CO_2 geological sequestration monitoring research progress of Ordos demonstration

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OUTLINE

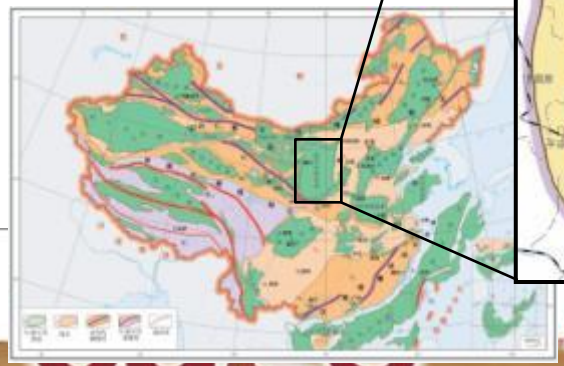
- 1.Overview of Ordos Demonstration
- 2.Achievements
- 3.Problems

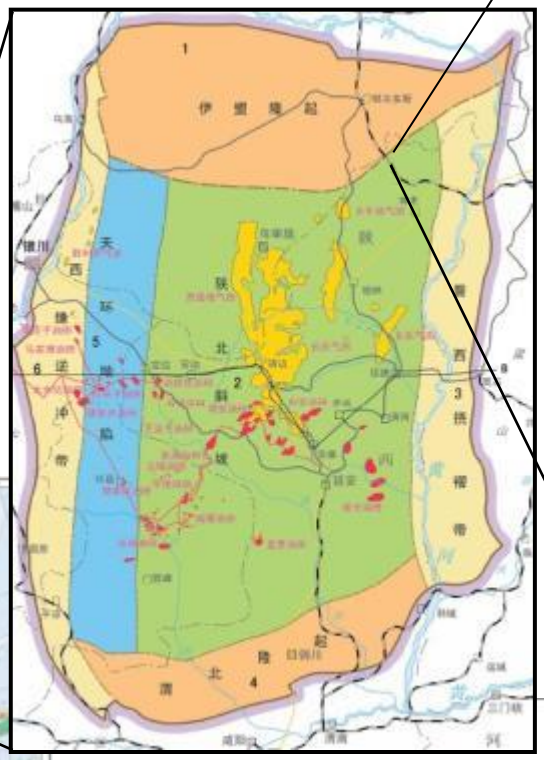
1.Overview of Ordos Demonstration

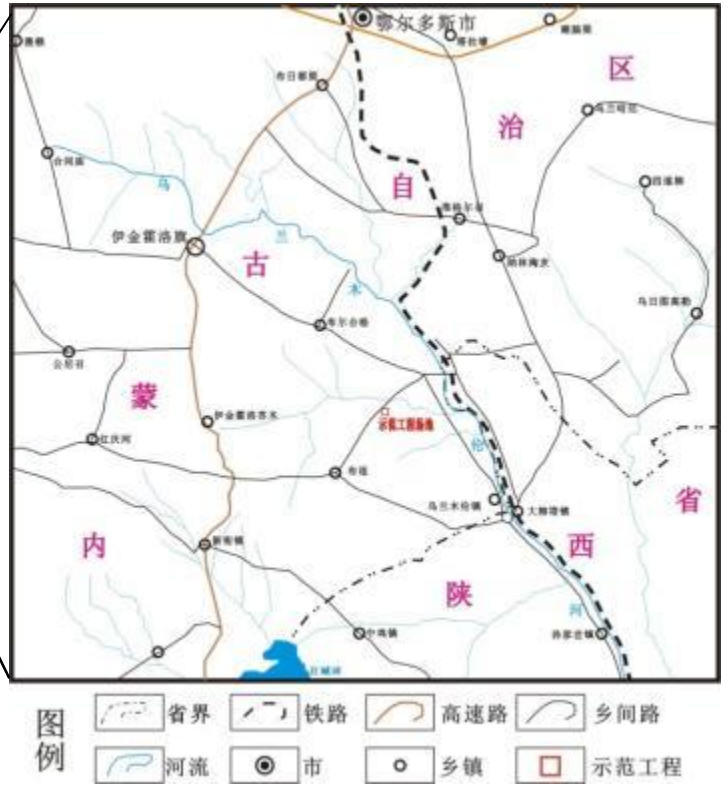
CO_2 geological sequestration of Ordos demonstration

Administrative division： Yijihuoluo County

First tectonic unit ： Yimeng Uplift







1.Overview of Ordos Demonstration

There is the first coal-based whole process of deep saline aquifer of CO_2 geological sequestration demonstration project in China also in the world.

Injection amount: 100,000 t/year;

