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The Drifting History of the China Main Blocks during Specific Periods and their Tectonic Constraints on Marine Potash Formation

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1 Introduction

Most of the world well know potash mines are deposited in marine environment. Regarding the serious potash shortage, no significant progress has been made in marine potash in China, while the terrestrial potash resources have been basically identified. As all the known potash mines were statistically formed within subtropical high, in a extremely arid climate, Determining the paleolatitudes of China main blocks during specific periods is the key to build a suitable theoretical framework of China marine potash resources.

Paleomagnetism is one of the most effective methods in determining latitudinal position of blocks. By using paleomagnetic inclination and declination, the paleolatitudinal positions of each block during specific periods can be well defined. Here we report a reevaluation and summarization of the existing paleomagnetic results from five blocks (e.g., North China (NSB), South China (SCB), Qiangtang(QT), Lanping-Simao(LSB) and the adjacent Indochina block (ICB)) (Fig. 1), to establish better constrained paleolatitudes of the blocks during their potential potash-halite formation periods.

2 Revised Paleomagnetic Results and Paleolatitudes

Large amount of paleomagnetic work has been done on the evolution of China blocks during the last several decades, and has achieved great progress on paleogeographic reconstruction. However, many of these work has been done during 1980s-1990s, some of the existing paleomagnetic results are not good enough for high resolution paleolatitude study of potash deposit.

Here we use seven paleomagnetic criteria to reevaluate the quality of the previous published paleomagnetic data,

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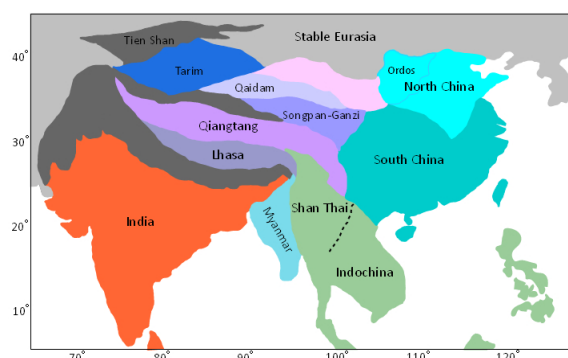


Fig. 1. Simplified tectonic map of China and Southeast Asia, showing the position of North China, South China, Qiangtang, Shan Thai, Indochina Blocks etc. (Modified from Replumza & Tapponnier, 2003).

and recalculate the paleolatitudes of the five blocks mentioned above. The final obtained paleolatitudes for the NCB (Reference: Suide) are $\sim 9.2^{\circ}\text{S}$ - 14.2°S during the early-middle Ordovician, $\sim 10.6^{\circ}\text{N}$ - 23.1°N for the SCB (Reference: Chengdu) during the Triassic, and 14.6°N - 27.5°N for the QTB (Reference: Yanshiping) during the middle-late Jurassic, 20.9°N - 27.6°N for the LSB (Reference: Jiangcheng) during the Cretaceous-Paleocene, and 21.1°N - 21.3°N for the ICB (Vientiane) during the Cretaceous.

Combined with other geologic evidences, all these paleolatitudes were within subtropical high with extremely arid climate, which indicating great potentials for potash-halite mine deposits of the five blocks during their related periods.

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