

Table DR1. Location, age, perimeter roughness, surface roughness and dimensions of lava fields from the central and northern Tibetan Plateau

Name	Latitude (dec. deg.)	Longitude (dec. deg.)	Av. Age (Ma)	Uncertainty (Myr)	Reference	Dating method	Perimeter Roughness SRTM 90 m	Surface Roughness SRTM 90 m	Perimeter Roughness SRTM 30 m	Surface Roughness SRTM 30 m	Area (km <sup>2</sup> )	Max. E-W extent (km)	Max. N-S extent (km)	Perimeter (km)	% Perimeter over bedrock
Heishibeiuhu	35.414	82.56	0.6	0.15	Yang 2011	Ar-Ar	1.001	1.004	1.001	1.006	440	43	21	140	35
Ashikule	35.767	81.648	1.7	0.4	Turner et al 1993; Williams et al., 2004; Lin et al., 2007	Ar-Ar	1.001	1.004	1.001	1.006	126	28	12	85	0
Henglianghu	34.905	88.861	2.9	0.35	Wang et al 2016	Ar-Ar	1.001	1.005	1.001	1.008	1349	65	50	254	51
Wulanwulahu	34.322	90.203	3.8	0.15	Wang et al 2016	Zircon U-Pb	1.003	1.006	1.003	1.011	396	43	34	154	85
Xiongyingtai	36.245	88.842	11	not given	Guo et al 2006	K-Ar	1.002	1.005	1.002	1.008	696	40	50	201	84
Xiangyanghu	35.703	89.298	11.7	0.2	Turner et al 1996	Ar-Ar	1.009	1.023	1.009	1.028	368	60	22	197	100
Quanshugou	35.408	80.133	12.8	2.2	Williams et al 2004	Ar-Ar	1.003	1.015	1.004	1.023	70	17	11	54	100
Kekaohu	35.715	90.003	13.4	0.37	Yang 2011	Ar-Ar	1.003	1.011	1.003	1.016	153	22	12	63	61
Qiangbaqian	36.013	86.032	14.3	0.3	Xia et al 2006; Lin et al 2007	Ar-Ar	1.002	1.010	1.002	1.013	1019	49	31	399	69
Wuxuefeng	36.125	90.313	17.5	0.42	Wang et al 2005; Yang 2011	Ar-Ar	1.003	1.017	1.003	1.018	157	23	15	64	92
Daomaoshan	35.666	92.246	18.3	0.22	Wei et al 2007	Zircon U-Pb	1.004	1.016	1.004	1.020	110	13	13	47	79
Fenghuoshan	34.113	91.298	27.6	0.37	Chen et al 2012	Ar-Ar	1.003	1.021	1.003	1.025	318	50	18	132	64
Bamaoqiongzong	34.789	87.09	28	0.56	Xia et al 2006	Ar-Ar	1.004	1.026	1.004	1.028	45	12	7	35	80
Yulinshan	33.864	83.358	28.7	0.4	Guo et al., 2006; Ding et al., 2003	Ar-Ar	1.021	1.019	1.009	1.028	52	11	10	39	56
Nading Co	32.703	85.639	35.4	0.1	Ding et al., 2007	Ar-Ar	1.005	1.016	1.001	1.019	462	29	23	103	43
Bandaohu (Yuejinla)	34.006	88.813	42.5	0.3	Wang et al 2008b	Ar-Ar	1.003	1.013	1.003	1.017	418	31	25	128	90
Dongyuehu	34.234	89.32	42.1	0.29	Wang et al 2008b	Zircon U-Pb	1.003	1.014	1.003	1.017	216	30	18	119	69
						Mean:	1.004	1.014	1.003	1.018	376	33	22	130	68
						St. Dev:					347	16	12	91	25

## References for Table DR1

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Table DR2. Surface roughness (SR) and Perimeter roughness (PR) for 30 internally-drained, 100 km-perimeter, areas of the Tibetan Plateau

