Datashare 119

Tectonic and paleogeographic controls on development of the Early–Middle Ordovician Shanganning Carbonate Platform, Ordos Basin, North China

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APPENDIX: NAMING OF SHANGANNING CARBONATE PLATFORM

The Ordos Basin, a multicycle cratonic basin (Yang et al., 2005), is located on the western North China craton and covers parts of Gansu, Ningxia, Shanxi, Neimenggu, and Shaanxi provinces (Figure 1A; Guo et al., 2012; Jiang et al., 2012; Zhao et al., 2015). A huge shallow carbonate platform developed in the area of the Ordos Basin during the Ordovician. In earlier publications, this platform has been referred to as the "North China carbonate platform" (Liu and Zhan, 2009; Chough et al., 2010; Zhen et al., 2016), the "Ordos Carbonate Platform" (Guo et al., 2012), and the "Qingyang land" (for the subaerially exposed part of the platform; Zhang et al., 2015). These names are herein regarded as inappropriate or suboptimal: "North China" refers to too large a geographic area, "Ordos" is the name given to the younger Ordos Basin, which has priority of naming, and "Qingyang land" was not defined to cover the entire platform area. The present study therefore proposes the name "Shanganning carbonate platform" for this feature based on the Chinese term "Shanganning," which is a portmanteau of the names of the three main provinces (i.e., Shaanxi, Gansu, and Ningxia) across which the carbonate platform extends (Figure 1A, B).

