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The difference of the sediment under diverse climate in the north-south part of Bohai Bay Basin in the Eocene

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The type of sediment is closely related to the environment of it is sedimentary period. For an example, typically, the water-depth level is relative identical in the same period and the same basin, so the sediment is similar.

However, Bohai Bay Basin stretch across the arid-humid boundary zone in the Eocene epoch eastern China[1], received both arid climate and the humid climate. During the same period, in lagoon which tectonic subsidence become slow and developing low water-depth, exist extreme arid sediment and extreme humid sediment. The exist arid climate developed the gypsum rock and halite. The exist humid climate develop the coal.

As shown in Figure 1, take the lower part of the 4th section and the upper part of the 3rd section of the Shahejie Group as an example, in contrast, the plane characteristic of climate can be expressed as a boundary between the Jizhong Depression and Bozhong Depression. The coal, oil shale and dark mudstone were discovered in the north, means the north area is wet. The gypsum rock, halite and red mudstone were discovered in the south, means the south area is dry. Moreover, the vertical variation of climate could be proved by examples such as the Jizhong Depression and the neighbor area. The evidence suggest that the gypsum rock and mudstone interbedded frequently in Shahejie Group 1to 4 in the Jizhong Depression. It indicates that the precipitation and evaporation changed frequently, relative lake level meandered up and down, the climate boundary push fastly forward and backward.

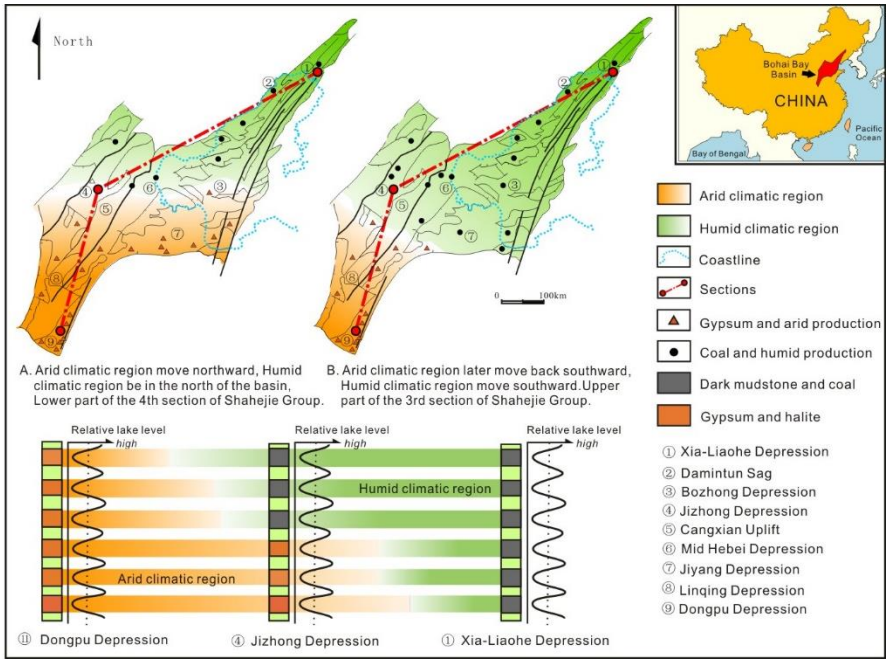

Figure 1: Sketch map of arid-humid climate evolution of Shahejie Group in Bohai Bay Basin

Thus, in the same period of the Bohai Bay Basin, the sediment was quite difference between the north and the South. The gypsum is a kind of widely used mineral, the gypsum layer is one of the most great caprock of oil and gas. The coal is not only energy, but also can be as a good source rock. And we could be on the basis of the characteristics of sediment, deduct the climate evolution features. In a word, there is an important significance of grasping the distribution characteristics of sedimentary mineral resources.

References:

[1] Dehai Wang et al. (2013) Journal of Asian Earth Sciences 62(1): 776-787