

Table S1. Compilation of ages for the Cenozoic potassic rocks within and outside the ARSZ in western Yunnan.

Sampling site	Rock type	Analyzed objects	Analytical method	Age (Ma)	$\pm 2\sigma$	Reference
Yongping	Syenite	Zircon	LA-ICP-MS U-Pb	35.7	0.4	Miao et al., 2021
Yongping	Syenite	Zircon	LA-ICP-MS U-Pb	35.7	0.3	Miao et al., 2021
Yongping	Nepheline syenite	Zircon	LA-ICP-MS U-Pb	35.1	0.2	Miao et al., 2021
Yongping	Nepheline syenite	Zircon	LA-ICP-MS U-Pb	34.9	0.3	Miao et al., 2021
Yongping	Syenite	Zircon	LA-ICP-MS U-Pb	34.2	0.3	Miao et al., 2021
Weishan	Quartz monzoporphyry	Zircon	SHRIMP U-Pb	35.4	0.6	Lu et al., 2012
Weishan	Quartz monzoporphyry	Zircon	LA-ICP-MS U-Pb	34.8	0.3	Liang et al., 2007
Machangqing	Biotite monzogranite	Zircon	LA-ICP-MS U-Pb	37.9	0.8	He et al., 2011
Machangqing	Shoshonite (mafic rock)	Phlogopite	Ar-Ar	36.5	0.2	Lu et al., 2015
Machangqing	Granite porphyry	Zircon	LA-ICP-MS U-Pb	36.2	0.3	Xu et al., 2012
Machangqing	Granite porphyry	Zircon	LA-ICP-MS U-Pb	36.1	0.2	Liu et al., 2020
Machangqing	Granite porphyry	Zircon	LA-ICP-MS U-Pb	35.9	0.3	Yang et al., 2020
Machangqing	Amphibole syenite	Zircon	SHRIMP U-Pb	35.6	0.3	Liang et al., 2004
Machangqing	Biotite amphibole monzogranite	Zircon	SHRIMP U-Pb	35.6	0.3	Lu et al., 2012
Machangqing	Monzogranite porphyry	Zircon	LA-ICP-MS U-Pb	35.3	0.4	Zhou et al., 2019
Machangqing	Granodiorite porphyry	Zircon	LA-ICP-MS U-Pb	35.2	0.4	Wang et al., 2020
Machangqing	Granite	Zircon	LA-ICP-MS U-Pb	35.2	0.3	Yang et al., 2020
Machangqing	Quartz diorite porphyry	Zircon	LA-ICP-MS U-Pb	35.1	0.3	Wang et al., 2020
Machangqing	Granite porphyry	Zircon	SHRIMP U-Pb	35.0	0.2	Liang et al., 2004
Machangqing	Amphibole monzogranite	Zircon	SHRIMP U-Pb	35.0	0.2	Lu et al., 2012
Machangqing	Granite	Zircon	LA-ICP-MS U-Pb	34.9	0.3	Yang et al., 2020
Machangqing	Granite porphyry	Zircon	LA-ICP-MS U-Pb	34.9	0.4	Wang et al., 2020
Machangqing	Granite aplite	Zircon	SHRIMP U-Pb	34.4	0.2	Lu et al., 2012
Machangqing	Quartz diorite porphyry	Zircon	LA-ICP-MS U-Pb	34.2	0.5	Wang et al., 2020