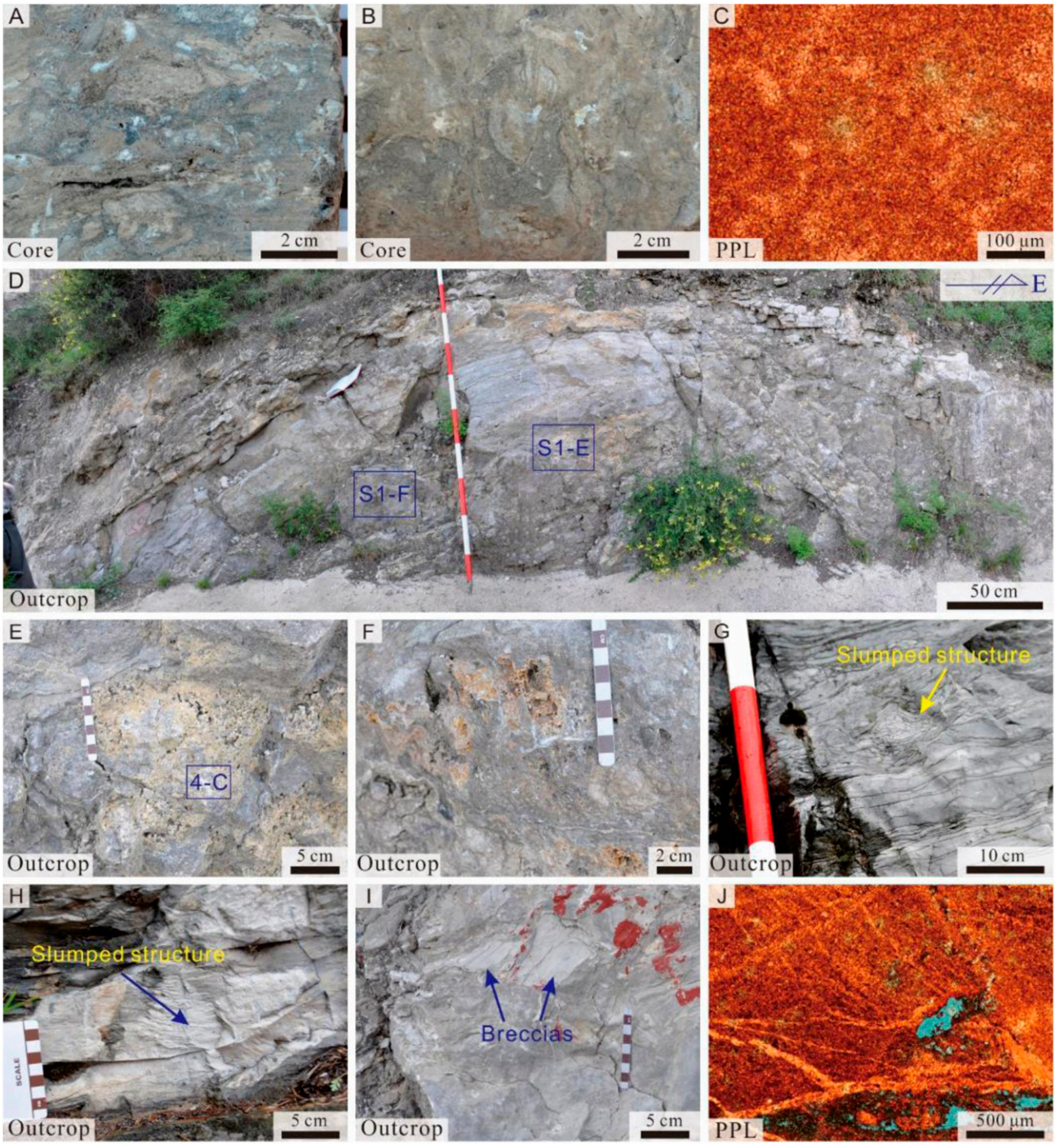

Figure S1. Supplementary photographs showing carbonate mudstone (microfacies fabric and sediment type [MF] 1). (A, B) Bioclastic limestone, core TN7 at 2378.8 m (7804.5 ft; M5 Member of the Majiagou Formation). (C) Close-up of (A), bioturbated recrystallized carbonate mudstone (MF1b). (D) A small-scale patch reef, outcrop Sanchuanhe (SC) in M4 Member of the Majiagou Formation. (E, F) Close-ups of (D), reef limestone. (G, H) Slump structure, outcrop Linyou in Zhuozishan Formation. (I) Brecciated limestone, outcrop SC in M4 Member of the Majiagou Formation. (J) Heavily fractured carbonate mudstone (MF1d), outcrop Qinglongshan in Zhuozishan Formation. PPL = plane-polarized light.

