

Cooperation on geochemical mapping along Sino-Mongolian border

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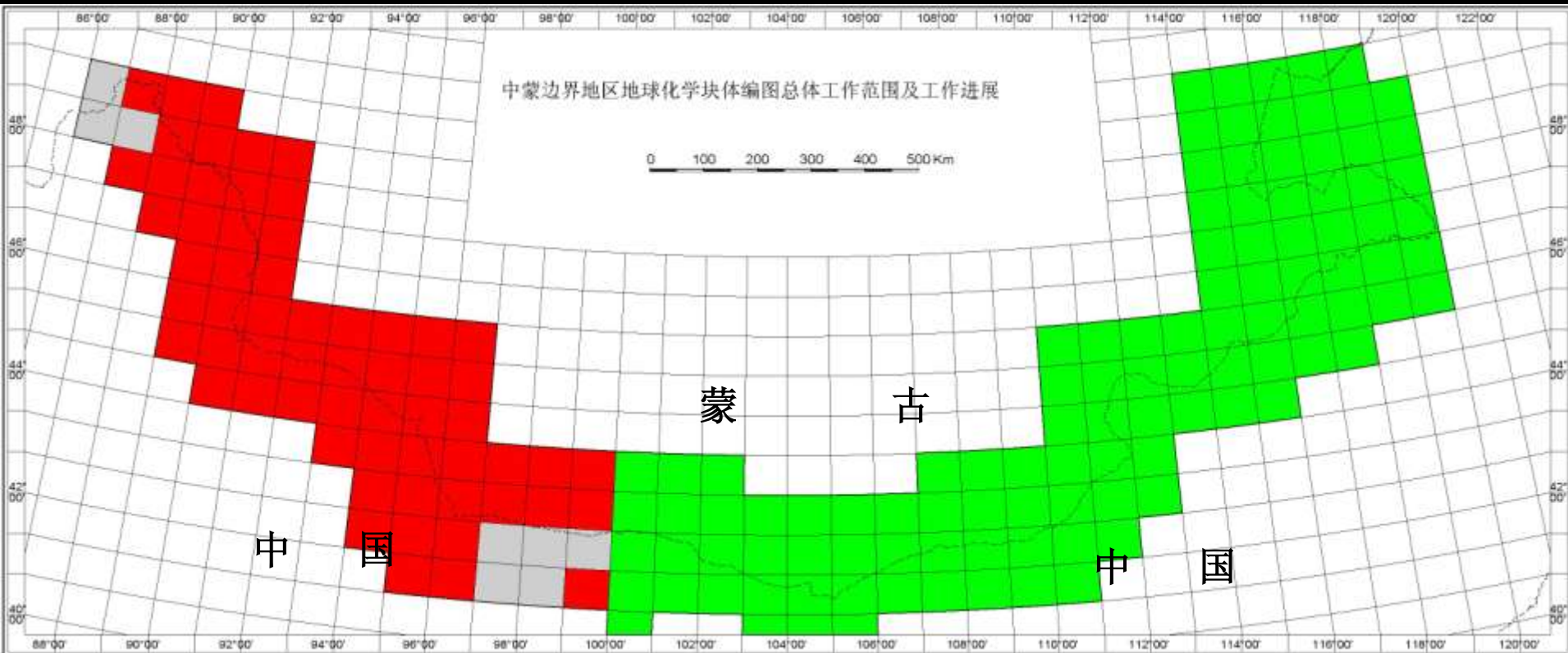


