# C and Sr isotope stratigraphy of the Ediacaran-Cambrian Xiaotan section, Yangtze Platform, S. China

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Ediacaran-Cambrian boundary strata are extensively developed and well exposed in eastern Yunnan, Southwest China, especially east of the Dianchi Fault in this region. The Laolin section (east of the fault) and the former GSSP candidate Meishucun section (west of the fault) were previously studied by the authors in detail [1]. Here we report new data from the even more completely exposed Xiaotan incised valley section, NE Yunnan Province.

The Ediacaran-Cambrian boundary Zhujiaqing Formation, which consists in upward succession of the Daibu Member, the Zhongyicun Member and the Dahai Member, is the new lithostratigraphic unit name for the strata between the Dengying and Shiyantou formations and is roughly equivalent to the earlier named Meishucun Formation [2].

Carbon isotopic data from carbonates and phosphorites of the Xiaotan section are in good agreement with previously determined values from the Laolin section, with a negative excursion (< -8‰) in the Daibu Member below the Ed-Cm boundary, and a positive excursion (> +3‰) in the Dahai Member [1] suggesting a pre-Tommotian age [3].

Limestone $^{87}Sr/^{86}Sr$ ratios show a systematic decrease from 0.7086-8 at the base of Zhongyicun Member (earliest Cambrian) to about 0.7082-3 in the Dahai Member. These values are consistent with global seawater $^{87}Sr/^{86}Sr$ trends that exhibit a decrease during the positive C-isotope excursion of the Nemakit-Daldynian and a subsequent rise in the Tommotian [4].

Both carbon and strontium isotope results support the view that the Zhongyicun and Dahai Members of the Zhujiaqing Formation are of pre-Tommotian age.

This study is supported by NSFC grant 40872025, Sino-German scientific fund and China Scholarship Council.

[1] Li *et al.* (2009) *Geological Magazine*, in press. [2] Zhu *et al.* (2001) *Acta Palaeotologica Sinica* **40**, 4-39. [3] Knoll *et al.* (1995) *Geology* **23**, 1139-43. [4] Brasier *et al.* (1996) *Geological Magazine* **133**, 445–85.

# Pb isotopic evidence for sources of heavy metals in vegetables and soil, southwest China

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## Introduction

The characteristics of heavy metal speciation, distribution and migration of heavy metals in vegetable ecosystem in southwest China were studied in this paper. The isotopic composition of Pb was used to identify pollution source and calculate source apportionment.

## Results and Discussions

The contents of bio-available heavy metals in vegetables soil profile are mostly higher than those in background soil profile. It indicates that human activities will increase the bioavailability of heavy metals in vegetable soil. However, the calculated transfer factors of heavy metals between soil and edible part of vegetable are generally low (0.04-0.33 for Cu, 0.004-0.06 for Pb, 0.07-0.23 for Zn, and 0.26-0.87 for Cd), which suggest that the vegetable quality is not significantly affected by high bioavailability of heavy metals.

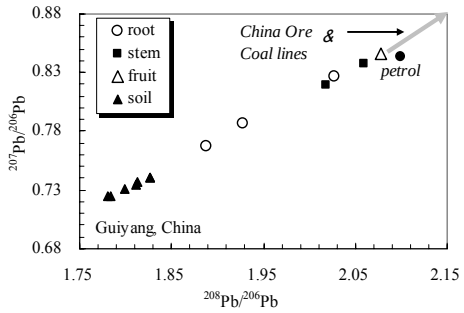


**Figure 1:** A plot of $^{207}Pb/^{206}Pb$ versus $^{208}Pb/^{206}Pb$ for soil and vegetable samples in Guiyang, China.

Between the $^{207}Pb/^{206}Pb$ and $^{208}Pb/^{206}Pb$ exists a clear positive relationship, as seen from Fig. 1. Using binary mixing equation [1], the calculation results show that the contribution of atmospheric Pb increased from root (22.3%~61.3%) to stem and leaf (54.6%~84.0%), and to fruit (89.2%) of vegetables, indicating that the lead pollution of vegetable by atmospheric deposits can not be neglected.

[1] Monna *et al.* (1997) *Environ Sci & Technol* **31**, 2277-2286.