

1 Supplementary data figures

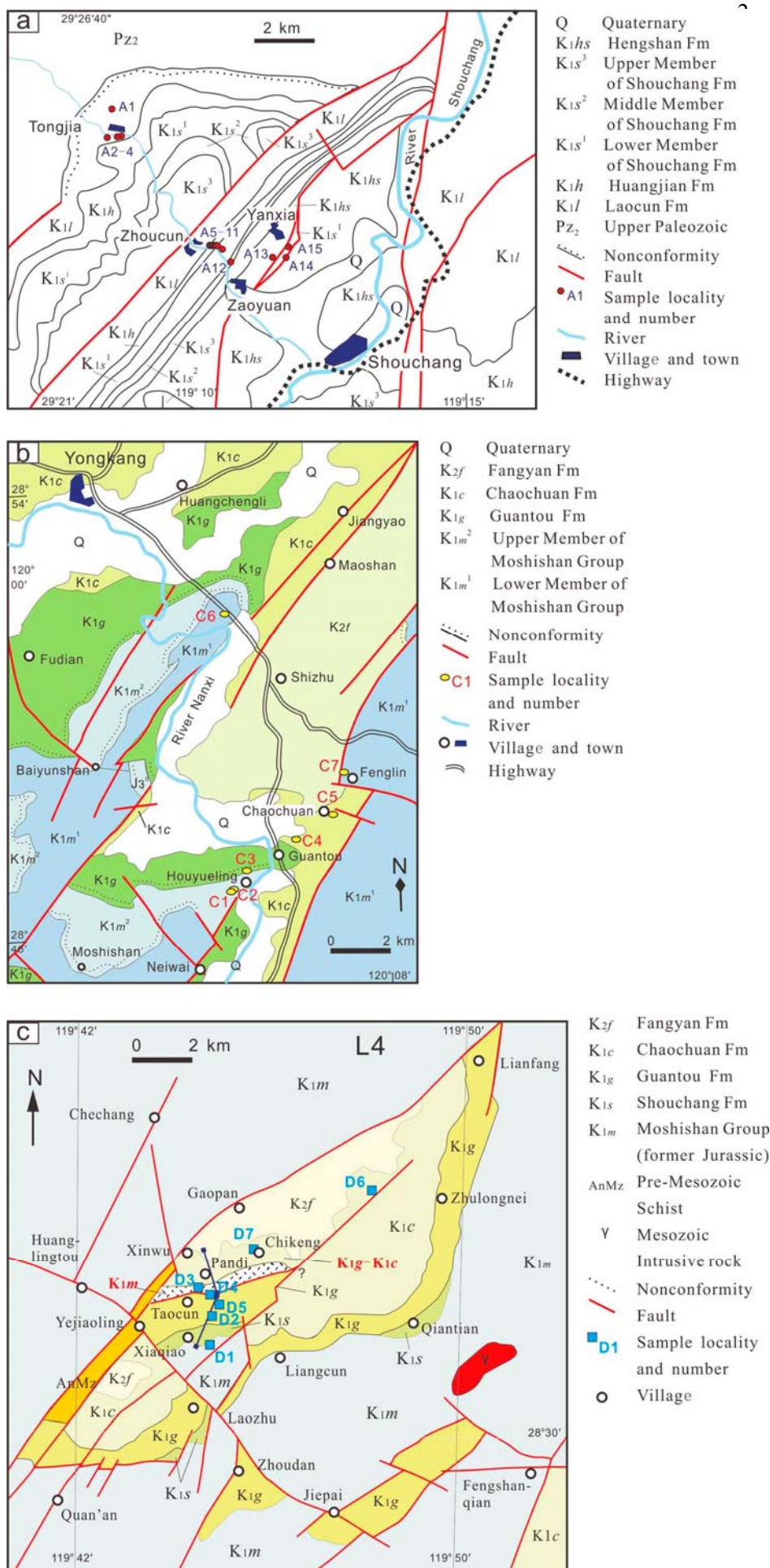


Figure S1 Selected geological sketches in western Zhejiang province, showing sample locations. a, geological sketch of Shouchang area (L1), Jiande Basin, modified from Jiang et al. (1993); b, geological sketch of Yongkang area (L3), Yongkang Basin, simplified from ZBG (1978); c, geological sketch of Laozhu area (L4), Lishui Basin, simplified from ZBG (1966). Details of sample are provided in Table S1. Geological sketch for L2 is not made as only two samples were taken from this section;

Cited references:

Jiang, W.S., Zhen, J.S., Li, L.T., and Xu, K.D.: Study of the Cretaceous in Zhejiang, China: Nanjing, Nanjing University Press, 1-42 (in Chinese with English summary), 1993.

ZBG (Bureau of Geology): 1:200,000 Geological Map of Lishui: People's Republic of China (in Chinese), 1 sheet, 1966.

ZBG: 1:200,000 Geological Map of Xianju: People's Republic of China (in Chinese), 1 sheet, 1978.

