Supplementary Information

Title

MSDT v1.0: An Open-source Multi-method Snow Drought Toolbox

Authors

Xiangfei Li[1], Jinzhi Tian[2*], Chengzhi Wu[3], Shuo Wang[4], Lin Zhao[1]

Affiliations

[1] School of Geographical Sciences, Nanjing University of Information Science & Technology, Nanjing, China.

[2] Faculty of Geomatics, Lanzhou Jiaotong University, Lanzhou 730070, China.

[3] School of Teacher Education, Nanjing University of Information Science & Technology, Nanjing, China.

[4] Department of Land Surveying and Geo-Informatics, The Hong Kong Polytechnic University, Hong Kong, China

[5] Research Institute for Land and Space and Research Institute for Sustainable Urban Development, The Hong Kong Polytechnic University, Hong Kong, China

*Corresponding author: Jinzhi Tian (tianjzh@outlook.com)

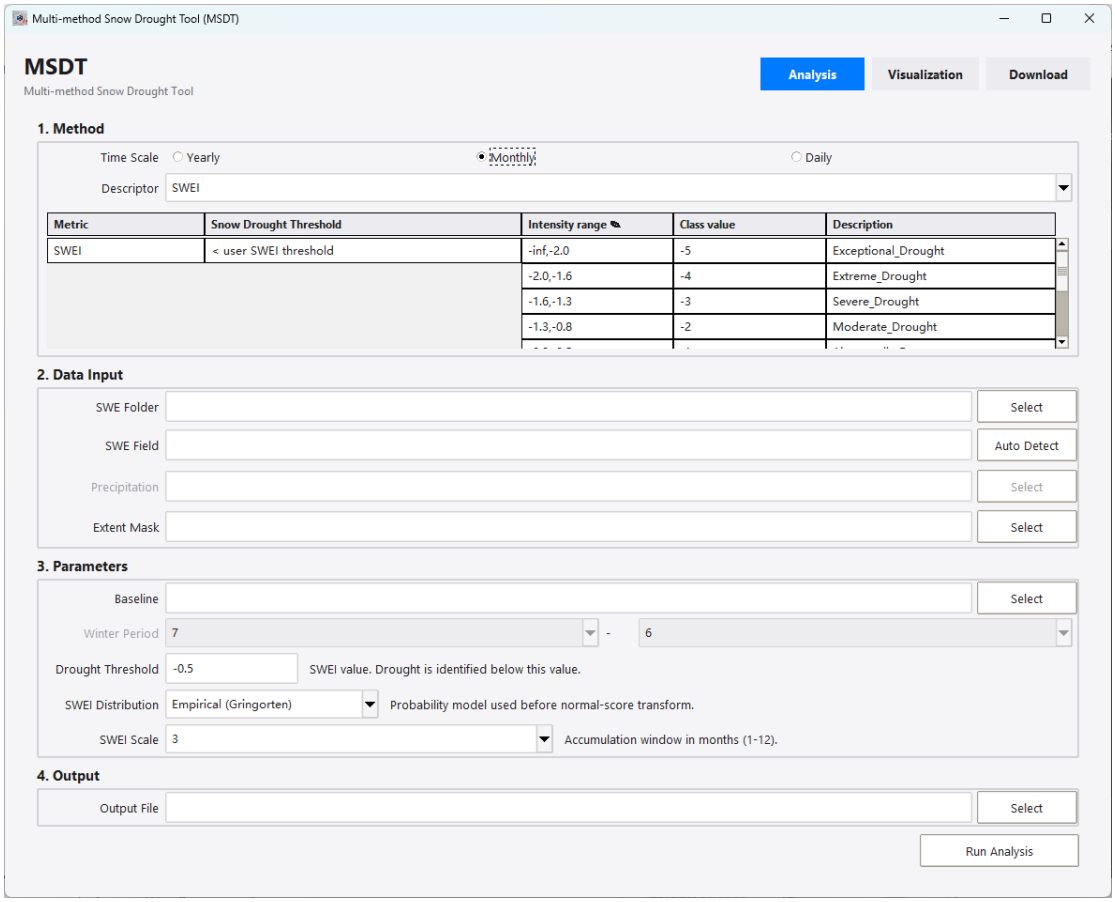

Figure S1. Graphical user interface of MSDT for snow drought identification.

