

Songnan Liu and Yu Wang, 2022, Origin of the Songpan-Garze Terrane on the northeastern Tibetan Plateau, eastern segment of the Tethyan tectonic domain: A Middle Permian–Early Triassic intracontinental rifting system: GSA Bulletin, <https://doi.org/10.1130/B36468.1>.

Supplemental Material

Text S1. Procedures of zircon U-Pb LA-ICP-MS geochronological analysis

Text S2. Procedures of whole-rock geochemical analysis

Figure S1. U-Pb concordia diagrams for each sample, which analyzed by U-Pb LA-ICP-MS geochronological method.

Figure S2. Th/U ratio for each sample, which analyzed by U-Pb LA-ICP-MS geochronological method.

Supplemental Data

Supporting Information for

Origin of the Songpan–Garze Terrane, eastern segment of the Tethyan tectonic

domain: a Middle Permian-Early Triassic intracontinental rifting system

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Text S1. U-Pb Geochronology analytical Procedures

Zircon grains were separated using conventional techniques, including crushing, heavy-liquid and magnetic separation. We hand-picked grains from the >25 μm nonmagnetic fractions of each sample under a binocular microscope. Then grains were mounted in an epoxy resin disks and polished to half their thickness to expose the zircon cores. Transmitted and reflected light images were taken to reveal the inner structures of zircon. Before photograph the cathodoluminescence (CL) images, zircons should be coated with gold. We select ideal sites for U-Pb dating and trace-element analyses based on transmitted images, reflected images and CL images.

U-Pb dating analyses were conducted by the instrument of AnalytikJena PQMS Elite ICP-MS and its matching ESI NWR 193 nm excimer laser denudation system at Beijing Createch Testing Technology Co.,Ltd. High purity argon and helium gas were used to remove the samples common Pb before entering the ICP-MS by continuously flushed the sample tank for about 2 hours. Standard materials 91500 were used as external calibration for the calculation of U-Pb ages. Trace element contents were calculated using NIST 610 as the external standard and Si as the internal standard. Zircon standard GJ-1 were repeated before and after each 6-12 samples to correct for instrument drift, and zircon Plesovice was measured to ensure the accuracy of analyses. Each analysis consists of 15~20 s background (gas blank) acquisition and 45 s data acquisition. The laser spot size was 25 μm in diameter, the shot frequency was 8 Hz and the energy density was 2.01 J/cm². (Liu et al, 2010). Data processing was performed by ICPMSDataCal (Liu et al, 2010). The analytical results are listed in Table S1 in online supplementary material.

