A Big Earth Data Platform for Three Poles

**Seven maps of Mesozoic tectonic thermal fluid numerical simulation in eastern China**

1、Description

The contents include: plane model diagram of strata deformation and shear strain change after 10% compression of the model of Huangjindong deposit in northeastern Hunan Province; Plane model diagram of strata deformation and shear strain change after 2% extension of Huangjindong deposit model in Northeast Hunan Province; Plane model diagram of strata deformation and volume strain change after 2% stretching of Huangjindong deposit model in Northeast Hunan Province; The cross-section model map of strata deformation and shear strain change after 1% compression of Huangjindong deposit model in Northeast Hunan Province; Section model of strata deformation and volume strain change after 1% compression in Huangjindong deposit, Northeastern Hunan Province; The cross-section model map of strata deformation and shear strain change after 1% stretching of Huangjindong deposit model in Northeast Hunan Province; The profile model of strata deformation and volume strain change after 1% stretching of the Huangjindong deposit model in northeastern Hunan Province. There are seven Mesozoic tectonic thermal fluid numerical simulation maps in eastern China.  
The establishment process of plane and profile model: the top surface of the profile model is 3km underground, and the geometric model is 633m long, 20m wide and 512 M high. The lithology of the stratum in the model is sandstone and slate interbedding, and is cut through by a fault. The plane model is 15.3km wide and 12.5km high. The model consists of sandstone, siliceous slate and two kinds of quartz bearing slate with four faults. The stratum and rock mass in the study area are defined as elastic-plastic materials, and the corresponding simulation calculation is carried out based on the Mohr Coulomb strength criterion. The Mohr Coulomb strength criterion is adopted. The permeability and porosity of each geological unit are mainly based on the measured parameters of different geological units in Northeast Hunan, while the mechanical parameters are mainly from the FLAC3D manual or the test data of similar lithology. According to the previous research results and the actual geological characteristics of the mining area, the initial and boundary conditions of deformation and fluid flow are set, and the fluid flux is given to the whole model according to the mode and direction of fluid migration. In the initial state, the initial state of all pores in the rock is water saturation, that is, the saturation is 1. According to the theoretical model of ore-forming fluid pressure of hypabyssal rock, the initial pore pressure in the formation is set as hydrostatic pressure, and the pore pressure on the top surface of the model is fixed. The surface of the model is a permeable boundary, and other boundaries are set as impermeable boundaries. Then the initial geostress is balanced to get the equilibrium state. Then, the mechanical boundary conditions are set for the model. Combined with the characteristics of the ore deposits in northeastern Hunan formed in the tectonic environment of first compression and then tension, the two models are compared with each other, and the symmetrical initial compression velocity (2.425) is applied on the left and right boundaries of one model × 10-9 M / s) to simulate the process of tectonic compression, while the symmetrical initial tension velocity (2. 425 M / s) was applied to the left and right boundaries of the other model × 10-9m / s) to simulate the process of tectonic extension.  
Main conclusions and Enlightenment: the dynamic mechanism of the mineralization process of Huangjindong gold deposit is discussed through numerical simulation. Under the action of tectonic compression and tectonic extension, a large dilatation area appears in the slate near the fault. The formation of dilatation space can provide a favorable metallogenic space for mineral precipitation and metasomatism, and provide a favorable place for the convergence of ore-forming fluids, The simulation results show that the expansion location is basically corresponding to the known ore body. It also shows that the mineralization process of gold deposits in Northeast Hunan is closely related to mechanical action. At the same time, for other gold deposits or other types of gold deposits in Northeast Hunan, this simulation study also has a certain reference value, that is, through obtaining the relevant metallogenic geological characteristics (tectonic stress environment, rock mechanics parameters, etc.), studying the rock mass properties, strata deformation characteristics and the migration law of ore-forming fluid in the ore body location, It can clearly show the physical process of mineralization, improve the existing metallogenic model, and provide a theoretical basis for further prospecting.  
The above data have not been published yet. The results are expected to be published in SCI high-level journals, and the data are true and reliable. The data is stored in JPG format.

2、Keywords

Theme：neotectonics,Tectonics,stress  
Discipline：Solid earth  
Places：Northeastern Hunan, eastern China, Huangjindong  
Time：Mesozoic, Yanshanian

3、Data details

1.Scale：None

2.Projection：

3.Filesize：11.3MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：29.0 | - |
| west：112.3 | - | east：114.0 |
| - | south：28.0 | - |

5、Time frame:None--None

6、Reference method

References to data:

LI Zenghua. Seven maps of Mesozoic tectonic thermal fluid numerical simulation in eastern China. A Big Earth Data Platform for Three Poles, doi:10.11888/Geo.tpdc.2713402021

References to articles:

7、Supporting project information

The deep process and resource effect of major geological events in Yanshan period (2016YFC0600400)

8、Data resource provider

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