

Kaixuan Ji, Paul B. Wignall, Jinnan Tong, Yingyue Yu, Wenwei Guo, Wenchao Shu, and Daoliang Chu, 2022, Sedimentology of the latest Permian to Early Triassic in the terrestrial settings of the North China Basin: Low-latitude climate change during a warming-driven crisis: GSA Bulletin, <https://doi.org/10.1130/B36260.1>.

Supplemental Material

Figure S1. Sedimentary logs of the sections at Baode, Xuecun and Haojiajin in Shanxi Province, Ordos Basin, developed in the uppermost part of the Sunjiagou Formation and base of the Liujiagou Formation. Grey-purple dashed line shows correlation of a gray-purple paleosol beds laterally and red dashed line correlates at which pareiasaur bones occur.

Figure S2. Field photographs of the Huagedaling section, Jiyuan County, Luoyang City, Henan Province. (A) FA3: Bc horizons (common calcareous nodules) and Bm horizon (layer of calcretes) in paleosol profiles of the Sunjiagou Formation. (B) A distant view of the upper part of Sunjiagou Formation and the lower part of Liujiagou Formation.

Figure S3. Log and field photographs of the Xiewan section, Yima City, Henan Province. (A) FA3: red and green siltstone with paleosol horizons in the lower Sunjiagou Formation. (B) FA7: Thin sandstone and mudstone alternations in the upper Sunjiagou Formation. (C) FA5: red sandstone in the lower Liujiagou Formation. (D) FA5: concentric laminated concretions (CLC) within sandstone bed, Liujiagou Formation. (E) FA5: wrinkle structure on the surface of sandstone, Liujiagou Formation. (F) FA4: light gray-purple sandstone with sharp base interbedded with siltstone, upper Liujiagou Formation.

Figure S4. Log and field photographs of the Sugou section, Dengfeng City, Henan Province. (A) FA3: red and minor green siltstone in the lower Sunjiagou Formation. (B) FA5: trough-cross bedded sandstone with intraformational conglomerate beds with erosive base and oncolite-like concretions. Water bottle, top right, for scale. (C) FA5: multimodal trough cross bedding.

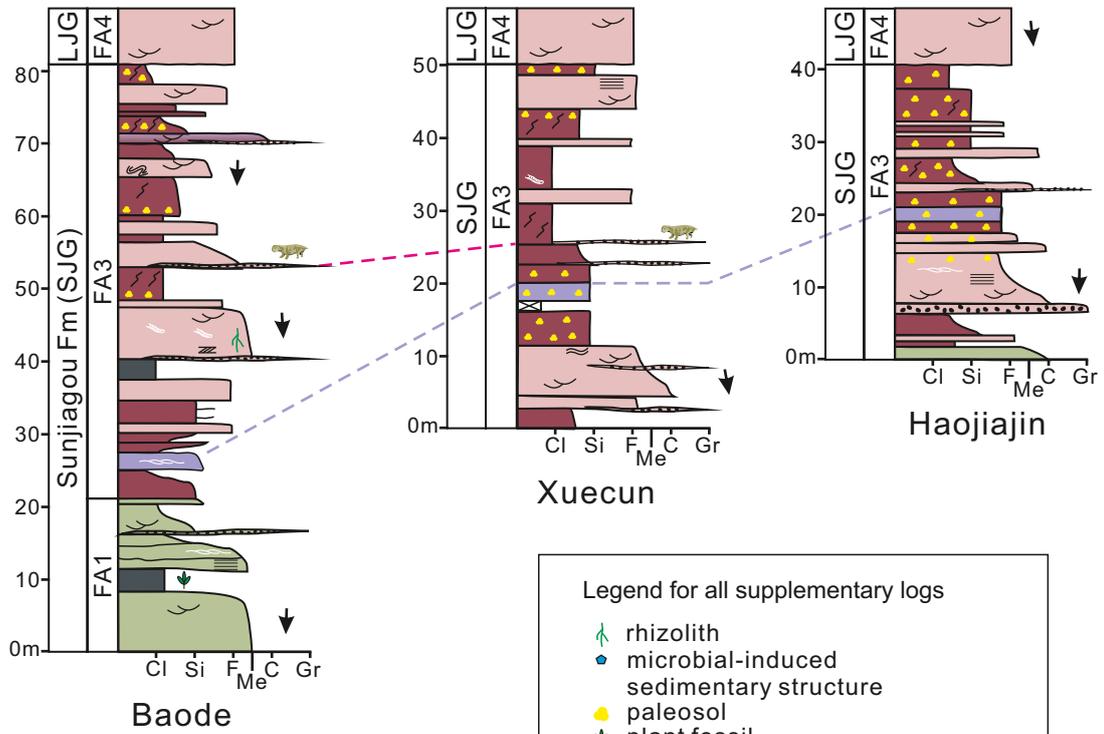
Figure S5. Channel sand bodies of FA3, Sunjiagou Formation. Arrows point the channels. (A) and (B) Xuecun section, Shanxi Province. (C) and (D) Baoliang section, Shanxi Province. (E) and (F) Haojiajin section. (G) Shichuanhe section, Shaanxi Province. (H) Dayulin section. A person in the circle provides scale in C and F.