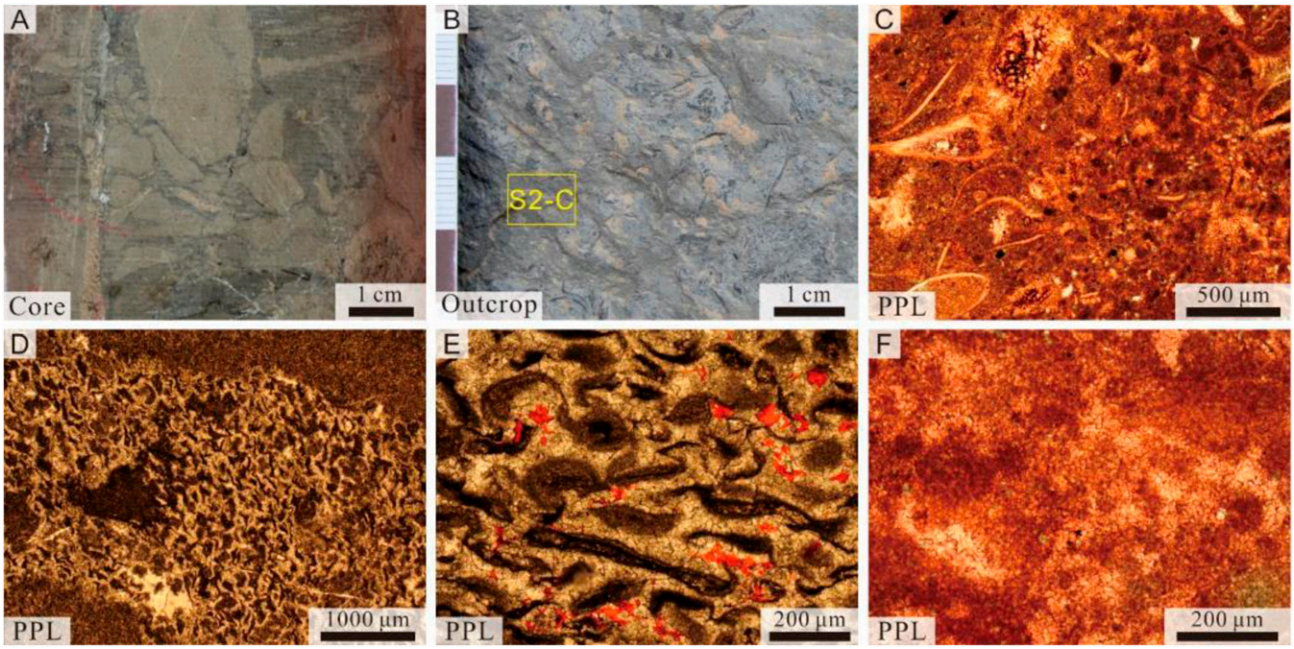

Figure S2. Supplementary photographs showing wackestone (microfacies fabric and sediment type [MF] 2). (A) Brecciated rock, core WR4 at 4266.1 m (13,996.4 ft; Kelimoli Formation). (B) Bioclastic limestone, outcrop Mo'ergou in Sandaokan Formation. (C) Close-up of (B), bioclastic wackestone–packstone (MF2b). (D) Sponge wackestone with second recrystallization (MF2b), core IR9 at 3094.5 m (10152.6 ft) (M5 Member of the Majiagou Formation). (E) Sponge wackestone with second recrystallization (MF2b), core HQ3 at 4370.3 m (14,338.3 ft; Sandaokan Formation). (F) Skeletal-intraclastic wackestone (MF2c), showing subangular and poorly to moderately sorted clasts of various size (0.01–0.5 mm [<0.02 in.]), core TZ2 at 4285.4 m (14,059.7 ft; Sandaokan Formation). PPL = plane-polarized light.