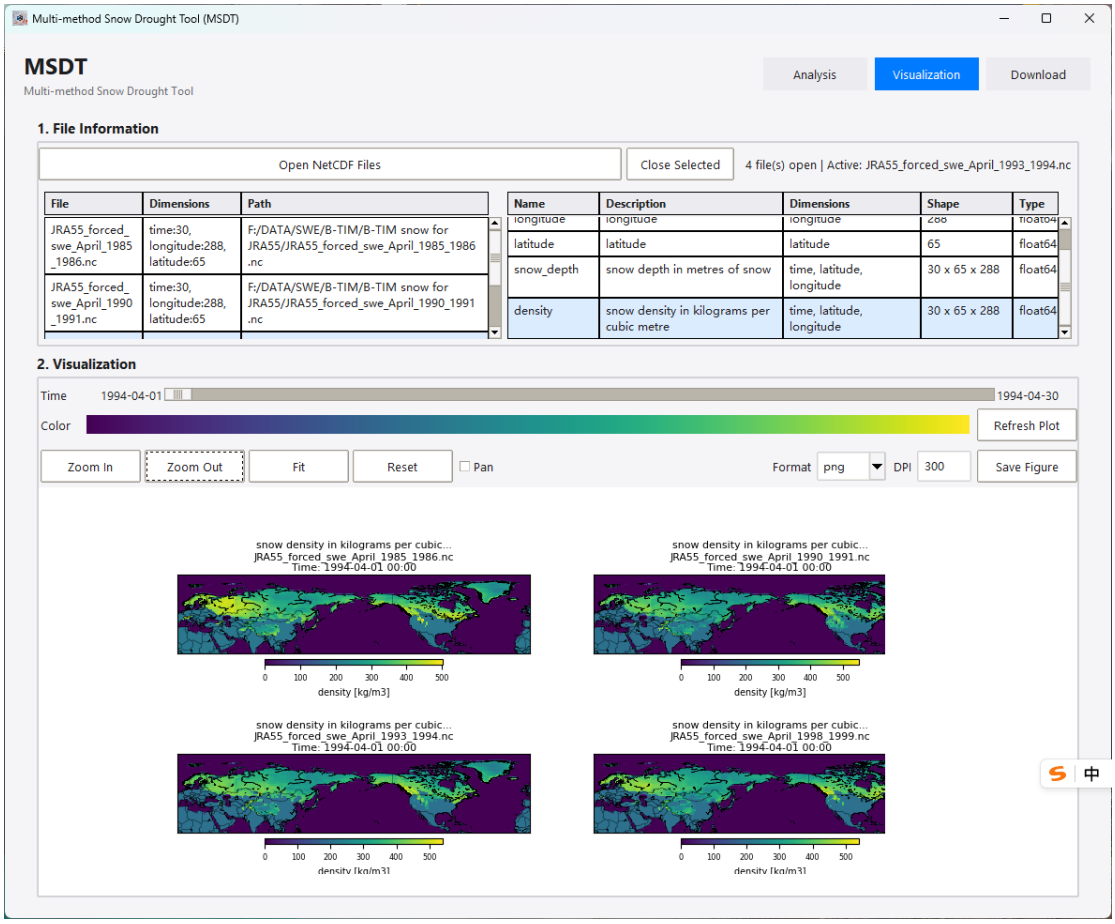

Figure S2. Graphical user interface of MSDT for snow data visualization.