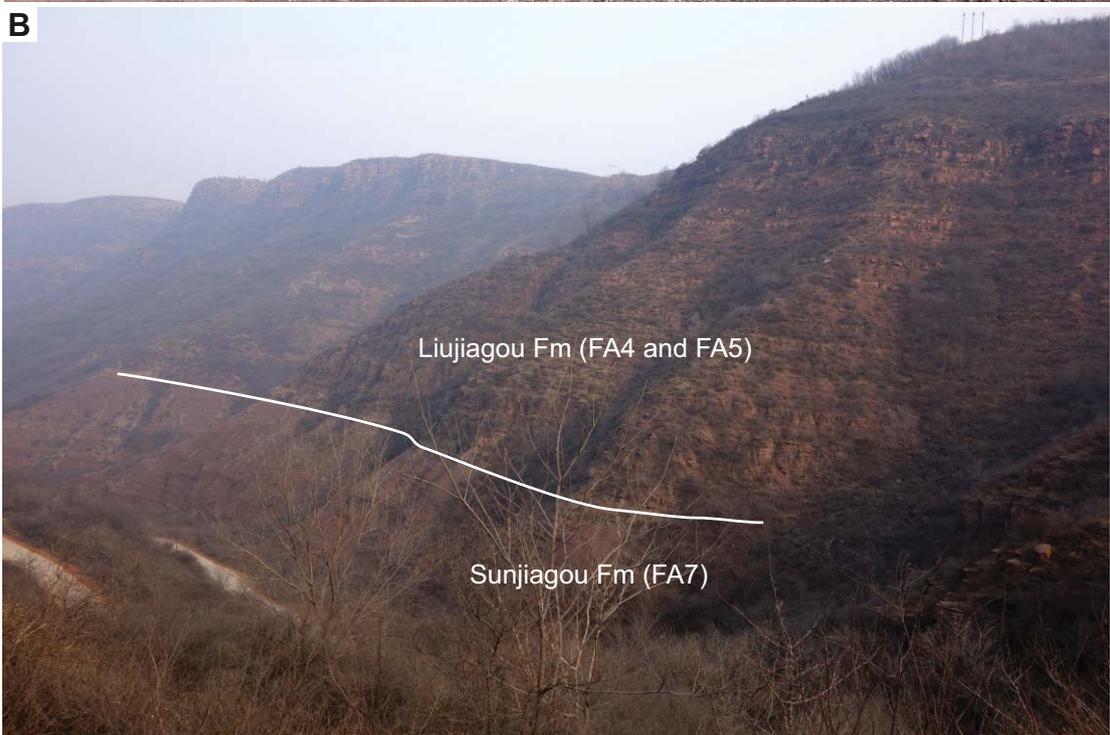
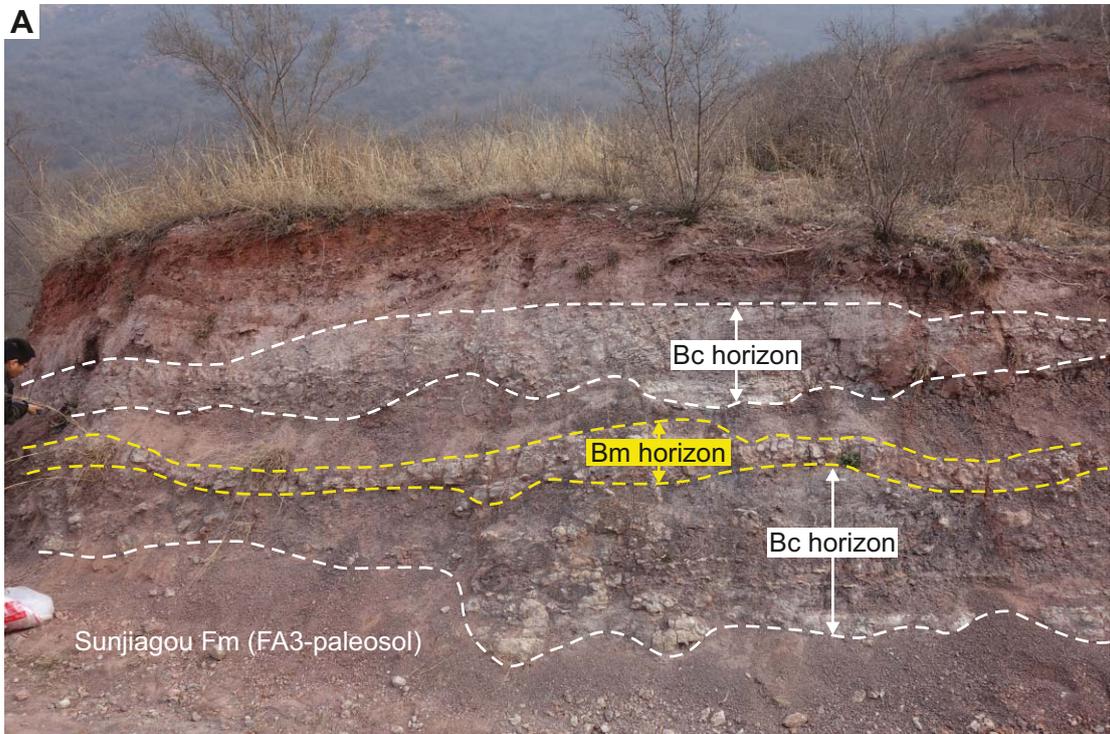
Figure S6. Field photos of Qishuihe section, Shaanxi Province. (A) FA3: Sandstone body in the lower Sunjiagou Formation. (B) FA3: red mud-siltstone with horizons of calcareous nodules. (C) FA7: Thin sandstone and mudstone alternations in the upper Sunjiagou Formation. (D) FA4: Multi-storey sandstone beds with sharp bases in the base of the Liujiagou Formation.

