R function	Equation	Description	Unit
Temperature-related indices			
Freezing_index	(4, 6)	Freezing degree-days for air and ground	°C day
Thawing_index	(3, 5)	Thawing degree-days for air and ground	°C day
MAAT	(7)	Mean annual air temperature	°C
MAGST	(8)	Mean annual ground surface temperature (5 cm)	°C
MAGT	(10)	Mean annual ground temperature (at 15 m)	°C
NT	(11)	Thawing *n* factor	
NF	(12)	Freezing *n* factor	
Surface_Offset		The difference between the MAGST and MAAT	°C
Thermal_Offset		The difference between the TTOP and MAGST	°C
Vegetation_Offset		The second term (Surface_Offset) is negative and represents the reduction in MAGST due to vegetation effects in summer (vegetation offset)	°C
Nival_Offset		The first term (Surface_Offset) on the right-hand-side is positive and represents the elevation of MAGST over MAAT due to the insulating effect of winter snow cover (nival offset)	°C
TTOP_Smith	(13)	The temperature at the top of the permafrost using Smith & Riseborough function	°C
TTOP_Kudryavtsev	(14)	The temperature at the top of the permafrost using Kudryavtsev function	°C
Depth-related indices			
Freeze_depth_Stefan	(20)	Maximum freezing depth using Stefan function	m
Thaw_depth_Stefan	(16)	Active layer thickness using Stefan function	m
ALT_Kudryavtsev	(19)	Active layer thickness (ALT) or maximum thawing depth using Kudryavtsev function	m
Region			
Spatial_Pic	(3, 4, 7, 16)	Spatial changes with MAAT, DDT_a, DDF_a and ALT	m
Toolkit			
Com_Indices_QTP		Computing all indices for all stations of the QTP	
Outlier_Process		Process the abnormal value	
VLH	(2)	Computing volumetric latent heat of fusion	$J\,m^{-3}$
Convert_4_ggplot		Convert the values of TTOP & ALT to one column	
Exist_Permafrost		To determine the stations where permafrost exist by TTOP values	
Statistic			
Stat	(21, 22, 23)	Statistical functions with 10 more methods	
Spatial_Stat	(24)	Spatial statistical method, just for spatial trend	
Com_Stats_QTP		Computing the statistical values for one or both of these indices	
Visualization			
Plot_3M		Plot MAAT, MAGST, and MAGT for all stations or a single station	
Plot_TTOP_ALT		Plot TTOP and ALT for all stations or a station	
ggplot_Pic		Plot multiple indices for all stations or a single station using ggplot2	
Map_Pic		Plot multiple indices for all stations or a single station using ggmap	
Netcdf_Multiplot		Regional visualization of NetCDF with multiple plots	
Netcdf_Animation		Regional animation of NetCDF	