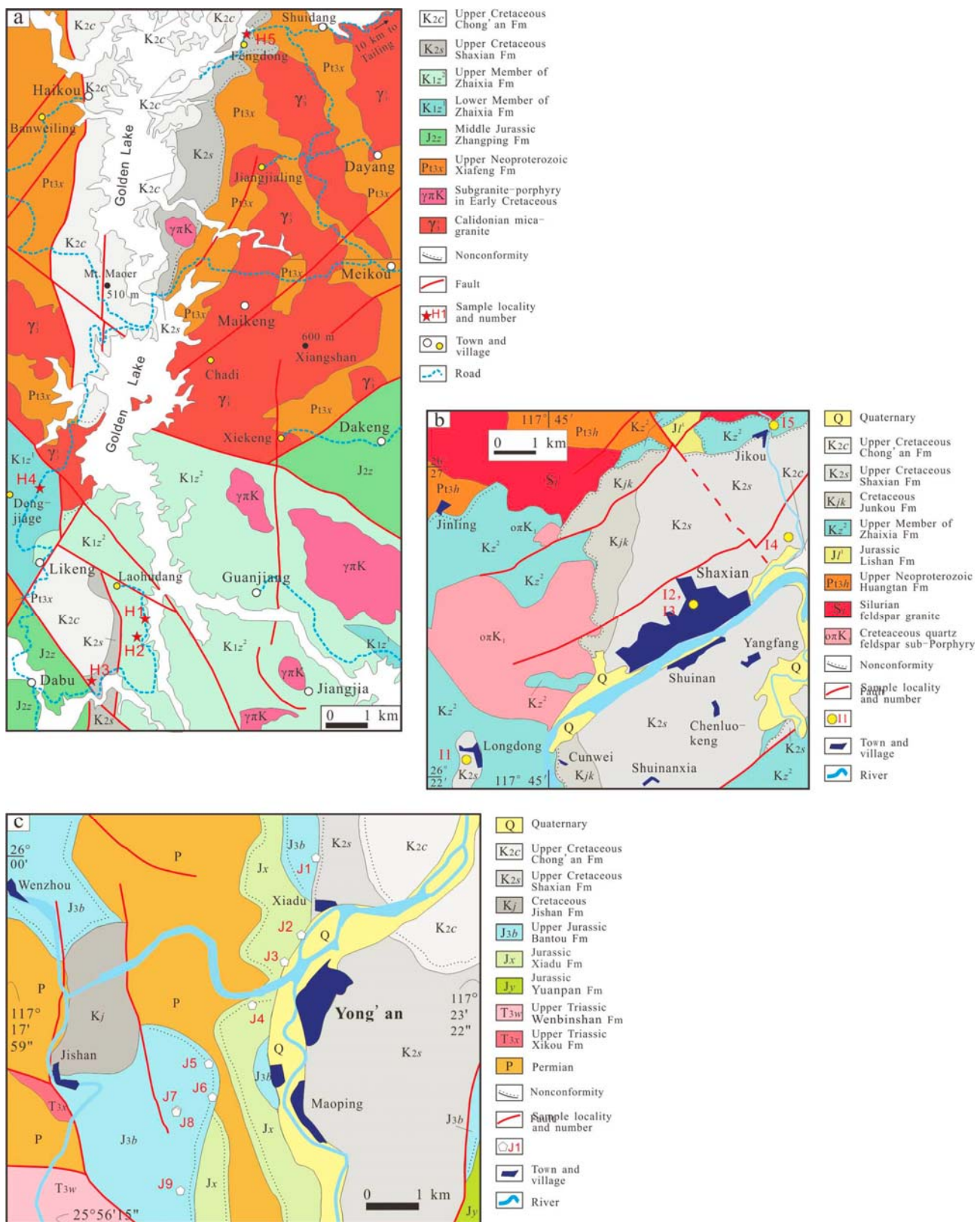


Figure S2 Selected geological sketches in northeastern Jiangxi province, showing sample locations. a, geological sketch of eastern Yanshan area (L5), Xinjiang Basin, modified from Wu and Guan (1994); b, geological sketch of southern Guixi area (L6), modified from JTRG (1982). Geological sketch for L7 is not made as only one sample was taken. Details of samples are provided in Table S1.

Cited references:

- JTRG (Team of Regional Geological Survey, Jiangxi Bureau of Geology and Mineral Ore): 1:200,000 Geological Map of Shangrao City: The People's Republic of China (in Chinese), 1 sheet, 1982.
- Wu, J.H., and Guan, T.Y.: A new knowledge of the "Shixi Formation" in the Yanshan and Shangrao areas, Jiangxi, J. Stratigr., 18(1), 57-63 (in Chinese with English abstract), 1994.

