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In-depth research of geology is inseparable from the support of advanced drilling technology

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Mankind has live in the earth for countless years, but until now, people are not really understand the connotation of the Earth. We know that the earth composition including the lithosphere, the asthenosphere, mantle and core. Of course, the lithosphere supports all the life on Earth. For a long time, geoscientists trying to use all kind of methods such as geological, geophysical and geochemical methods to detect and study the earth, but the knowledge about earth are mostly indirect. Through the direct observation to the lithosphere, people can understand and recognize the plate movement of ocean and the mainland, crustal stress, earthquakes, volcanic processes, deep resources, the origins of life , global climate change and biodiversity. They are all the basis of a series of geosciences problems^[1].

For our daily lives, as we all know, against landslides, mudslides and other geological disasters, people's responses can only be monitoring, prevention and treatment are needed. The one of the most important technical means of course is the drilling methods. For example, through engineering investigation drilling, people can understand the overall structure of the landslide. Through anchor nails, bolt, cable, curtain grouting, soil modification, anti-slide bored piles of construction, people can prevent landslides, collapse, and other geological disasters.

For geosciences, earth scientists are facing a lot of challenges. Plate tectonics theory is one of the 20th century's major scientific achievements. The continental drift assumptions put forward in the early 20th century, but until 1968, the "Geluoma • Challenger" ocean drilling vessel belong to United States has drilled several hundred holes in the ocean, the theory of seafloor spreading and plate subduction model has been confirmed directly by drilling. However, many problems cannot be explained for "Plate theory "on land. A continental dynamics theory find from the internal driving force of mainland is initiation and development. This heralded a landmark geology revolution is coming soon.

At the same time, the 21st century human survival and development resources, the environment and disaster reduction, and other issues need to be addressed urgently. All of this requires us to understand the deep Earth, and this is the only direct means of direct observation of the Earth's continental crust, "Continental Scientific Drilling."

Geological specimens, especially the true samples from deep of the Earth, are the most directly study subjects for geologists. But the only way to access the true samples from deep of the earth is drilling. The most directly relevant evidence always originated from the deep of the earth, such as core, cuttings, fluid samples and other physical samples.

No advanced drilling technology, no enough high quality samples from the deep of the Earth, the in-depth studies for geosciences will be restricted of course^[2].

References:

- [1] Su D et al. (2010) ACTA GEOLOGICA SINICA. Vol.84 No.6:873-886
- [2] Zhang X et al. (2013) GEOLOGY IN CHINA. Vol. 40 No.3:681-693

