



**HAL**  
open science

## **Emplacement mechanism of the Middle-Late Jurassic Qitianling pluton and its implications on the Mesozoic tectonics of South China Block**

Hongsheng Liu, Yan Chen, Michel Faure, Bruno Scaillet, Bo Wang, Guillaume Martelet, Fangfang Huang, Jinchu Zhu, Rucheng Wang, Saskia Erdmann

### ► **To cite this version:**

Hongsheng Liu, Yan Chen, Michel Faure, Bruno Scaillet, Bo Wang, et al.. Emplacement mechanism of the Middle-Late Jurassic Qitianling pluton and its implications on the Mesozoic tectonics of South China Block. EGU General Assembly 2016, 2016, Vienne, Austria. <hal-03551936>

**HAL Id: hal-03551936**

**<https://hal.science/hal-03551936v1>**

Submitted on 2 Feb 2022

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons CC BY 4.0 - Attribution - International License



## **Emplacement mechanism of the Middle-Late Jurassic Qitianling pluton and its implications on the Mesozoic tectonics of South China Block**

Hongsheng Liu (1,2), Yan Chen (2), Michel Faure (2), Bruno Scaillet (2), Bo Wang (1), Guillaume Martelet (2,3), Fangfang Huang (1), Jinchu Zhu (1), Rucheng Wang (1), and Saskia Erdmann (1)

(1) State Key Laboratory for Mineral Deposits Research, School of Earth Sciences and Engineering, Nanjing, China(hongsheng.liu@cnsr-orleans.fr), (2) Institut des Sciences de la Terre d'Orléans, UMR 7327, Université d'Orléans, France, (3) CNRS/BRGM/INSU, ISTO, UMR 7327, 45071 Orléans, France

The widespread Mesozoic magmatism that extends about 1500km along the NE-SW strike and 800km wide in the southeastern part of the South China Block is a remarkable feature that has attracted the attention of geoscientists since 1940's. Numerous studies have been carried out, and consequently, several geodynamic models related to the emplacement mechanism have been proposed, based essentially on petrology, geochronology, and (isotopic) geochemistry. Recently, a general consensus is apparently achieved within the geosciences community on the tectonic contexts of the South China Block during the Triassic (compressive) and Cretaceous (extensive) periods, however the tectonic setting of the Jurassic is still in debate, moreover the Jurassic magmatism is closely related to abundant mineralization of rare metal elements. Due to the similarities in age, rock type and major geochemical feature of Jurassic granite, the Qitianling granitic pluton, situated in the Nanling area and dated at ca. 157 Ma, was chosen as the target of this study among 41 visited plutons. Previous studies divide the Qitianling pluton into three petrographic facies, namely: i) Bt + Qtz + Fsd + Amp, ii) Bt + Qtz + Fsd + (Amp) , iii) Bt + Qtz + Fsd. Zircon U-Pb dating indicate the age peak of these different facies at 161Ma, 157-156Ma and 149Ma, respectively. The field observation shows that: 1) the granite is isotropic without visible preferred mineral orientation or deformation; 2) the contact between the granite and country rocks is sharp, with a 1-10m narrow thermal aureole, but without any visible deformation. The microscopic observation on the thin sections of wall rocks and granite doesn't show any mineral preferred orientation consisting to the field observation. Therefore, a total of 53 sampling sites and 318 oriented cores were collected from the Qitianling pluton for an Anisotropy of Magnetic Susceptibility (AMS) study. The investigation on rock magnetism shows the pseudo-single-domain magnetite as the principal carrier of magnetic susceptibility. The degree of magnetic anisotropy (PJ) of all measured samples is lower than 1.12, suggesting that the granites did not experience a post-solidus deformation. Positive values and concentric poles are revealed for the majority of shape parameter (T) and magnetic foliation (k3), respectively, while the magnetic lineations (k3) are dispersed. The gravity data of the Qitianling pluton exhibits a laccolite shape with a northeast ward trend and a root at its southern central part. Both field observation and laboratory analysis suggests a non-syntectonic environment for the emplacement of the Qitianling pluton. More investigations are needed in the future for a comprehensive understanding of the geodynamic setting of the Jurassic magmatism in South China.