transportation

capture, purify, compress

Exhaust gas

canning storage

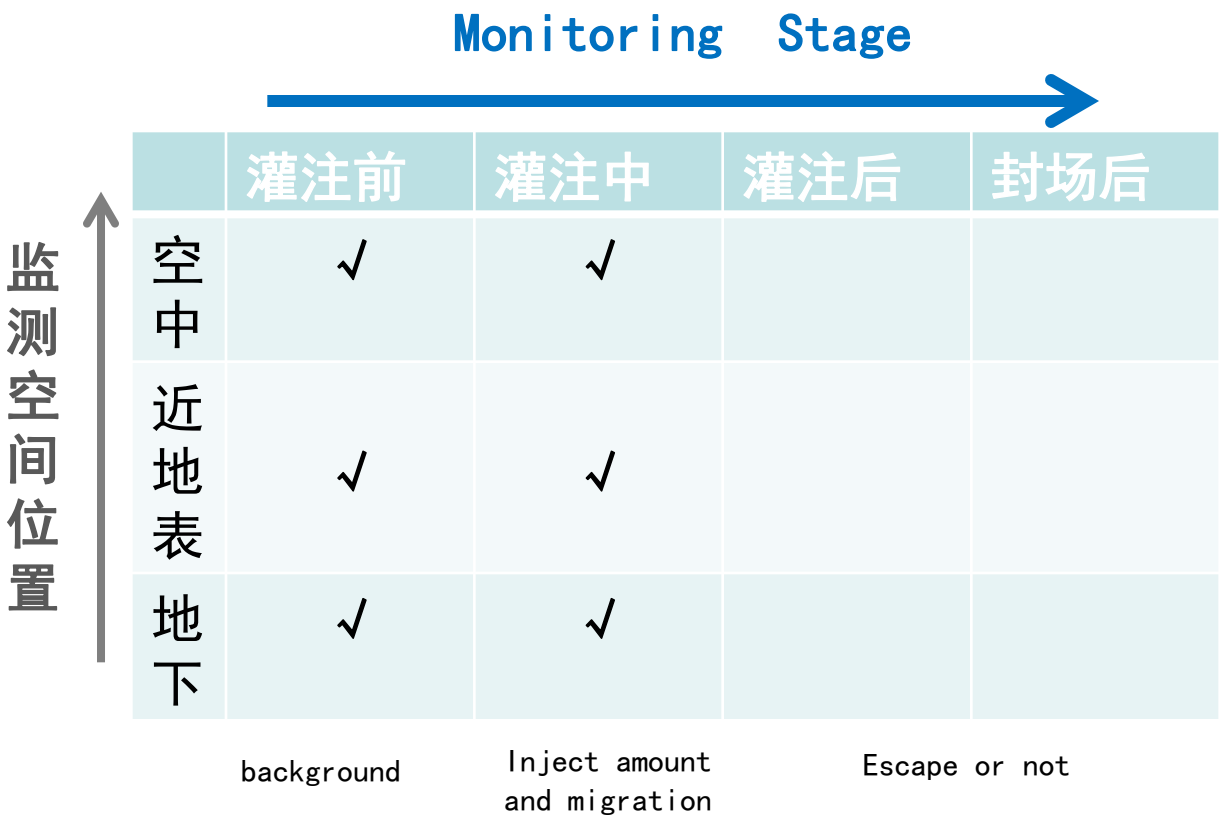
geological storage

1.Overview of Ordos Demonstration

- **Cooperate with China Shenhua coal to liquid and chemical co., LTD., and more than 10 universities and research institutes**
- **1 injection well,2 monitoring wells**

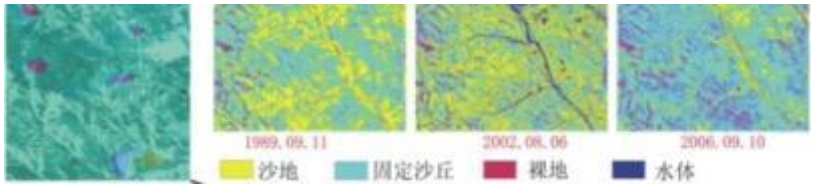
2. Achievements

2.1 Establish monitoring technology system of CO_2 geological sequestration



Develop the CCS Pilot project in Ordos

Remote Sensing(D-InSAR, Vegetation index differences)

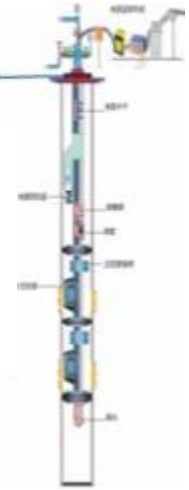


Air CO_2 Monitoring

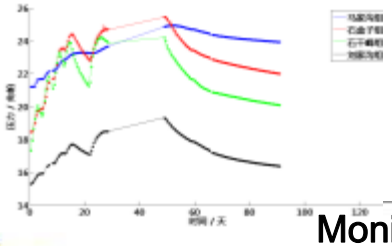
Surface Change

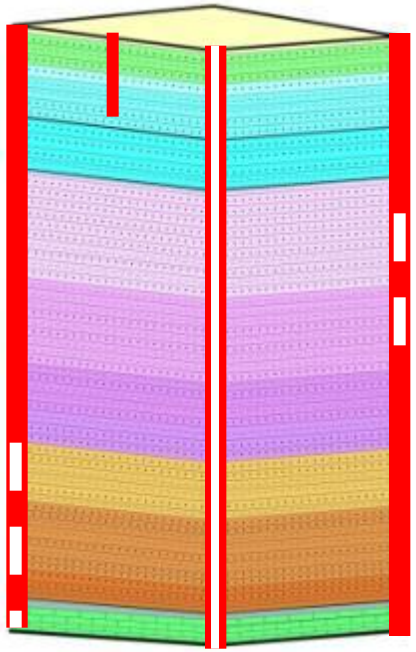
Soil CO_2 Monitoring

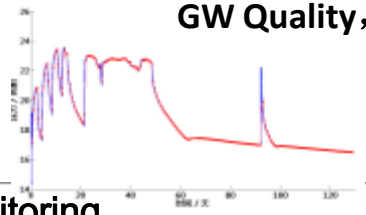
Water quality



Borehole monitoring(P, T，GW Quality， VSP)



