological Regions

I. Geocryological area of Eastern China

I.1 Permafrost region in temperate and cold, temperate zone of Northeastern China

1. I.1-1 Sub region of predominantly continuous permafrost in the northern Da Hinggang Mountains
2. I.1-2 Sub-region of predominantly continuous and island permafrost in the Da Hinggang Mountains
3. I.1-3 Subregion of island and sparsely island permafrost in the Da Hinggang and Xiao Hinggang Mountains

I.2 Seasonally frozen ground region in the temperate and warm, temperate zone of Northeastern China

4. I.2-1 Subregion of middle and thick seasonally frozen ground in the temperate zone of Northeastern China
5. I.2-2 Subregion in the warm temperate zone of Northeastern China
6. I.3 Region of short duration frozen ground in the subtropic zone of Southeastern China
7. I.4 Region of non-frozen ground in the subtropic zone of Southeastern China

II. Geocryological area of Northwestern China

8. II.1 Mountain permafrost region in the high, cold, temperate zone of Altay-Beita in Northwestern China.

9. II.2 Mountain permafrost region in the high, cold, temperate zone in the mountains west of the Junnggar Basin in Northwestern China.

10. II.3 Seasonally frozen ground region in the temperate zone of the Junnggar Basin in Northwestern China.

11. II.4 Mountain permafrost region in the high, cold mountain zone of Tian Shan in Northwestern China.

12. II.5 Seasonally frozen ground region in the warm, temperate zone of Tarim Basin in Northwestern China

13. II.6 Seasonally frozen ground region in the temperate zone of Hexi Corridor and the Alxa Plateau in Northwestern China

III. Geocryological area of Southwestern China (Qinghai-Xizang Plateau)

14. III.1 Mountain permafrost in the high, cold mountain zone of the Altun-Qilian Shan in Southwestern China

15. III.2 Seasonally frozen ground region in the temperate zone of Qaidam Basin in Southwestern China

16. III.3 Predominantly continuous permafrost region in the high, cold zone of the northern part of the Southern Qinghai and Northern Xizang Plateau in Southwestern China

17. III.4 Predominantly continuous and island permafrost in the high, cold zone of the southern part of the Northern Xizang Plateau.

18. III.5 Mountain permafrost region in the high, cold mountain zone of the Himalaya Shan in Southwestern China.

19. III.6 Island mountain permafrost region in the high, cold zone at the eastern fringe of the Qinghai-Xizang Plateau.

0. Missing

Meteorological Station Data

Meteorological station data includes station location and the ratio of annual temperature range ($A = T_{Jul} - T_{Jan}$) to mean annual temperature (T). Generally, $A/T < 0$ in permafrost regions, $A/T > 1$ in seasonally frozen ground regions, and $0 < A/T < 1$ in regions with no freeze/thaw cycle. In addition to the temperature ratios, maximum seasonal thaw depth is provided for stations in permafrost areas and maximum seasonal freeze depth is provided for stations in seasonal frozen ground areas. The data are presented as $(A/T)/(depth)$. Depth is not included for short-duration frozen ground and non-frozen ground areas.

1.2.2 Naming Convention

ggd603_class_ease_china.bil

ggd603_class_ease_china.hdr

ggd603_class_ease_china.prj

ggd603_class_china.dbf

ggd603_class_china.shp

ggd603_class_china.shx
ggd603_lakes_china.dbf
ggd603_lakes_china.shp
ggd603_lakes_china.shx
ggd603_region_china.dbf
ggd603_region_china.shp
ggd603_region_china.shx
ggd603_rgn_ease_china.bil.gz
ggd603_rgn_ease_china.hdr.gz
ggd603_rgn_ease_china.prj.gz
ggd603_stations_china.dbf
ggd603_stations_china.shp
ggd603_stations_china.shx
ggd603_streams_china.dbf
ggd603_streams_china.shp
ggd603_streams_china.shx

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3 REFERENCES

Zhou, Y., D. Guo, G. Qiu, G. Cheng, and S. Li. 2000. "The Map of Geocryological Regionalization and Classification in China," in *Geocryology in China*, Beijing: Science Press. (in Chinese)

Zhang, T. 2001. "Book Review of Geocryology in China" in *Permafrost and Periglacial Processes*. 12: 315-322.

Zhang, T. In Press, "Historical overview of permafrost study in China." *Physical Geography*.

4 DOCUMENT INFORMATION

4.1 Publication Date

04 October 2002

4.2 Date Last Updated

16 February 2021