

Figure S1. The sand heavy mineral assemblages and content of rivers the samples collected from.

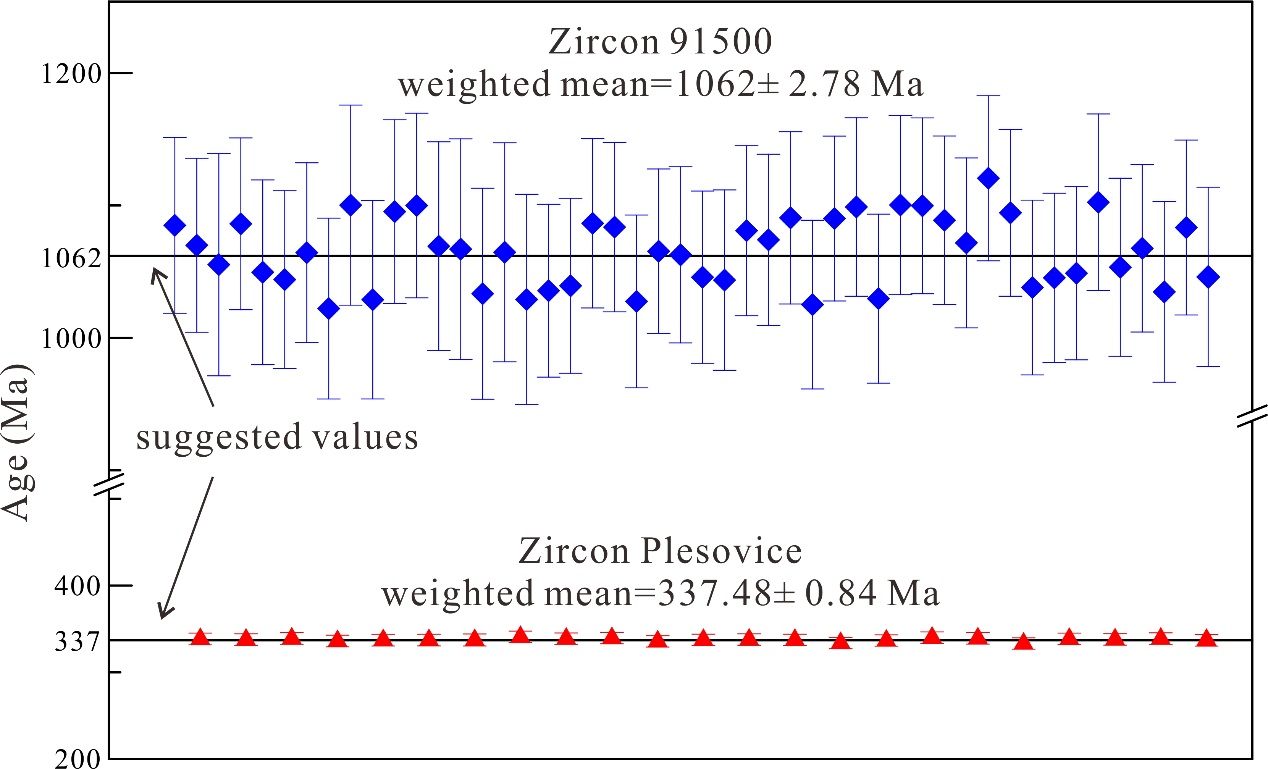


Figure S2 Weighted mean age of standard sample Zircon 91500 and Zircon Plesovice, the 207Pb/206Pb ages were adopted for grains older than 1000 Ma, and 206Pb/238U ages for younger than 1000 Ma.