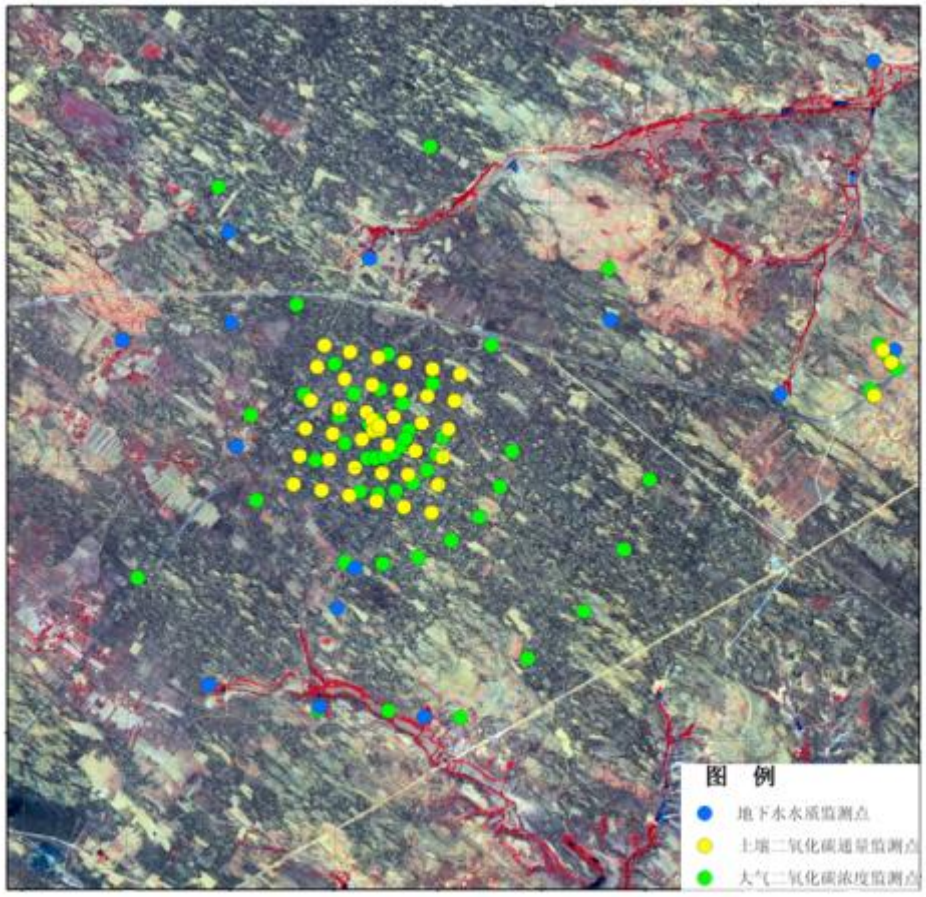




Monitoring　　Injection　　Monitoring

2. Achievements

2.2 Atmosphere, soil and groundwater of CO_2 monitoring

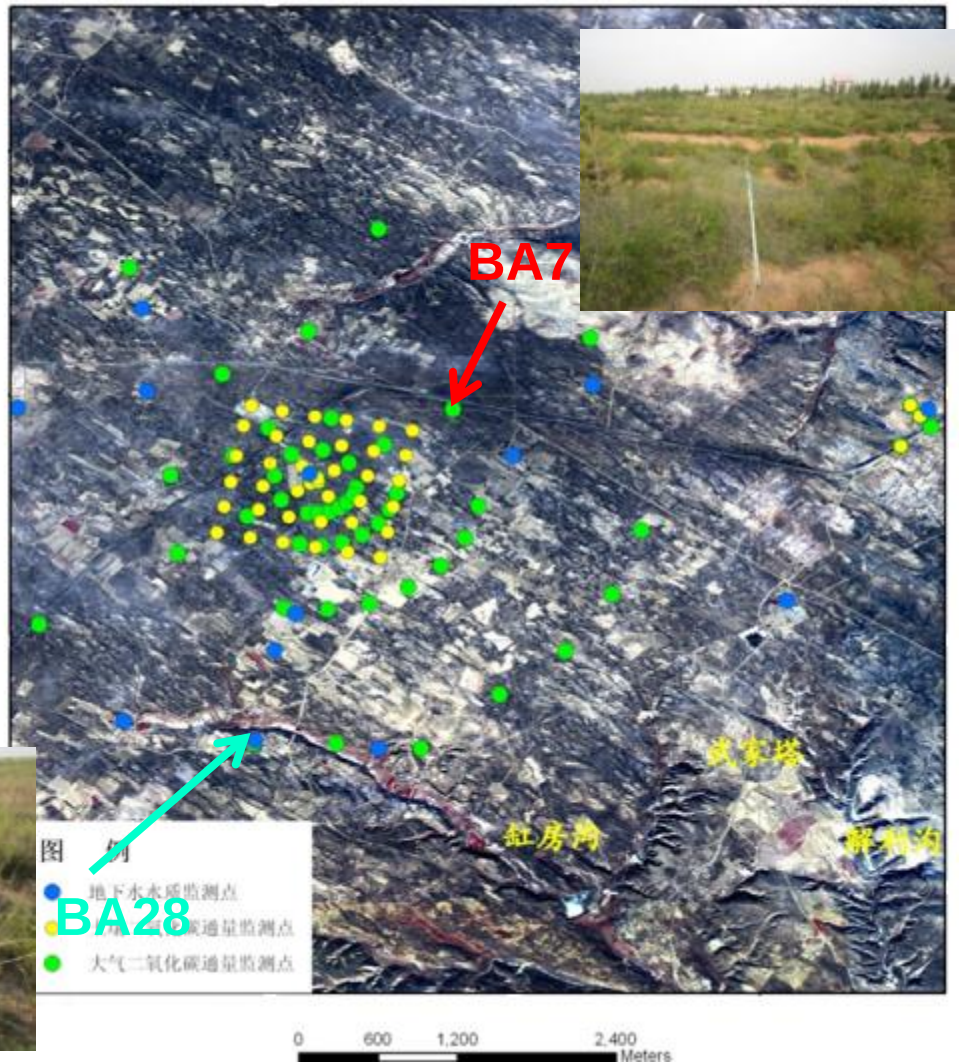


2. Achievements