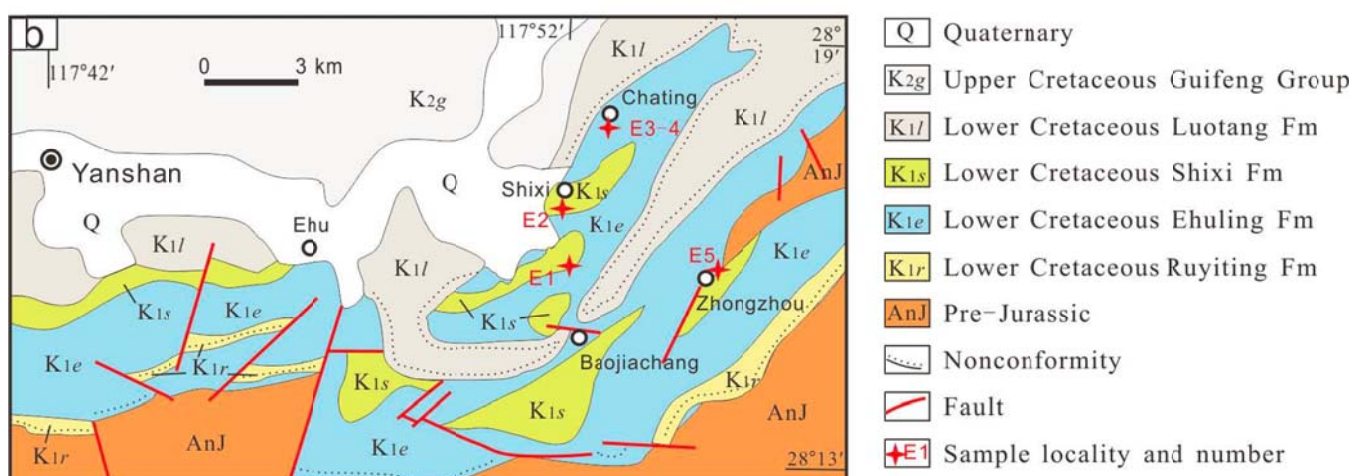
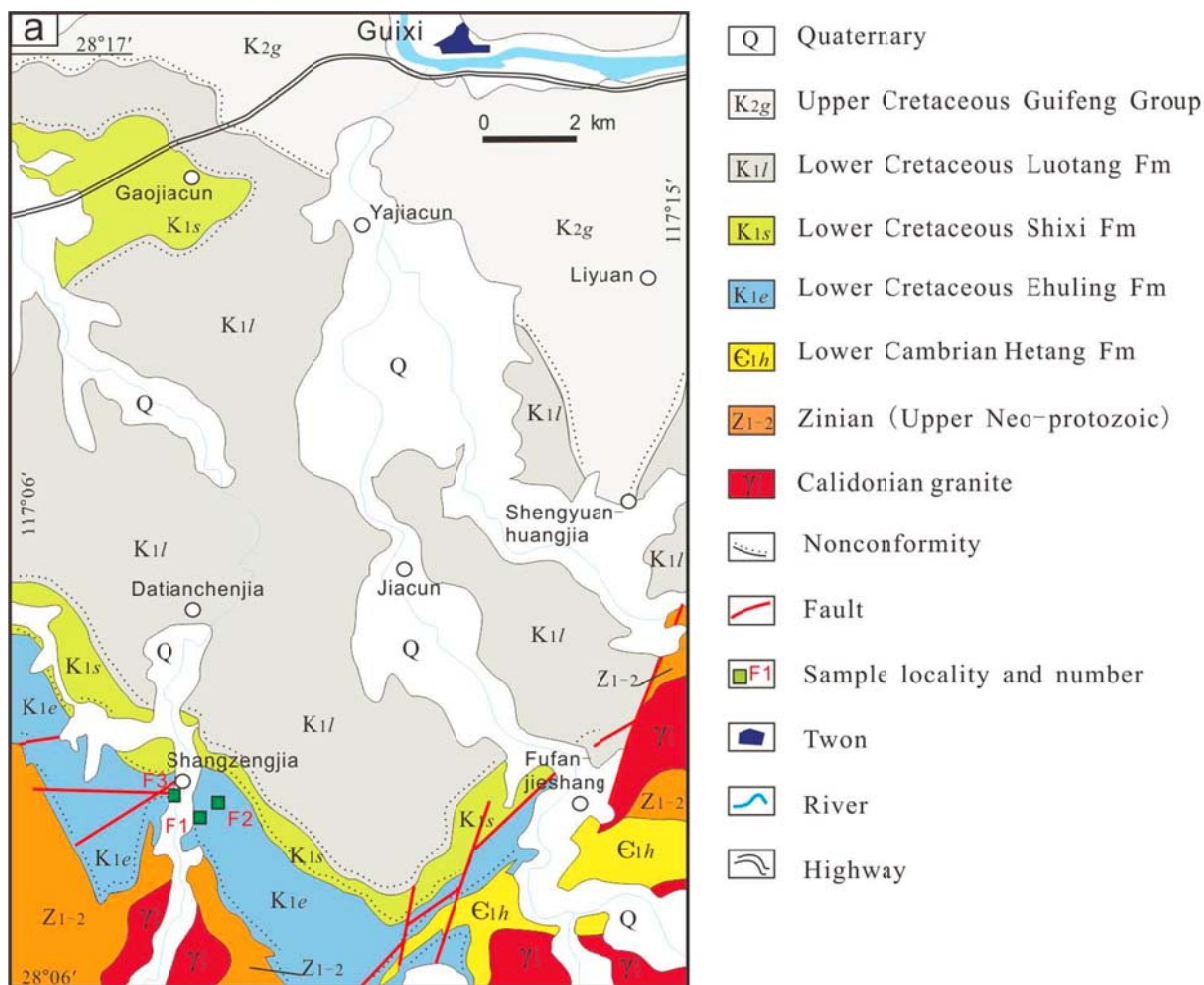


Figure S3 Selected geological sketches in western Fujian province, showing sample locations. a, geological sketch of southwestern Golden Lake area of Taining (L8), intercepted from FGS (2004); b, geological sketch of Shaxian area (L9), intercepted from FTRGS (1997); c, geological sketch of Yong'an (L10), intercepted from FGS (2005). Details of sample refer to Table S1.

Cited references:

- FGS (Fujian Geological Survey).: Geological Map of the Taining Geopark (in Chinese): 1:10,000, 1 sheet, 2004.
- FGS.: 1:10,000 Geological Map of the Yong'an National Geopark (in Chinese), 2005.
- FTRGS (Team of Regional Geological Survey, Fujian Bureau of Geology and Mineral Ore).: Geological Map of Shaxian: People's Republic of China (in Chinese), 1:50,000, 1 sheet, 1997.

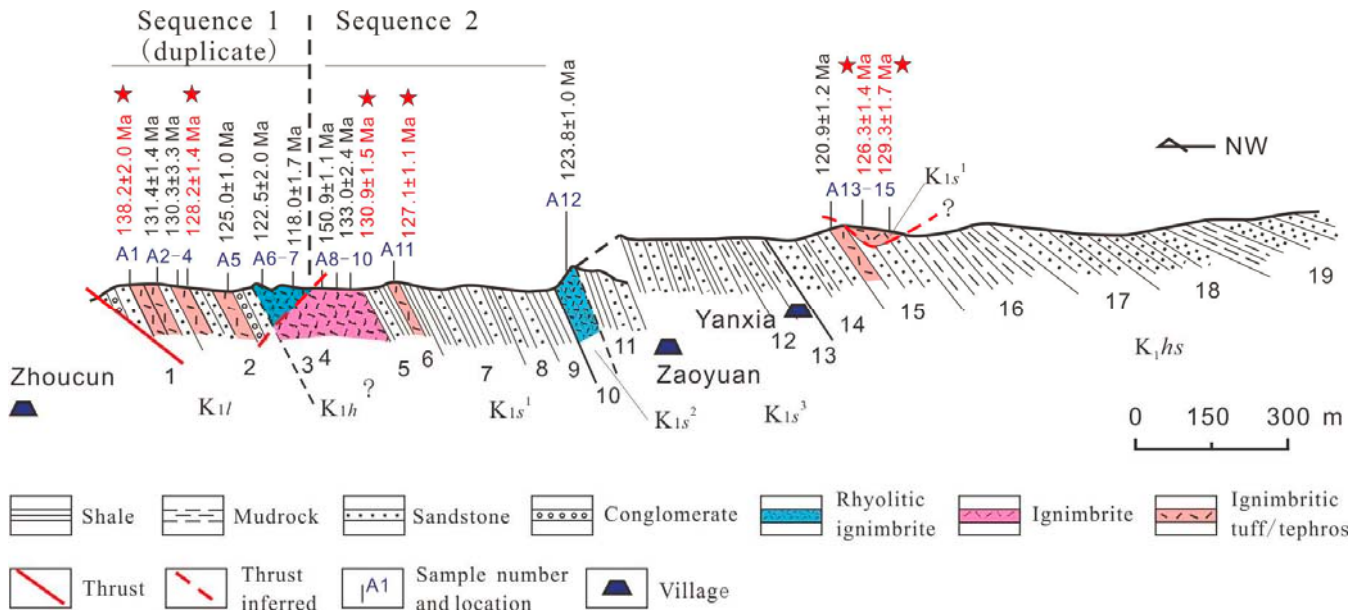


Figure S4 Profile of the type Zhoucun-Yanxia section (L1) in Shouchang town of Jiande, western Zhejiang with sampling horizons. Strata partly changed from the profile by Jiang et al. (1993). Star-marked samples are from Li et al. (2019).

