Ecological analysis of Kashin-Beck osteoarthropathy risk factors in Tibet's Qamdo Prefecture, China

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C=A∩B	A	B	D=A+B	Result	Interaction
TEC∩MI=0.777	0.560	0.334	0.894	C<D; C>Max(A,B)	↑
MI∩GDP=0.760	0.334	0.314	0.648	C>D; C>Max(A,B)	↑↑
TEC∩STR=0.731	0.560	0.467	1.027	C<D; C>Max(A,B)	↑
STR∩GDP=0.710	0.467	0.314	0.781	C<D; C>Max(A,B)	↑
MI∩PRE=0.689	0.334	0.294	0.628	C>D; C>Max(A,B)	↑↑
STR∩MI=0.682	0.467	0.334	0.801	C<D; C>Max(A,B)	↑
STR∩PRE=0.679	0.467	0.294	0.761	C<D; C>Max(A,B)	↑
TEC∩PRE=0.674	0.560	0.294	0.854	C<D; C>Max(A,B)	↑
TEC∩GDP=0.673	0.560	0.314	0.874	C<D; C>Max(A,B)	↑
TEC∩TEM=0.640	0.560	0.051	0.611	C>D; C>Max(A,B)	↑↑
GDP∩PRE=0.628	0.314	0.294	0.608	C>D; C>Max(A,B)	↑↑
TEC∩SOI=0.614	0.560	0.117	0.677	C<D; C>Max(A,B)	↑
ELE∩TEC=0.597	0.560	0.081	0.641	C<D; C>Max(A,B)	↑
VEG∩TEC=0.595	0.560	0.043	0.603	C<D; C>Max(A,B)	↑
GEO∩TEC=0.592	0.560	0.042	0.602	C<D; C>Max(A,B)	↑
GRO∩TEC=0.573	0.560	0.088	0.648	C<D; C>Max(A,B)	↑
GEO∩STR=0.573	0.467	0.042	0.509	C>D; C>Max(A,B)	↑↑
SD∩TEC0.563	0.560	0.012	0.572	C<D; C>Max(A,B)	↑
SA∩TEC=0.562	0.560	0.003	0.563	C<D; C>Max(A,B)	↑
GRO∩STR=0.556	0.467	0.088	0.555	C>D; C>Max(A,B)	↑↑
TEM∩STR=0.55	0.467	0.051	0.518	C>D; C>Max(A,B)	↑↑
SOI∩STR=0.545	0.467	0.117	0.584	C<D; C>Max(A,B)	↑
ELE∩STR=0.534	0.467	0.081	0.548	C<D; C>Max(A,B)	↑
GRO∩GDP=0.518	0.314	0.088	0.402	C>D; C>Max(A,B)	↑↑
VEG∩STR=0.514	0.467	0.043	0.510	C>D; C>Max(A,B)	↑↑
SD∩STR=0.482	0.467	0.012	0.479	C>D; C>Max(A,B)	↑↑
SA∩STR=0.477	0.467	0.003	0.470	C>D; C>Max(A,B)	↑↑

GRO∩PRE=0.456	0.294	0.088	0.382	C>D; C>Max(A,B)	↑↑
TEM∩PRE=0.428	0.294	0.051	0.345	C>D; C>Max(A,B)	↑↑
SOI∩PRE=0.419	0.294	0.117	0.411	C>D; C>Max(A,B)	↑↑
GEO∩PRE=0.416	0.294	0.042	0.336	C>D; C>Max(A,B)	↑↑
GEO∩GDP=0.412	0.314	0.042	0.356	C>D; C>Max(A,B)	↑↑
SOI∩MI=0.405	0.334	0.117	0.451	C<D; C>Max(A,B)	↑
SOI∩GDP=0.391	0.314	0.117	0.431	C<D; C>Max(A,B)	↑
VEG∩GDP=0.391	0.314	0.043	0.357	C>D; C>Max(A,B)	↑↑
ELE∩PRE=0.39	0.294	0.081	0.375	C>D; C>Max(A,B)	↑↑
GRO∩MI=0.385	0.334	0.088	0.422	C<D; C>Max(A,B)	↑
TEM∩GDP=0.385	0.314	0.051	0.365	C>D; C>Max(A,B)	↑↑
VEG∩MI=0.384	0.334	0.043	0.377	C>D; C>Max(A,B)	↑↑
GEO∩MI=0.382	0.334	0.042	0.376	C>D; C>Max(A,B)	↑↑