2.2.1 monitoring summary of CO_2 concentration in ATMOSPHERE

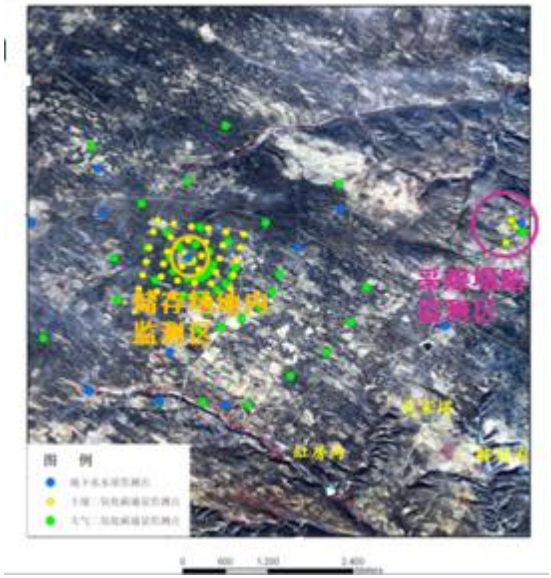
(1) Background

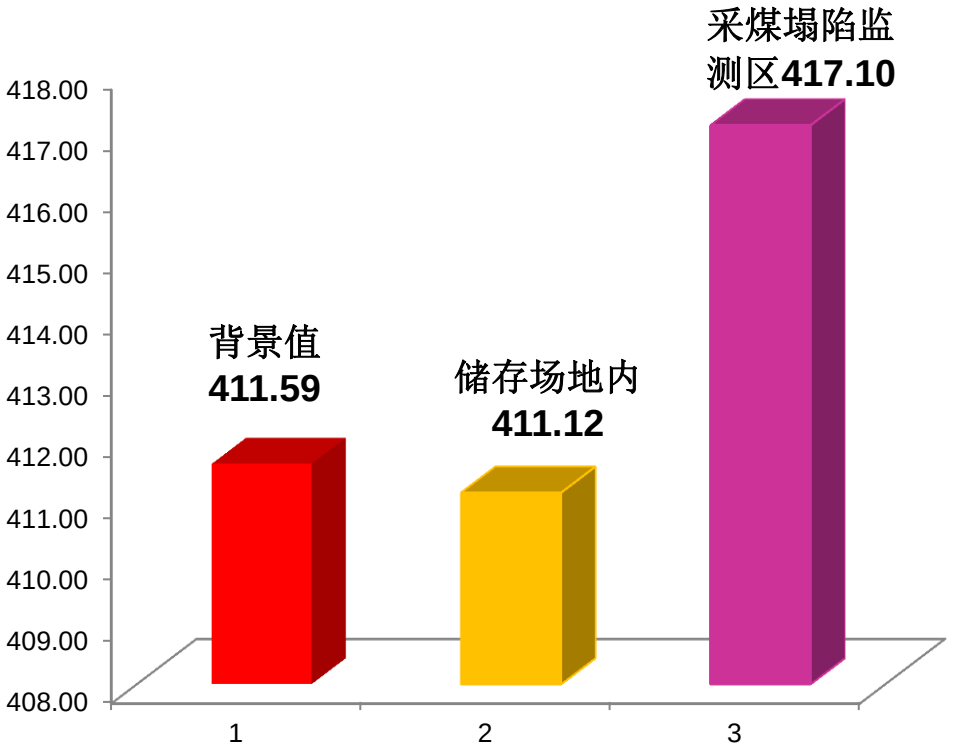
- average background value：411.59PPM



三 取得的主要成果

(2) There were NO CO_2 leakage;