Note, Sequence 1 is the duplicate of the lower Sequence 2. K_1l , Lower Cretaceous Laocun Fm; K_1h , Lower Cretaceous Huangjian Fm; K_{1s}^1 , Lower Member of Shouchang Fm; K_{1s}^2 , Middle Member of Shouchang Fm; K_{1s}^3 , Upper Member of Shouchang Fm; K_1hs , Lower Cretaceous Hengshan Fm.

Cited references:

Jiang, W.S., Zhen, J.S., Li, L.T., and Xu, K.D.: Study of the Cretaceous in Zhejiang, China, Nanjing, Nanjing University Press, 1-42 (in Chinese with English summary), 1993.

Li, X.H., Zhang, C.K., Li, Y.X., Wang, Y., and Liu, L.: Refined chronostratigraphy of the late Mesozoic terrestrial strata in South China and its tectono-stratigraphic evolution, *Gond. Res.*, 66, 143-167, 2019.

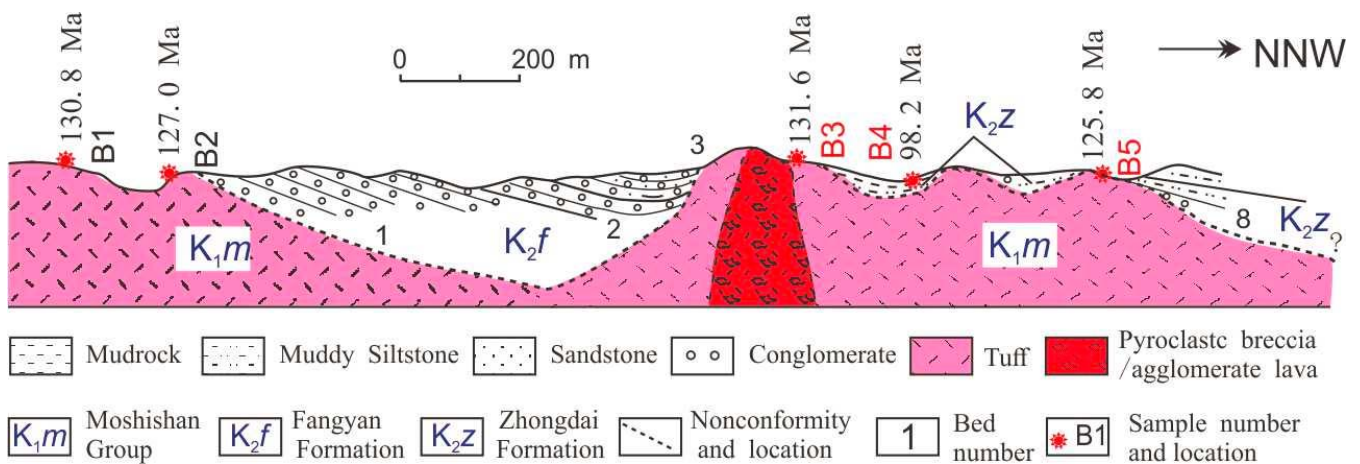


Figure S5 Profile of the type Zhongdai section (L2) of Jinhua, western Zhejiang, showing sampling locations. Stratigraphical reinterpretation and samples B1, B3, and B5 are from Li et al. (2019), B2 and B4 from this study. Symbol of lithostratigraphic units refer to figure S4.

Cited references:

Li, X.H., Zhang, C.K., Li, Y.X., Wang, Y., and Liu, L.: Refined chronostratigraphy of the late Mesozoic terrestrial strata in South China and its tectono-stratigraphic evolution, *Gond. Res.*, 66, 143-167, 2019.