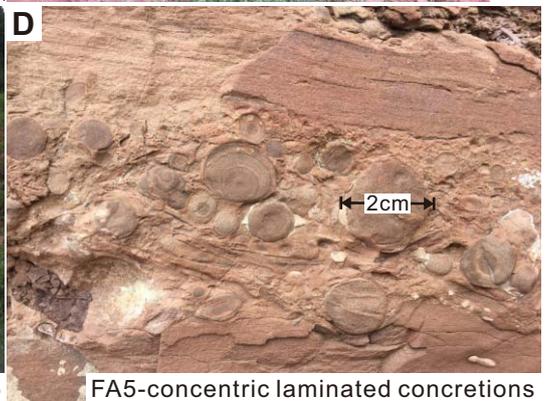
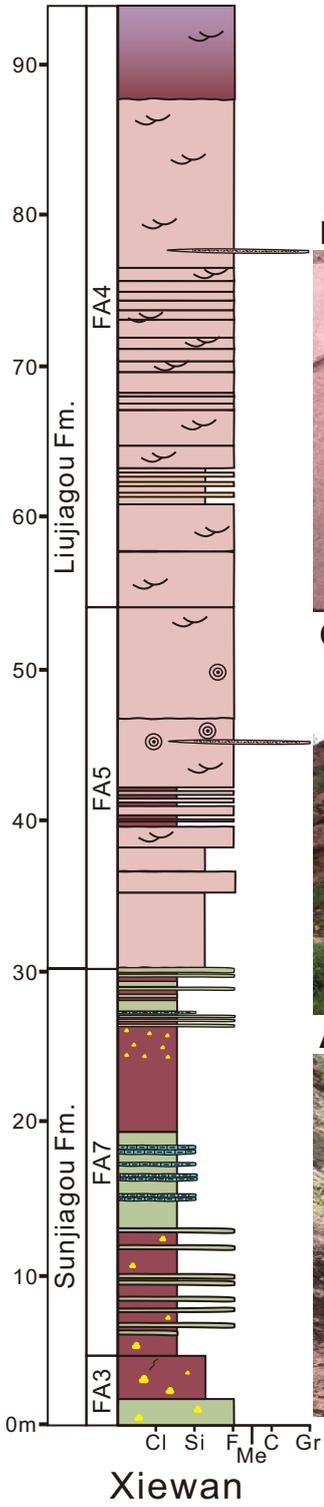
Figure S7. Log and field photographs of FA5, Liujiagou Formation, Yuntouling section, Yuzhou City, Henan Province. (A) Sandstone bed erosively overlain by a conglomerate bed composed of oncolite-like clasts which are reworked sandstones concretions (cf. Ji et. al., 2021). (B) Sandstone with in situ concretion, showing concentric laminae, adjacent to the pen. Sandstone laminae show low amplitude hummocky cross stratification. (C) Bedding plane view of intraformational conglomerate bed. (D) Low amplitude wave-ripples in bedding plane view.