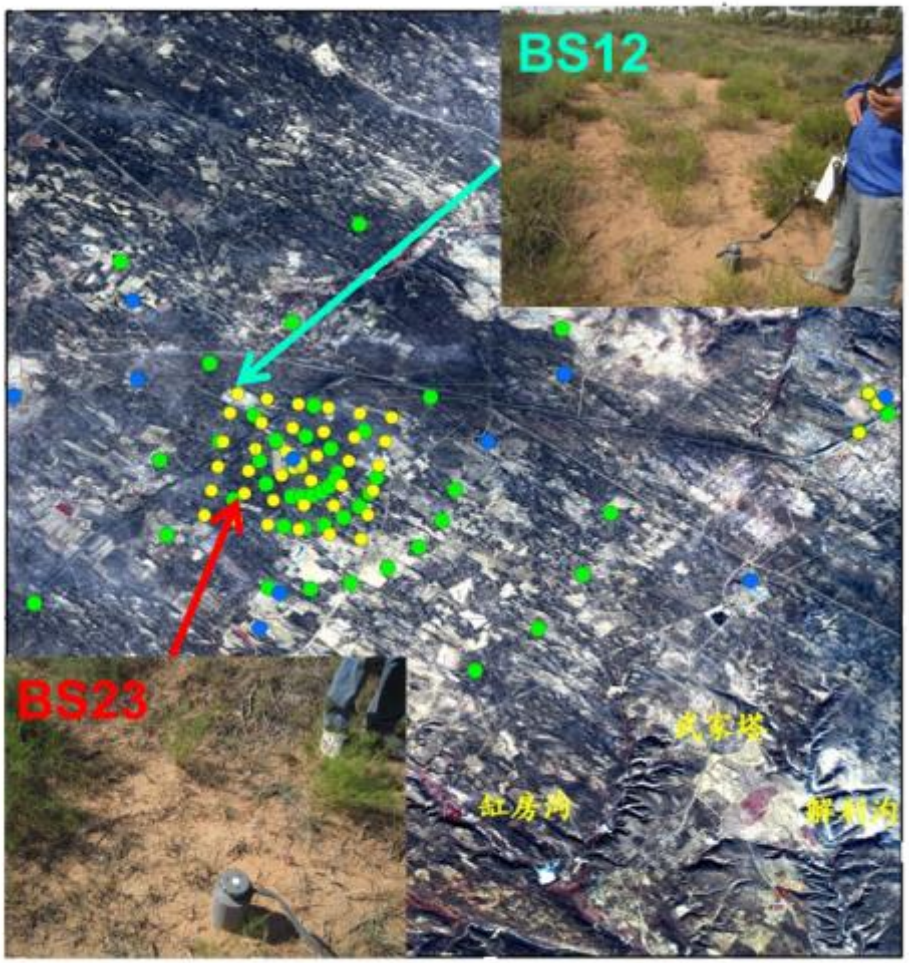
2. Achievements

2.2.2 monitoring summary of CO_2 concentration in SOIL

(1) Background

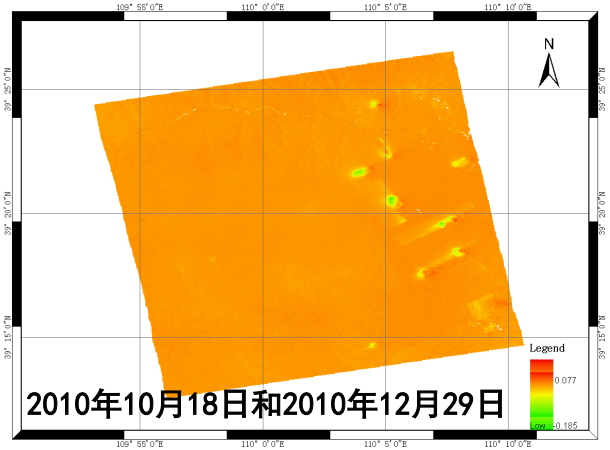
➢Average background value：

0.087mg/h·m^2

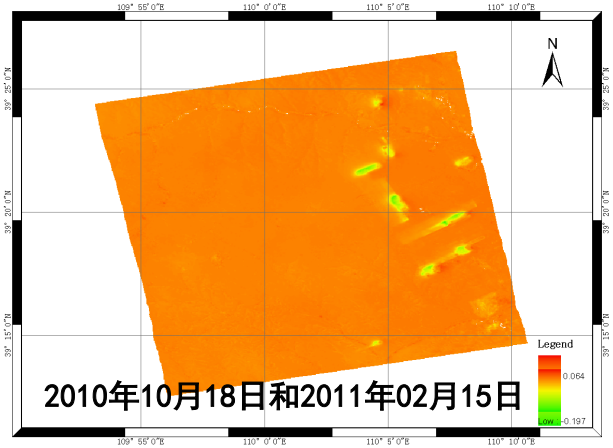


2. Achievements

2.3 遥感差分干涉雷达测量监测（D-InSAR）



2010年10月18日和2010年12月29日



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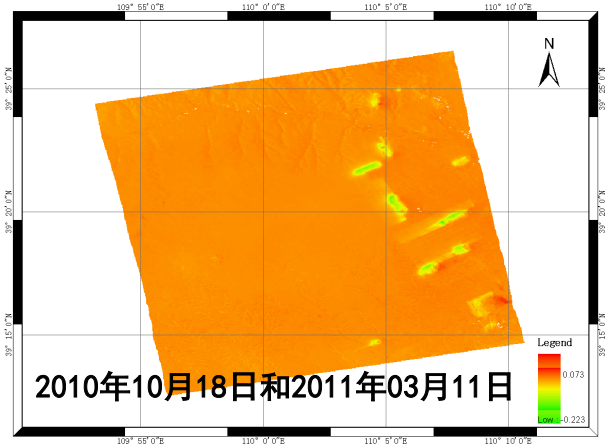

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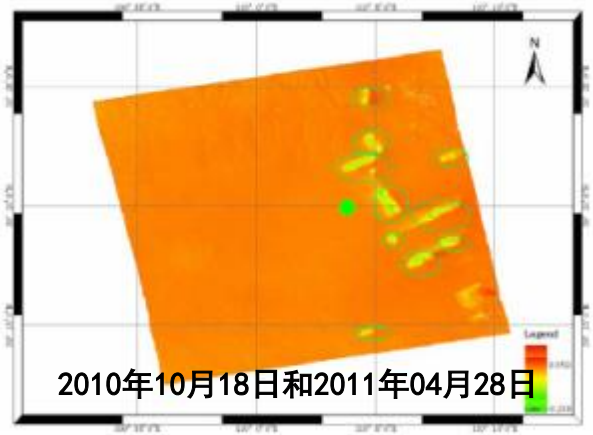
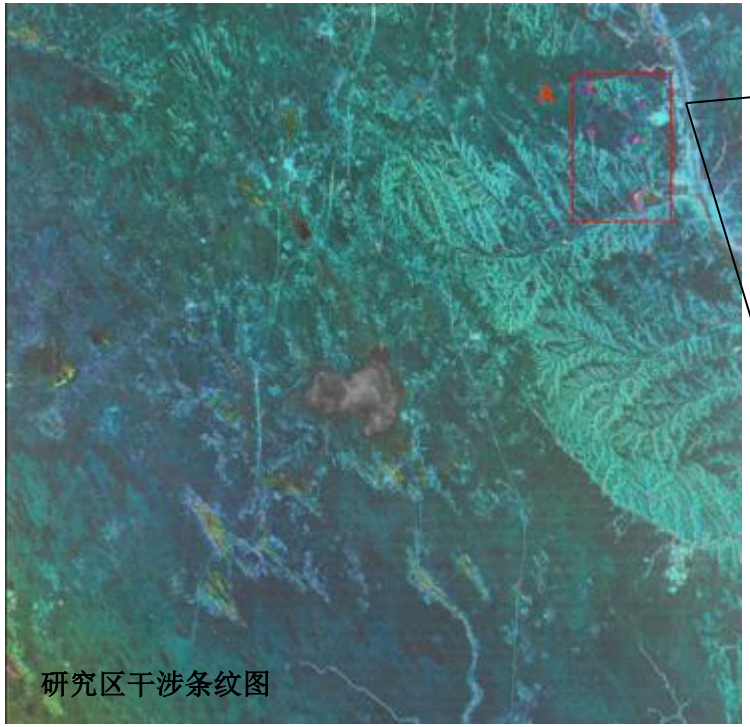
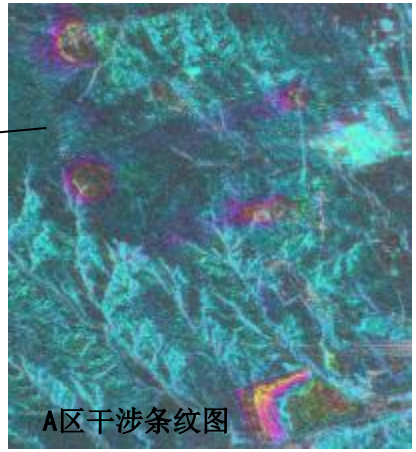