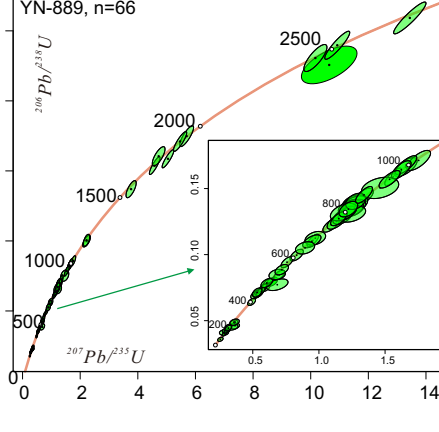
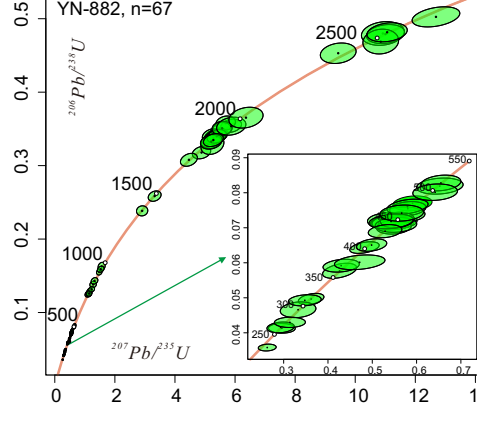
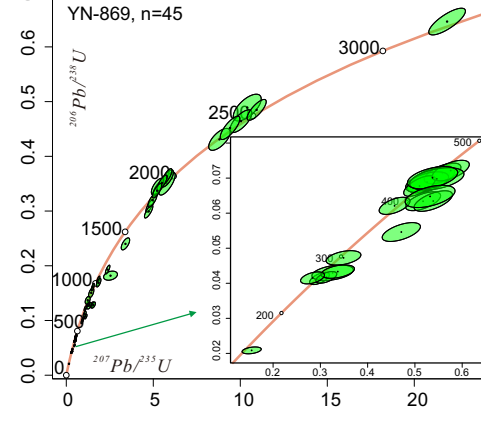
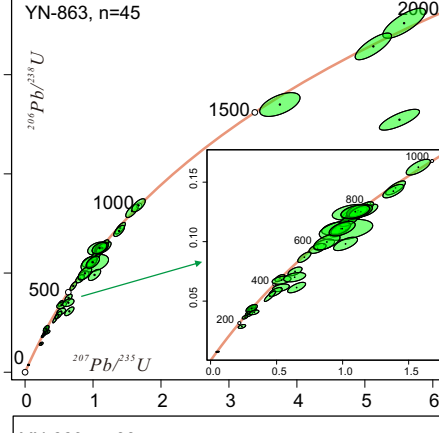
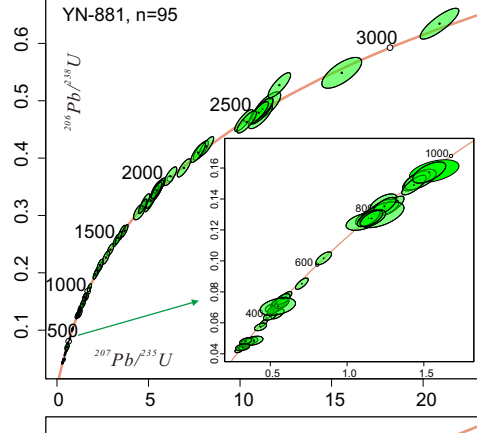
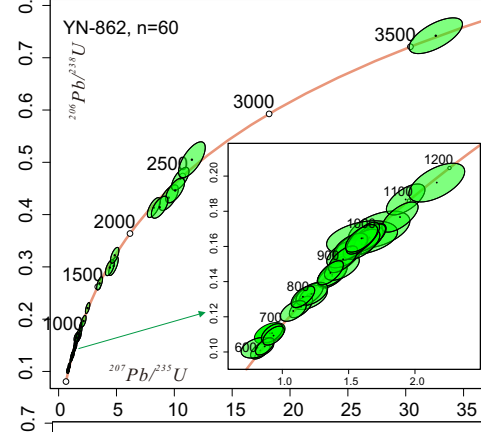
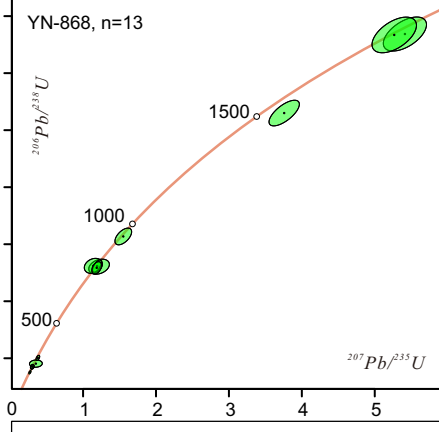
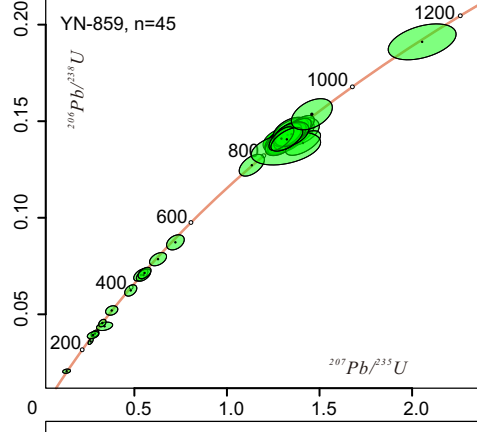
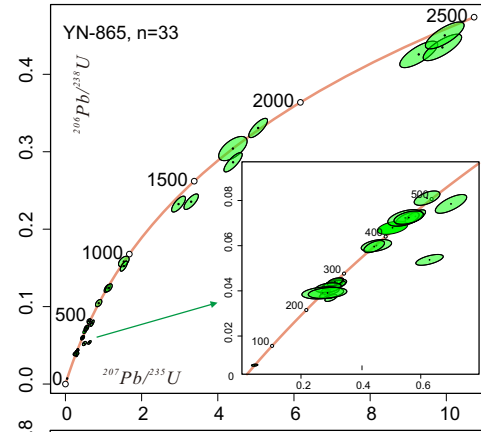
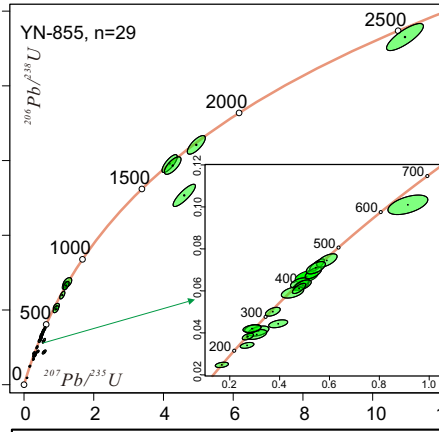
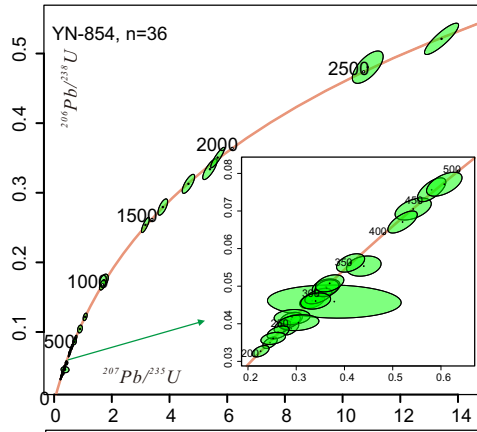
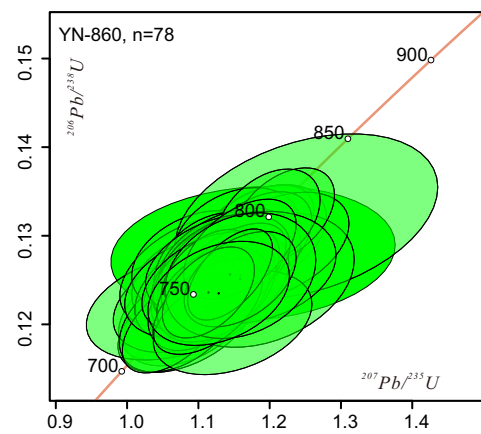
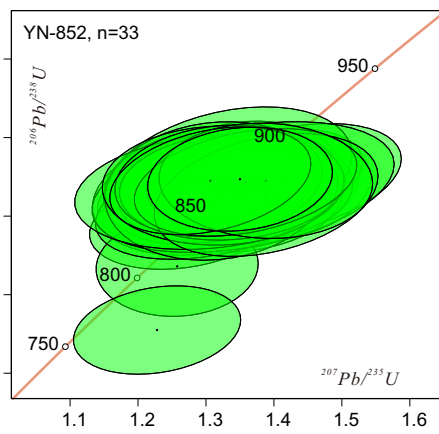
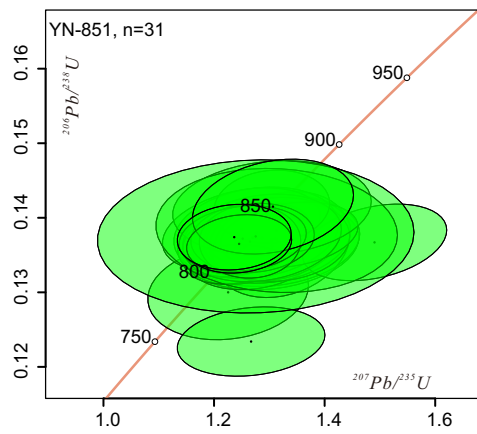
Text S2. Whole-rock geochemistry analytical Procedures

Whole rock major and trace elements analyses were conducted at Analysis and Test Research Center, Beijing Institute of Geology, Nuclear Industry. Firstly, removing the weathered and altered surface of samples and powdering the fresh samples to 200 mesh. Major element oxides were determined using Phillips PW1480 X-ray fluorescence spectrometer (XRF). The relative standard derivations of measurements were less than 2%. Trace elements and rare earth elements (REE) were measured by inductively coupled plasma-mass spectrometer (ICP-MS). Tested samples were placed into high-pressure Teflon bombs with a mixture of super-pure HF-HNO₃ for 2 days at ~ 100° C in order to the powder were completed dissolved. The analytical errors were less than 5% for most elements. The analytical results are listed in Table S2 in online supplementary material.

Captions for Figures S1 and S2

Figure S1: U-Pb concordia diagrams for each sample, which analyzed by U-Pb geochronological test.

Figure S2: Th/U ratio for each sample, which analyzed by U-Pb geochronological test.



Th/U

