

## Head hollows with a nest-of-box structure: their formation and hydrogeomorphic functions

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A head hollow is generally remarked as an area where throughflow is concentrated to generate streamflow and an area of repeated scouring and filling which may be controlled by climatic change. We found head hollows with a nest-of-box structure, which have smaller subhollows within the lower part of head hollows proper, in several hills in central and northeastern Japan. The following facts were revealed by detailed observation of surface forms and soil profiles and continuing devised measurements of surface and subsurface water movement in this type head hollows:

(1) Percolated water is accumulated in older colluvium which fills a head hollow proper and then move to younger colluvium which fills a subhollow excavated in the lower portion of the head hollow proper. Streamflow is generated at the lower end of the hollow from the bottom of the younger fill upward. It suggests that a head hollow with a nest-of-box-structure, consisting of older colluvium with bigger storage capacity and younger colluvium situated downstream with smaller storage capacity, has a hydrogeomorphic function with which streamflow generation is both delayed temporally and concentrated spatially.

(2) The nest-of-box structure was formed with repeated scouring and filling. Filling material, which varies from clay to gravel in places, is transported from surrounding slopes and head hollows themselves. The younger fill is rather soft and porous but smaller in volume than the older one. Several radiocarbon dates of fill material or buried humic horizon indicate that the cycle of scouring and filling is in the order of  $10^3$  or, in cases,  $10^2$  years. It is obviously shorter than the glacial-interglacial cycle.