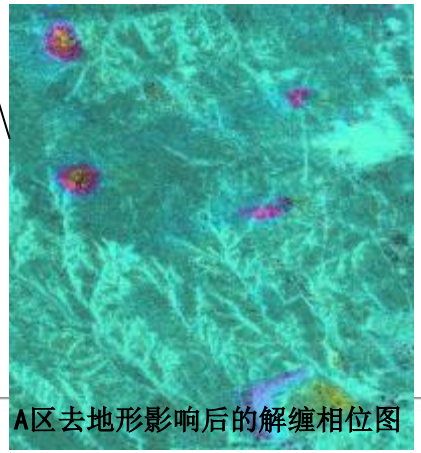
2010年10月18日和2011年04月28日

2. Achievements

2.3 遥感差分干涉雷达测量监测（PS-InSAR）

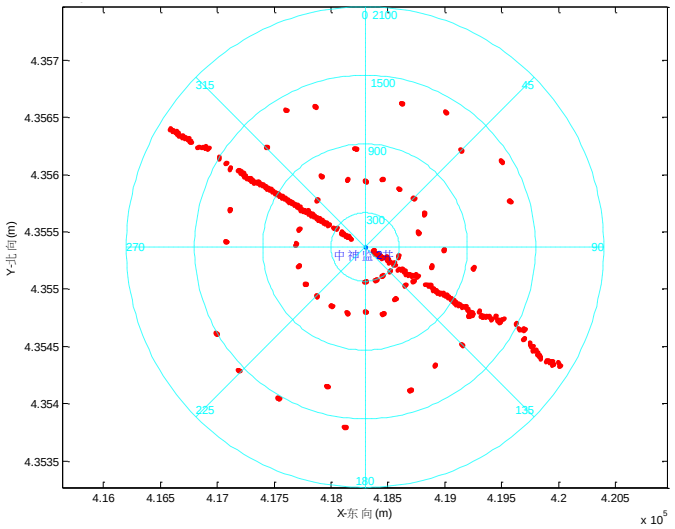

研究区干涉条纹图

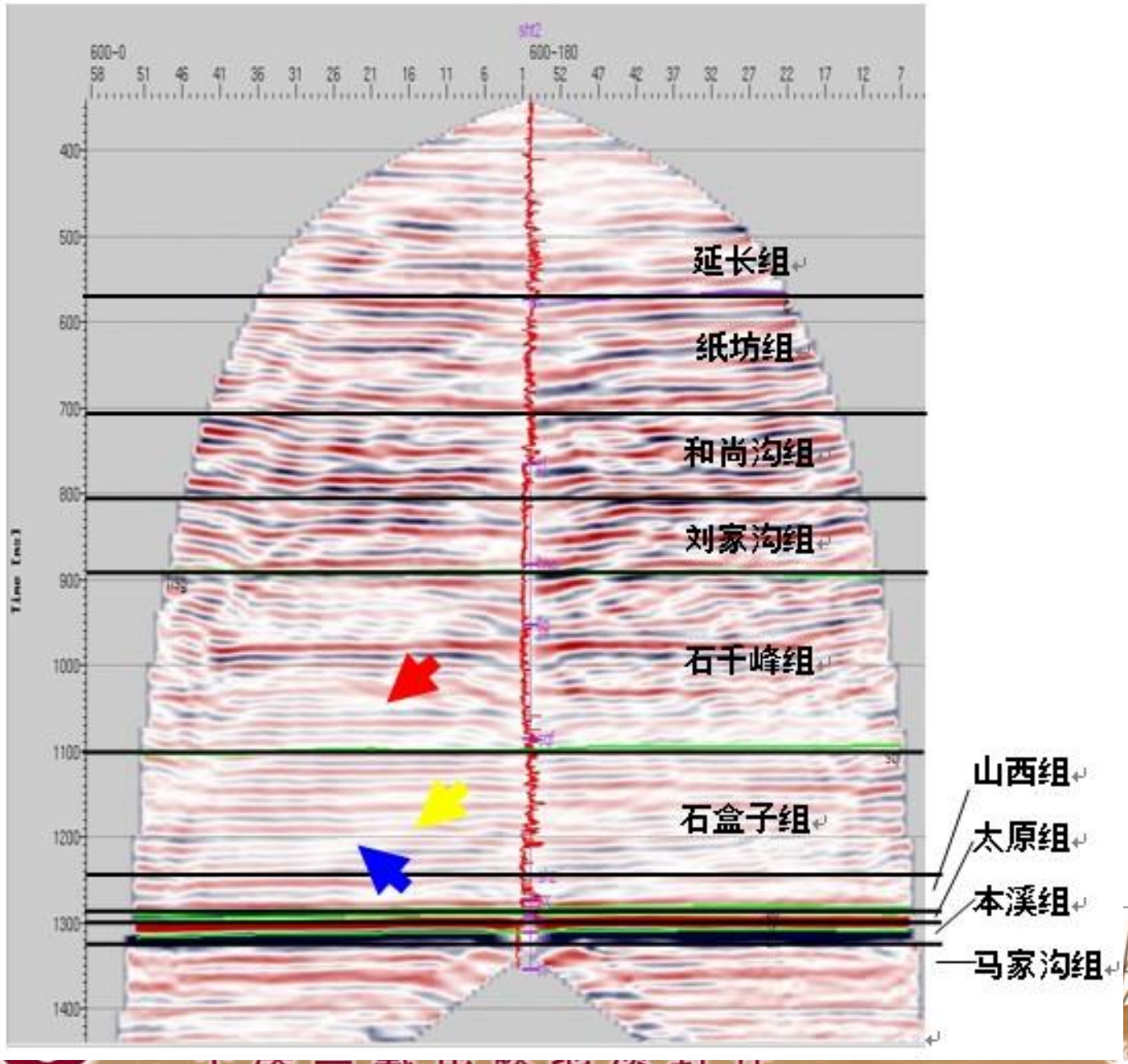

A区干涉条纹图


A区去地形影响后的解缠相位图

2. Achievements

2.4 时移地震剖面法(VSP)