Cooperation background

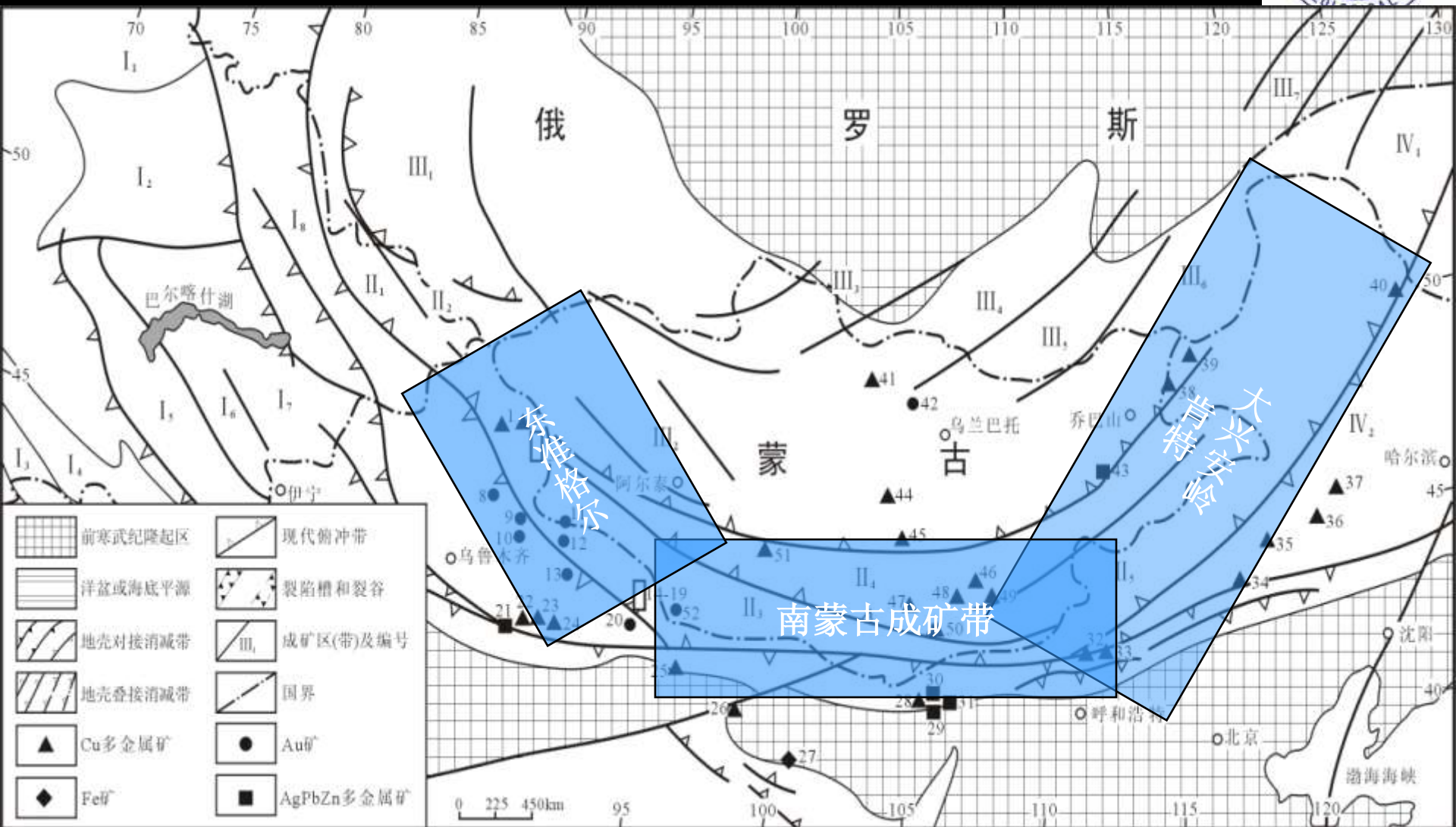
- **China Geological Survey and Mongolia Bureau of Geology and Mineral Resources signed a cooperation agreement in 2005**
- **The Chinese Geophysical and Geochemical Exploration Institute of Chinese Academy of Geological Sciences, and the Mongolia Geological Survey are the two sides responsible for execution.**
- **The first phase of cooperation is 2005-2010**
- **The aim is to compile an 1:1 000 000 Geochemical map of the Sino-Mongolian border areas for the mineral resources evaluation in Mongolia border region, in order to trace the large-scale Metallogenic belt in Mongolia extending to China, and to provide basic data and maps for Chinese companies in their "going out" process.**

Cooperation area

- Along the Sino-Mongolian border and extending into both sides 100km, the dimension is about 1.3 million square kilometers. The colorful part is the waiting-mapping area. The green part has been completed, the red part is in progress.



Geological background



Distribution of major deposits of Sino-Mongolian border



Setting technology standards for Sino-Mongolian joint geochemical mapping



Manual Geochemical Mapping

1: 1 million

From design to map generation

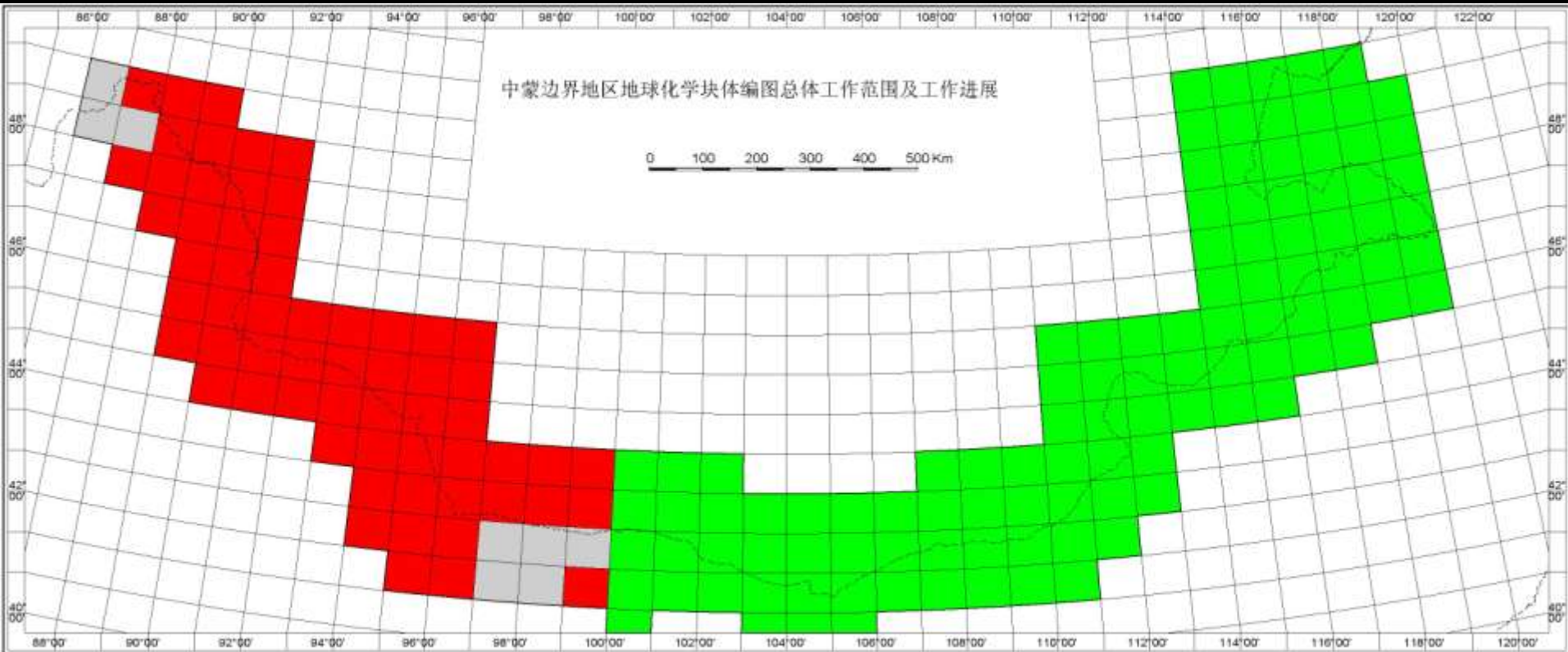
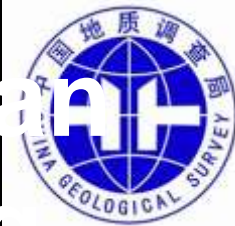
Version 1.0