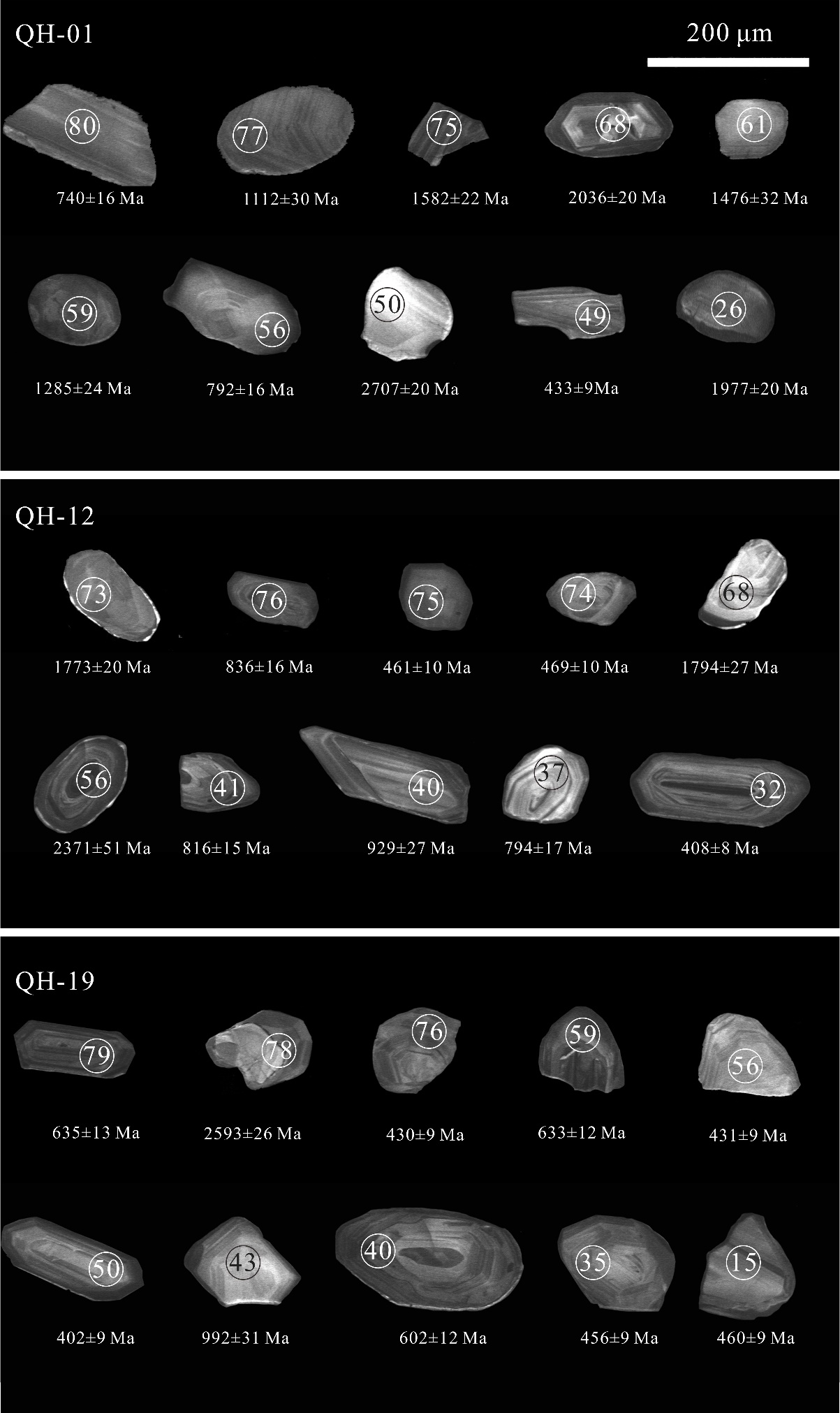


Figure S3. CL images of representative detrital zircons in modern river samples.

