

## Seawater incursion event in the Songliao Basin: New evidence from the calcareous nannofossils of SK-1

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The Songliao Basin is the largest non-marine oil-bearing basin in China. In the absence of sufficient evidence, the hypothesis of seawater incursion(s) into the Songliao Basin remains controversial. However, Marine fossil material can provide direct explanations to this argument. More recently, abundant calcareous nannofossils were recovered from units 1 and 2 of the Nenjiang Formation of borehole SK-1.

In these fossils, some taxa have been positively identified, namely *Calculites obscurus*, *Calculites ovalis*, *Quadrum* sp., and *Micula* sp. They were distributed in the Cretaceous marine environment. Based on comparisons of the fossil assemblage with global record of calcareous nannofossils, the stratigraphical age of units 1 of the Nenjiang Formation appears to extend from the latest Coniacian to the end of the Santonian.

The abundance and diversity of calcareous nannofossils in the Songliao Basin are lower than those from a typical marine environment, but much higher than the typical inland lake. We propose that there might be a marine transgression from the West Pacific in the Songliao Basin and resulted in mixture of sea water and fresh water. As a result, calcareous nannofossils were taken into the paleo-Songliao lake, and fossil specimens of some species subsequently underwent deformation caused by salinity decline. The distribution and paleo-ecology of the calcareous nannofossils, as well as its co-existing foraminifera in the SK-1 (Xi Dangpeng et al., 2010), provide further evidence for seawater incursions that occurred in Songliao basin.

### References

Xi D P, Wan X Q, Feng Z Q et al., 2011, Discovery of Late Cretaceous Foraminifera in the Songliao Basin. *Chin Sci Bull*, **56(3)**, 253-256