ELE∩MI=0.374	0.334	0.081	0.415	C<D; C>Max(A,B)	↑
TEM∩MI=0.371	0.334	0.051	0.385	C<D; C>Max(A,B)	↑
ELE∩GDP=0.369	0.314	0.081	0.395	C<D; C>Max(A,B)	↑
SD∩MI=0.347	0.334	0.012	0.346	C>D; C>Max(A,B)	↑↑
SD∩GDP=0.343	0.314	0.012	0.326	C>D; C>Max(A,B)	↑↑
SA∩MI=0.342	0.334	0.003	0.337	C>D; C>Max(A,B)	↑↑
VEG∩PRE=0.341	0.294	0.043	0.337	C>D; C>Max(A,B)	↑↑
SA∩GDP=0.319	0.314	0.003	0.317	C>D; C>Max(A,B)	↑↑
SA∩PRE=0.304	0.294	0.003	0.297	C>D; C>Max(A,B)	↑↑
SD∩PRE=0.302	0.294	0.012	0.306	C<D; C>Max(A,B)	↑
GEO∩SOI=0.19	0.117	0.042	0.159	C>D; C>Max(A,B)	↑↑
VEG∩SOI=0.168	0.117	0.043	0.160	C>D; C>Max(A,B)	↑↑
GRO∩SOI=0.167	0.117	0.088	0.205	C<D; C>Max(A,B)	↑
ELE∩SOI=0.155	0.117	0.081	0.198	C<D; C>Max(A,B)	↑
GEO∩GRO=0.155	0.088	0.042	0.130	C>D; C>Max(A,B)	↑↑
GEO∩ELE=0.154	0.081	0.042	0.123	C>D; C>Max(A,B)	↑↑
TEM∩SOI=0.151	0.117	0.051	0.168	C<D; C>Max(A,B)	↑
VEG∩GRO=0.146	0.088	0.043	0.131	C>D; C>Max(A,B)	↑↑
SD∩SOI=0.144	0.117	0.012	0.129	C>D; C>Max(A,B)	↑↑
TEM∩ELE=0.133	0.081	0.051	0.132	C>D; C>Max(A,B)	↑↑
ELE∩GRO=0.131	0.088	0.081	0.169	C<D; C>Max(A,B)	↑
VEG∩ELE=0.126	0.081	0.043	0.124	C>D; C>Max(A,B)	↑↑
SA∩SOI=0.122	0.117	0.003	0.120	C>D; C>Max(A,B)	↑↑
SD∩ELE=0.119	0.081	0.012	0.093	C>D; C>Max(A,B)	↑↑
TEM∩GRO=0.117	0.088	0.051	0.139	C<D; C>Max(A,B)	↑
GEO∩TEM=0.114	0.051	0.042	0.093	C>D; C>Max(A,B)	↑↑
VEG∩TEM=0.102	0.051	0.043	0.094	C>D; C>Max(A,B)	↑↑
SD∩GRO=0.101	0.088	0.012	0.100	C>D; C>Max(A,B)	↑↑
GEO∩VEG=0.098	0.043	0.042	0.085	C>D; C>Max(A,B)	↑↑

SA∩GRO=0.09	0.088	0.003	0.091	C<D; C>Max(A,B)	↑
SD∩TEM=0.086	0.051	0.012	0.063	C>D; C>Max(A,B)	↑↑
SA∩ELE=0.085	0.081	0.003	0.084	C>D; C>Max(A,B)	↑↑
SD∩GEO=0.074	0.042	0.012	0.054	C>D; C>Max(A,B)	↑↑
SA∩TEM=0.059	0.051	0.003	0.054	C>D; C>Max(A,B)	↑↑
SD∩VEG=0.053	0.043	0.012	0.055	C<D; C>Max(A,B)	↑
SA∩GEO=0.05	0.042	0.003	0.045	C>D; C>Max(A,B)	↑↑
SA∩VEG=0.048	0.043	0.003	0.046	C>D; C>Max(A,B)	↑↑
SA∩SD=0.018	0.012	0.003	0.015	C>D; C>Max(A,B)	↑↑

Table S1. Interactive q-statistic values between pairs of risk factors. "↑" denotes A and B bivariate enhance each other; "↑↑" denotes nonlinear enhancement of A and B. The 13 risk factors (TEC, STR, MI, GDP, PRE, SOI, GRO, ELE, TEM, VEG, GEO, SD and SA) are all included.