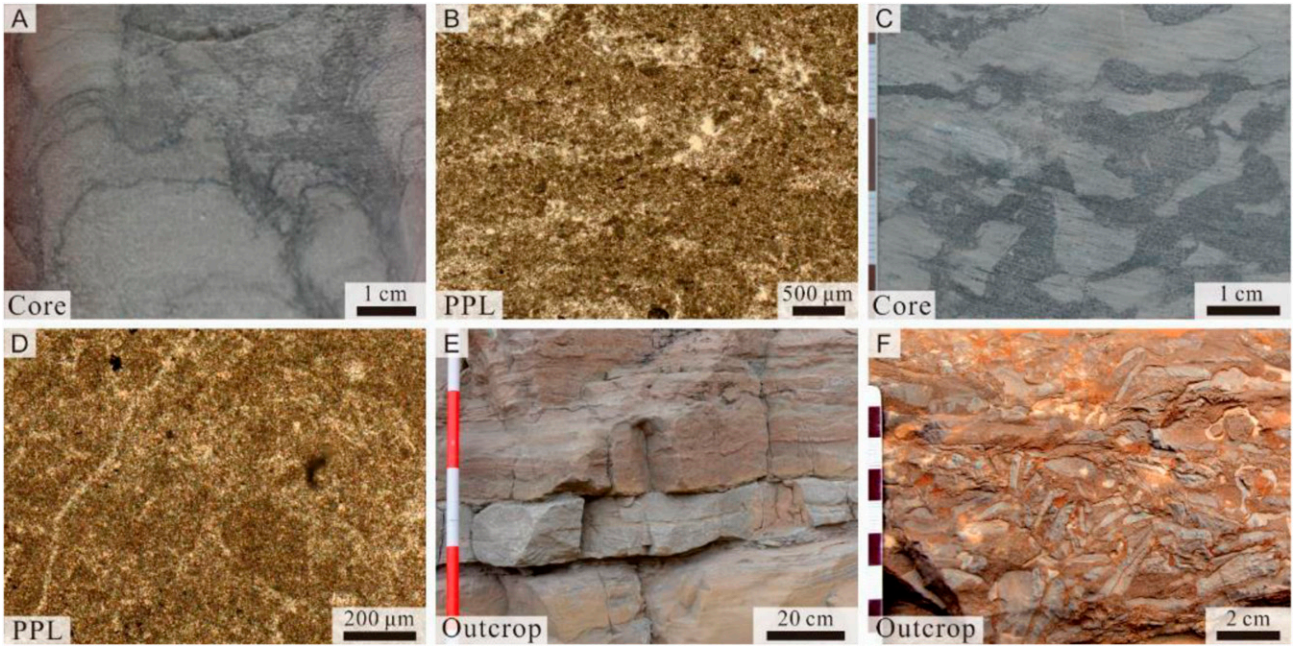

Figure S3. Supplementary photographs showing packstone and grainstone (microfacies fabric and sediment type [MF] 3). (A) Stromatolitic structure, core GC8 at 2674.0 m (8773.0 ft; M5 Member of the Majiagou Formation). (B) Close-up of (A), laminated peloidal packstone–grainstone (MF3a). (C) Intraclastic limestone, core KZ7 at 2814.5 m (9234.0 ft; M4 Member of the Majiagou Formation). (D) Intraclastic packstone or grainstone (late-stage fracturing) (MF3c) showing subangular and poorly to moderately sorted clasts of various size (<0.3 mm [<0.012 in.]), core AD5 at 3048.0 m (10,000 ft; M5 Member of the Majiagou Formation). (E) A 20-cm (7.87-in.)-thick limestone layer, outcrop Mo'ergou in Sandaokan Formation. (F) Close-up of (E), flat-pebble intraclastic limestone. PPL = plane-polarized light.

