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Supplemental Material

Table S1. Compilation of Carnian magmatism in South China and surrounding areas.

Table S2. Sampling information and analytical data at the Wayao section.

Table S3. Sampling information and analytical data at the Laishike section.

Table S1. Compilation of Carnian magmatism in South China and surrounding areas.

Notes	Locations		Rock types	Age (Ma)	$\pm 2\sigma$	Dating method	Refs.
Carnian-aged mafic volcanic rocks in South China and surrounding areas	Yunnan	Cuiyibi, Weixi, NW Yunnan	Basalt	237	± 3	Zircon U-Pb	Zi et al., 2012
			Basalt	245	± 4	Zircon U-Pb	Zi et al., 2012
	Hainan	Changzheng	Gabbro	236	± 3	Zircon U-Pb	He et al., 2018
		Fengmu	Dolerite	240	± 3	Zircon U-Pb	He et al., 2018
		Zhongsha	Gabbro	242	± 3	Zircon U-Pb	He et al., 2018
	Tibetan Plateau	Tuohepingco, W Qiangtang	Mafic volcanic/subvolcanic rock	234	± 4	Zircon U-Pb	Zhang et al., 2011
			Mafic volcanic/subvolcanic rock	223	± 3	Zircon U-Pb	Zhang et al., 2011
		Geladandong, N Tibet	Basalt	220	± 2	Zircon U-Pb	Fu et al., 2010

		Tuotuohe, central Qiangtang	Nb-enriched basalt	229	±7	Zircon U-Pb	Wang et al., 2008
		Quehala, central Tibet	Basalt	229	±2	Zircon U-Pb	Chen et al., 2015
		Amdo, central Tibet	Pillow lava	220	±2	Zircon U-Pb	Chen et al., 2015
		Yanshiping, ~150km NNE of Amdo, Tibet	Basalt	241	±2	Zircon U-Pb	Chen et al., 2016
		Yanshiping	Basalt	242	±1	Zircon U-Pb	Chen et al., 2016
		Yanshiping	Basalt	241	±1	Zircon U-Pb	Chen et al., 2016
		Yanshiping	Basalt	240	±1	Zircon U-Pb	Chen et al., 2016
Carnian-aged intermediate-felsic rocks (around 234-230 Ma) in South China and surrounding areas	Sanjiang	Lanping	Adakitic Quartz diorite	230	±2	Zircon U-Pb	Wang et al., 2011
		Lanping	Dacite	232	±5	Zircon U-Pb	Yang et al., 2014
		Lanping	Dacite	237	±3	Zircon U-Pb	Yang et al., 2014
		Lanping	Rhyolite	235	±3	Zircon U-Pb	Yang et al., 2014
		Ludian	Granodiorite	231	±3	Zircon U-Pb	Zi et al., 2013

		Ludian	Granodiorite	230	±2	Zircon U-Pb	Zi et al., 2013
		Jiaren	I-type granite	234	±1	Zircon U-Pb	Zhu et al., 2011
		Jiaren	I-type granite	233	±2	Zircon U-Pb	Zhu et al., 2011
		Jiaren	I-type granite	231	±2	Zircon U-Pb	Zhu et al., 2011
		Huashiban, Ailaoshan belt	I-type granite	230	±2	Zircon U-Pb	Liu et al., 2014
		Xiaguan	Gneissic granite	233	±4	Zircon U-Pb	Liu et al., 2018
		Xiaguan	Augen granitic gneiss	232	±4	Zircon U-Pb	Liu et al., 2018
		Xiaguan	Granitic gneiss	229	±4	Zircon U-Pb	Liu et al., 2018
		Xiaguan	Leucosome	229	±5	Zircon U-Pb	Liu et al., 2018
		Lincang Batholith	Granites	235-200		Zircon U-Pb	Deng et al., 2018
	Hainan	Hainan	Massive granitoids	242-225		Zircon U-Pb	He et al., 2020
	West of Kunlun	Maixue	Diorite	235	±6	Zircon U-Pb	Li et al., 2014
		Zhongchuan	Monzogranite	236	±2	Zircon U-Pb	Zhu et al., 2013
		Zhongchuan	Monzogranite	233	±1	Zircon U-Pb	Zhu et al., 2013
		Zhongchuan	Monzogranite	232	±2	Zircon U-Pb	Zhu et al., 2013

		Gangcha	Diorite	234	±1	Zircon U-Pb	Guo et al., 2012
		Muztaga	Granodiorite	230	±5	Zircon U-Pb	Jiang et al., 2013
		Taer	Monzogranite	234	±3	Zircon U-Pb	Jiang et al., 2013
		Taer	Monzogranite	232	±4	Zircon U-Pb	Jiang et al., 2013
		Taer	Mafic magmatic enclave	233	±3	Zircon U-Pb	Jiang et al., 2013
	East of Kunlun	Balong	Diorite	235	±2	Zircon U-Pb	Chen et al., 2012
		Xiangride	Granitic porphyry	236	±2	Zircon U-Pb	Xiong et al., 2014
		Xiangride	Syenogranite	236	±4	Zircon U-Pb	Xiong et al., 2014
		Hutouya	Granodiorite	235	±2	Zircon U-Pb	Feng et al., 2011
		Kaerqueka	Granodiorite	237	±2	Zircon U-Pb	Wang et al., 2009
		Balong	Syenogranite	232	±1	Zircon U-Pb	Xiong et al., 2014
		Balong	Syenogranite	231	±3	Zircon U-Pb	Zhang et al., 2012
		Kendekeke	Monzonite granite	230	±4	Zircon U-Pb	Xi et al., 2010
		Galinge	Diorite	234	±1	Zircon U-Pb	Gao et al., 2012

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