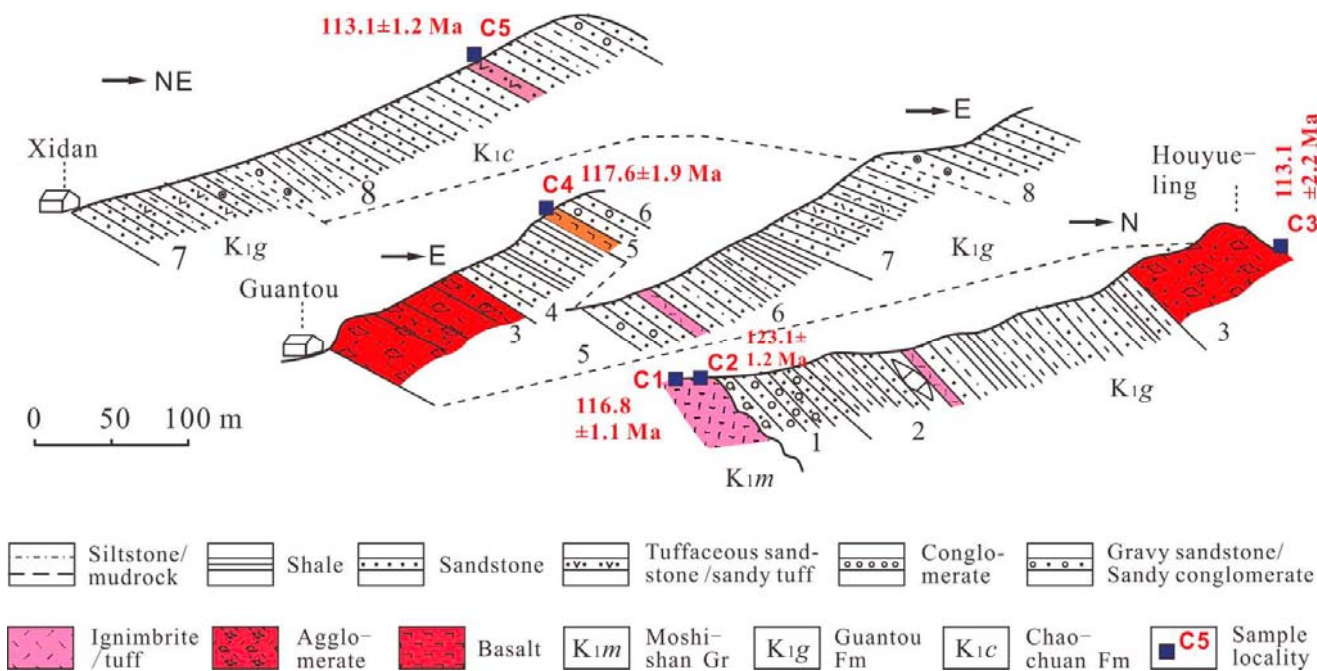


Figure S6 Profile and sampling horizons of the type Houyueling-Guantou section (L3) in Yongkang Basin, western Zhejiang. Profile mainly selected from Jiang et al. (1993).

Cited references:

Jiang, W.S., Zhen, J.S., Li, L.T., and Xu, K.D.: Study of the Cretaceous in Zhejiang, China, Nanjing, Nanjing University Press, 1-42 (in Chinese with English summary), 1993.

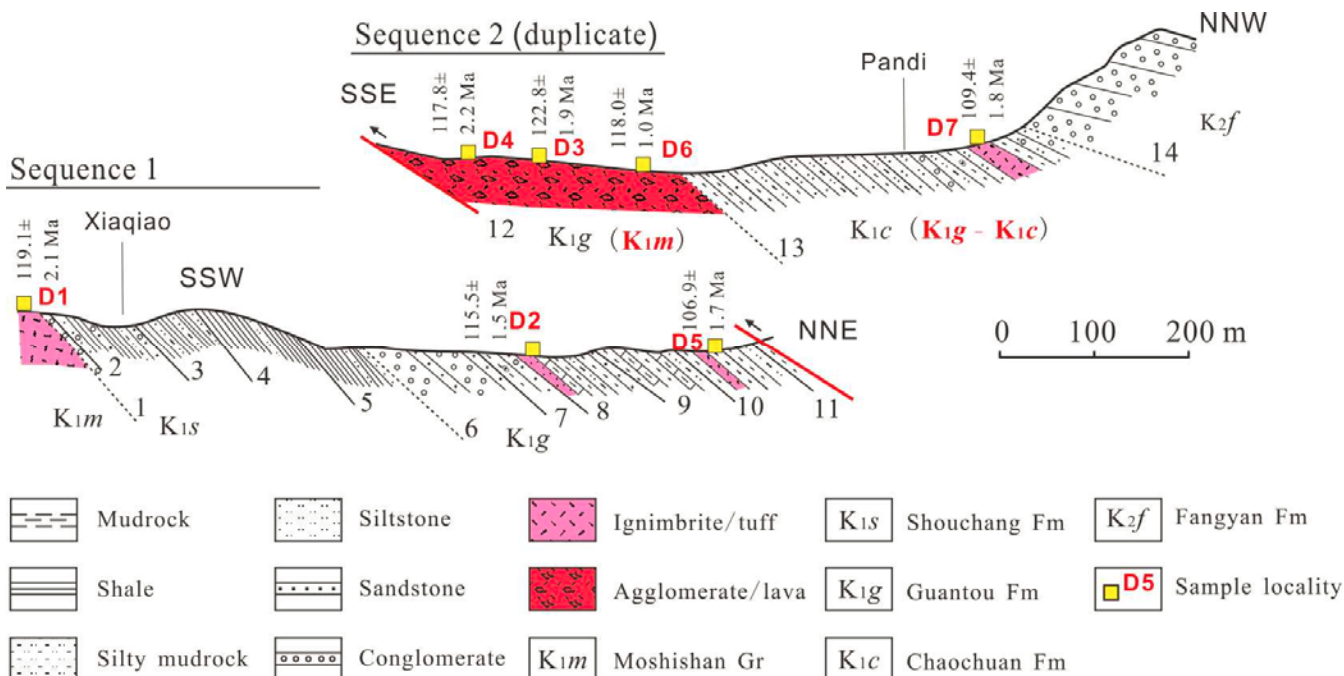


Figure S7 Profile and sample locations of the type Laozhu section (L4) of Lishui, western Zhejiang. Stratigraphical reinterpretation is from Li et al. (2019).

Cited references:

Li, X.H., Zhang, C.K., Li, Y.X., Wang, Y., and Liu, L.: Refined chronostratigraphy of the late Mesozoic terrestrial strata in South China and its tectono-stratigraphic evolution, Gond. Res., 66, 143-167, 2019.

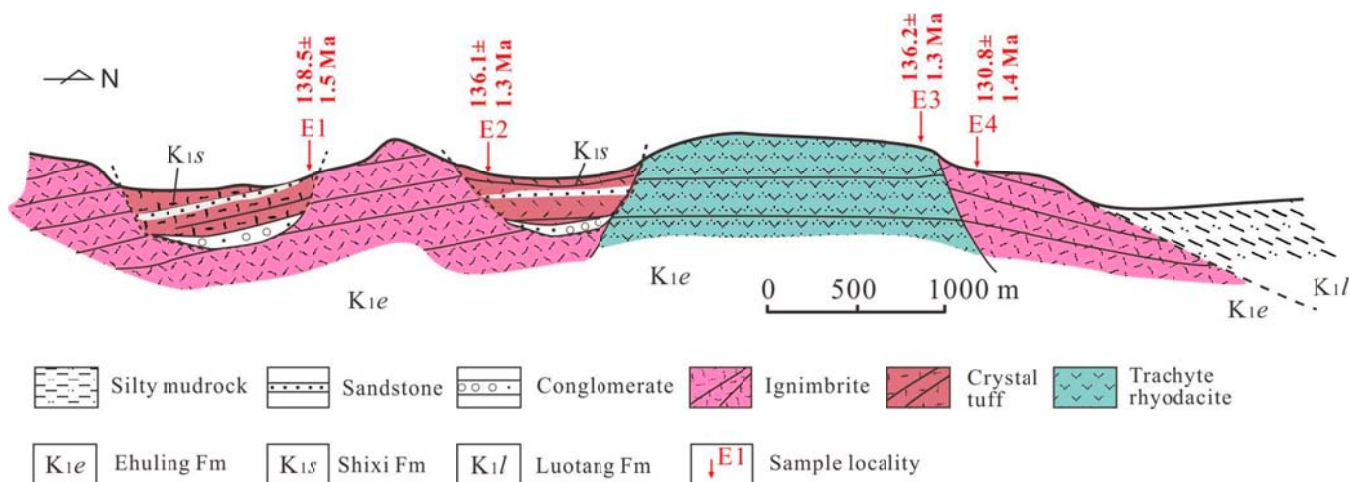


Figure S8 Profile and sample locations of the type Shixi section (L5) of Yanshan, eastern Jiangxi.

