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Late Cenozoic intra-plate basalts of the Greater Khingan Range in NE China and Khangai Province in Central Mongolia

Fan-chao Meng^{a,b}, Inna Safonova^{c,d,e}, Shuang-shuang Chen^{f,g,h,*}, Jia-qi Liu^{f,h}, Patrick Rioual^{f,h}

^a School of Geosciences, China University of Petroleum (East China), Qingdao 266580, China

^b Shandong Provincial Key Laboratory of Depositional Mineralization & Sedimentary Mineral, Shandong University of Science and Technology, Qingdao 266590, China

^c Novosibirsk State University, Novosibirsk 630090, Russia

^d Sobolev Institute of Geology and Mineralogy, SB RAS, Novosibirsk 630090, Russia

^e School of Earth Sciences and Engineering, Nanjing University, 210023 Nanjing, China

^f Key Laboratory of Cenozoic Geology and Environment, Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing 100029, China

^g State Key Laboratory of Lithospheric Evolution, Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing 100029, China

^h Institutions of Earth Science, Chinese Academy of Sciences, Beijing 100029, China

Abstract

This paper presents new major and trace element data, Sr-Nd-Pb isotopic ratios and K-Ar ages from volcanic rocks of the Greater Khingan Range of NE China (Nuomin–Keluo and Arxan–Chaihe volcanic fields) and the Khangai volcanic province of Central Mongolia. These data are discussed in correlation with available in literature geological, geochronological, geochemical, isotopic, petrologic and geophysical data from intra-plate volcanic fields of Central and East Asia. All volcanic rocks possess geochemical affinities to intra-plate oceanic and continental basalts. The Nuomin–Keluo samples (2.75 and 0.41 Ma) show enrichment in large ion lithophile elements (LILE) and light rare earth elements (LREE; $La/Yb_N = 43.6 - 91.5$), as well as depletion in heavy REE (HREE), and Nb peaks relative to La and Th ($Nb/La_{pm} = 0.61-1.24$; $Nb/Th_{pm} = 0.96-1.70$) in the multi-element spectra. The Arxan–Chaihe basalts (0.91 and 0.53–0.27 Ma) have lower K, less fractionated REE ($La/Yb_N = 15.7 - 28.1$), but higher Nb peaks ($Nb/La_{pm} = 1.56-1.74$; $Nb/Th_{pm} = 1.27-1.79$), as well as higher epsilon Nd and $^{206}Pb/^{204}Pb$, but lower Sr isotopic ratios. The Khangai volcanic province consists of central and

* Corresponding author: Dr. S.S. Chen, Key Laboratory of Cenozoic Geology and Environment, Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing 100029, China; sschen@mail.iggcas.ac.cn

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