Machangqing	Granite porphyry	Zircon	LA-ICP-MS U-Pb	34.1	0.3	Yang et al., 2020
Machangqing	Lamprophyre (mafic rock)	Zircon	LA-ICP-MS U-Pb	34.1	0.2	Shen et al., 2021
Machangqing	Granite	Zircon	LA-ICP-MS U-Pb	33.8	0.2	Guo et al., 2012
Machangqing	Lamprophyre (mafic rock)	Zircon	LA-ICP-MS U-Pb	33.8	0.1	Jia et al., 2013
Wase	Shoshonite (mafic rock)	Whole rock	Ar-Ar	35.1	0.2	Huang et al., 2010
Wase	Olivinebasalt (mafic rock)	Whole rock	Ar-Ar	35.1	0.2	Huang et al., 2007
Wozhong	Shoshonite (mafic rock)	Whole rock	Ar-Ar	35.5	0.1	Huang et al., 2010
Wozhong	Olivinebasalt (mafic rock)	Whole rock	Ar-Ar	35.5	0.1	Huang et al., 2007
Houshan	Shoshonite (mafic rock)	Whole rock	Ar-Ar	36.6	0.2	Huang et al., 2010
Houshan	Trachybasalt (mafic rock)	Whole rock	Ar-Ar	36.6	0.2	Huang et al., 2007
Houshan	Latite (mafic rock)	Whole rock	Ar-Ar	36.3	0.2	Huang et al., 2010
Houshan	Shoshonite (mafic rock)	Whole rock	Ar-Ar	36.0	0.4	Huang et al., 2007
Jianchuan	Syenite porphyry	Zircon	LA-ICP-MS U-Pb	35.8	0.3	Tong et al., 2019
Jianchuan	Monzoporphyry	Zircon	LA-ICP-MS U-Pb	35.7	0.2	Tong et al., 2019
Jianchuan	Monzoporphyry	Zircon	SHRIMP U-Pb	35.7	0.2	Lu et al., 2012
Jianchuan	Monzoporphyry	Zircon	LA-ICP-MS U-Pb	35.6	0.2	Tong et al., 2019
Jianchuan	Amphibole syenite	Zircon	SHRIMP U-Pb	35.6	0.3	Lu et al., 2012
Jianchuan	Syenite	Zircon	LA-ICP-MS U-Pb	35.6	0.2	Liang et al., 2007
Jianchuan	Monzoporphyry	Zircon	LA-ICP-MS U-Pb	35.5	0.3	Tong et al., 2019
Jianchuan	Monzoporphyry	Zircon	LA-ICP-MS U-Pb	35.4	0.2	Tong et al., 2019
Jianchuan	Amphibole syenite	Zircon	SHRIMP U-Pb	35.4	0.3	Lu et al., 2012
Jianchuan	Biotite monzoporphyry	Zircon	SHRIMP U-Pb	35.3	0.4	Lu et al., 2012
Jianchuan	Monzoporphyry	Zircon	LA-ICP-MS U-Pb	35.3	0.2	Tong et al., 2019
Jianchuan	Lamprophyre (mafic rock)	Zircon	LA-ICP-MS U-Pb	34.9	0.1	Li and Jiang, 2020
Binchuan	Amphibole quartz monzoporphyry	Zircon	SHRIMP U-Pb	36.6	0.6	Lu et al., 2012
Binchuan	Biotite quartz monzoporphyry	Zircon	SHRIMP U-Pb	35.4	0.4	Lu et al., 2012

Beiya	Monzogranite	Zircon	SHRIMP U-Pb	37.9	0.8	Hou et al., 2017
Beiya	Quartz monzoporphyry	Zircon	LA-ICP-MS U-Pb	37.2	0.4	Zhou et al., 2019
Beiya	Granite porphyry	Zircon	LA-ICP-MS U-Pb	37.0	0.6	Deng et al., 2015
Beiya	Monzogranite porphyry	Zircon	SHRIMP U-Pb	36.9	0.3	Lu et al., 2012
Beiya	Altered monzogranite porphyry	Zircon	LA-ICP-MS U-Pb	36.7	0.3	He et al., 2016
Beiya	Altered monzogranite porphyry	Zircon	LA-ICP-MS U-Pb	36.7	0.2	He et al., 2016
Beiya	Monzogranite porphyry	Zircon	LA-ICP-MS U-Pb	36.6	0.7	Deng et al., 2015
Beiya	Monzogranite porphyry	Zircon	LA-ICP-MS U-Pb	36.6	0.4	He et al., 2016
Beiya	Granite porphyry	Zircon	LA-ICP-MS U-Pb	36.6	0.6	Deng et al., 2015
Beiya	Quartz syenite porphyry	Zircon	LA-ICP-MS U-Pb	36.5	1.1	Jiang et al., 2013
Beiya	Quartz syenite porphyry	Zircon	LA-ICP-MS U-Pb	36.5	0.3	He et al., 2013
Beiya	Monzogranite porphyry	Zircon	LA-ICP-MS U-Pb	36.4	0.6	He et al., 2016
Beiya	Monzogranite porphyry	Zircon	LA-ICP-MS U-Pb	36.3	0.1	He et al., 2016
Beiya	Monzogranite porphyry	Zircon	LA-ICP-MS U-Pb	36.3	0.7	Deng et al., 2015
Beiya	Quartz syenite porphyry	Zircon	LA-ICP-MS U-Pb	36.2	0.6	He et al., 2012
Beiya	Alkali feldspar syenite porphyry	Zircon	SHRIMP U-Pb	36.2	0.3	Lu et al., 2012
Beiya	Quartz syenite porphyry	Zircon	LA-ICP-MS U-Pb	36.1	0.4	Fu et al., 2015
Beiya	Monzogranite porphyry	Zircon	LA-ICP-MS U-Pb	36.0	0.5	He et al., 2016
Beiya	Monzogranite porphyry	Zircon	LA-ICP-MS U-Pb	35.9	0.6	Deng et al., 2015
Beiya	Monzogranite porphyry	Zircon	LA-ICP-MS U-Pb	35.7	0.6	Deng et al., 2015
Beiya	Potassic-altered granite porphyry	Zircon	LA-ICP-MS U-Pb	35.5	0.8	Deng et al., 2015
Beiya	Monzogranite porphyry	Zircon	LA-ICP-MS U-Pb	35.4	0.6	Deng et al., 2015
Beiya	Potassic-altered granite porphyry	Zircon	LA-ICP-MS U-Pb	35.0	0.8	Deng et al., 2015
Beiya	Lamprophyre (mafic rock)	Zircon	LA-ICP-MS U-Pb	35.0	0.7	He et al., 2014
Beiya	Quartz syenite porphyry	Zircon	LA-ICP-MS U-Pb	34.9	0.7	He et al., 2012
Beiya	Minette (mafic rock)	Phlogopite	Ar-Ar	34.9	0.1	Guo et al., 2005