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Development of Sino-Mongolian border geochemical mapping

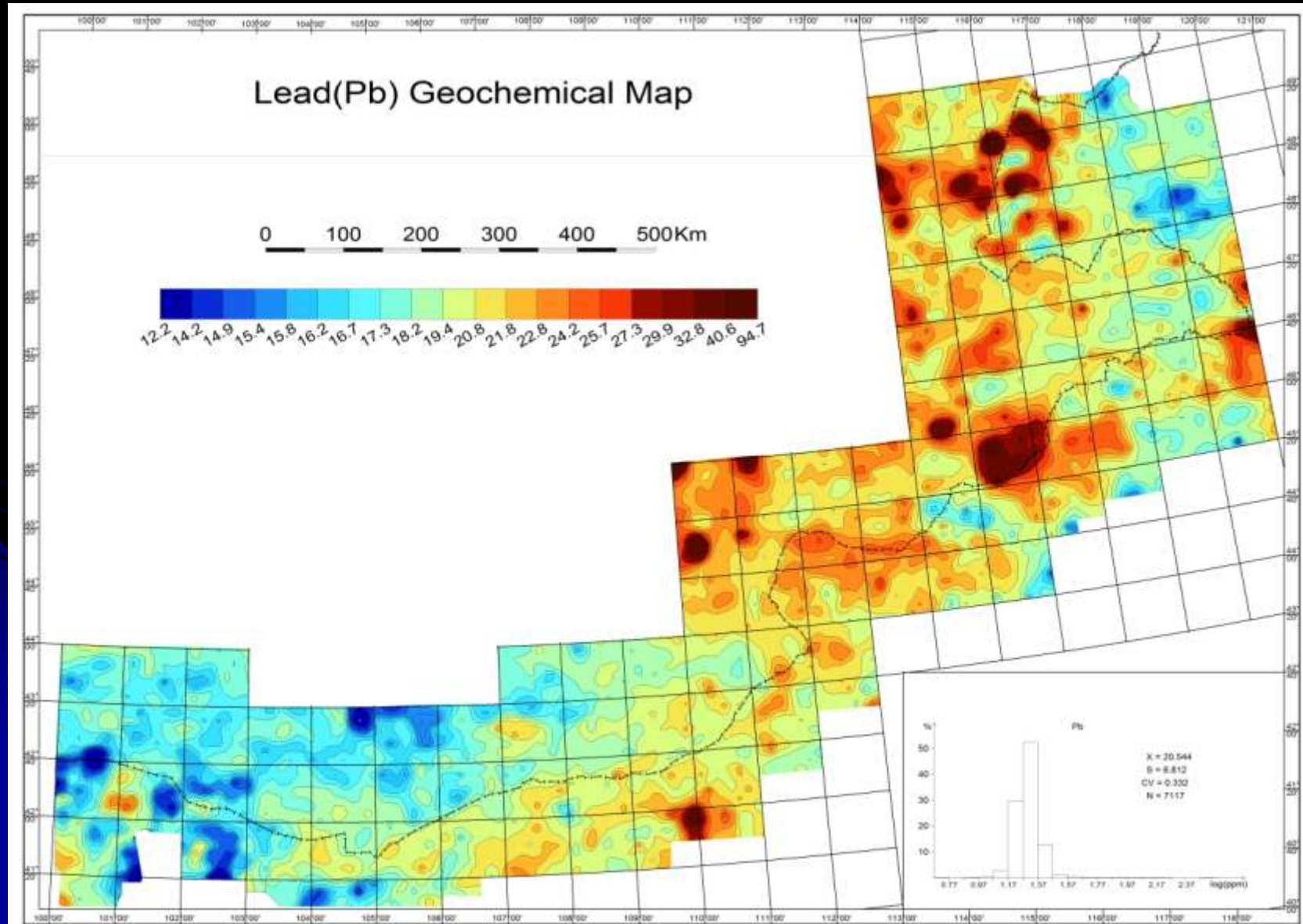
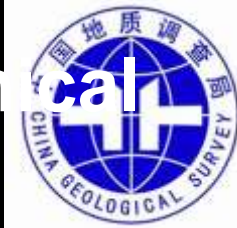


