

**10 2****THREE STRUCTURES OF THE OGCHEON OROGEN**

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The origin of the NE-SW-trending Ogcheon Orogen is highly controversial. The deformations and metamorphic events that formed the strong NE-SW trend of the Ogcheon Orogen have possibly transformed or erased early developed fabrics, causing ambiguity in the stratigraphic and the structural framework. This resulted in the lack of fossils and the heterogeneous development of structures along the orogen. To attempt to provide a structural framework to the Ogcheon Orogen, this study has gathered structural informations from a 3-D analysis and early studies and suggests three structural events, namely NW-SE phase, NE-SW phase and N-S phase.

**NW-SE phase** is defined by composite foliation or crenulation with orientations that range around approximately NW-SE, having variable inclinations in the matrix. Dimension of this structure ranges from a geologic map to microscopic scales. Evidences of the NW-SE phase structures overprinted by the NE-SW phase are generally found in the low strain zone of the NE-SW phase structure within fold hinges in pebble-bearing phyllite in the central Ogcheon Orogen or in the strain shadow areas of competent bodies (granite or orogen-basement gneiss body). Consequently, it is considered that the NW-SE phase structures were formed by a NE-SW shortening before the NE-SW phase structures and then remains NW-SE trend in the low strain zones, whereas elsewhere, these early structures were rotated into the regional NE-SW trend, or completely destroyed during the formation of the NE-SW structures.

**The NE-SW phase** is the second oldest but major structure of the Ogcheon Orogen. NE-SW-striking planar structures are the most dominant and consistent matrix foliation along and across the Ogcheon Orogen, ranging from zones of phyllosilicate concentration to differentiated crenulation cleavage. It has a NE-SW strike and dips vary from subvertical to shallow. This study agrees upon that a NW-SE shortening was the dominant deformation and gave the Ogcheon Orogen its present trend, causing repetition of packages of rocks by folding and formation of the regional NE-SW-trending folds. Plus, it is often found that these NE-SW-striking planar foliations are overprinted by a sub-horizontal cleavage and hence gets shallower. This can suggest a subsequent vertical shortening.

**The N-S phase** is the youngest among the three structural phases in the Ogcheon Orogen. This structure is defined by asymmetric folds with approximately N-S-striking, steeply dipping, axial planes in a geologic map and differentiated crenulation cleavages under the microscope. The Ogcheon Supergroup generally trends NE-SW except for where the bedding and foliations rotate around these N-S-trending fold hinges. However, this structure develops only in limited areas in the Ogcheon Orogen. The consistent west-side-up shear sense across the regional and micro fold hinges from the Chungju area, northeastern end of the Ogcheon Orogen, and from the Dacheong reservoir area, mid-central part of the orogen suggests that this shortening event was overall non-coaxial. This could have resulted from a change in plate interaction in Asia, or an anticlockwise rotation of the 'Asian'-side plate. It is interesting that N-S to NNE-SSW-trending high-angle reverse faults cut through the hinges of folds in many places along the Ogcheon Orogen and are considered to have formed during. These faults transect Jurassic granites and it is presumed that this deformational event occurred after the bulk of intrusion of the Jurassic granite.