A Big Earth Data Platform for Three Poles

**Data set of deep prediction evaluation and prospecting demonstration of porphyry mineralization system in the middle Gangdese, Tibet**

1、Description

The data generated by the project are as follows:
1、 Zircon U-Pb age, Hf isotope and trace element data produced by third-party detection;
2、 Sr-Nd-Pb isotopic geochemical data of the whole rock generated by third-party detection;
3、 Whole rock major and trace element data generated through third-party detection;
4、 In situ major and trace element data of chlorite and epidote produced by third-party detection;
5、 Mineral EPMA data generated by third-party detection;
6、 Measured short-wave infrared spectroscopy and X-ray fluorescence element data in the field;
7、 Measured audio magnetotelluric data and broadband magnetotelluric data in the field;
The above data were collected in the middle Gangdese metallogenic belt, Tibet. The geophysical data include audio-magnetotelluric (AMT) array covering the major porphyry Cu-deposits and the regional broad-band magnetotelluric (BBMT) array within Zhunuo mining area and surrounding areas, and also the three-dimensional electrical structure models obtained by the inversion of these data. These data were collected from July to October 2019. The magnetotelluric soundings (MT) use the natural electromagnetic fields with rich frequency components as the field source and are able to detect the electrical structure of the earth from near surface to hundreds of kilometers underground. Both the AMT and BBMT data were collected in accordance with the technical specification for natural field audio-magnetotelluric methods (No. DZT 0305-2017). They data acquisition works were conducted through Mtu-5A system developed by the Phoenix Co., Ltd., Canada. The collecting time for BBMT data were more than 24 hours and with period range of 0.004~3000s, while the values of AMT data were more than 1 h and 10000Hz~1s, respectively. The field stations were deployed in geographical coordinates. Standard robust estimation and remote reference processing were used to process the time series and reduce the effects of cultural noises, and finally the impedance tensors and the corresponding apparent resistivity, phase and other information were obtained after editing. Before inversion, the AMT and BBMT impedance data need to be analyzed in detail for dimensionality and strike information. Error floors of 7.5-10 per-cent of the absolute values of both the unrotated diagonal and off-diagonal impedances (i.e., Zxx & Zyy and Zxy & Zyx components) were applied for the 3-D inversion.
The short wave infrared spectrum and X-ray fluorescence elemental analysis data are collected from Beimulang and Cimabanshuo deposits in the Zhunuo ore concentration area. The infrared spectrum data were obtained by TerraSpec® Halo of American ASD company that is full spectral range infrared mineral analyzer. The X-ray fluorescence data were obtained by the new generation NITON xl3t 950 portable XRF element analyzer of Thermo Scientific NITON. The collection time is 2018-2021.
The chlorite, epidote and rock mass samples for integrated study are all collected from Beimlang, Cimabanshuo, Rmujucuo, Luobugangmu, Yawajiage and other deposits in the middle Gangdese. The trace element data of chlorite and epidote, whole rock major and trace element data and Sr-Nd-Pb isotopic data, zircon U-Pb dating and trace element data, zircon Hf isotopic data and mineral electron microprobe data for comprehensive study were completed in laboratories with relevant qualifications at home and abroad, mainly including the Centre for Ore Deposits and Earth Sciences (CODES), University of Tasmania, Australia, China University of Geosciences (Beijing), Analytical Laboratory of Beijing Research Institute of Uranium Geology, Geological Experiment and testing center, Hubei, Wuhan SampleSolution Analytical Technology Co., Ltd, and Beijing Createch Testing Technology Co., Ltd. All the data have reliable quality. The instruments used include AnalytikJena PQMS Elite ICP-MS instrument with a RESOlution 193 nm laser ablation system, laser ablation multi receiver cup plasma mass spectrometer (LA-MC-ICP-MS), X-ray fluorescence spectrometer, ICP-MS, multi receiver inductively coupled plasma mass spectrometer (MC-ICPMS), ISOPROBE-T thermal ionization mass spectrometer (TIMS) and EPMA-1600. The collection time is 2018-2021.
The data set of deep prediction evaluation and prospecting demonstration of porphyry mineralization system in the middle Gangdese provides data support for researchers to study the genetic mechanism and exploration model of the porphyry copper deposit in the Gangdese belt, which show a good application prospect in guiding the prospecting breakthrough in the middle Gangdese.

2、Keywords

Theme：Exploration geochemistry,Rocks/Minerals,Earth Resistivity,Geochemistry,Magnetotellurics,Cu
Discipline：Solid earth
Places：Tibet, Middle Gangdese
Time：Cenozoic

3、Data details

1.Scale：None

2.Projection：

3.Filesize：51.6MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：29.67 | - |
| west：87.0 | - | east：88.0 |
| - | south：29.41 | - |

5、Time frame:None--None

6、Reference method

References to data:

ZHENG Youye , YIN Yaotian , WU Song . Data set of deep prediction evaluation and prospecting demonstration of porphyry mineralization system in the middle Gangdese, Tibet. A Big Earth Data Platform for Three Poles, doi:10.11888/SolidEar.tpdc.2720762022

References to articles:

Chen, X., Zheng, Y.Y., Gao, S.B., Wu, S., Jiang, X.J., Jiang, J.S., Cai, P.J., & Lin, C.G. (2020). Ages and petrogenesis of the late Triassic andesitic rocks at the Luerma porphyry Cu deposit, western Gangdese, and implications for regional metallogeny. Gondwana Research, 85, 103-123.

Qi, P., Yin, Y.T., Jin, S., Wei, W.B., Xu, L.Y., Dong, H., & Huang, J.H. (2021). Three-Dimensional Audio-Magnetotelluric Imaging including Surface Topography of the Cimabanshuo Porphyry Copper Deposit, Tibet. Minerals, 11(12), 1424.

李家桢, 吴松, 林毅斌, 蒋宗洋, 易建洲, 蒋光武, 刘晓峰, 华康, 次琼, 赵亚云. (2021). 西藏次玛班硕斑岩铜矿蚀变-矿化样式及找矿潜力. 地球科学, https://kns.cnki.net/kcms/detail/42.1874.p.20211223.1011.008.html.

7、Supporting project information

Deep prediction evaluation and prospecting demonstration of porphyry mineralization system in the middle Gangdese, Tibet

8、Data resource provider

name: ZHENG Youye
unit: China University of Geosciences, Beijing
email: zhyouye@163.com

name: WU Song
unit: China University of Geosciences, Beijing
email: songwu@cugb.edu.cn

name: YIN Yaotian
unit: China University of Geosciences, Beijing
email: yaotian@cugb.edu.cn