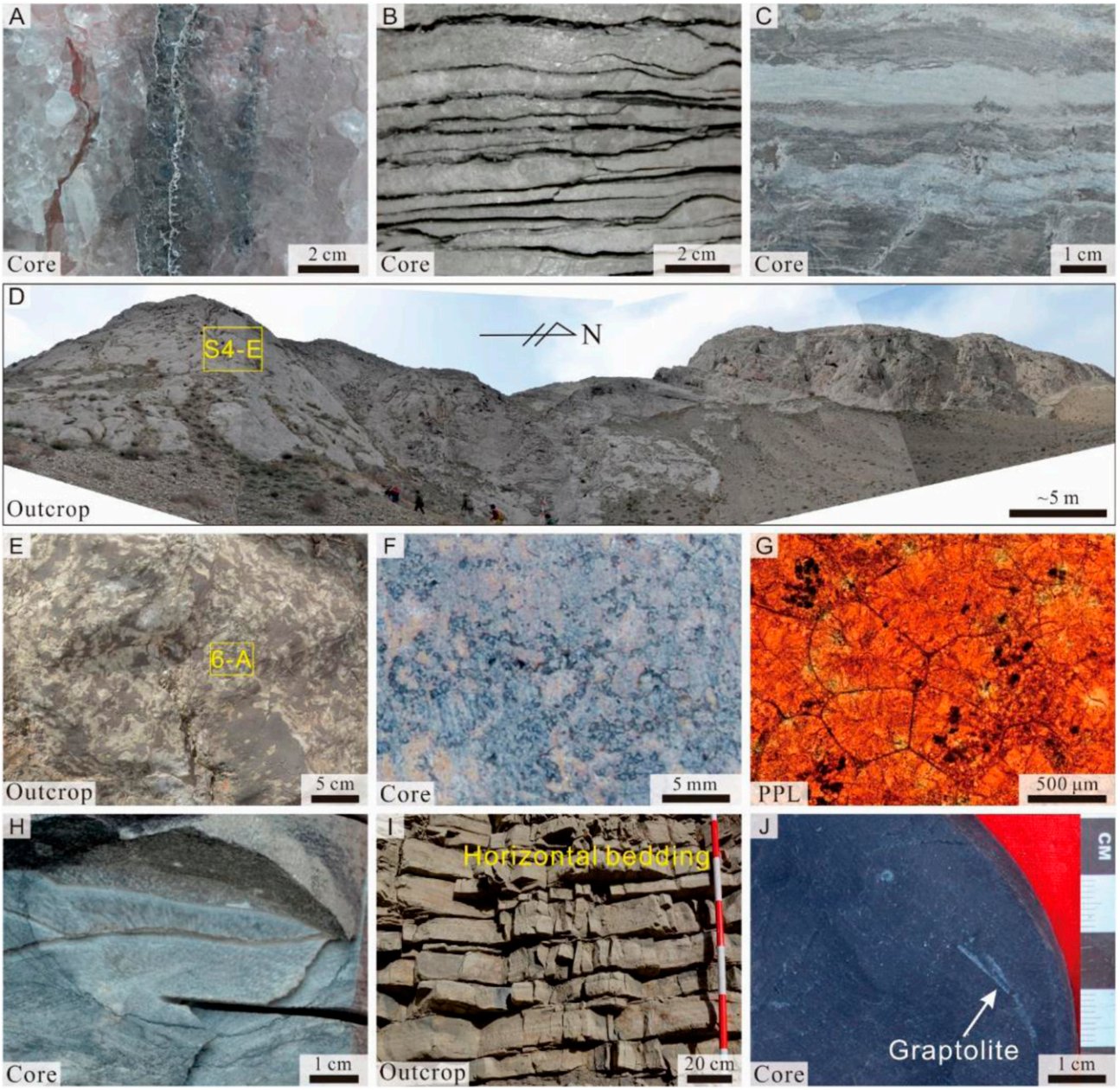

Figure S4. Supplementary photographs showing evaporitic sediments (microfacies fabric and sediment type [MF] 4), bindstones and framestones (MF5), and siliciclastic sediments (MF6). (A) Halite (MF4a), core ZI6 at 2575.8 m (8450.8 ft; M3 Member of the Majiagou Formation). (B) Gypsum (MF4b), core IM4 at 3642.6 m (11,950.8 ft; M2 Member of the Majiagou Formation). (C) Gypsiferous dolostone (MF4c), core KZ7 at 3163.2 m (10,378.0 ft; M1 Member of the Majiagou Formation). (D) Reef mound, outcrop Mo'ergou (ME) in Zhuozishan Formation. (E) Close-up of (D). (F) Reef limestone, core KW9 at 3451.4 m (11,323.5 ft; Pingliang Formation). (G) Coral framestone (MF5b), core KW9 at 3453.0 m (11,328.7 ft; Pingliang Formation). (H) Reef limestone, core PM8 at 2887.6 m (9473.8 ft; Pingliang Formation). (I) Thick shale with horizontal bedding, outcrop ME in Kelimoli Formation. (J) Dark-colored shale with graptolite fossil (MF6c), core TX2 at 4043.8 m (13,267.1 ft; Kelimoli Formation). PPL = plane-polarized light.