完成样品采集区域

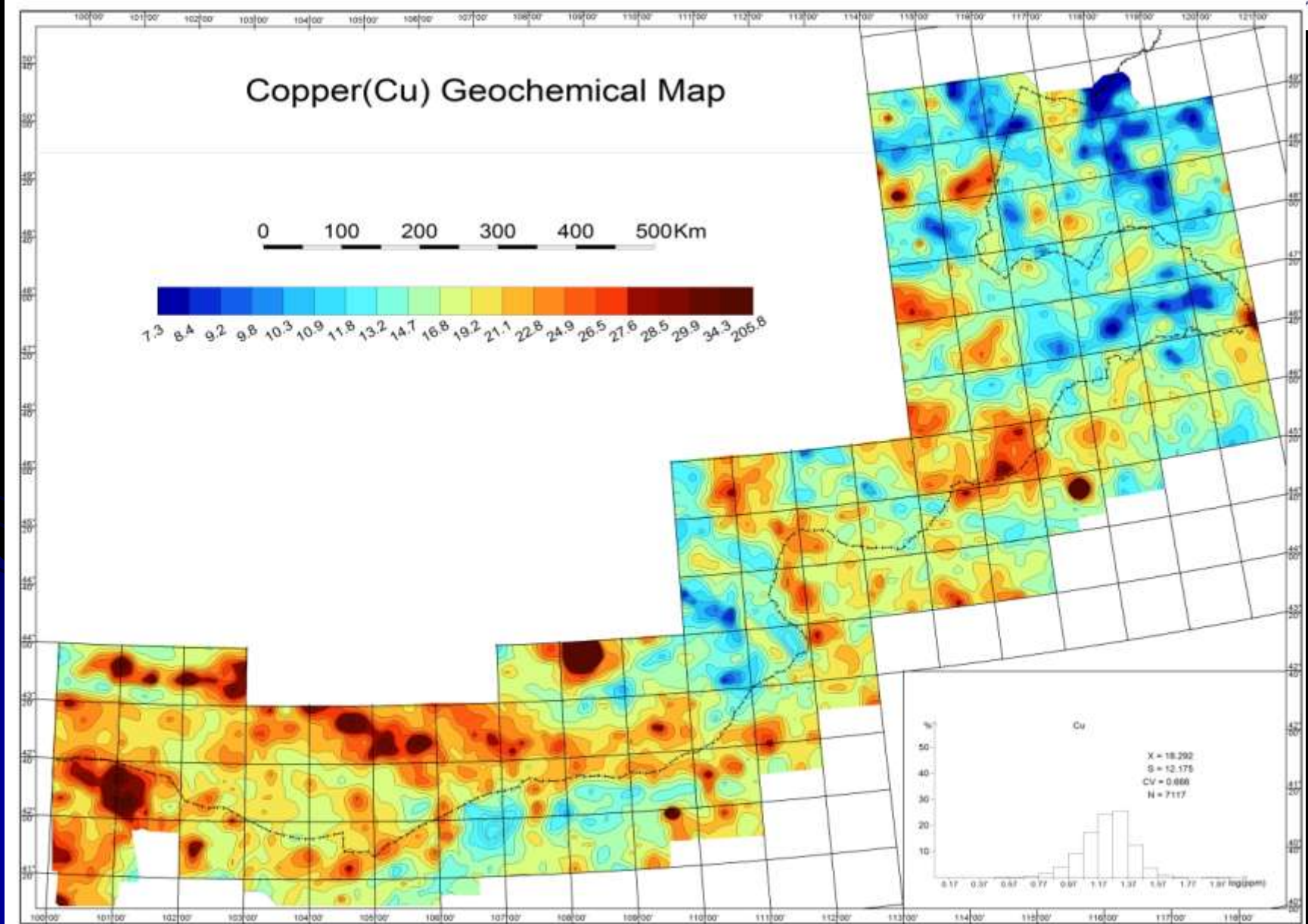


完成样品分析区域

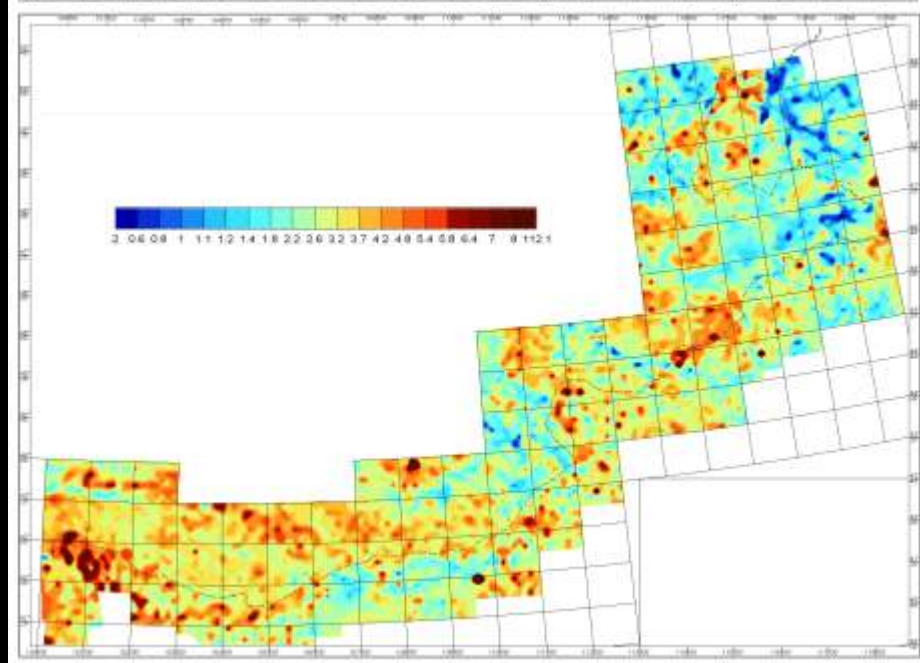
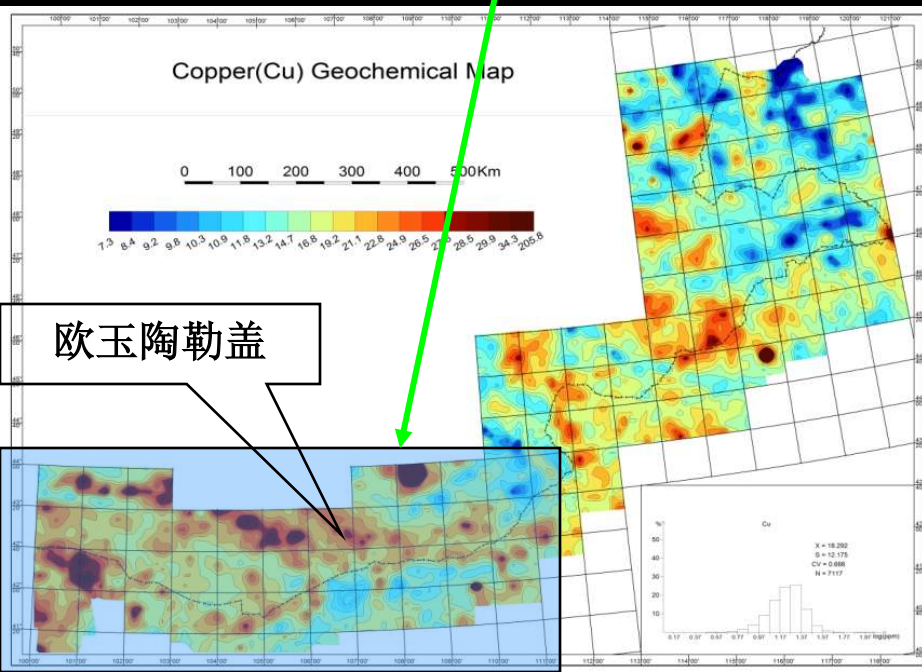