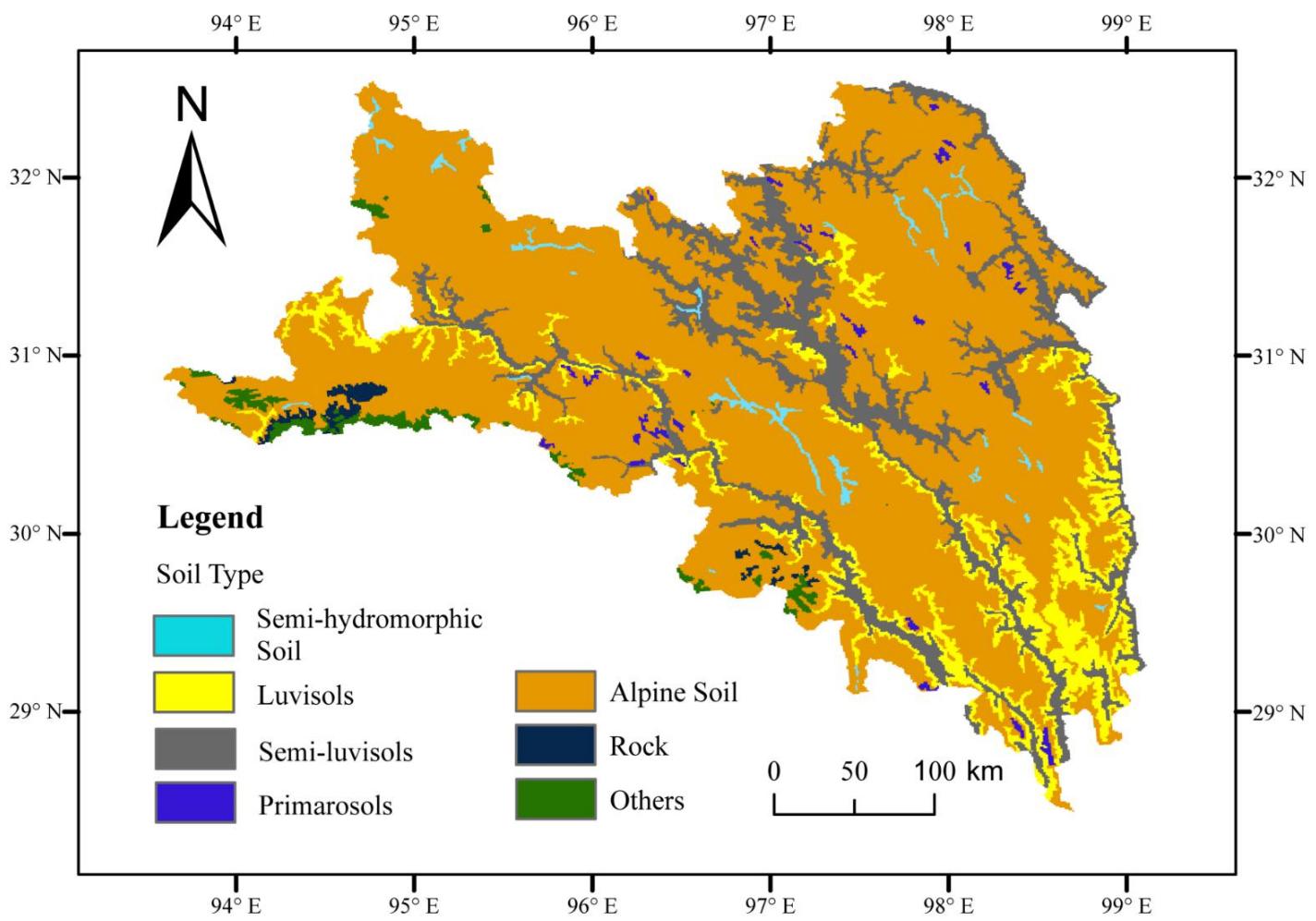
Figure S1. Soil types of the Qamdo prefecture. It was generated by ArcGIS 10.2 (http://www.esri.com/).
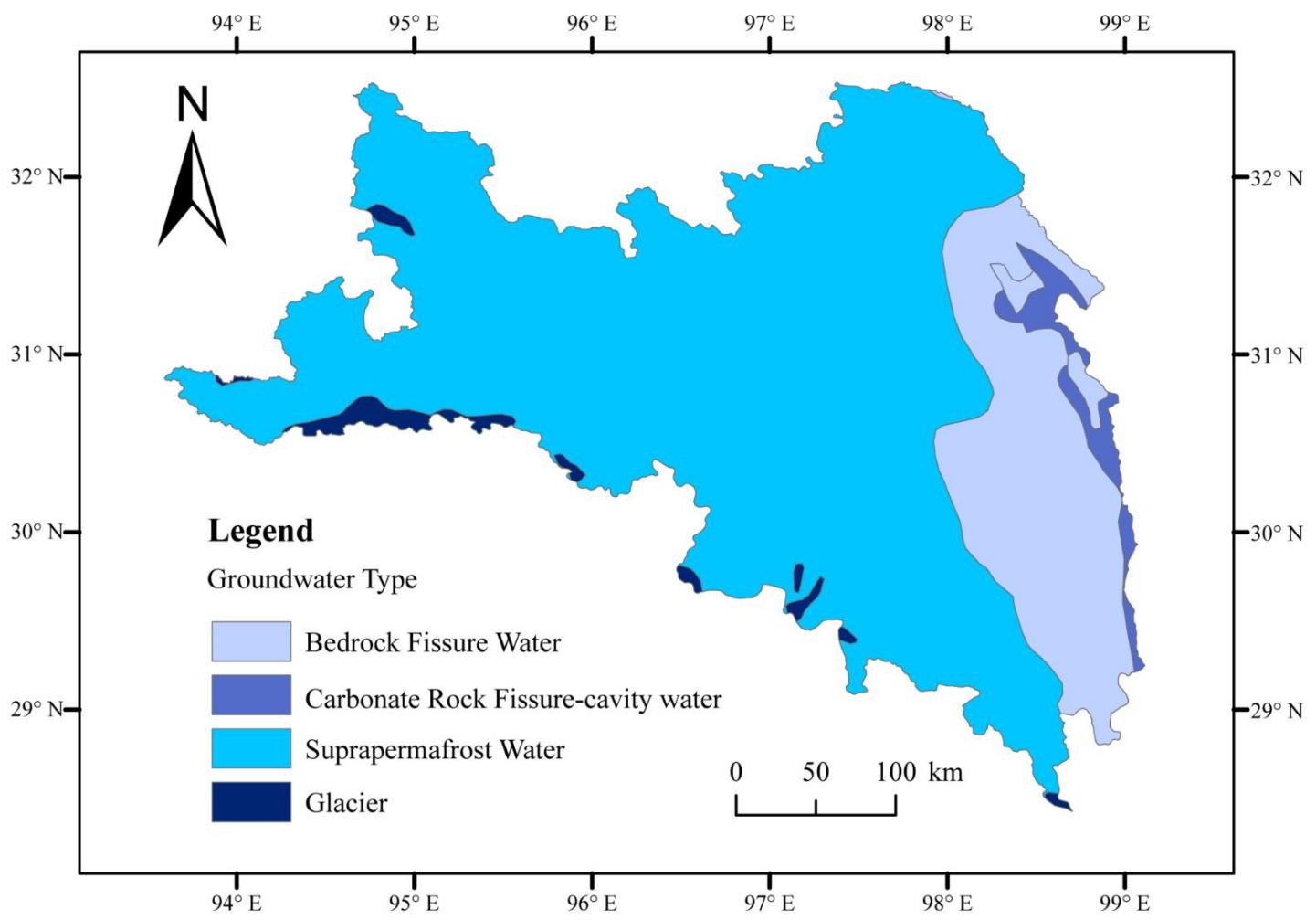
Figure S2. Groundwater types of the Qamdo prefecture. It was generated by ArcGIS 10.2 (http://www.esri.com/).
