



Geological structures and deformation sequence of the eastern Gyeonggi massif, central Korea

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The Gyeonggi massif, situated between the Nangrim and Yeongnam massifs of the Korean Peninsula, is a Precambrian terrane consists primarily of Archean to Proterozoic crystalline basement. Although the Gyeonggi massif has been suspected as an eastern extension of the Qinling-Dabie collision belt of China, a structural data about the Gyeonggi massif are very short, especially about the eastern part of the Gyeonggi massif. This study focused the deformation sequence of the eastern part of Gyeonggi massif and comparison with that of western part of Gyeonggi massif.

At least, five phases of deformational events can be recognized. The first phase of deformation produced gneissic and schistose structures with intrafolial and recumbent folds. During the second phase of deformation, mylonite, mineral lineation, intrafolial recumbent folds and irregular folds were formed. The Bangsan Anticline (BSA) and its sub-order folds were produced by the third phase of deformation. SE-vergent thrust and south-vergent kink folds resulted from the forth and fifth phases of deformation, respectively.

Axis of the BSA can be traced over 5km and the representative orientations of two limbs of the BSA are N17°W/32°SE, N29°E/25°NW, respectively. Interlimb angle of the BSA is measured as 128° and can be classified into open fold. Structural transect analysis of regional foliation shows that axis of the BSA is located about 4.6km toward East from longitude 127°53'45"E.

If the BSA is correlated with very large-scale NS-trending folds occurred in the western part of the Gyeonggi massif based on characteristics of fold structure, the third phase of deformation can be interpreted in age from the Late Proterozoic to the Early Paleozoic (750~390 Ma). Mylonite of the study area cannot be correlated to the Gyeonggi Shear Zone, which was suggested as post-collisional top-to-the-north extensional structure. The SE-vergent thrust of the forth phase of deformation is probably correlated to the Jeongok thrust, by which the Precambrian basement was thrust over the Late Triassic-Early Jurassic Gimpo Group.