

薛怀民,马芳,宋永勤,谢亚平. 2010. 江南造山带东段新元古代花岗岩组合的年代学和地球化学:对扬子与华夏地块拼合时间与过程的约束. 岩石学报, 26(11): 3215-3244

江南造山带东段新元古代花岗岩组合的年代学和地球化学:对扬子与华夏地块拼合时间与过程的约束

作者	单位
薛怀民	中国地质科学院地质研究所,北京 100037
马芳	北京大学地球与空间科学学院,北京 100871
宋永勤	浙江省地质矿产研究所,杭州 310007
谢亚平	安徽省地质矿产局332地质队,屯溪 245000

基金项目: 本文受中国地质调查项目 (1212010811048)资助.

摘要:

江南造山带东段发育了一系列新元古代的花岗岩类侵入体,本文用LA-ICP-MS锆石U-Pb法对区内出露的主要岩体(包括许村岩体、歙县岩体、休宁岩体、灵山岩体、莲花山岩体、石耳山岩体)进行了定年,并分析了这些岩体代表性样品的主量和微量元素含量。结果表明,区内的花岗岩类侵入体分属S-型和A-型两类,前者属于同造山的岩浆岩,成分主要为花岗闪长质;后者为晚造山的岩浆岩,成分为花岗质。S-型花岗闪长质岩浆是在碰撞、地壳加厚后由不成熟的变质沉积-火山岩系经减压熔融形成的。由同造山到晚造山阶段,随着地壳应力由挤压转为拉张,所形成的A-型花岗岩中有明显的新生地幔物质的加入。两类岩体的空间分布有明显的规律,且随时间具有明显的向南(大洋侧)迁移的趋势。同造山的S-型花岗闪长质侵入体均分布在皖南蛇绿混杂岩带的北侧(及缝合带内),其中空间位置最北突的许村岩体的侵位时间最早,为 $850 \pm 10\text{Ma}$;位于皖南蛇绿混杂岩带内,具有同构造特点的歙县岩体的侵位时间为 $838 \pm 11\text{Ma}$;同样侵位于该缝合带内,具有晚构造特点的休宁岩体的侵位时间为 $826 \pm 6\text{Ma}$ 。而晚造山的A型花岗岩均分布在该缝合带的南侧,其中灵山岩体和莲花山岩体的侵位年龄分别为 $823 \pm 18\text{Ma}$ 和 $814 \pm 26\text{Ma}$,两者的侵位时间在误差范围内一致。后造山裂谷环境下形成的石耳山花岗岩斑岩的年龄为 $785 \pm 11\text{Ma}$ 。我们认为江南造山带形成于新元古代,造山过程具有多岛弧拼贴、多缝合的特点。不同缝合带上洋盆闭合的时间存在着差异,最早闭合的可能是赣东北带(蛇绿岩套)、其次是江山-绍兴带,最后是皖南带(歙县蛇绿岩套)。不同缝合带上发育的岛弧型火山岩在地球化学性质上存在着明显的差异,前两者是在洋壳基础上发育起来的,而后者是在不成熟的陆壳基础上发育起来的。江南造山带形成后不久,其南侧即遭受到后造山裂谷(南华裂谷系?)作用的破坏,只是到了早古生代末期(加里东期)扬子克拉通与华夏地块之间的裂谷才最终闭会形成华南统一大陆。

英文摘要:

There are a series of Neoproterozoic granitoids developed in eastern segment of the Jiangnan orogen, LA-ICP-MS zircon U-Pb ages and whole-rock geochemical compositions were determined for those main granitoid intrusions, including Xucun body, Shexian body, Xiuning body, Lingshan body, Lianhuashan body and Shi'er shan body. The granitoid intrusions in the region can be classified into S-type and A-type in petrology and geochemistry, and the former belong to synorogenic magmatic rocks and are mainly granodioritic in component, while the latter belong to late-orogenic magmatic rocks and are granitic in component. The S-type granodioritic magma was generated by partial melting of immature metamorphic sedimentary-volcanic rock series under dynamic background of collision and crust thickening. But from synorogenic to late-orogenic stages, along with the stress changed from extrusion to extension, the A-type granites formed include obvious mantle-derived matter. The two types intrusions distributed regularly in space, show obvious southward (ocean side) migration with time. The synorogenic S-type granodioritic intrusions are all located at the north of the South Anhui suture belt (and inside the suture zone), the Xucun intrusion of S-type granodiorite, situated at the most north part, has the earliest emplacement age of $850 \pm 10\text{Ma}$; Shexian intrusion of S-type granodiorite, which is located inside the Anhui suture zone and has the feature of syntectonic, has the emplacement age of $838 \pm 11\text{Ma}$; and also located inside the suture zone but has the feature of late tectonic, the Xiuning intrusion of S-type granodiorite has the intrusion age of $826 \pm 6\text{Ma}$. Whereas late-orogenic A-type granites are all located at the south of the suture zone, emplacement ages for Lingshan and Lianhuashan A-type granites are $823 \pm 18\text{Ma}$ and 814 ± 26 respectively, the two ages are consistent each other considering the errors, and can represent as the time of late-orogenic stage magmatism. The Shi'er shan granite-porphphy formed in post-orogenic rift setting has the emplacement age of $785 \pm 11\text{Ma}$. We consider that the Jiangnan orogen formed in Neoproterozoic era, with characteristics of poly-island arcs amalgamation and poly-sutures. The closing times for different sutures are difference, the earliest closing suture may be the Northeast Jiangxi suture, followed by the Jiangshan-Shaoxin suture, the South Anhui suture was final closed. The arc-type volcanic rocks related with different suture are difference in geochemistry, the two former were developed on oceanic crust background, while the latter was formed on immature continental crust. The Jiangnan orogen had been destroyed by post-orogenic rifting before long it formed, just up to the telophase of Early Paleozoic, the rift between the Yangtze and Cathaysia cratons had finally been closed and formed unionized continent of South China.

关键词: [锆石定年](#) [新元古代](#) [S型花岗岩](#) [A型花岗岩](#) [江南造山带](#) [扬子克拉通](#)

投稿时间: 2010-04-29 最后修改时间: 2010-06-21

[HTML](#) [查看全文](#) [查看/发表评论](#) [下载PDF阅读器](#)

黔ICP备07002071号-2

主办单位: 中国矿物岩石地球化学学会

单位地址: 北京9825信箱/北京朝阳区北土城西路19号

本系统由北京勤云科技发展有限公司设计

[linezing.com](#)