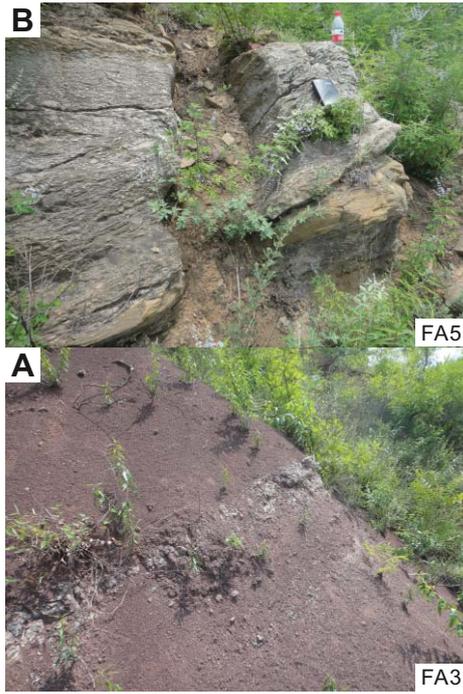
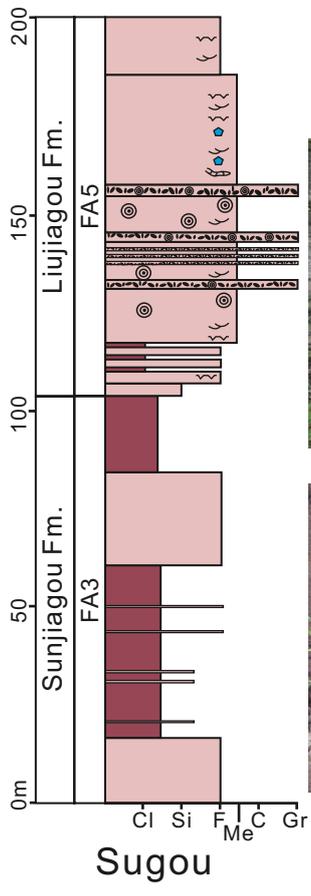
Table S1. Paleosol horizon terms used in this study

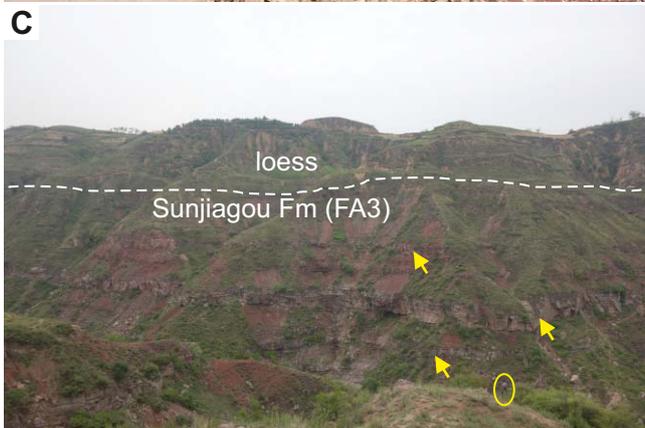
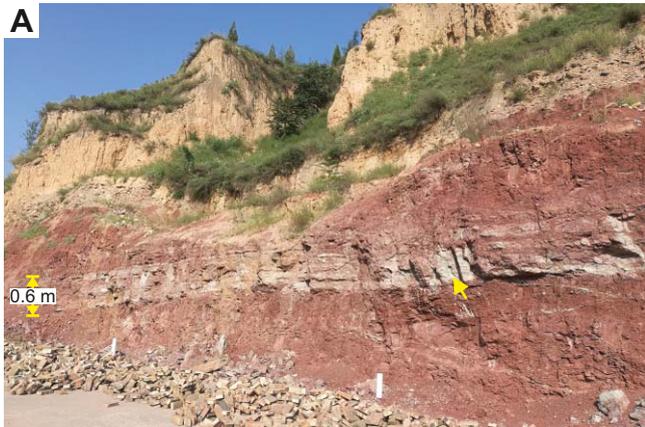
Table S2. Channel dimensions of FA2.