No.	Lat.	Long.	SR	PR	SR	PR
1	34.866	80.938	1.042	1.057	1.048	1.035
2	35.171	81.67	1.018	1.051	1.020	1.028
3	34.43	81.837	1.022	1.076	1.027	1.018
4	34.513	82.275	1.019	1.068	1.022	1.037
5	35.588	82.308	1.088	1.075	1.101	1.044
6	34.127	82.854	1.008	1.025	1.010	1.013
7	33.624	83.789	1.013	1.009	1.017	1.027
8	34.339	83.895	1.006	1.001	1.010	1.006
9	35.09	84.026	1.005	1.011	1.007	1.006
10	34.643	84.456	1.015	1.022	1.018	1.013
11	35.135	84.514	1.003	1.010	1.005	1.006
12	35.62	84.678	1.004	1.010	1.006	1.006
13	34.682	85.274	1.010	1.043	1.012	1.028
14	34.156	85.747	1.018	1.047	1.022	1.027
15	33.597	85.836	1.002	1.001	1.004	1.006
16	33.267	86.955	1.030	1.047	1.038	1.028
17	35.7	87.016	1.010	1.024	1.015	1.014
18	33.705	87.12	1.008	1.020	1.011	1.012
19	34.154	88.26	1.009	1.022	1.012	1.013
20	34.743	88.576	1.008	1.016	1.011	1.010
21	33.806	88.64	1.004	1.023	1.006	1.013
22	33.495	88.819	1.011	1.037	1.013	1.021
23	34.735	88.825	1.008	1.019	1.011	1.011
24	34.233	89.75	1.009	1.027	1.012	1.015

25	34.336	89.784	1.018	1.027	1.021	1.015
26	35.192	90.044	1.005	1.013	1.008	1.003
27	35.618	90.433	1.008	1.015	1.011	1.008
28	35.049	91.073	1.012	1.020	1.015	1.012
29	34.443	91.355	1.007	1.002	1.009	1.008
30	34.654	91.687	1.008	1.004	1.011	1.014
		Mean	1.014	1.027	1.018	1.017
			SRTM 90 data	SRTM 30 data		

Table DR3. Surface roughness (SR) and Perimeter roughness (PR) for 30 externally-drained, 100 km-perimeter, areas of the Tibetan Plateau

No.	Lat.	Long.	SR	PR	SR	PR
1	33.327	92.268	1.013	1.061	1.017	1.036
2	31.473	92.592	1.083	1.142	1.105	1.089
3	31.942	93.283	1.068	1.139	1.082	1.083
4	32.891	93.676	1.003	1.009	1.006	1.006
5	34.35	94.22	1.028	1.053	1.034	1.029
6	33.057	94.482	1.057	1.074	1.070	1.043
7	31.977	94.655	1.037	1.049	1.046	1.030
8	34.038	94.663	1.104	1.222	1.120	1.143
9	32.706	94.851	1.077	1.147	1.091	1.087
10	35.38	94.88	1.012	1.027	1.012	1.028
11	32.331	94.984	1.098	1.177	1.118	1.110
12	33.395	95.471	1.136	1.212	1.154	1.133
13	32.696	96.191	1.087	1.163	1.108	1.102
14	31.821	96.213	1.125	1.224	1.147	1.143
15	33.183	96.381	1.035	1.086	1.046	1.050
16	31.961	96.41	1.120	1.208	1.140	1.056
17	30.098	97.264	1.189	1.255	1.211	1.165
18	30.347	97.371	1.070	1.158	1.081	1.092
19	33.262	97.46	1.042	1.092	1.049	1.054
20	31.717	97.607	1.090	1.181	1.108	1.111
21	32.456	97.679	1.176	1.253	1.209	1.169
22	30.917	97.975	1.093	1.182	1.111	1.114
23	29.837	98.394	1.137	1.242	1.169	1.158
24	33.502	98.422	1.016	1.049	1.016	1.049
25	30.704	98.484	1.068	1.160	1.091	1.104
26	29.929	98.528	1.071	1.162	1.087	1.103

27	31.64	98.62	1.177	1.268	1.204	1.176
28	30.296	98.646	1.084	1.166	1.106	1.103
29	34.05	99.06	1.029	1.076	1.029	1.076
30	32.104	99.784	1.085	1.205	1.086	1.205
		mean	1.080	1.148	1.095	1.095
			SRTM 90 data		SRTM 30 data	