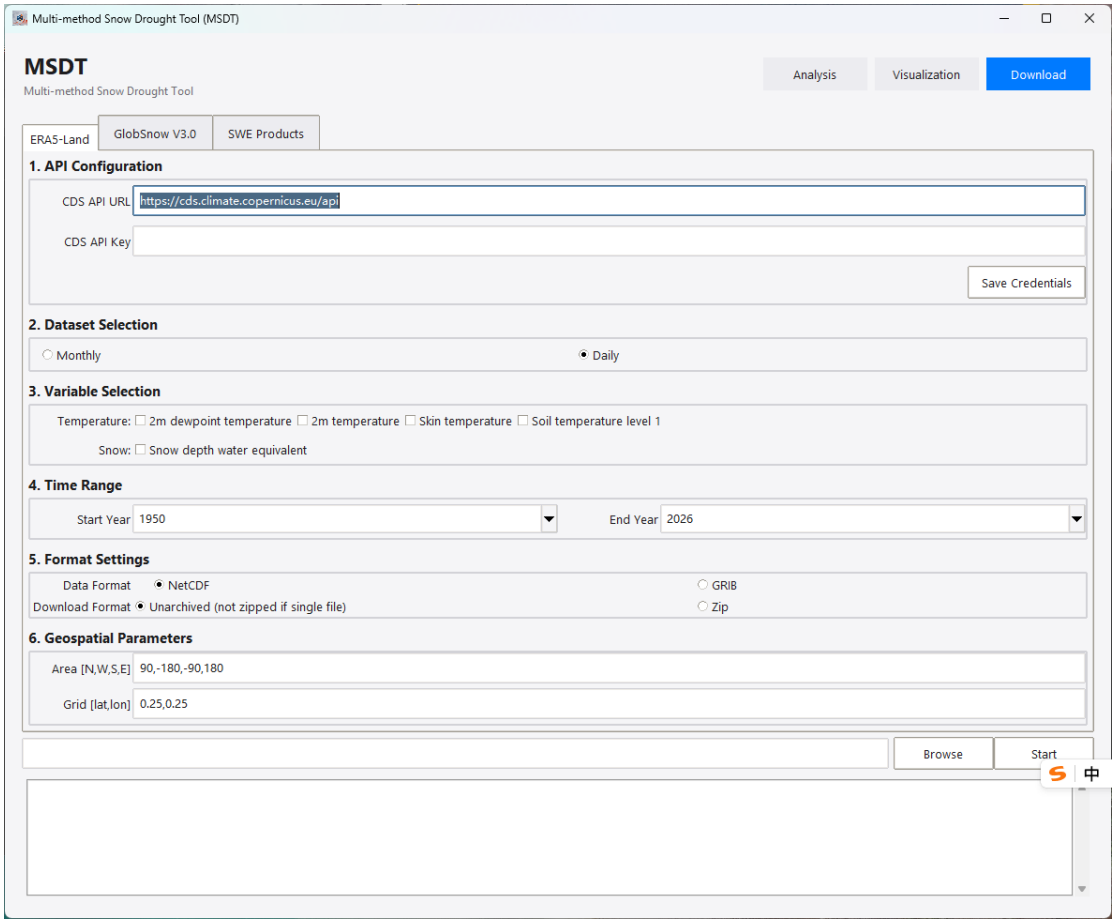

Figure S3. Graphical user interface of MSDT for data download.

Table S1. SWE-related data products listed in the MSDT data-catalog panel.

Category	Product	Time	Resolution	Data source	Access link
In-situ	NRCS SNOTEL / Snow Course	long records to present	Point stations	USDA NRCS	https://www.nrcs.usda.gov/resources/data-and-reports/snow-and-water-interactive-map
	NOAA GHCN Daily	historical to present	Point stations	NOAA NCEI	https://www.ncei.noaa.gov/products/land-based-station/global-historical-climatology-network-daily
Reanalysis	ERA5-Land	1950-present	0.1 deg; hourly/monthly/daily derivatives	ECMWF / Copernicus CDS	https://cds.climate.copernicus.eu/datasets/reanalysis-era5-land
	MERRA-2 Land Diagnostics	1980-present	0.5 x 0.625 deg; hourly/time-averaged	NASA GMAO / GES DISC	https://disc.gsfc.nasa.gov/datasets/M2T1NXLND_5.12.4/summary
	GLDAS Noah	2000-present for v2.1	0.25 deg; 3-hourly/monthly	NASA GES DISC	https://disc.gsfc.nasa.gov/datasets/GLDAS_NOAH025_3H_2.1/summary
	SNODAS	30 September 2003-present	1 km; daily; CONUS	NOAA NOHRSC / NSIDC	https://nsidc.org/data/g02158/versions/1
Remote sensing	GlobSnow SWE v3.0	1979-2022 archive	25 km EASE-Grid; daily/monthly	Finnish Meteorological Institute / ESA heritage	https://www.globsnow.info/swe/archive_v3.0/
	ESA Snow CCI SWE	1979 onwards; product dependent	Passive-microwave grid products; product dependent	ESA Climate Change Initiative	https://climate.esa.int/en/projects/snow/
	AMSR-E / AMSR2 SWE	AMSR-E 2002-2011; AMSR2 2012-present	25 km EASE-Grid; daily	NASA NSIDC	https://nsidc.org/data/ae_dysno/versions/3