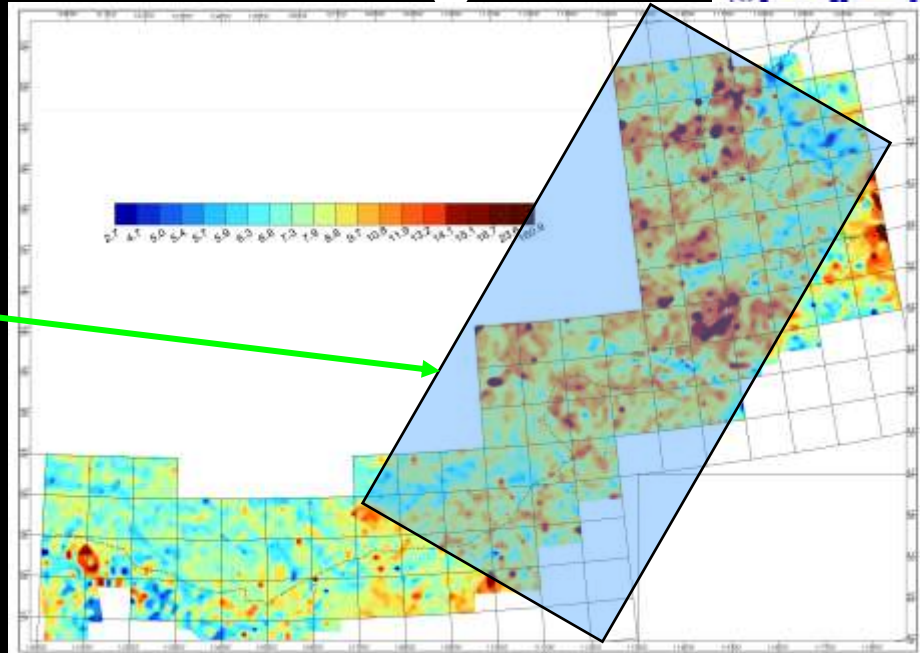
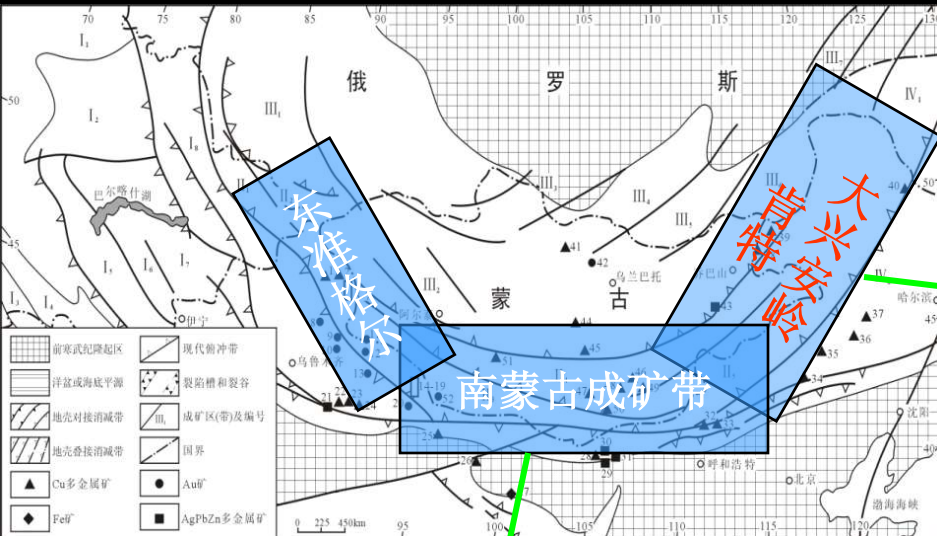
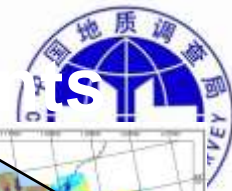
Sino-Mongolian border 1:1000000 Geochemical map of lead