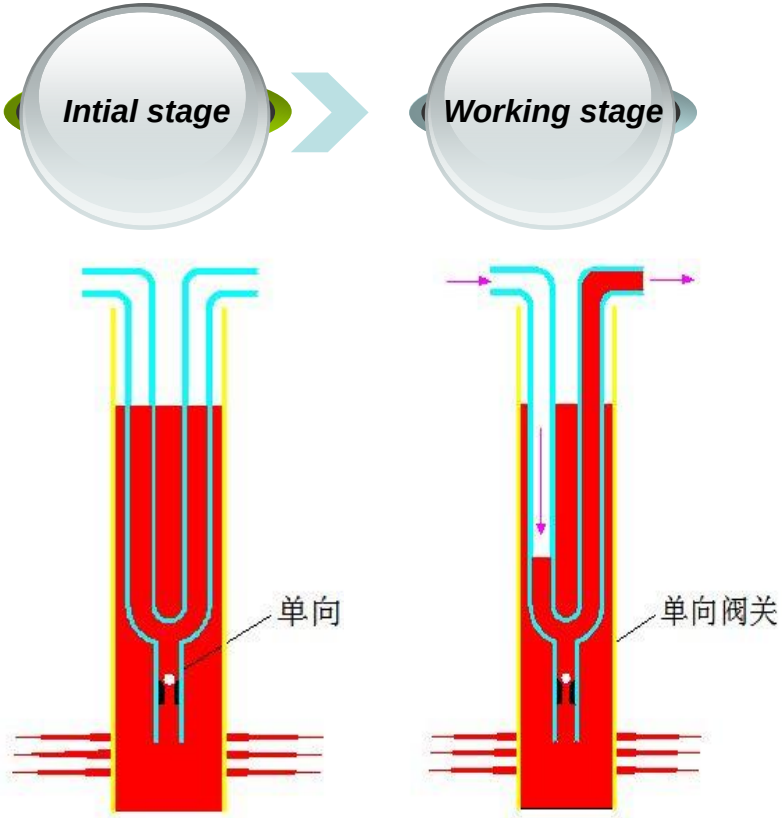

600-0
600-180
Time (ms)
延长组
纸坊组
和尚沟组
刘家沟组
石千峰组
石盒子组
山西组
太原组
本溪组
马家沟组

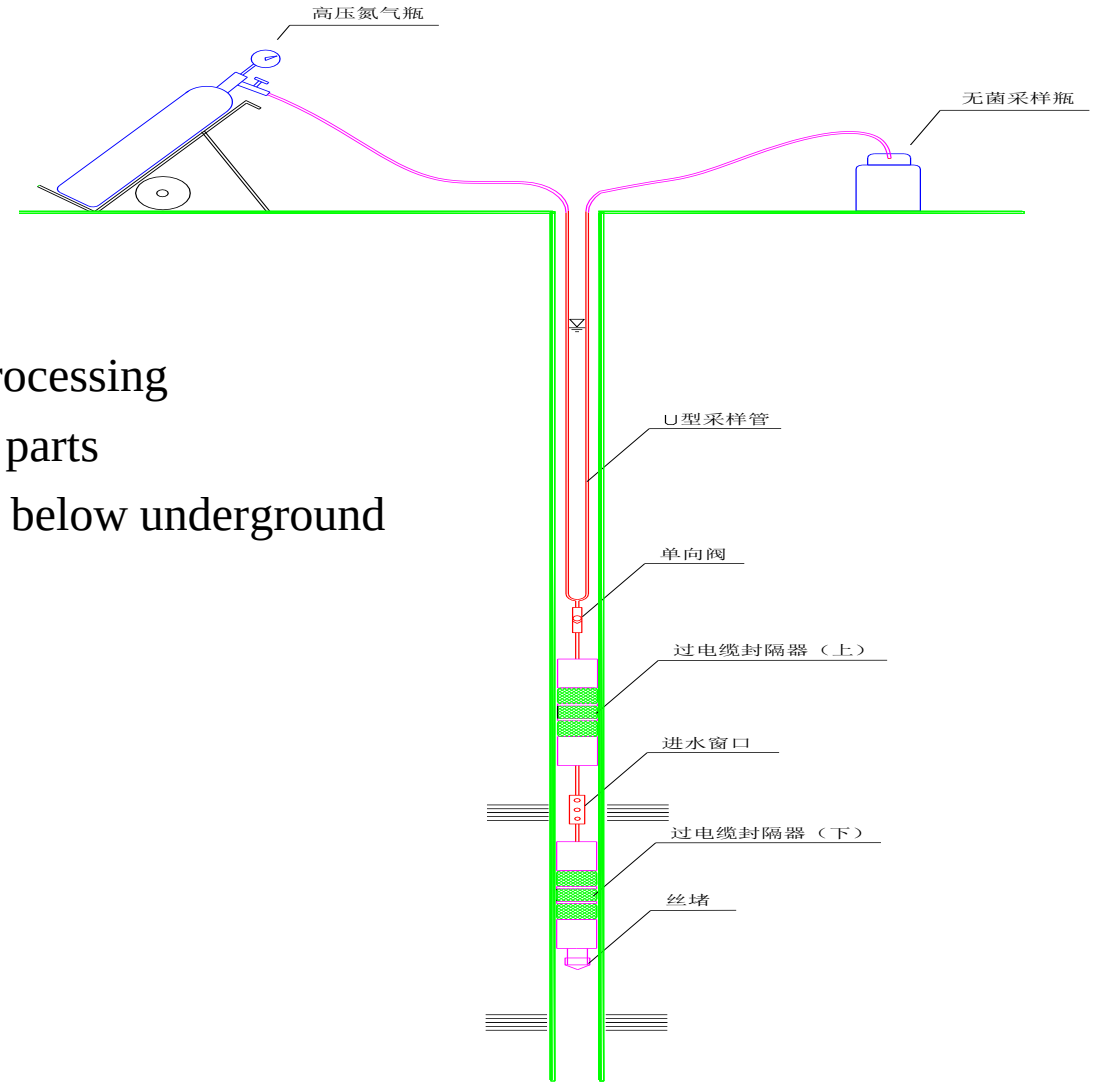
2. Achievements

2. 5 pH monitoring in situ in borehole

2. Achievements

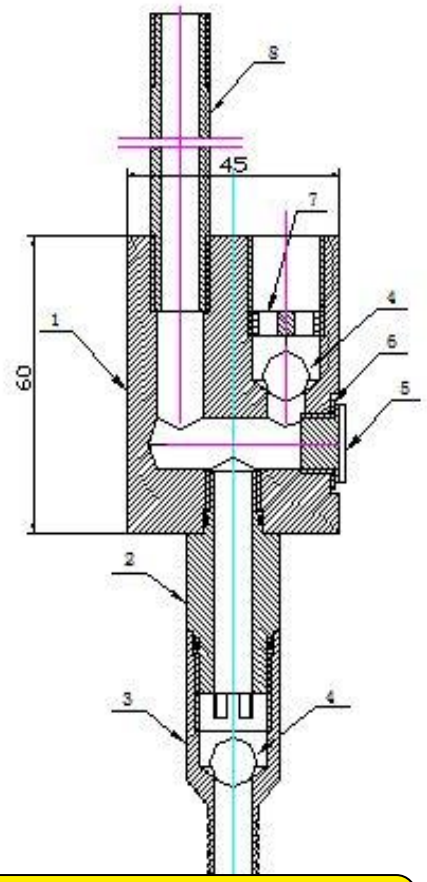
2.6 U-shaped tube sampling equipment





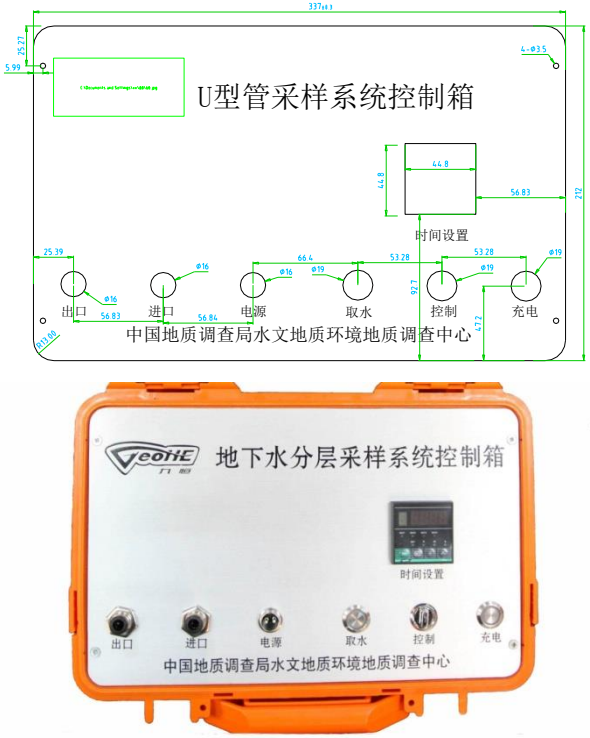
- Completed design and processing of the U-shaped tube core parts
- Completed sampling test below underground 500 m

U型管采样系统



Core part

Sample tube



Control box

3.Problems

- Make a summing up of the experiences of monitoring technology
- Monitoring period was shorter, some regularity results was not obvious;
- Complete the integration equipment of underground in situ monitoring parameters
- U-shaped tube sampling test still need deeper in borehole well development;
- There were not significant impacts on the environment and people health, need to be further studied.

Thanks for your attention!