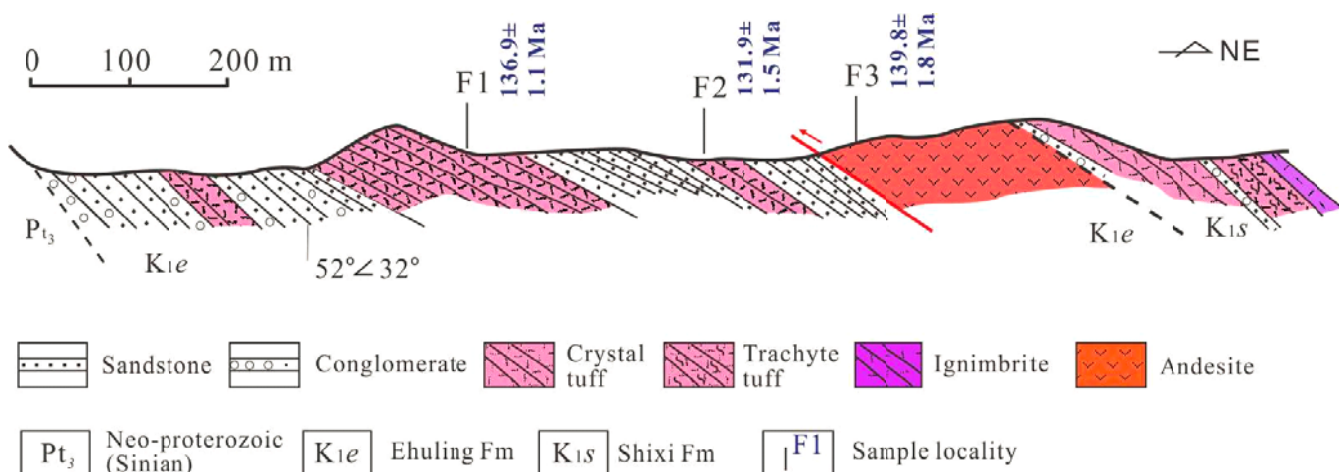


Figure S9 Profile and sample locations of the Shangzengjia section (L6) of Guoxi, eastern Jiangxi. Profile modified from Wu and Wu (2013).

Cited references:

Wu, J., and Wu, J.H.: Shuangfengling formation in Jiangxi and its geological age, J East China Inst. Techn., 36, 17-24 (in Chinese with English abstract), 2013.

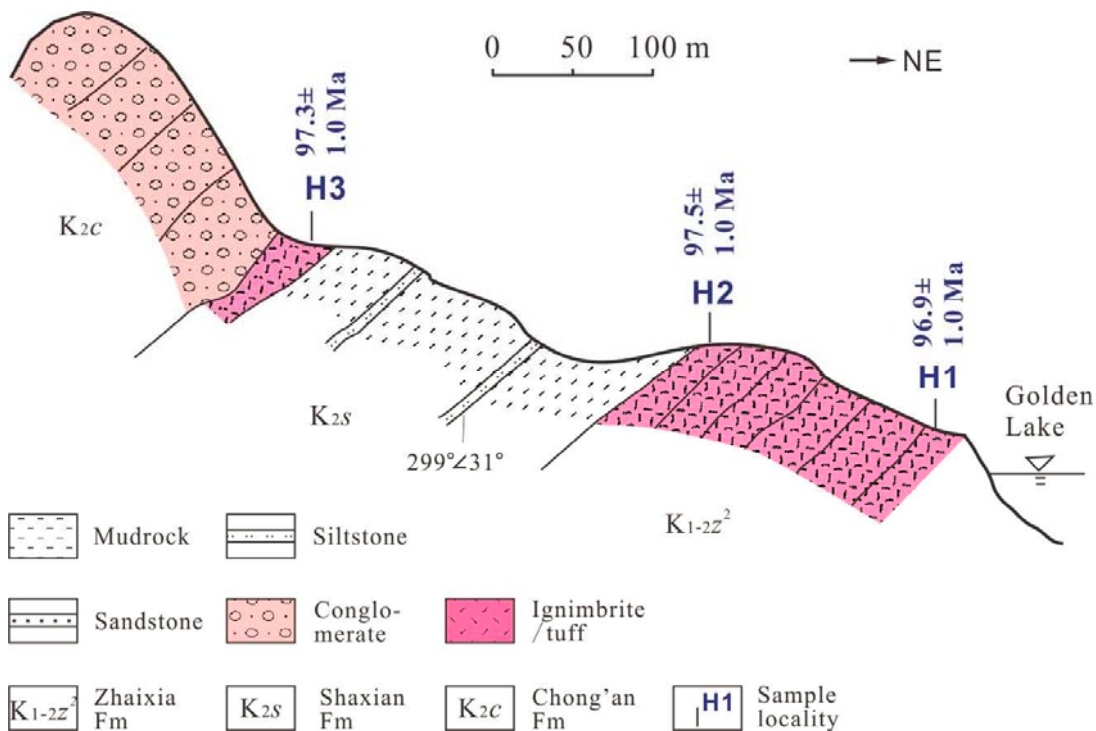


Figure S10 Profile and sample locations of the Dabu section (L8) of Taining, western Fujian.