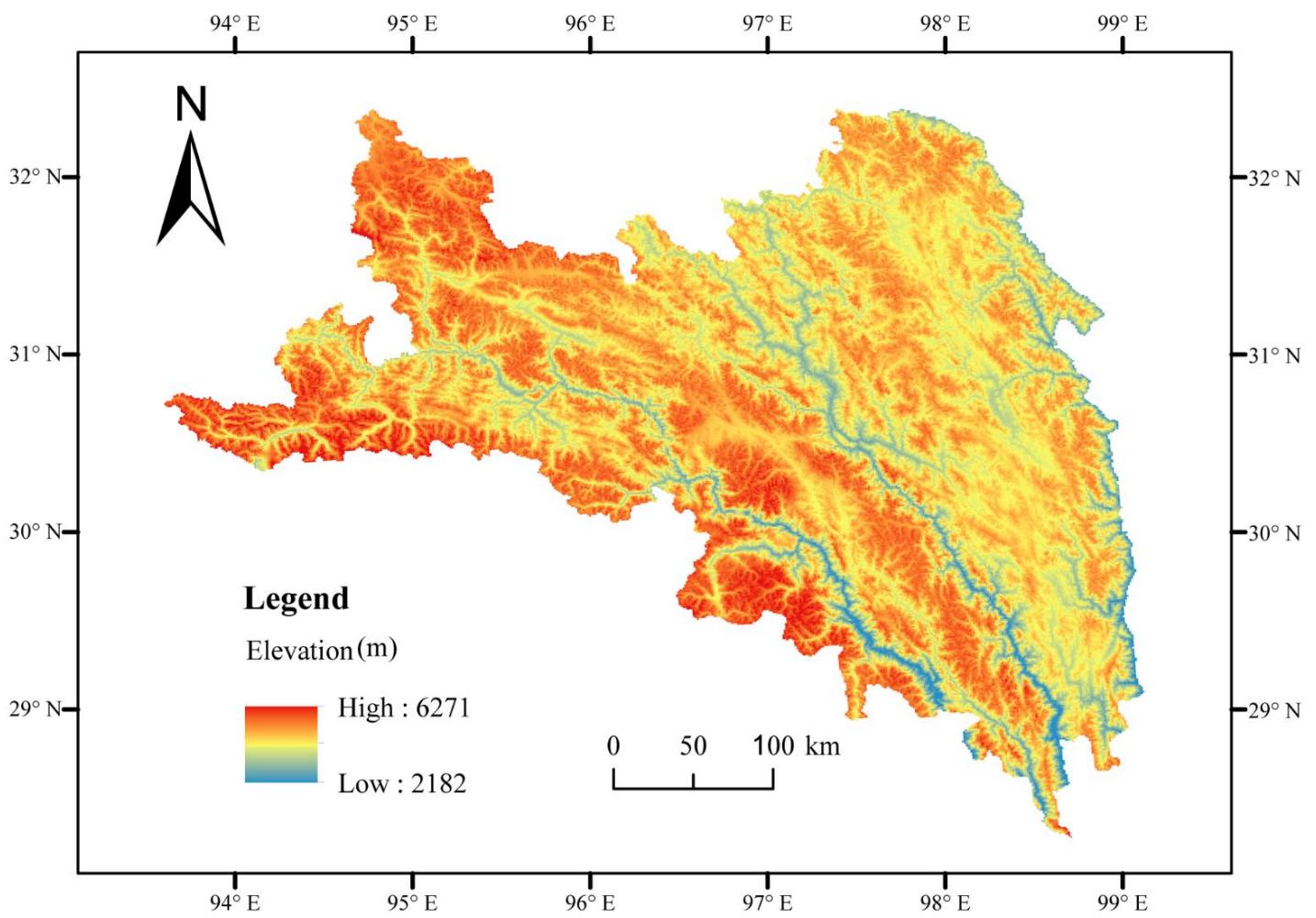
Figure S3. Elevation of the Qamdo prefecture. It was generated by ArcGIS 10.2 (http://www.esri.com/).