Beiya	Monzogranite porphyry	Zircon	LA-ICP-MS U-Pb	34.7	0.9	Deng et al., 2015
Beiya	Monzogranite porphyry	Zircon	LA-ICP-MS U-Pb	34.7	0.8	Deng et al., 2015
Beiya	Alkali feldspar granite porphyry	Zircon	SHRIMP U-Pb	34.6	0.5	Lu et al., 2012
Beiya	Latite (mafic rock)	Phlogopite	Ar-Ar	34.4	0.2	Lu et al., 2015
Beiya	Shoshonite (mafic rock)	Phlogopite	Ar-Ar	33.9	0.2	Lu et al., 2015
Liuhe	Syenite porphyry	Zircon	LA-ICP-MS U-Pb	36.9	0.4	Tong et al., 2019
Liuhe	Syenite porphyry	Zircon	LA-ICP-MS U-Pb	36.0	0.7	Tong et al., 2019
Liuhe	Syenite porphyry	Zircon	LA-ICP-MS U-Pb	34.6	1.1	Tong et al., 2019
Dalongtan	Syenite porphyry	Zircon	LA-ICP-MS U-Pb	34.1	0.1	Li and Jiang, 2020
Dalongtan	Syenite porphyry	Zircon	LA-ICP-MS U-Pb	33.2	0.3	This study
Yao'an	Pseudoleucite porphyry	Zircon	LA-ICP-MS U-Pb	34.1	0.3	Sun et al., 2017
Yao'an	Syenite porphyry	Zircon	SHRIMP U-Pb	33.8	0.4	Luo et al., 2019
Yao'an	Lamprophyre (mafic rock)	Phlogopite	Ar-Ar	33.7	0.5	Lu et al., 2015
Yao'an	Biotite quartz monzoporphyry	Zircon	SHRIMP U-Pb	33.4	0.3	Lu et al., 2012
Yao'an	Syenite porphyry	Zircon	LA-ICP-MS U-Pb	33.2	0.3	Tang et al., 2022
Yao'an	Syenite porphyry	Zircon	LA-ICP-MS U-Pb	32.8	0.3	Zhou et al., 2017
Yao'an	Quartz monzonite granite	Zircon	LA-ICP-MS U-Pb	32.6	0.1	Li and Jiang, 2020
Yao'an	Trachyte	Zircon	LA-ICP-MS U-Pb	32.4	0.2	Huang et al., 2022
Yao'an	Quartz monzonite granite	Zircon	LA-ICP-MS U-Pb	32.4	0.1	Li and Jiang, 2020
Yao'an	Trachyte	Zircon	LA-ICP-MS U-Pb	32.3	0.3	Huang et al., 2022
Yao'an	Lamprophyre (mafic rock)	Zircon	LA-ICP-MS U-Pb	31.2	0.1	Yan et al., 2019
Zhiju	Monzogranite	Zircon	LA-ICP-MS U-Pb	34.2	0.2	Ding et al., 2016
Zhiju	Monzogranite	Zircon	LA-ICP-MS U-Pb	34.1	0.3	Ding et al., 2016
Zhiju	Syenite porphyry	Zircon	LA-ICP-MS U-Pb	30.3	0.1	Li and Jiang, 2020
Zhiju	Hornblende monzogranite	Zircon	LA-ICP-MS U-Pb	29.31	0.3	Li and Jiang, 2020
Yongsheng	Granite porphyry	Zircon	LA-ICP-MS U-Pb	34.6	0.2	Tang et al., 2022

Yongsheng	Biotite granite porphyry	Zircon	SHRIMP U-Pb	34.1	0.3	Lu et al., 2012
Yongsheng	Granite porphyry	Zircon	LA-ICP-MS U-Pb	34.0	0.3	Tang et al., 2022
Yongsheng	Granite porphyry	Zircon	LA-ICP-MS U-Pb	33.7	0.5	Tang et al., 2022
Yongsheng	Biotite quartz monzodiorite porphyry	Zircon	SHRIMP U-Pb	33.1	0.4	Lu et al., 2012
Ninglang	Granite porphyry	Zircon	SHRIMP U-Pb	32.5	0.3	Lu et al., 2012
Ninglang	Quartz monzonite	Zircon	LA-ICP-MS U-Pb	35.6	0.2	Ding et al., 2016
Ninglang	Quartz monzonite	Zircon	LA-ICP-MS U-Pb	35.0	0.2	Ding et al., 2016