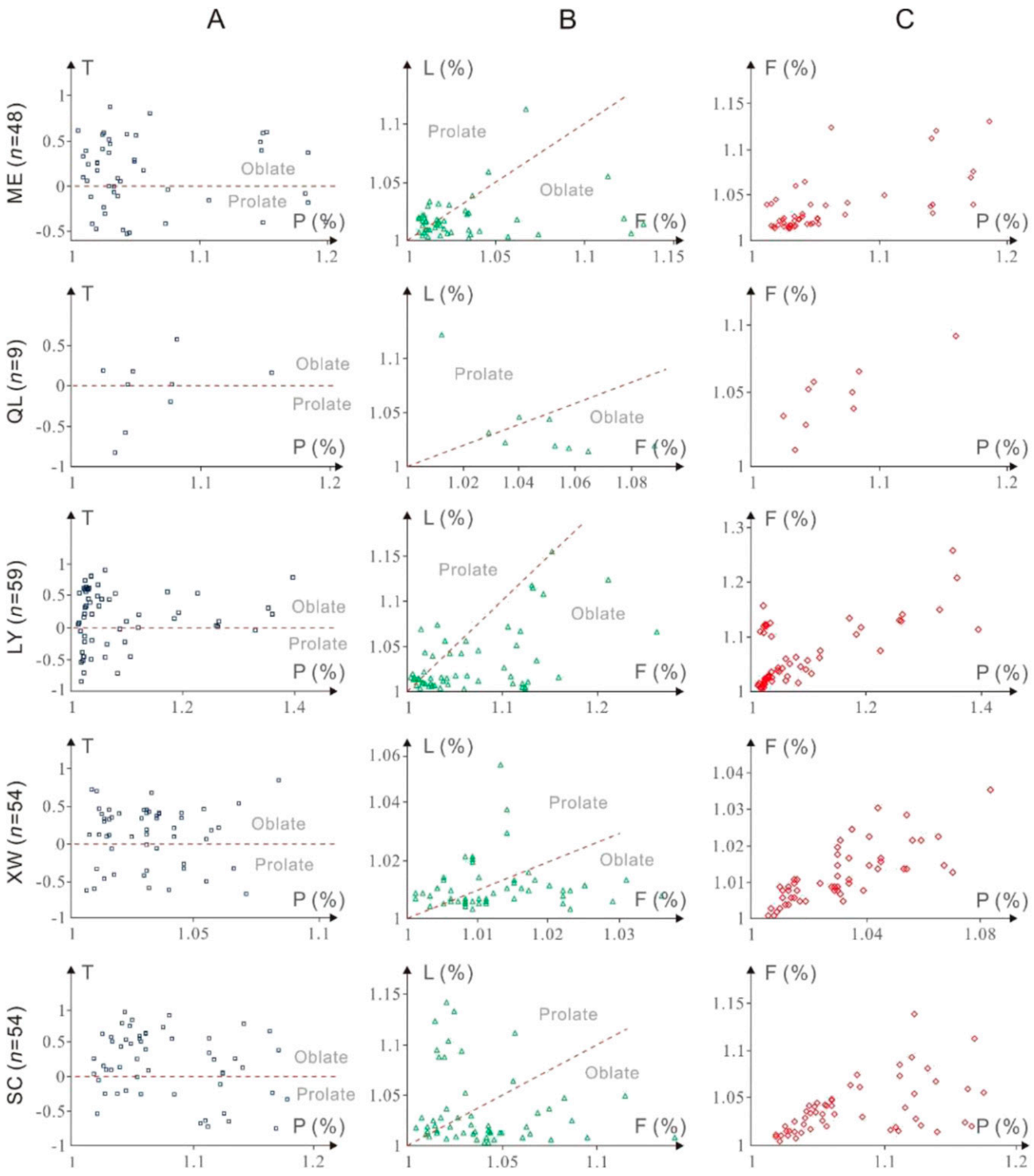

Figure S5. Relationships between the anisotropy of magnetic susceptibility parameters of degree of anisotropy (P) and shape factor (T) in (A), foliation (F) and lineation (L) in (B), and P and F in (C) for five outcrops samples of the Shanganning carbonate platform. LY = Linyou outcrop; ME = Mo'ergou outcrop; QL = Qinglongshan outcrop; SC = Sanchuanhe outcrop; XW = Xiweikou outcrop.