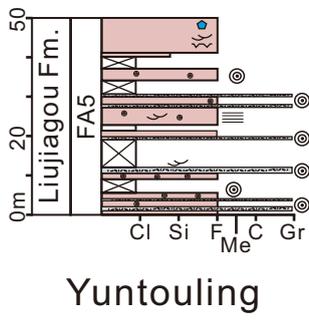












Supplementary Table S1. Paleosol horizon terms used in this study

Category		Description
Master Horizons	O	Surface accumulation of organic materials (peat, lignite, coal), overlying clayey or sandy part of the soil. We didn't find this horizon in our sections.
	A	Roots are common and a mixture of organic and mineral matter, such as abundant plants fragments. Forms the surface where is lacking O horizon.
	B	Beneath the A horizon and enriched with clayey, sesquioxidic, organic matter or weathered than other horizons. The color of this horizon is darker than others. This horizon always shows ped structures.
	C	Subsurface horizon with slightly more weathered than underlying fresh bedrock and lacks properties of other horizons. But it shows mild mineral oxidation.
Gradations between master horizons	AB	Horizon with typical characteristics of both A and B horizons but shows more A horizon elements.
Subordinate descriptors	c	Common to many moderate to large calcareous nodules or concretions
	g	A horizon with strong gleying characteristic which was usually influenced by high table water or intense precipitations. For example, pyrite and siderite nodules and green mottles. Accumulation of carbonates but less than "c". less calcareous nodules and always smaller (< 1 cm). Sometimes it contains fabric carbonate in reaction to acid but never shows any calcareous nodules.
	k	Slickenside
	w	Mild pedogenesis, only shows colored or structural B horizon.
	m	Shows more characteristics of strong cementation or induration, for example, the calcareous nodules generated to a stable carbonate layer and avoidance by root traces in adjacent horizons.

Note: this table is based on Retallack (1988)

Table S2. Channel dimensions of FA2

Location	Single channel thickness (m)	Channel package thickness (m)	Channel width (m)	Thickness/wid th ratio	Flow direction	Channel orientation with respect to current flow.	Figure reference
Shanxi-Liulin (Baoliang)	2-3	8	>200	<0.04	NW (350°)	Orthogonal	Sfig. 5C
	3	3	>50 (Partly exposed)	<0.06	N (1°)	Oblique cross section	
	0.5	0.5	>10 (Partly exposed)	<0.05	N	Oblique cross section	
	1.2	1.2	>10 (Partly exposed)	<0.12	NW	Oblique cross section	Sfig. 5D
	4	10	>100	<0.04	N	Orthogonal	
	1-2	3-6	>50	<0.04	N	Orthogonal	
	5	5	~60	0.08	NE	Orthogonal	
	1	2-6	>30 (Partly exposed)	<0.03	N	Orthogonal	
3-6	~10	>200	<0.06	N	Orthogonal		
Shanxi-Liulin (Haojiajin)	2-3	2-3	>30 (Partly exposed)	<0.1	NW	Orthogonal	Sfig. 5E and F
	3-4	8	>100	<0.08	N	Orthogonal	
	1-2	1-2	~20	~0.1	NW	Orthogonal	
Shaaxi-Shichuanhe	1.2	1.2	>20 (Partly exposed)	<0.06	NE	Oblique cross section	Sfig. 5G
	0.5	0.5	>10 (Partly exposed)	<0.05	NE	Oblique cross section	
Henan-Dayulin	3	3	>30 (Partly exposed)	<0.1	SW	Oblique cross section	Sfig. 5H