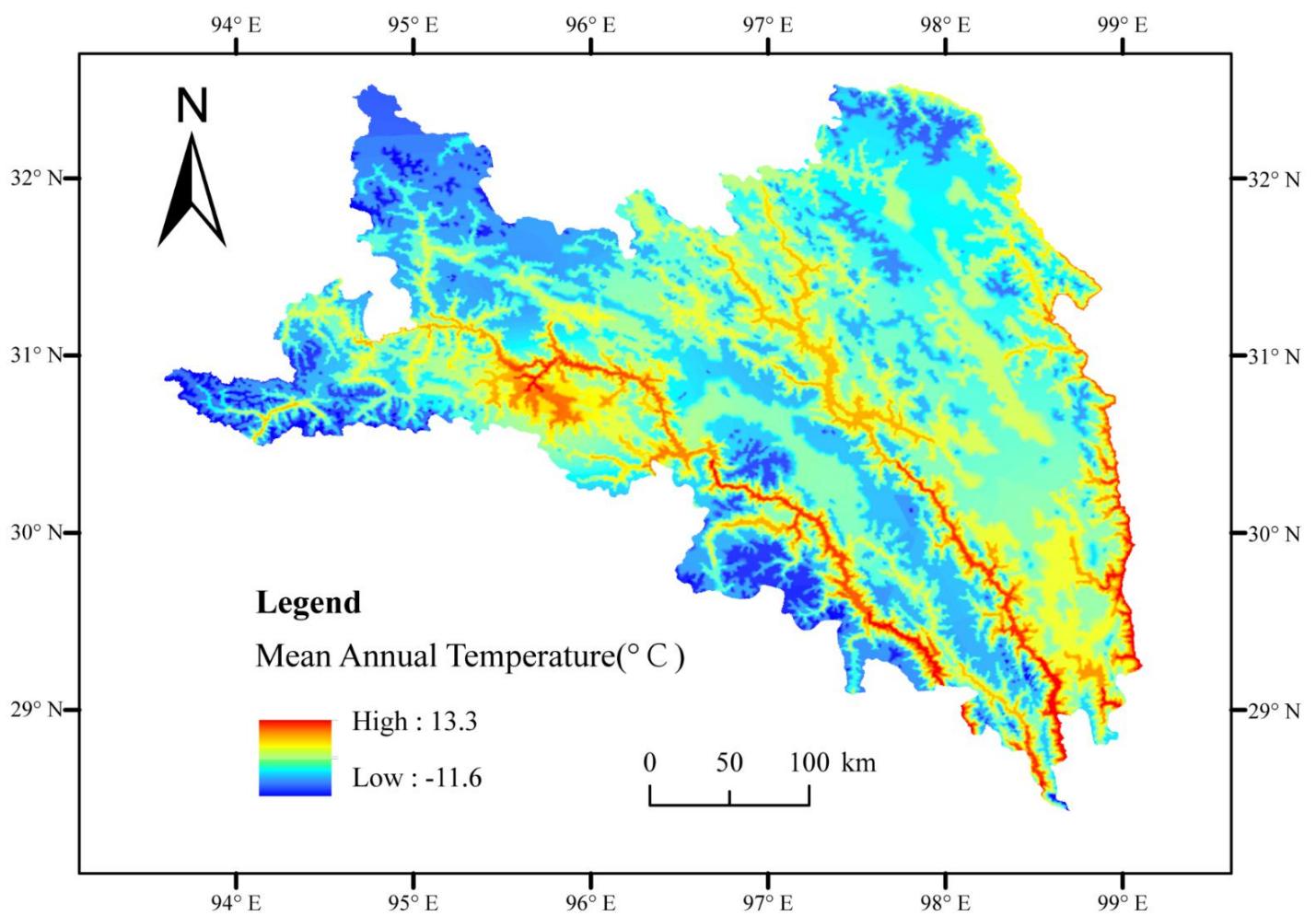
Figure S4. Mean annual temperature of the Qamdo prefecture. It was generated by ArcGIS 10.2 (http://www.esri.com/).