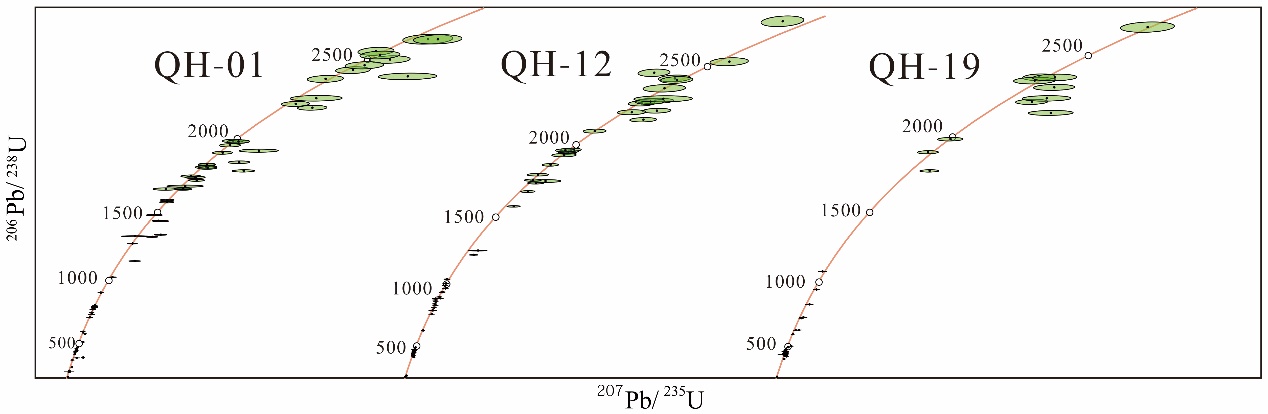


Figure S4. Detrital zircon U–Pb concordia plots for modern river samples.

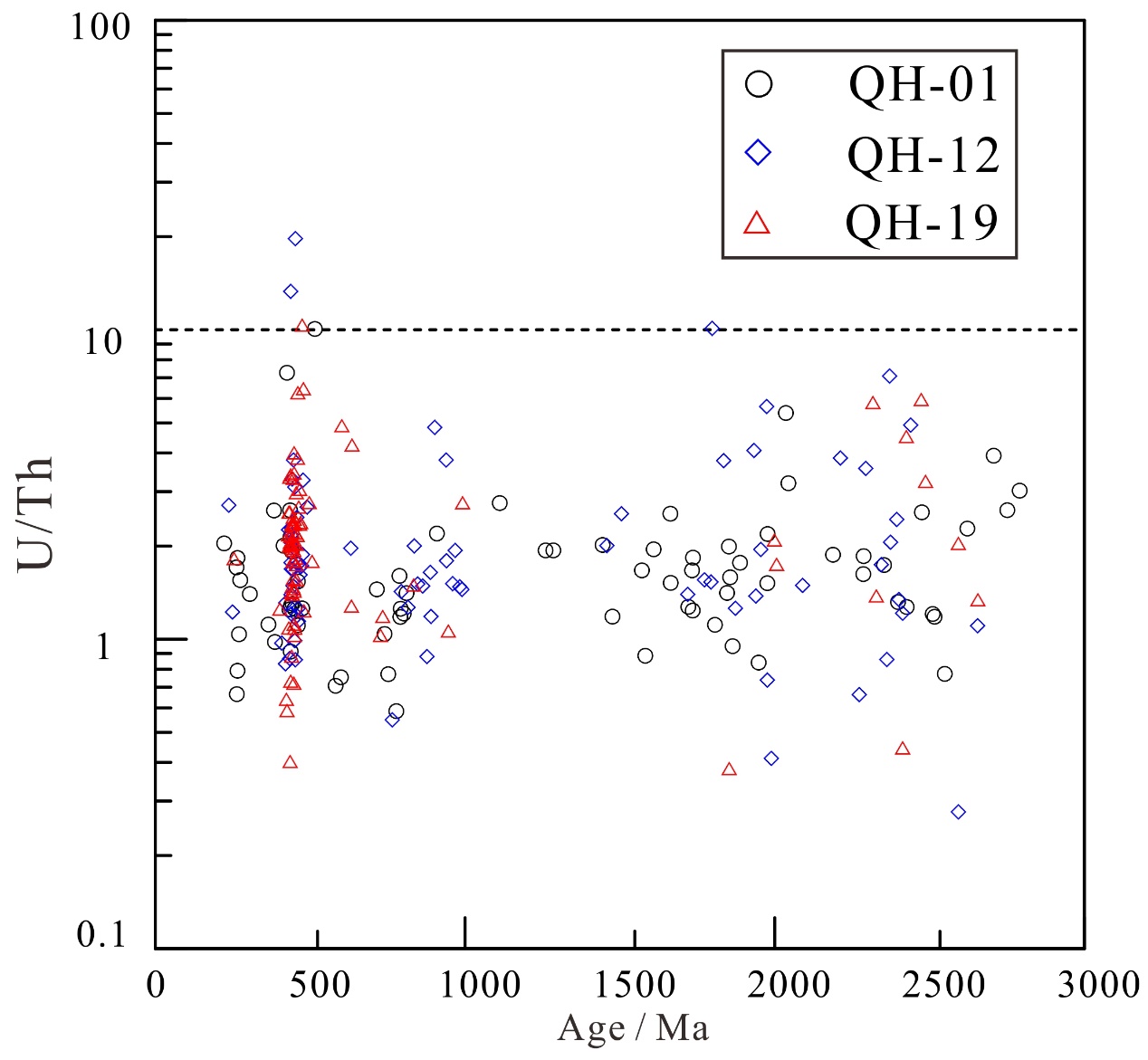


Figure S5. Ratio of U/Th of detrital zircons in modern river samples.