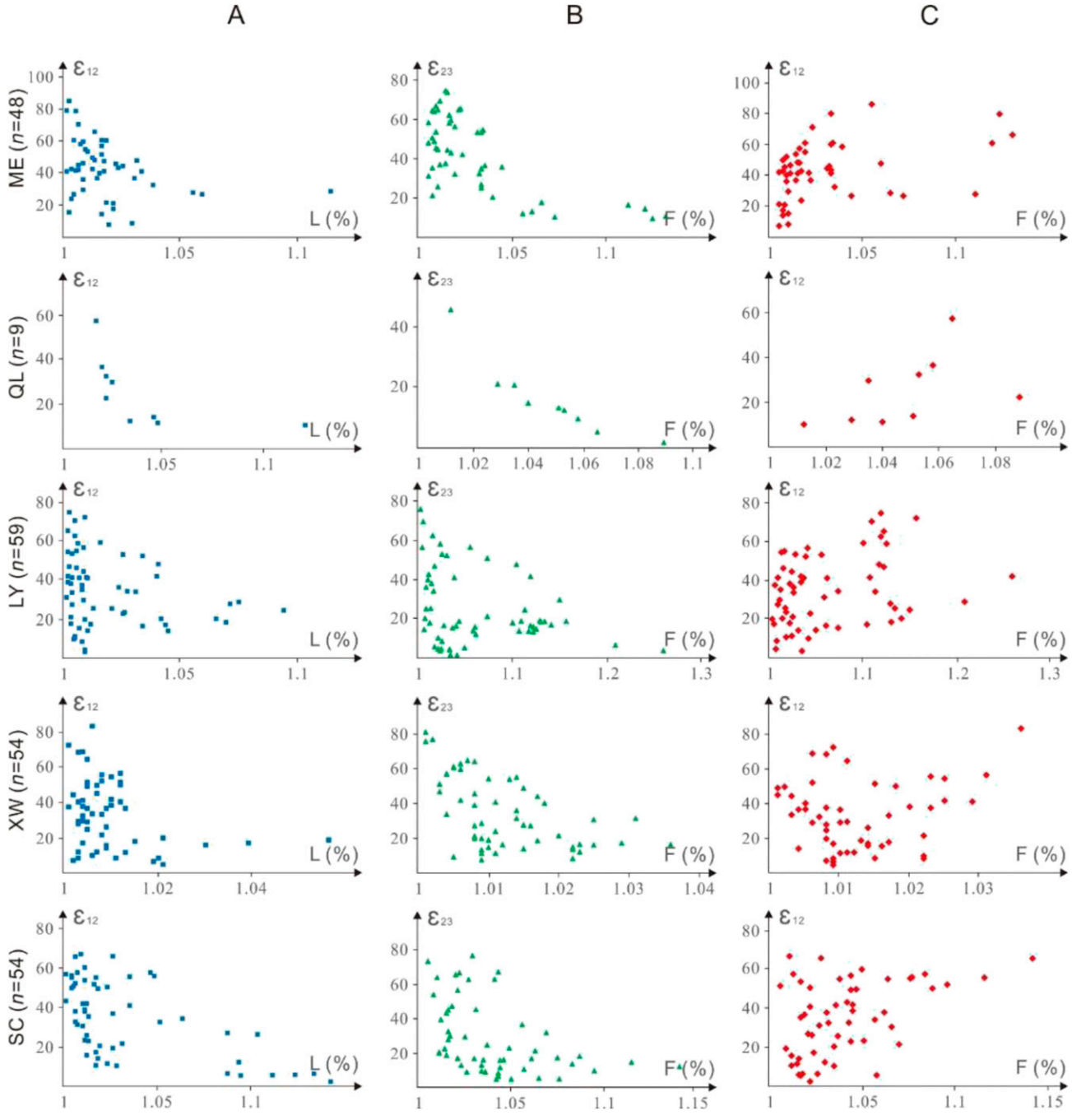

Figure S6. Correlation between the anisotropy of magnetic susceptibility parameters of lineation (L) and the half-angle uncertainty of K_{max} in the plane joining K_{max} and K_{int} (ε_{12}) in (A), foliation (F) and the half-angle uncertainty of K_{int} in the plane joining K_{int} and K_{min} (ε_{23}) in (B), and F and ε_{12} in (C) for five outcrops samples of the Shanganning carbonate platform. LY = Linyou outcrop; ME = Mo'ergou outcrop; QL = Qinglongshan outcrop; SC = Sanchuanhe outcrop; XW = Xiweikou outcrop.