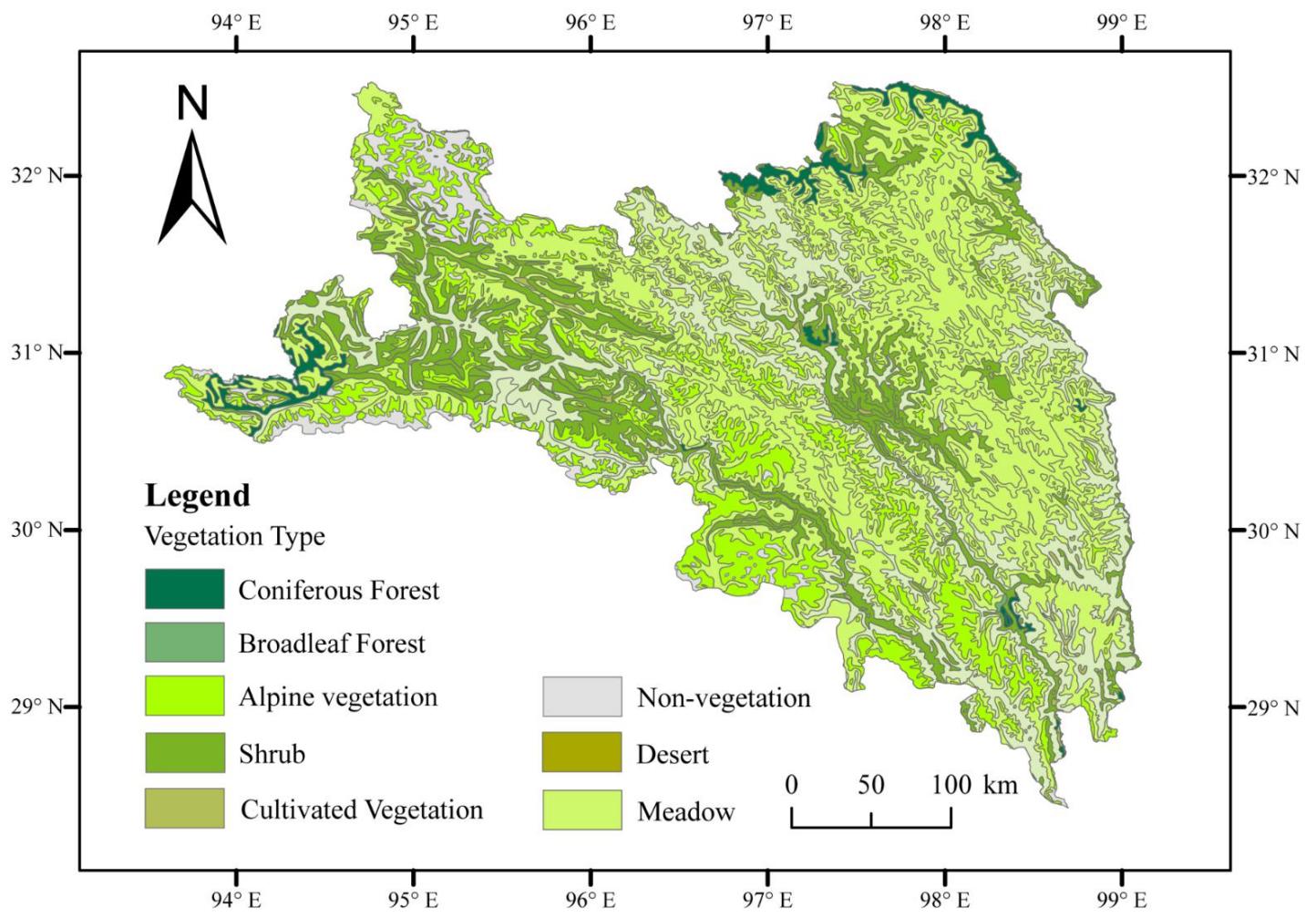
Figure S5. Vegetation types of the Qamdo prefecture. It was generated by ArcGIS 10.2 (http://www.esri.com/).
