

China Bio-Lith datapack for TS-Creator

Converted to GTS2012 age model; Dec'12

The bulk of this suite was compiled during an extended visit to the Geobiodiversity Database group; Nanjing, China (2010).
 Main published sources: Biostratigraphy of China (Zhang Wentang et al., 2003)
 Yang Zunyi et al., 1986. The Geology of China. Oxford Monographs on Geology and Geophysics 3. Oxford University Press.
 Xueping P. Ma et al, 2009, The Devonian System of China

Main set	Second level	Third level	Fourth level	Source
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China Biostratigraphy

China Regional Stages (Sinian-Permian)

- Pre-Cambrian Periods (China)
- Sub-Period (China, Carb.)
- Epoch (China)
- Sub-Epoch (China, Perm.)
- Age/Stage (China)
- Stage abbrev. (China)
- Epoch (N. China)
- Age/Stage (N. China)

Main Macrofossil Groups (Paleozoic-Triassic; China)

modified from Zhang et al. (2003); Cambrian modified from Peng and Babcock (2008, and GTS2012), Permian modified by Shuzhong Shen (pers. comm., 2010)

- Ammonoids; Cephalopods (China)
 - Ammonoids (S. China or general)
 - Ammonoids (NW China; Tarim)
 - Ammonoids (Himalaya)
 - Cephalopods (Camb-Silur)
 - Cephalopods (N. China; Camb)
- Conodonts (China)
 - Conodonts (S. China or general)
 - Conodont subzone (late-middle Devon.; China)
 - Conodonts (NW China, Tarim; Perm-Tri, Cambrian)
 - Conodonts (NE China; Late Tri.)
 - Conodonts (Himalaya; Tri.)
- Graptolites (China)
 - Graptolites (S. China or general)
- Trilobites (China)
 - Trilobites (S. China or general; Polymerids of Cambrian = benthic types)
 - Trilobites (Camb, S. China; Agnostids = pelagic types)
 - Trilobites (Devon., and Camb. (Polymerid = benthic types); N. China)
- Small Shelly Fossils (Cambrian)
 - Small Shelly Fossils (Cambrian, S. China)

Other Marine Invertebrate Groups (Paleozoic-Triassic; China)

modified from Zhang et al. (2003); Cambrian modified from Peng and Babcock (2008, and GTS2012), Permian modified by Shuzhong Shen (pers. comm., 2010)

- Metazoans (Sinian)
 - Metazoans (S.China)
- Trace Fossils (Sinian)
 - Trace Fossils (Sinian, S. China)
 - Trace Fossils (Sinian, Tarim, NW China)
- Brachiopods (Ordov-Tri; China)
 - Brachiopods (S. China or general)
 - Brachiopods (Silurian megazones)
 - Brachiopods (Devon; Perm-Tri; NW China (Tarim))
 - Brachiopods (Triassic, Himalayas (Tibet))
- Bivalves (Devon.; Tri.)
 - Bivalves (S. China or general)
 - Bivalves (Devon; Perm-Tri; NW China (Tarim))
 - Bivalves (Triassic; NE China)
 - Bivalves (Triassic; Himalaya)
- Corals (Silur.-Tri.)
 - Rugose (Silur-Perm; S. China or general) and Scleractina Corals (Trias., Himalaya)
 - Rugose (Devon., Perm.; N.China, Tarim, respectively)
 - Tabulate Corals (Silur., China)
- Dacryocanarids (Tentaculids) (Devon.; China)
 - Dacryocanarids (Tentaculids) (Devon.)
- Ostracods (Devon.; China)
 - Ostracods (Devon.)