Sino-Mongolian border 1:1000000 Geochemical map of copper

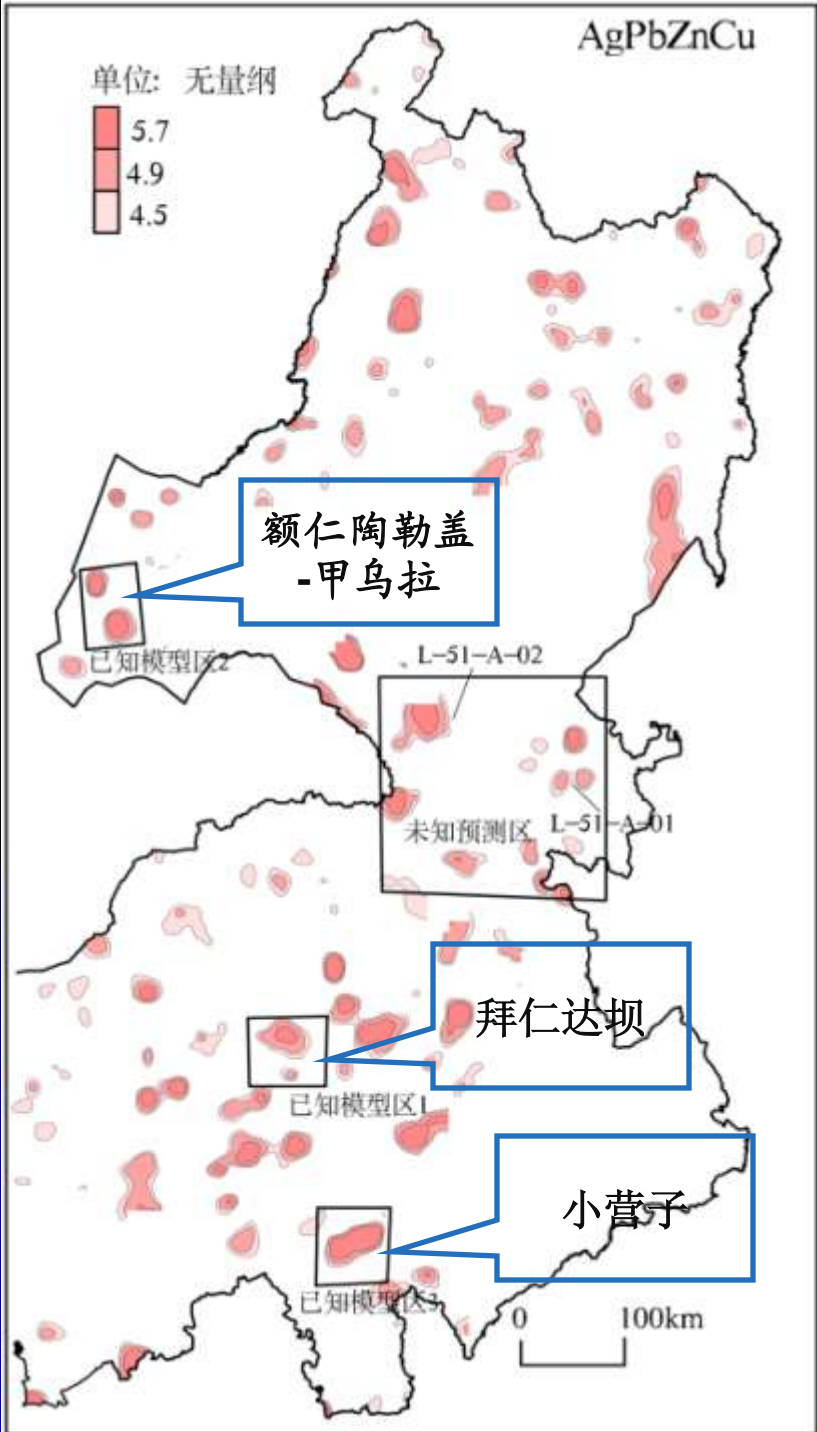


Distribution of the main ore-forming elements



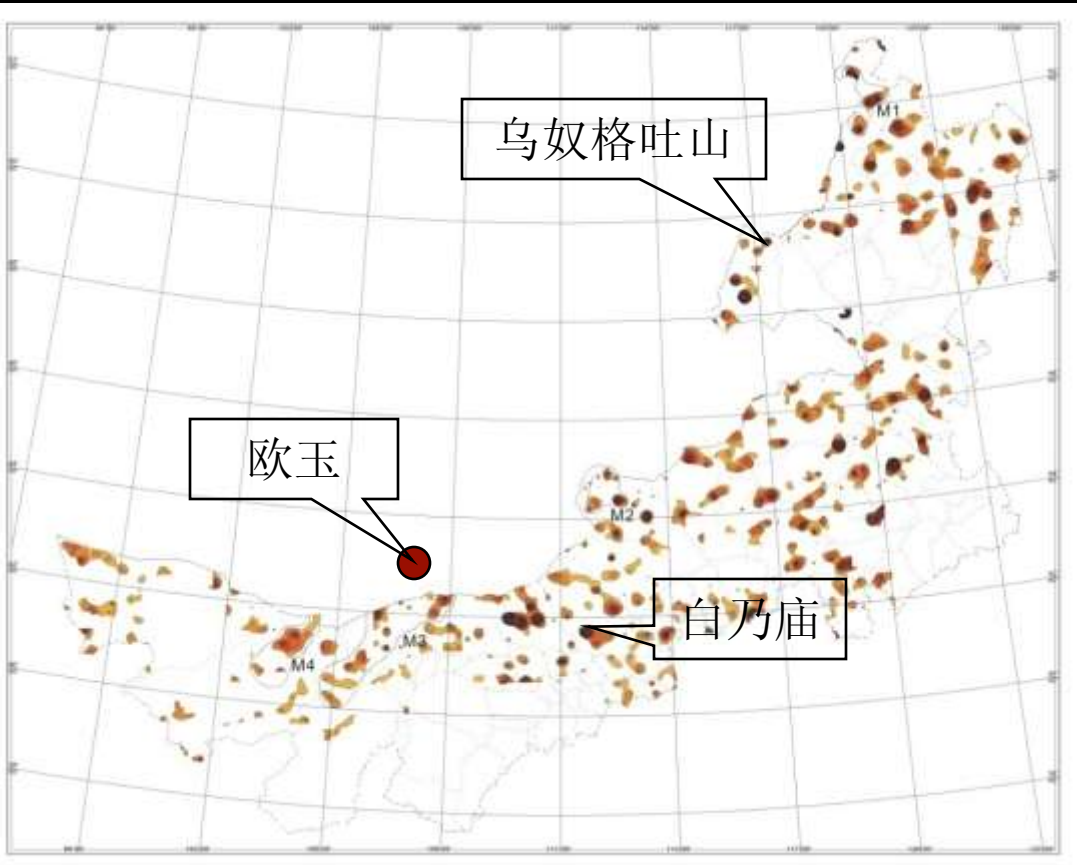


Output relations between Geochemical province and silver-polymetallic ore



矿床规模	矿床数	产出于异常内矿床数	百分比
大型	4	4	100%
中型	11	10	91%
小型	11	6	54%
全部	26	20	77%

Output relation Statistics of Geochemical anomalies and Porphyry copper.



矿床规模	矿床数量	产于地球化学省	产于区域地球化学异常
大型	3	2, 75%	3, 100%
中小	5	1, 20%	5, 100%
全部	8	3, 37%	8, 100%

Geochemical indicators of large silver polymetallic deposit.

矿集区	成矿元素	异常下限	异常点数	异常面积	异常均值	几何均值	极大值	异常衬度	异常规模	异常NAP
额仁达坝-维拉斯托-银都银铅锌大型矿集区	Ag	100.1	99	471	158.4	2.1	1047.9	1.6	27495	746
	Pb	29.5	208	891	53.4	1.6	831.5	1.8	21284	1613