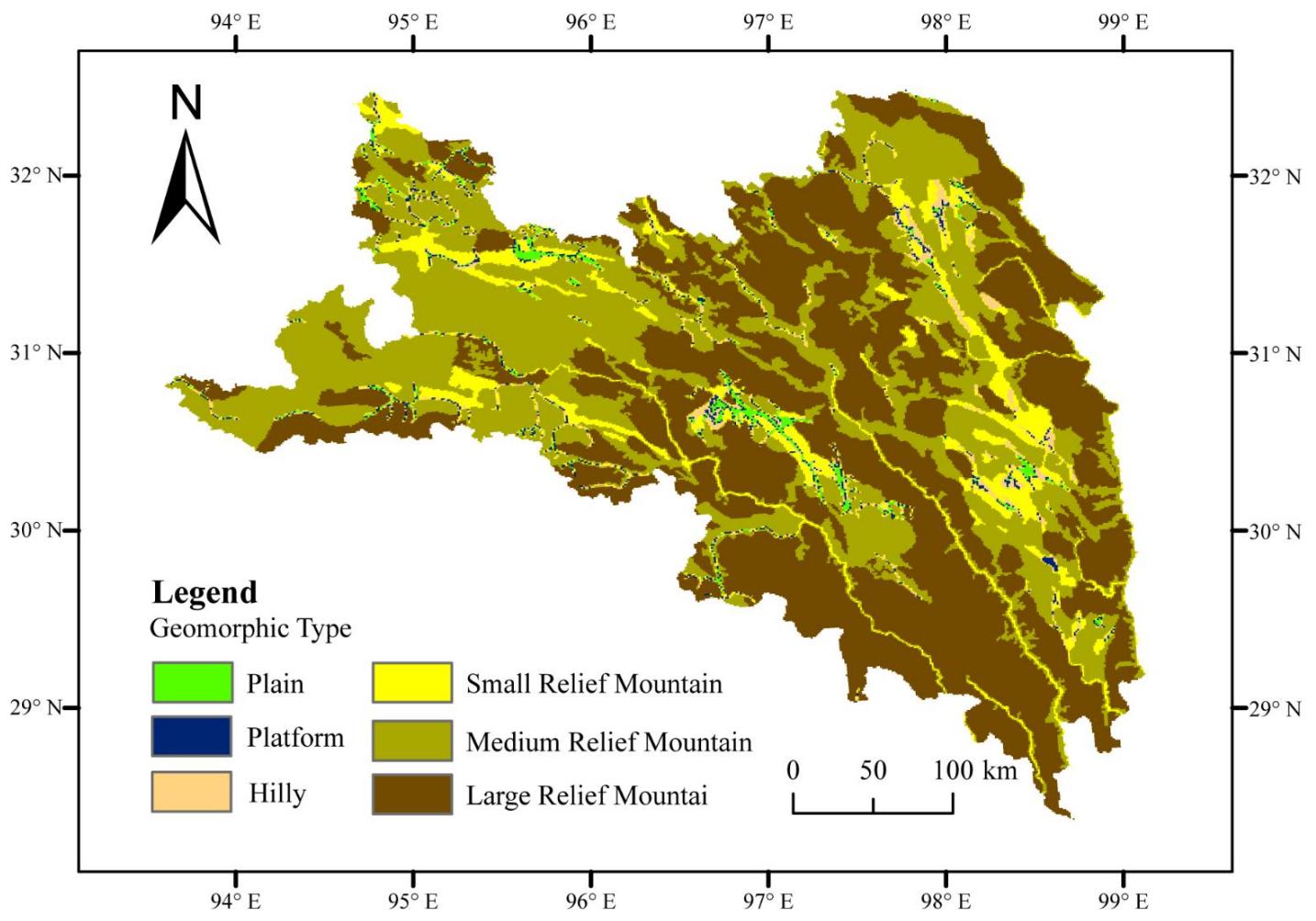
Figure S6. Geomorphic types of the Qamdo prefecture. It was generated by ArcGIS 10.2 (http://www.esri.com/).