Foraminifers and Microfossils (Paleozoic-Triassic; China)

modified from Zhang et al. (2003); Cambrian modified from Peng and Babcock (2008, and GTS2012), Permian modified by Shuzhong Shen (pers. comm., 2010)

- Benthic Foraminifers (China)
 - Benthic Foraminifers (S. China or general)
 - Benthic Foraminifers (Tri., N.China, Tarim)
 - Benthic Foraminifers (Tri., Himalayas)
- Fusulinids (China)
 - Fusulinids (S. China or general)
 - Fusulinids (Tarim; Permian)
- Radiolarians (China)
 - Radiolarians (Ordov.; S. China or general)
 - Radiolarians (NE China; Triassic)

Palynology and Non-Marine (Paleozoic-Triassic; China)

modified from Zhang et al. (2003); Cambrian modified from Peng and Babcock (2008, and in press 2011)

- Acritarchs (Sinian; China)
 - Acritarchs (only Sinian; Devon.)
- Multi-cellular Algae (Sinian, Ordov. China)
 - Multi-cellular Algae (Sinian)
- Chitinozoans (China)
 - Chitinozoans (Ord.-Silur.; China)
- Miospores (China)
 - Miospores (Dev-Carb; and Silurian trilete spores)
 - Cryptospores (Silur., China)
- Plants (China)
 - Plants (Dev., plus Silurian tubular types; China)
 - Plant fragments (Silurian epidermoid types; China)

NOTE: -- Most are only to Stage level; but confusing drafting in upper part of each zone on diagram.

Tarim Basin main reference sections (Sinian to Quaternary)

- Kashi (Cenoz-Jur) / Kalpin (Perm-Camb; Platform)
- Baicheng-Kuqa (Ceno-Tri) / Kuruktag (Dev-Camb; Slope)

Tarim sections (Zhou and Chen; 1992)
Tarim sections (Zhou and Chen; 1992)

Chinese Litho-Stratigraphy (mainly Yang'86)**W China****NW China [Xinjiang]**

- Junggar Basin
 - Western Junggar (Xar Burd Mtn; Devon)
 - Junggar [Turpan (Perm); Karamay (Tri)]
 - East Junggar (Devon)
- Tianshan - Beishan belt
 - Tianshan (Boroxoro Mtns; Carb.)
 - Sharburtishan, North Tianshan (Silurian)
 - Tianshan-Hingan region (Boroxoro Mtns; Ordov.)
 - N. Tianshan (Camb.)
 - Beishan (Ganshu; Carb.)

Devon Section #1 of Ma et al (2009)
Permian section #5 and Triassic section #5 of Yang Zunyi et al. (1986)
Devon Section #2 of Ma et al (2009)
Beishan (Ganshu; Carb.)
Carboniferous section #4 of Yang Zunyi et al., 1986
Silurian column #5 (Sharburtishan, North Tianshan) of Yang Zunyi et al. (1986)
Ordovician column #7 (Boroxoro Mtn.; Hocheng, Gouzigou; Tianshan-Hingan region) of Yang Zunyi et al. (1986)
Cambrian column #8 (N. Tianshan part of Tianshan-Beishan) of Yang Zunyi et al (1986)
Carboniferous section #5 of Yang Zunyi et al., 1986

Tarim Basin

- Kashi (Cenoz-Cret.)
- NW China non-marine (Jur.)
- Kuche (Trias.)
- Kalpin (Perm.)

Cret section #7 of Yang Zunyi et al. (1986)
Triassic section #6 of Yang Zunyi et al. (1986)
Permian section #6 of Yang Zunyi et al. (1986)

Central western fold belts

- Qilian - North Qinling - Dabie Mtns belt
 - E. Gansu (Cret.)
 - S. Qilian (Carb-Tri)
 - E. Qinlin (Devon-Carb)

Carb section #7 (S. Qilianshan), Perm section #7 (S. Qilian) and Triassic section #7 (W. Sichuan) of Yang Zunyi et al. (1986)
Devon #10 E. Qinlin of Ma et al (2009) and Carb #2 (Tewa in S. Gansu of Yang Zunyi et al., 1986)

