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A successfully finished ICDP deep borehole of 7108m (SK2) in the Cretaceous Songliao Basin of Northeast China

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A series of ICDP deep boreholes of SK1), SK2 and SK3 have been drilled in the Songliao Basin of NE China during 2006 to 2021. The deepest and the most attractive SK2 is with bottom depth of 7108m and super long Continuous coring footage of 4380m. With the long-term working process, we have some special experiences that may be useful to others. The first is that ICDP financial support may cover only a small part of the total cost. But the fishing effect is crucial. That is to say, when we are trying to get financial support, the most important thing above all is generally the reason why do we want to spend the money for. Because of its widely accepted peer review international level program, ICDP funding, no matter big or small, can always give us strong and convictive argument for the money usage, especially when we are trying to get funded from government organizations and/or companies those are interested in high level research of global aspects. The second is that an ICDP project can be forward in different ways. A step by step procedure is also a very functional way. For example, at the beginning of our ICDP long marching, we got ICDP technical support when we worked on SK1 in 2006. This turned to a key step for the following procedure. Three years later in 2009, we got ICDP funded. The third is that drilling and coring are costly. We may save a lot of money if we can combine ICDP pure research of global aspects with local industry interests. Petroleum companies related to the Songliao Basin kindly provided us all the available data including well-logs, core samples and 3D-seismic data for free. So that, we did not spend any money for the pre-drilling research. And more so, based on these precise data we got very good prediction of the subsurface stratigraphic sections we may meet while drilling, which are very important information for the plans of drilling engineering.

Why we want to drill the deep boreholes of the SK2 coupled with SK1 and SK3.

At first, we hope to obtain a continuous and complete Cretaceous terrestrial coring succession. Situated on the eastern margin of the Eurasian Plate, the Songliao Basin accumulated the most continuous and the highest resolution geological records of Cretaceous terrestrial sedimentary-

volcanic successions in the world. The whole Cretaceous sequence is over 10km thick.

Secondly, we hope to establish a high-precision terrestrial stratigraphic framework of the region.

Thirdly, we hope to study the Cretaceous conditions concerning paleo-environment of the lakes in the Songliao Basin and adjacent areas. At last, research on paleoclimatic aspects in northeastern Asia based on the collected precise lake deposits. And then, According to the knowledge acquired from the global warming process in the Cretaceous in NE Asia, especially during the stages of intense fossil fuel accumulation episodes, we may have the opportunity try to find some similarities to the global warming trend that human being is facing now.