	Zn	80.8	103	448	120.8	2	432	1.5	17902	669
额仁陶勒盖银铅锌矿集区	Ag	100.1	52	208	538	2.2	14507.4	5.4	90912	1116
	Pb	25.9	49	209	73.4	1.5	853.3	2.8	9940	593
	Zn	69.8	43	163	128.8	1.9	748.1	1.8	9622	301
查干布拉根-甲乌拉银铅锌矿集区	Ag	100.1	32	136	1298.5	2.2	35372.6	13	162771	1762
	Pb	25.9	14	53	59.8	1.4	521.4	2.3	1780	121
	Zn	69.8	18	71	100.6	1.9	370	1.4	2181	102
小营子-黄谷屯铅锌银矿集区	Ag	100.1	164	680	271.3	2.2	5734.6	2.7	116462	1844
	Pb	25.9	157	679	93.3	1.7	1284.5	3.6	45785	2446
	Zn	69.8	18	71	100.6	1.9	370	1.4	2181	102

establishment of Porphyry copper-gold geochemistry indicators

矿床	元素	异常面积	异常均值	异常面金属量	异常衬值
欧玉	Cu				
白乃庙	Cu	423	32.8	13874	2.1
	Au	211	2.5		1.5
	Mo	425	2.76		2.7
乌奴格吐山	Cu	158	40.1	6320	2.6
	Au	206	2.5		3.2
	Mo	88	6.5		8.5

