

Geomorphic Development of Intermontane Basins in Korea

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For the purpose to investigate the geomorphic development of intermontane basins in southwestern Korea, a detailed geomorphological investigation, together with a soil profile study was made in four basins and two coastal areas.

Seven fluvial and three marine geomorphic surfaces were recognized. The formers are named the H1, H2, M1, M2, T, L1 and L2 surfaces, from older to younger, and the latter, the Simgok, Hasidong and Anin surfaces, also from older to younger. The study of profiles of soils which cover these, C-14 dating, and the examination of longitudinal profiles of fluvial and marine surfaces allowed to establish a chronological frame of the geomorphic development of the intermontane basins in Korea. Grain size analysis, pollen analysis and the research of periglacial landforms on the surrounding mountains were made for the reconstruction of geomorphic environments during the Last Glacial age.

The main results obtained by this study are as follows:

1. The outline of the intermontane basins in Korea was formed as erosional basins before Middle Pleistocene, probable since Last Pliocene to Early Pleistocene. Pediments in the study areas were dissected and modified into alluvial fans through the alternation of cold/dry glacial climate and warm/humid interglacial climate since Middle Pleistocene.
2. The L1 and L2 are alluvial fan surfaces which were formed during the Last Glacial. The L2 surfaces (fillstrath) was formed at the lowest sea level in the Last Glacial, between 18,000 and 15,000 years B.P. The L1 surface (filltop) was formed at least before 32,000 years B.P., and probably during the earlier cold phase in the Last Glacial (about 70,000-40,000 y.B.P.). Only the Yellowbrown forest soil or Brown forest soil develops on these surfaces.
3. The lowest marine surface (Anin surface; 17m high) corresponds to the Last Interglacial, and the T surface in the lowest reach of the rivers is an ancient alluvial plain which continues downstream to the Anin surface. A weakly developed Red soil on the T surface indicates that this surface experienced a Red soil formation for a short time after the Interglacial transgression.
4. The M1, M2, H1 and H2 are older alluvial fan surfaces. The formation periods of the M and H surface are supposed to be Riss and Mindel Glacial, respectively, on the basis of the relation between these surfaces and the middle and high marine surfaces, and of the degree of Red soil development. The Red soil on the H surface develops stranger than that on the M.
5. The construction of alluvial fans during the Last Glacial is attributed to the increase in debris supply from mountain slopes and the decrease in water discharge during the glacial cold/dry phases, in which timber line was lowered to about 1,000m high.