Western Qinling (Dev)	Devonian section #9 (Dangdougou, Diebu County) of Ma et al (1986)
Yumen, N. Qilian region (Camb-Silur)	Cambrian column #7, Ordovician column #6 and Silurian column #4 (all for Yumen, Qilian region) of Yang Zunyi et al (1986)
Kunlun - S. Qinling belt easternmost Kunlun (Burhan Buda; Carb.) Kulun (Ordov-Silur) S. Qinling (Cambrian)	Carb section #6 of Yang Zunyi et al (1986)
Bayan - NE Xizang - W. Sichuan belt	Devon section #8 (Mangkang) of Ma et al (2009), Carb section #8 (Qamdo), Perm #9 (Qambo) and Tri #8 (Qamdo) of Yang Zunyi et al. (1986). Spellings were not consistent
Qambo (E. Tibet/W. Sichuan; Devon-Tri)	Devon section #8 (Mangkang) of Ma et al (2009), Carb section #8 (Qamdo), Perm #9 (Qambo) and Tri #8 (Qamdo) of Yang Zunyi et al. (1986). Spellings were not consistent
Xizang (Tibet)	Cret section #8 and Jurassic section #7 of Yang Zunyi et al (1986)
Yangzuoyong Lake (Cret); Yarlunzangbo (Jur)	Devonian section #6 (Xainza, southern Tibet) of Ma et al (1986)
Xainza, Tibet (Dev)	
Himalaya (southernmost Tibet)	Silurian column #8 (Nyalam area, Himalaya region, Xizang) of Yang Zunyi et al. (1986); Devon section #7 of Ma et al. (2009), Carb section #9, Perm section #8 and Triassic section #9 of Yang Zunyi et al (1986)
Qomolangma (Everest) region (Nyalam county)	
N and NE China	
Far Northeast and Mongol	Dong Wuqi (Dev)
Gobi region (Hailar; Cret.)	Cretaceous section #5 of Yang Zunyi et al. (1986)
Songliao basin (Cret.)	
W. Heilongjiang (Jur.)	
W. Heilongjiang (Silurian)	Silurian column #6 (West Heilongjiang, Xingan region) of Yang Zunyi et al. (1986)
Dong Wuqi (Dev)	Devonian section #3 (Dong Ujimquin Qi or Dong Wuqi) of Ma et al (1986)
Northern Great Hinggan (Dev)	Devonian section #4 (Wunur; or Northern Great Hinggan) of Ma et al (1986)
Lesser Hinggan (Dev)	Devonian section #4 (Handaqi, or Lesser Hinggan) of Ma et al (1986)
North China	Yanshan (Cambrian)
Shanxi (Carb-Jur)	Carb section #3 (Shanxi), Perm section #4 (Taiyun in Shanxi), Tri section #4 (Shanxi) and Jur section #5 (N. Shaanxi) of Yang Zunyi et al (1986)
Beijing (Jur.)	Jurassic section #3 (Xishan, Beijing) of Yang Zunyi et al (1986)
East Shandong (Cret.)	Cretaceous section #3 (E Shandong) of Yang Zunyi et al (1986)
N. Hebei (Ordovician)	Ordovician section #4 (N. Hebei; N and southern NE China) of Yang Zunyi et al (1986)
Yanshan (Cambrian)	Ordovician section #4 (N. Hebei; N and southern NE China) of Yang Zunyi et al (1986)
NE China Non-marine (Jur-Cret; Hebei and Liaoning)	
NE China non-marine	
S and SE China	
Yangzi platform region	
Nanjing region (Sinian-Quat) composite (English)	
Nanjing region (Sinian-Quat) composite (Chinese)	
Guizhou composite (Dev-Perm)	Perm #3 (Qinglong, SW Guizhou); and Carb #1 (Dushan, SE Guizhou) of Yang Zunyi et al. (1986) and Devon section #17 (Dushan, Guizhou) of Ma et al (2009)
Changxing, Zhejiang (S. Yangzi; Perm)	Permian section #2 (Changxing, Zhejiang) of Yang Zunyi et al (1986)
Sichuan non-marine (Jur.)	From Yang Zunyi et al (1986). The Penglaizheng Fm is a gas reservoir in Sichuan; and Upper Shaximiao Fm. has dinosaurs
Longmenshan, Sichuan (Tri)	Triassic section #3 (Longmenshan, Sichuan) of Yang Zunyi et al. (1986)
Longmenshan, Sichuan (Dev)	Devonian section #11 (Longmenshan; Sichuan) of Ma et al (1986)

