

Biostratigraphic Correlation of the Cambrian Succession Between Shandong Province, North China and the Taebaeksan Basin, Korea

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Abstract The Palaeozoic North China Platform is an epeiric platform developed on the Sino–Korean Craton. The Cambrian succession is superbly exposed in Shandong Province, which is located in the central part of the North China Platform. The Taebaeksan Basin, Korea displays a somewhat similar Cambrian succession to that of North China, and is known to have been situated at the eastern margin of the North China Platform, ca. 900 km from present-day Shandong Province. Although both regions have similar Cambrian trilobite faunal assemblages, the independently developed biozonal schemes have hampered a detailed correlation of the Cambrian strata of the two regions. Recent palaeontological and sedimentological studies in Shandong Province and the Taebaeksan Basin enable a detailed correlation to be made of the two regions. The biostratigraphic and lithostratigraphic correlation of the two regions reveals that carbonate production was more active in Shandong Province than in the Taebaeksan Basin, and that the Cambrian Series 3 microbial carbonate-dominant facies appeared earlier in Shandong Province. The abrupt cessation of the microbial carbonate accumulation, followed by deposition of siliciclastic mud, also occurred earlier in Shandong Province than in the Taebaeksan Basin.

Keywords North China Platform · Cambrian · Biostratigraphy · Lithostratigraphy · Correlation

The North China Platform, measuring ca. 1000 km N–S and 1500 km E–W, is an epeiric platform developed on the stable Sino–Korean Craton (Meng et al. 1997). Sedimentation on the North China Platform started in the early Cambrian and

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Although the Cambrian trilobite faunal assemblages in both regions are known to be generally similar (Choi and Chough 2005), the biostratigraphic schemes were independently developed in the two regions. As a result, a detailed correlation of the two regions has been hardly attempted. Recently, the Cambrian successions in both Shandong Province and the Taebaeksan Basin have been intensively studied in terms of palaeontology and sedimentology, and a precise biostratigraphic and lithostratigraphic correlation of the two regions is now possible. The comparison reveals that carbonate production was more active in Shandong Province, whereas coarse-grained siliciclastics were deposited more voluminously in the Taebaeksan Basin during the Cambrian. The most notable feature from the correlation is the diachroneity of the major lithological boundary. Both the Zhangxia Formation of Shandong Province and the Daegi Formation of the Taebaeksan Basin represent the microbial carbonate-dominant succession in the Cambrian Series 3 of the North China Platform. However, the biostratigraphy indicates that the microbial carbonate-dominant facies appeared earlier in Shandong Province than in the Taebaeksan Basin (Fig. 1). The abrupt cessation of the microbial carbonate accumulation, followed by deposition of shale-dominant lithology (the Gushan Formation in Shandong Province and the Sesong Formation in the Taebaeksan Basin) also occurred earlier in Shandong Province (Fig. 1). Identification of such diachronous lithological boundaries within the same platform will eventually help us to understand the dynamics of sedimentation processes as well as the palaeo-environmental changes at a basin scale.

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