

郑勇,孔屏. 2013. 四川盆地西缘晚新生代大邑砾岩的物源及其成因: 来自重矿物和孢粉的证据. 岩石学报, 29(8): 2949-2958

四川盆地西缘晚新生代大邑砾岩的物源及其成因: 来自重矿物和孢粉的证据

作者 单位

E-mail

[郑勇](#) [中国科学院地质与地球物理研究所, 中国科学院地球深部重点实验室, 北京 100029; 中国科学院大学, 北京 100049](#)

[孔屏](#) [中国科学院地质与地球物理研究所, 中国科学院地球深部重点实验室, 北京 100029](#)

pingkong@mail.iggcas.ac.cn

基金项目: 本文受中国科学院战略性先导科技专项(B类)(XDB03020300)和国家自然科学基金项目(41173067、41021063)联合资助。

摘要:

新生代早期印度与欧亚板块的俯冲碰撞造就了巍峨高耸的青藏高原。然而,在其相邻的四川盆地,伴随青藏高原强烈隆升所堆积的碎屑沉积物,最老仅能追索到晚新生代的大邑砾岩。因此,解读广泛发育于四川盆地西缘的大邑砾岩成因对获取青藏高原及其周缘古环境信息及理解相关的构造演化过程具有重要意义。本文报告了对三个典型大邑砾岩剖面样品的重矿物和孢粉组合研究结果,试图从大邑砾岩的物源区和沉积环境来解读大邑砾岩的成因。大邑砾岩中重矿物种类繁多,表明相应物源区具有多种岩石类型。除极不稳定矿物外,大邑砾岩新鲜剖面样品的重矿物组合与现代岷江沉积物相似,表明大邑砾岩是经由岷江通道输送到四川盆地的;富含石榴子石等远源矿物表明当时的古岷江已切穿龙门山,深入到松潘-甘孜褶皱带内。孢粉分析显示孢粉含量极低,为0.2粒/克,孢粉类型以高山黯针叶林成分为主,混有少量落叶阔叶林和草本植物花粉,显示了高寒的环境。结合已有的年代学结果,本文认为大邑砾岩是形成于2.0Ma的冰水沉积物,其形成反映了青藏高原第四纪早期的寒冷环境。

英文摘要:

The collision between Indian and Eurasian plates initiated in the Early Cenozoic produced the high Tibetan Plateau. Accompanied with the uplift of the Tibetan Plateau Tertiary sediments are almost absent in the adjacent Sichuan Basin, and the preserved oldest deposits are the Late Cenozoic Dayi conglomerates. Therefore, Dayi conglomerates can potentially provide information on palaeoenvironments and tectonic evolution of the Tibetan Plateau and adjacent areas. This paper reports heavy mineral compositions and spore-pollen assemblage within three Dayi conglomerates and a modern sand sample from the bank of the Min River and attempts to understand the origin of Dayi conglomerates through provenance analysis and sedimentation environment studies. Dayi conglomerates contain a variety of heavy minerals, which suggests that the provenance of the Dayi conglomerates covers a wide range of petrologic types. Except for extremely unstable minerals, the similarity in heavy mineral compositions between a newly exposed Dayi conglomerate and the modern sand from the Min River suggests that the Dayi conglomerates were delivered to the Sichuan Basin by the Min River, and during which time the Min River already dissected the Longmen Shan and was sourced to Songpan-Ganzi flysch belt. Garnet rarely occurs in natural profiles of Dayi conglomerates and we attribute this to intense weathering in an acidic environment. Spore-pollen is very scarce in the Dayi conglomerates with a concentration of 0.2 grains/g. Species are mostly derived from alpine coniferous forest and a few from deciduous broad-leaf and herbaceous plants. Such an assemblage reflects cold environment. Together with available chronological data for the Dayi conglomerates, we prefer that the Dayi conglomerates are glaciofluvial deposits formed ~2.0Ma ago. Formation of Dayi conglomerates reflects Early Quaternary cold environment in the eastern margin of the Tibetan Plateau.

关键词: [大邑砾岩](#) [重矿物组合](#) [孢粉组合](#) [冰水沉积物](#) [岷江](#) [青藏高原](#)

投稿时间: 2012-03-04 最后修改时间: 2013-04-04

[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](#)