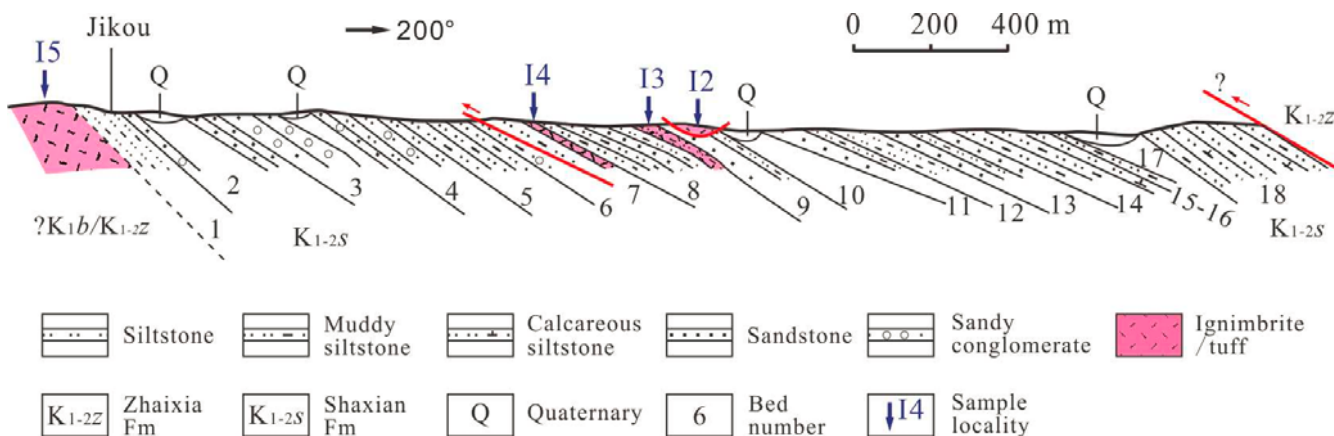


Figure S11 Profile and sample locations of the Shaxian section (L9), western Fujian. Profile modified from FTRGS (1997).

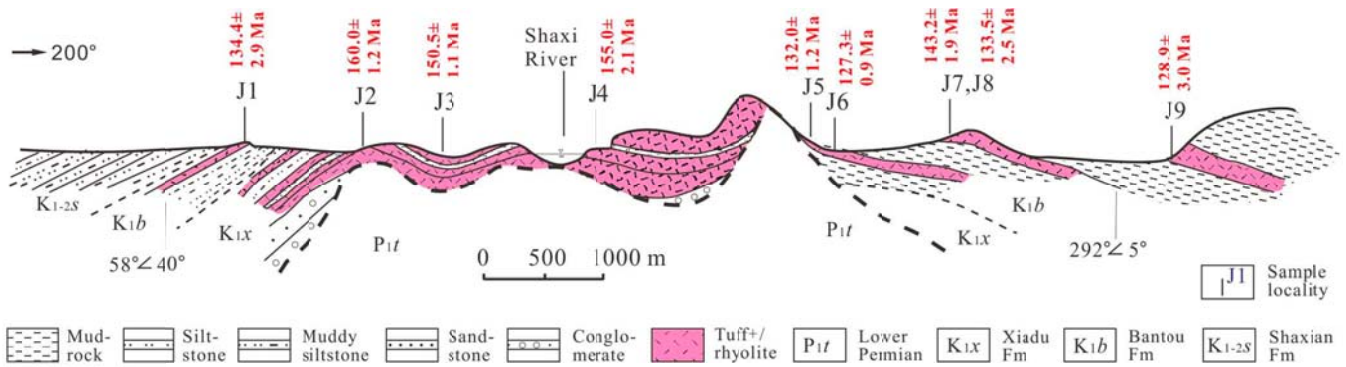


Figure S12 Profile and sample locations of the Yong'an section (L10), western Fujian.