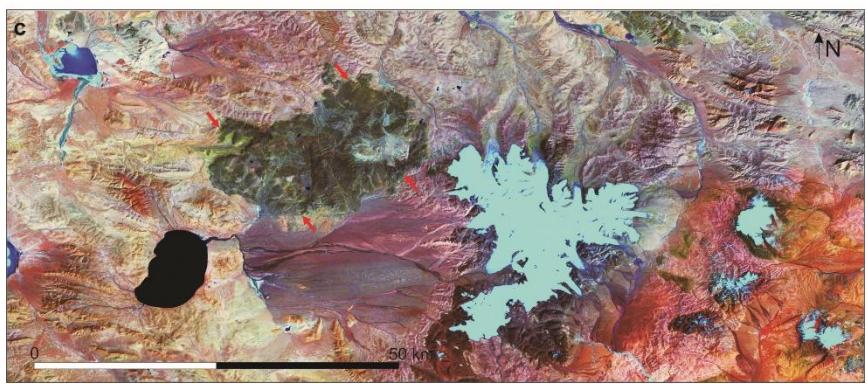
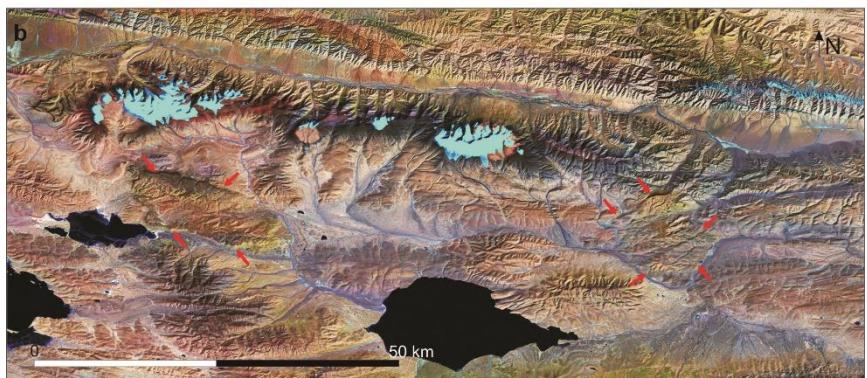
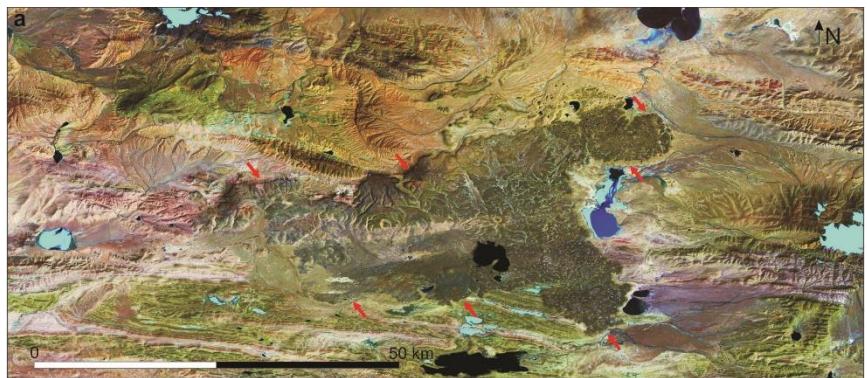


Figure DR1

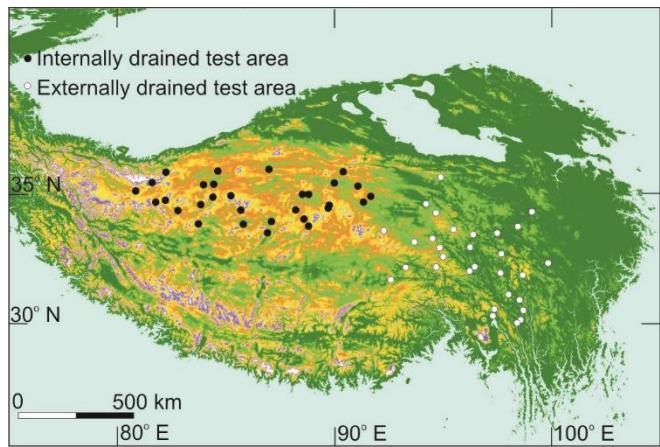


Figure DR2

Figure captions for supplementary figures.

Figure DR1. Examples of undeformed lava fields from the Tibetan Plateau. All images are Landsat 7 false color composites, bands 2, 4, 7. Red arrows highlight field margins. A: Henglianghe. B: Kekaohu. C: Bandaohu and Daomaoshan. Field locations shown on Fig. 1.

Figure DR2. Locations of internally- and externally-drained test areas, with 100 km perimeters, used for comparison with lava field geomorphology.