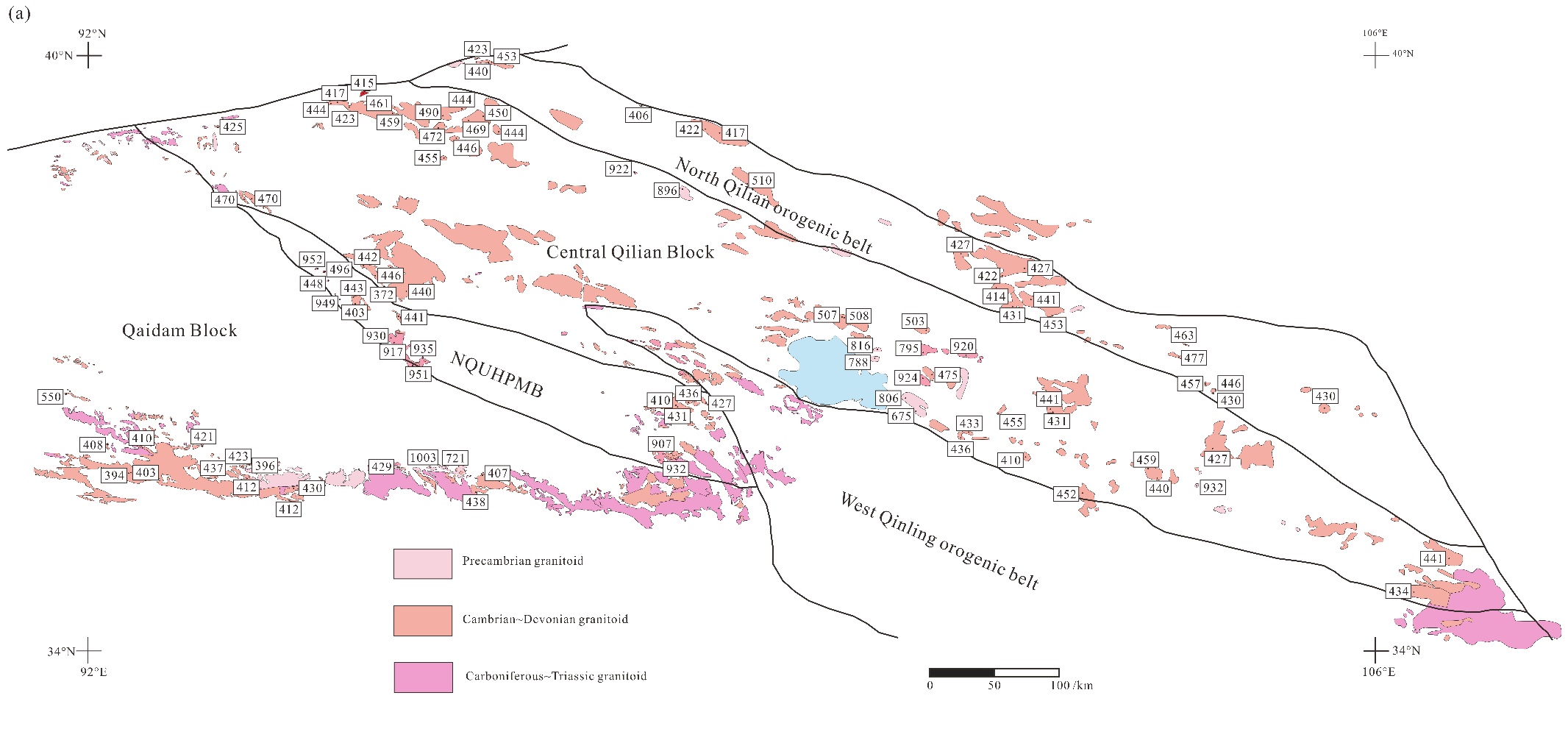
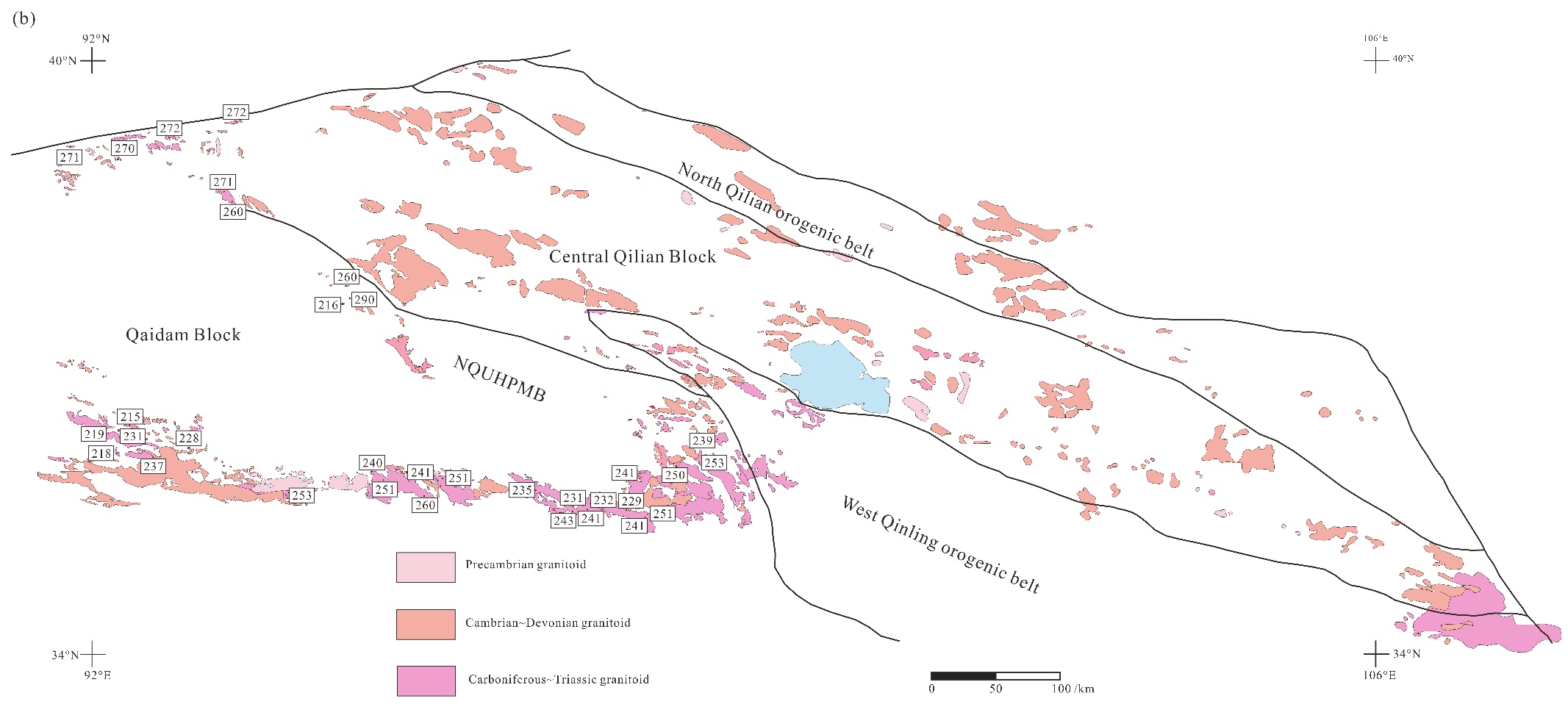
 

Figure S6. Previously published U-Pb ages for (a)Pre-Carboniferous granitoid rocks and (b) Carboniferous to Triassic granitoid rocks in the Qilian orogenic belt (map after Tung et al. 2013 and Geological Map of Tibetan Plateau and Adjacent Area, 2004). Age data and location bases on the reference shown in Table S2 (also see Cheng et al. 2017)