geochemical forecasting symbols of large silver- polymetallic ore



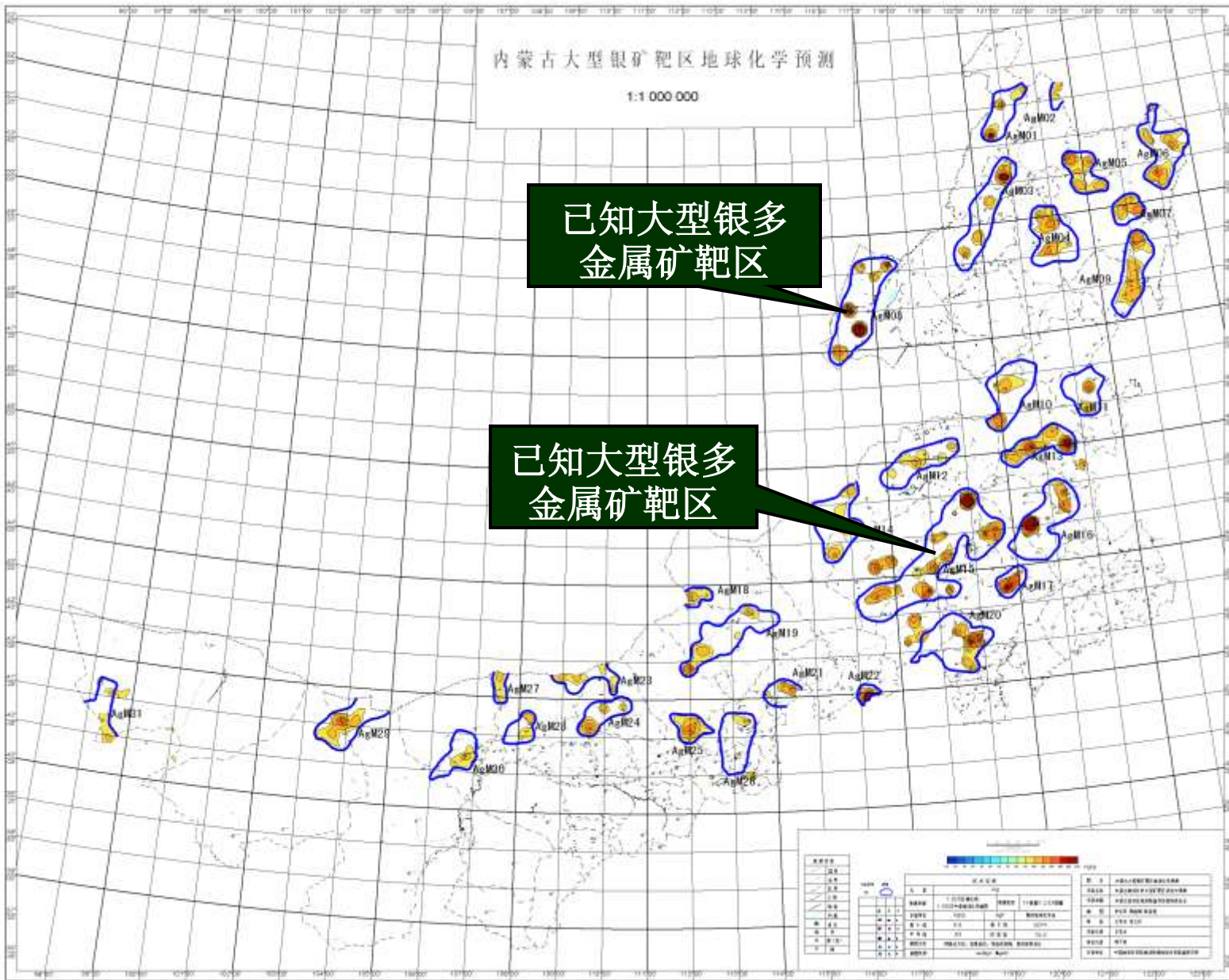
- There is an unusual combination of Ag, Pb, Zn and Cu in the concentration area of Silver polymetallic ore .
- Area of the single-element anomaly is generally $>500\text{km}^2$, area of the more-than-or-equal-to one element anomaly is generally $>1000\text{km}^2$; area of the integrated Ore-forming elements anomaly is $>500\text{km}^2$;
- the NAP value of the more-than-or-equal-to one element >10000 。
- the standardized integrated anomaly threshold of Ag、 Pb、 Zn and Cu >4.5 , anomaly contrast (Average content of elements/anomaly threshold content) >1.5 。

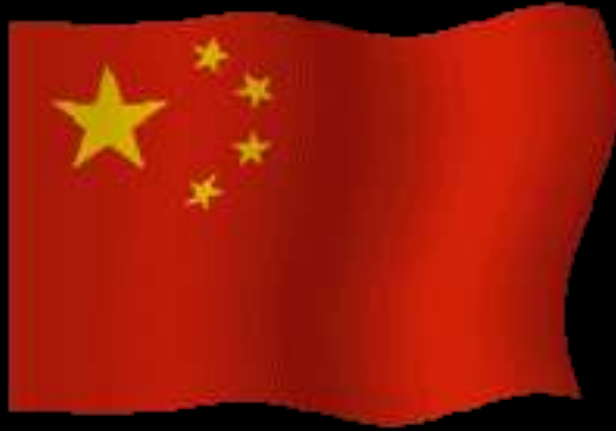


Predictors of large-scale porphyry copper

- Predictors of large-scale porphyry copper has a combination of Cu, Au, Mo, Ag. Therefore these two groups of elements can predict after respective cumulating, the single-element anomaly is generally between 100-500km²;
- NAP value of Ore-forming elements >5000.
- Single-element enrichment factor >2.0;
- There are igneous activity associated with the combination of elements K₂O、 SiO₂、 Y、 Th、 Nb、 La and U and so on.

forecasting of large silver-polymetallic





**thank
you!**