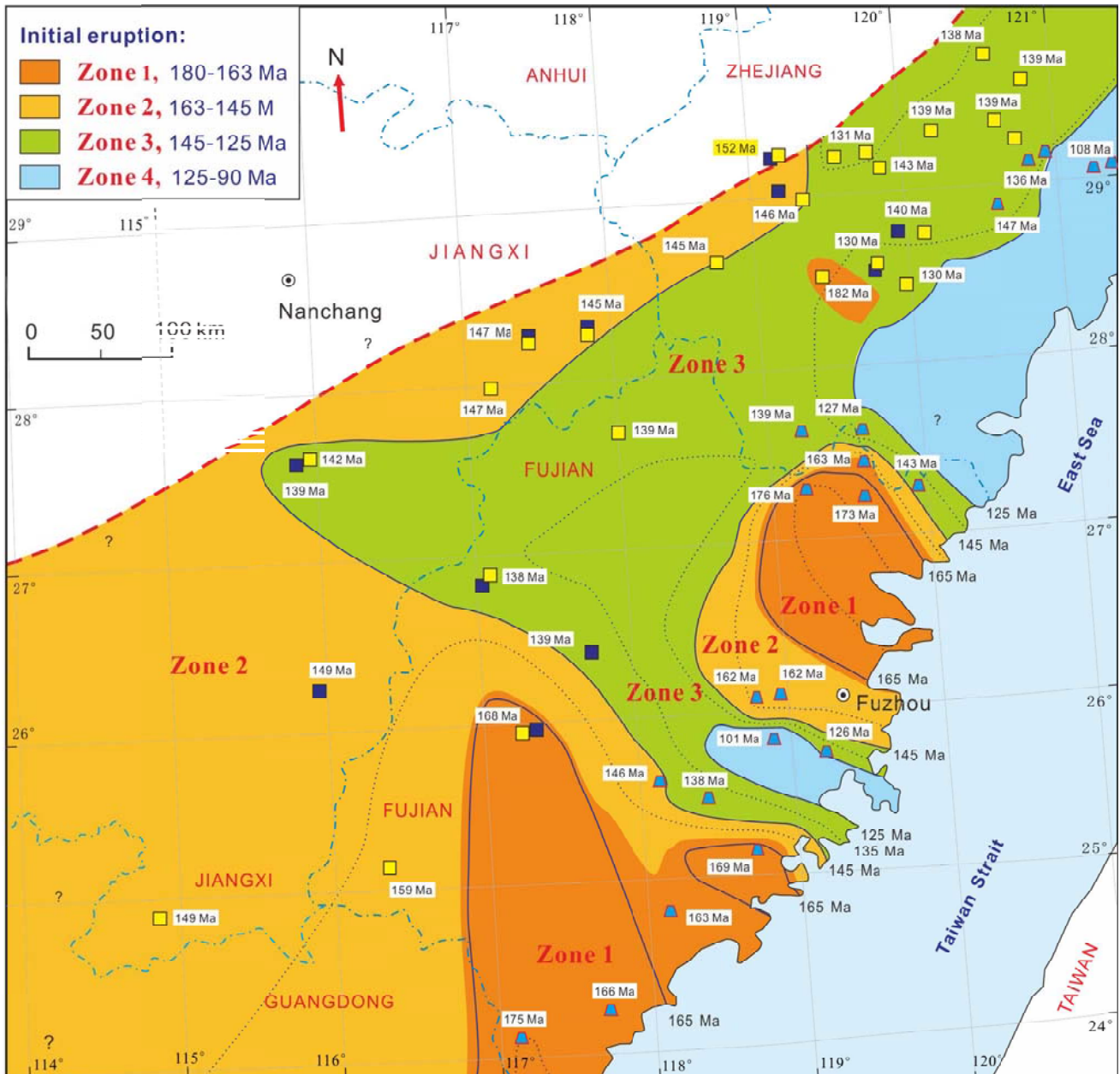


Figure S13 Sketch map showing extrusive zonations of the late Mesozoic volcanism by initial ages in SE China. Geographical map modified from Shu et al. (2009). Four zonations Zone 1, 2, 3, and 4 are recognized. Zone 1, 2, 3, and 4 are in the order of the initial eruption age 180-163 Ma, 163-145 Ma, 145-125 Ma, and 125-90 Ma, separately. Ages within white rectangle are the initial eruption age at a location or in a basin/region. Names of the faults, color squares and trapezoids refer to Fig. 1.

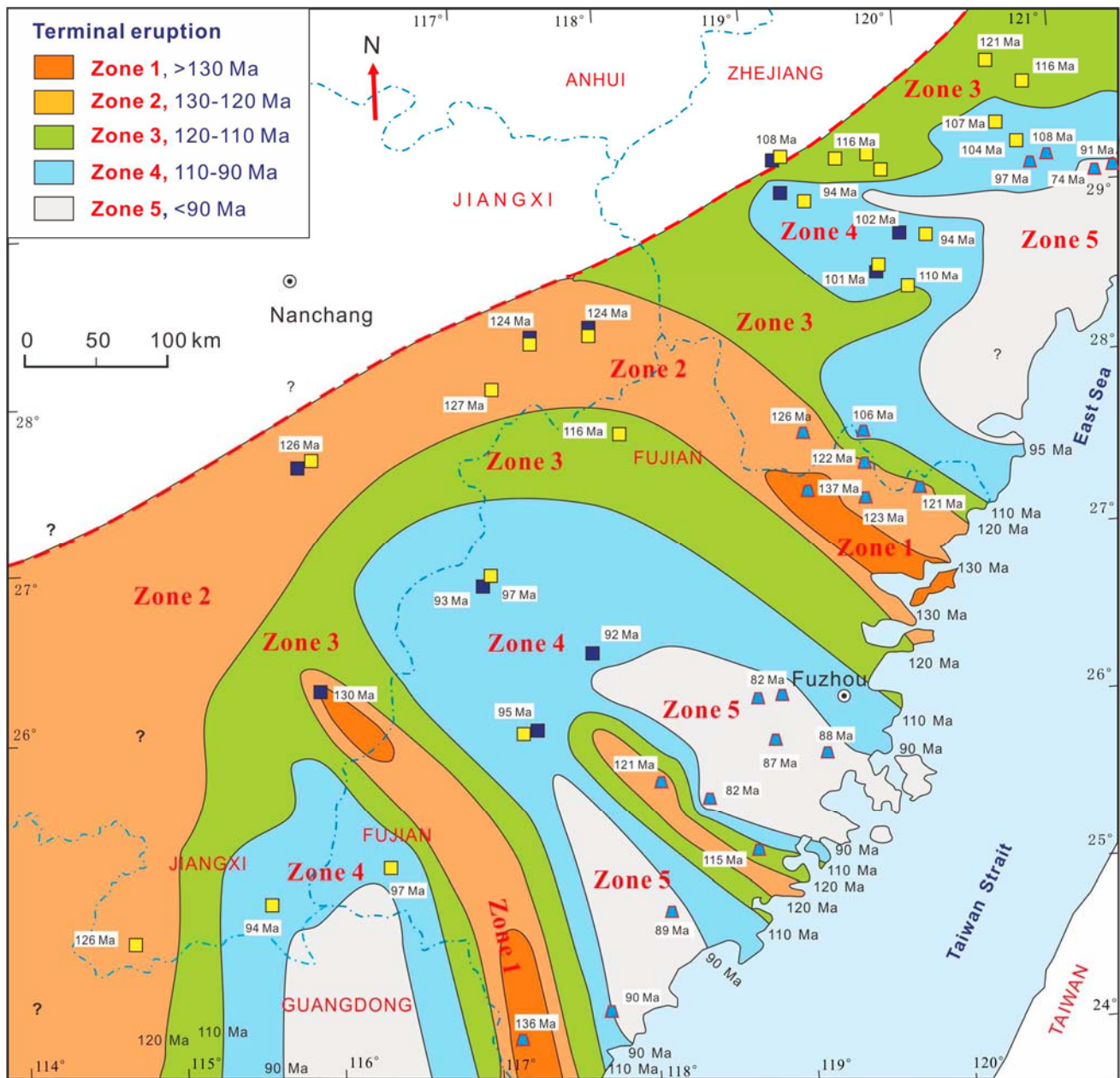


Figure S14 Sketch map showing extrusive zonation of the late Mesozoic volcanism by peak (extensive) ages in SE China. Geographical map modified from Shu et al. (2009). Five zonation Zone 1, 2, 3, 4, and 5 are recognized. Name of the faults refers to Fig. 1. Zone 1, 2, 3, 4, and 5 are in the order of the initial eruption age >130 Ma, 130-120 Ma, 120-110 Ma, 110-90 Ma, and <90 Ma, separately. Ages within white rectangles are the peak eruption age at a location or in a basin/region. Names of the faults, color squares and trapezoids refer to Fig. 1.