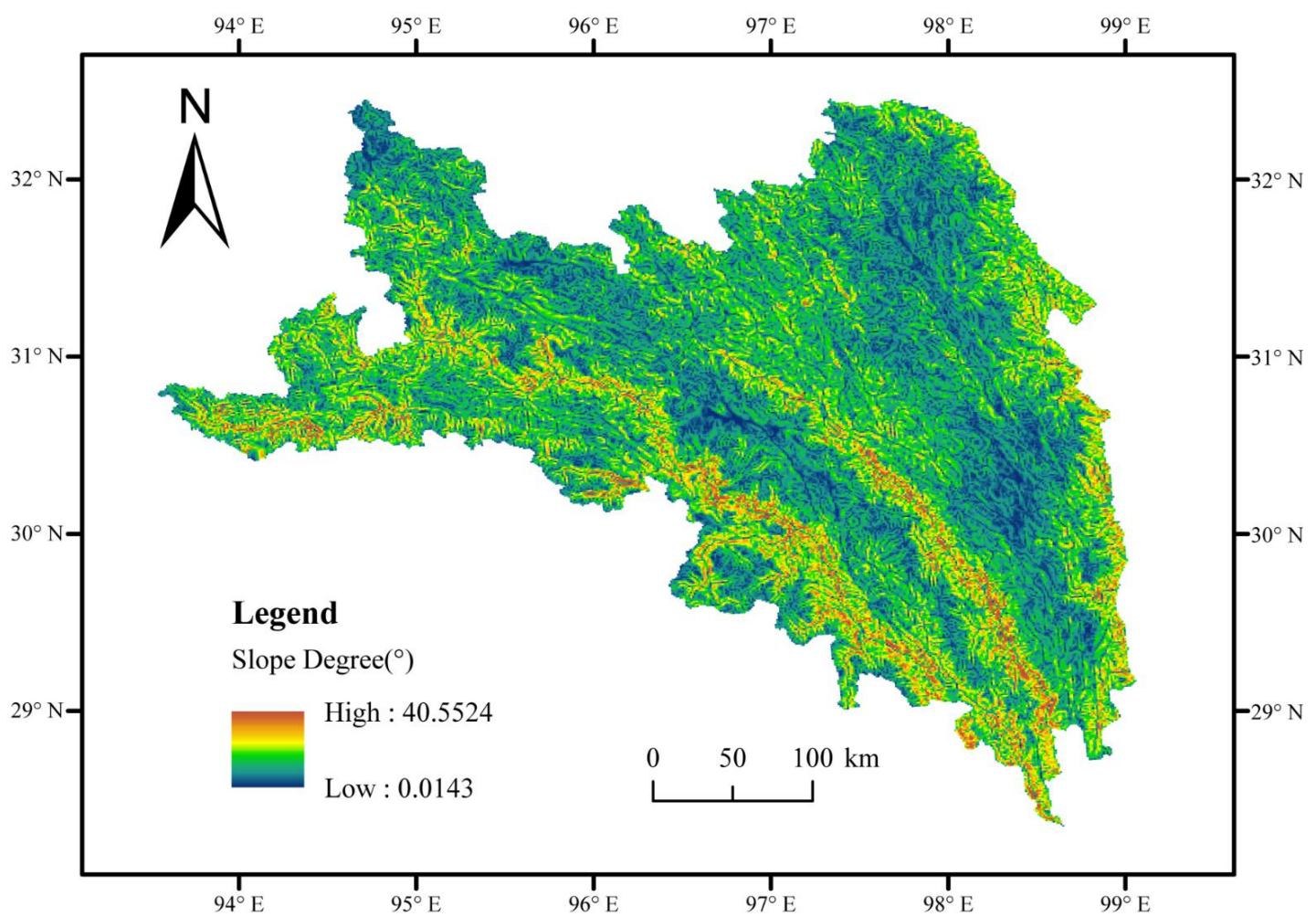
**Figure S7. Slope degree of the Qamdo prefecture.** It was generated by ArcGIS 10.2 (http://www.esri.com/).
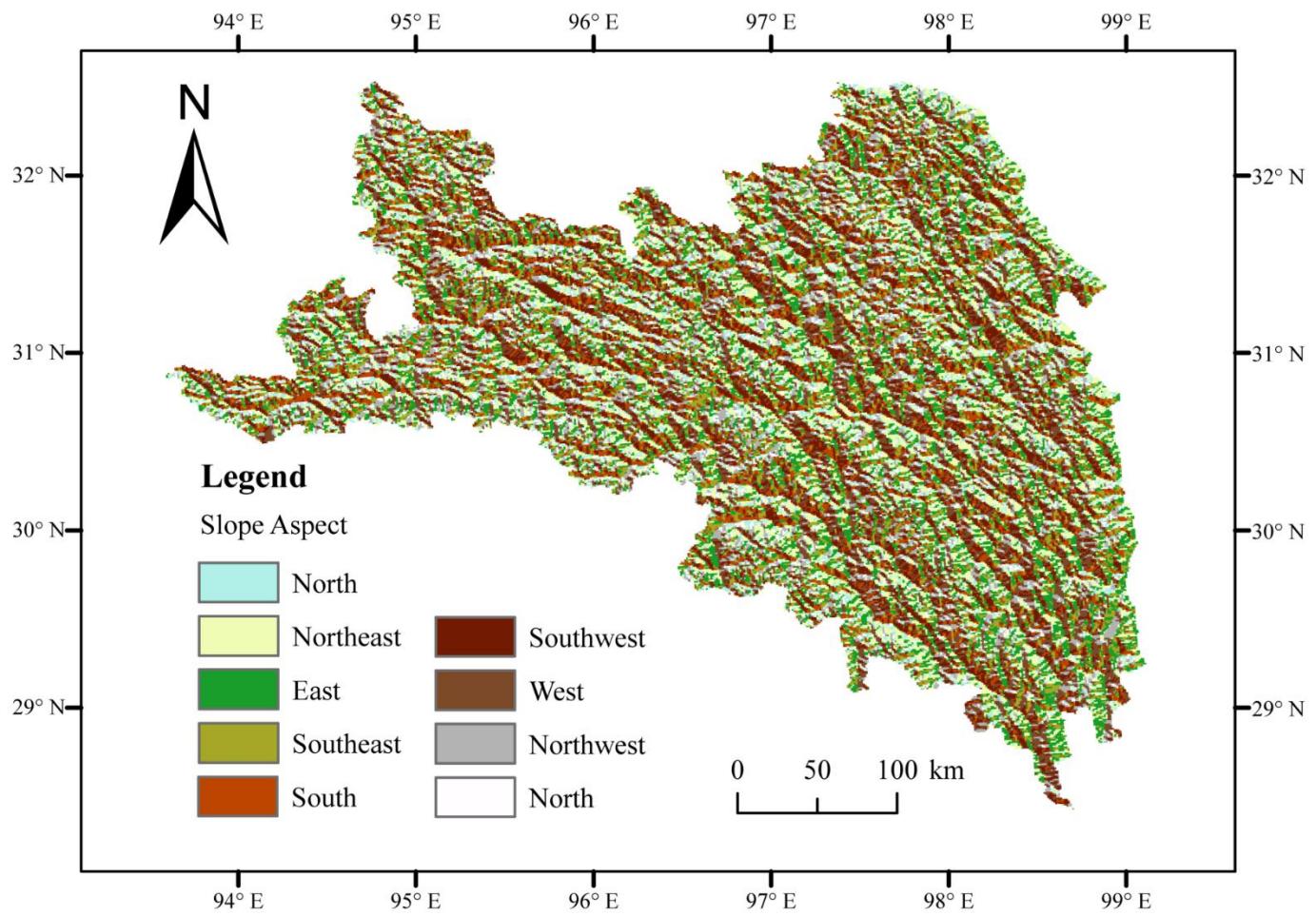
Figure S8. Slope aspect of the Qamdo prefecture. It was generated by ArcGIS 10.2 (http://www.esri.com/).