Yangzi Gorges (Camb-Silur)	Cambrian column #3 (Yangzi Gorges, Yangzi Gorges); Ordovician column #3 (Yangzi region; W. Hubei) and Silurian column #3 (Yangzi Gorges, West Hubei, South Sichuan and North Guizhou) of Yang Zunyi et al (1986)
Hengyang, Hunan (Cret)	Cretaceous section #2 (Hengyang, Hunan) of Yang Zunyi et al. (1986)
Central Hunan (Devon)	Devon section #20 (Qiziqiao-Xikuangshan, central Hunan) of Ma et al (2009)
SE China (Cathaysia)	
Fujian-Guangxi-Juangzi composite (Cret-Perm)	Cretaceous section #1 (Su-Wuan area, Leping, Jiangxi); Jurassic #2 (Fujian); Triassic #2 (Youjiang Region, W. Guanxi); Permian #1 (Yongdin, Fujian) of Yang Zunyi. BUT, these really don't fit together -- temporary only until have ones to fill in each region.
Yudu (Southern Jiangxi) (Dev)	Devonian section #23 (Sanmentan, Yudu country) of Ma et al. (2009)
W. - N. Guangdong composite (Tri-Jur)	Jurassic section #2 (West and central Guangdong) and Triassic section #1 (N. Guangdong) of Yang Zunyi et al (1986); but they don't exactly fit at boundary
S.E. China Non-marine lithostrat (Jur.)	From Yang Zunyi et al (1986)
Quijing (Dev)	Section #14 (Cuifengshan-Xikuangshan, Quijing) of Ma et al. (2009)
Panxi (Yunnan) (Dev)	Section #15 (Panxi, which is just south of Quijing section) of Ma et al. (2009)
Wenshan (Yunnan) (Dev)	Section #16 (Wenshan, which is just o SE of Panxi section) of Ma et al. (2009)
Luofu (Dev)	Section #18 (Luofu, which is just south of Dushan, SE Guizhou section) of Ma et al. (2009)
Liujiang (Dev)	Section #19 (Liujiang, which is southeast of Dushan, SE Guizhou section) of Ma et al. (2009)
Guilin, Tangjiawan (Guangxi) (Dev)	Devonian section #21 (Tangjiawan, Guilin) of Ma et al. (2009)
Dale (Guangxi) (Dev)	Devonian section #22 (Dale, Xiangzhou county) of Ma et al. (2009)
North Jiangxi (Camb-Silur)	Cambrian column #2 (Xiushui, Jiangshan Mtns, Jiangnan region; Jiangxi), Ordovician column #2 (Xiushui area, Jiangxi, Jiangnan region) and Silurian column #2 (North Jiangxi, Jiangnan region) of Yang Zunyi et al. (1986)
Yunkai area, SE China (Silurian)	Silurian column #1 (Yunkai area, SE China -- where is it?) of Yang Zunyi et al. (1986)
Guangdong, SE China (Ordov.)	Ordovician column #1 (Central and northern Guangdong, SE China) of Yang Zunyi et al. (1986)
W. Yunnan (Sibumasi plate)	
W. Yunnan (Cret.)	Cretaceous section #9 of Yang Zunyi et al (1986)
E. Yunnan (Jur.)	Jurassic section #6 of Yang Zunyi et al (1986)
Lijiang, Yunnan (Dev)	Devonian section #12 (Lijiang) of Ma et al (1986)
Baoshan, west Yunnan (Camb.-Dev.)	Cambrian #9 and and Ordov columns "Baoshan" of N.Xizang-W.Yunnan, and Silurian column #9 (Baoshan, west Yunnan region) of Yang Zunyi et al (1986); Devonian section #13 (Baoshan) of Ma et al (1986)
E. Yunnan (Camb.)	Cambrian section #4 (E. Yunnan - W. Sichuan; from which many Lower Camb regional stages of S. China seem named after the local formations) of Yang Zunyi et al. (1986)

Chinese Paleogeography (Facies maps)

Cryogenian through Triassic

Provided by Dr. Junxuan Fan; from other publications