Gold geochemical provinces in China

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Delineation of Gold Geochemical Provinces

Geochemical mapping projects in China have provided a huge mass of information for regional geology and geochemistry, and have made the most significant contribution to mineral discoveries due to the high-quality, consistent, informative and comparable data [1, 2]. China's National Geochemical Mapping Project (RGNR project) has covered approximately 7 millions of km^2 of China's territory mainly using stream sediments at a density of 1 sample/4km^2 with 39 elements in the past 3 decades. This project provides us with a good opportunity to display geochemical provinces in China.

Gold geochemical provinces are delineated by using average values from the RGNR project data. One average value is calculated from a grid of 20 by 20 km.. A gold geochemical province is defined as an area over 1 000 km^2 with gold contents significantly different from the background. The significant difference is indicated by gold threshold, which is equal to background value plus 2 standard deviations. Gold geochemical background value and standard deviation in stream sediments are 1.3 ppb and 0.6 respectively based on statistics from approximately 1.5 million km^2 in China. Thus the threshold of 2.5 ppb is used to delineate gold geochemical provinces.

Discussion of Results

Forty gold geochemical provinces have been delineated in whole China mainland. Most of large gold geochemical provinces are distributed in the periphery of Yangtz craton of China and have a good correlation with gold metallogenic provinces.

Gold geochemical provinces contain 14 of all the 18 gold metallogenic provinces in China [3]. This fact indicates that geochemical provinces provide tremendous mass of gold for the formation of gold ore deposits.

Geochemical provinces without containing gold ore provinces can be interpreted that (1) gold deposits have not been discovered, because ore provinces can only be defined after a cluster of ore deposits have already been found in a region, (2) some geochemical provinces are not produced by ore deposits, and are due to some types of rocks containing a relatively high content of gold.

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SHRIMP U-Pb Age of Zircon from Precambrian - Cambrian Boundary in the Meishucun Section

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Introduction

Zhongyicun Member of the Meishucun section, Yunnan, China. The layer M5 is just between two international Precambrian -Cambrian boundary stratotypes point A and B. The volcanogenic event occur between the first emergence of monophyletical evolution's small shelly fossil assemblages of a phylum.

Discussion of Results

By using a new technique of combing with the Cathodoluminescence (CL) graphs and Raman Spectroscope Analysis to choose the suitable samples[1] and based on the U-Pb zircon determination by SHRIMP, this cluster consists of 13 spots and the new more credible zircon $^{206}Pb/^{238}U$ weighted mean age 541.3±1.3(σ)Ma have been obtained in layer M5 of the betonies from the Because the most of the layer of M5 80% zircons exist the metamictization in the different degrees, now still there is not announced on the authentic U-Pb age data of M5 layer zircons ID- TIMS. Because the announced M5 layer SHRIMP U- Pb age data [1,2] lacks the studies of the mineralogy and the Raman spectrumit peaks, it is very indispensable that these U- Pb data quantity and reliability can be test again.

Conclusions

We proposed that the zircons $^{206}Pb/^{238}U$ weighted mean age (541.3.0 ± 1.3Ma) of the bentonites within the layer M5 of the Meishucun section, dated by SHRIMP, may be the now best choice for the global criteria age of Precambrian-Cambrian boundary. It is very necessary that the date of 541.3Ma (the base of the Cambrian) will be received by GEOLOGIC TIME SCALE.

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