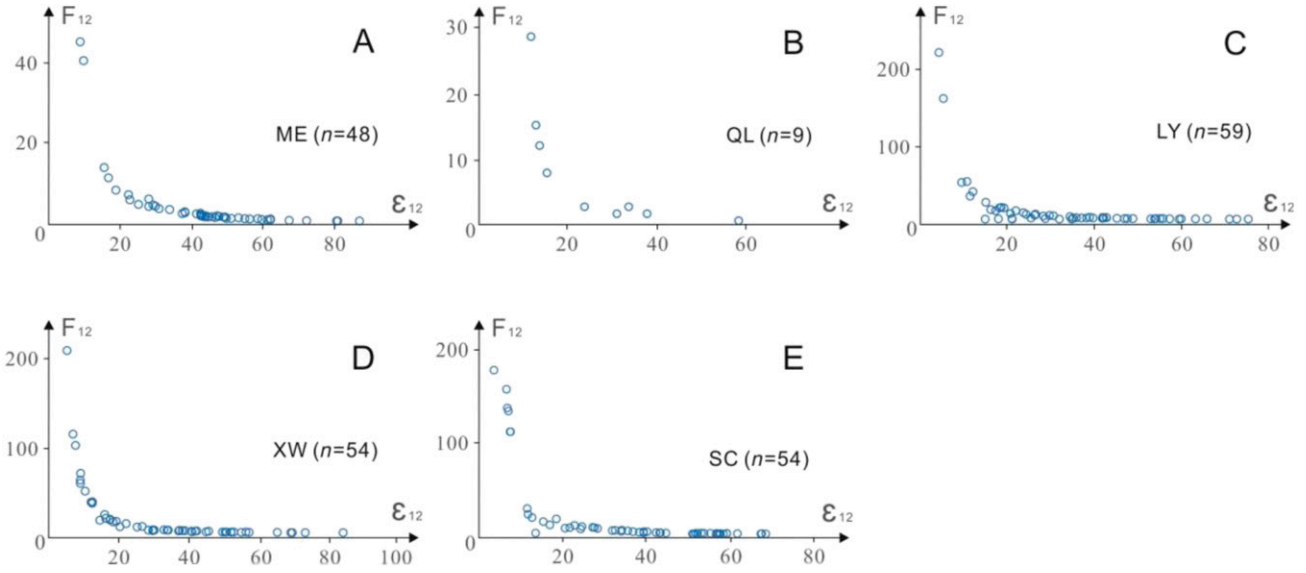

Figure S7. Correlation between the half-angle uncertainty of K_{max} in the plane joining K_{max} and K_{int} (ε_{12}) and the statistical significance of the lineation (F_{12}) for the Shanganning carbonate platform samples. (A–E) These are for the samples of the Mo'ergou (ME), Qinglongshan (QL), Linyou (LY), Xiweikou (XW), and Sanchuanhe (SC) outcrops, respectively.

Table S1. Location and Sampling Information for the 11 Study Outcrops

No.	Outcrop	Location	Thickness*, m (ft)	No. of Analyses for Thin Section	No. of Analyses for AMS
1	ME	39°40′19.32″ N; 106°57′30.25″ E	170 (558)	36 (Figures 4A, F; 5A, E; 6A, B, F–H; S2B, C; S3E, F; S4D, E, I)	48
2	QL	37°17′19.16″ N; 106°34′10.32″E	40 (131)	11 (Figure S1J)	9
3	LY	34°28′54.25″ N; 107°39′15.33″ E	120 (394)	22 (Figure S1G, H)	59
4	XW	35°43′45.11″ N; 110°42′53.75″ E	260 (853)	55	54
5	SC	37°27′22.68″ N; 110°58′49.92″ E	160 (525)	35 (Figures 4C, 5D, F; S1D–F, I)	54
6	LJ	35°00′52.03″ N; 106°40′01.62″ E		Bao et al., 2016	
7	HS	34°34′35.37″ N; 108°03′12.70″ E		Jiang et al., 2013	
8	TQ	34°59′40.71″ N; 108°54′28.29″ E		Jiang et al., 2013	
9	DZ	34°42′06.69″ N; 108°28′34.39″ E		Bai et al., 2010	
10	TW	34°43′08.17″ N; 108°36′54.67″ E		Jiang et al., 2011	
11	JJ	34°56′02.03″ N; 109°06′04.48″ E		Guo et al., 2012	

*Total observed and measured thickness in a given outcrop.

Abbreviations: AMS = anisotropy of magnetic susceptibility; DZ = Dongzhuang outcrop; HS = Haoshihe outcrop; JJ = Jiangjunshan outcrop; LJ = Lijiapo outcrop; LY = Linyou outcrop; ME = Mo'ergou outcrop; No. = number; QL = Qinglongshan outcrop; SC = Sanchuanhe outcrop; TQ = Taoqu outcrop; TW = Tiewadian outcrop; XW = Xiweikou outcrop.

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