

Paleohydrological environment change of the Kuiseb River in Namib Desert

Kotaro Yamagata[1], Kazuharu Mizuno[2]

[1] Joetsu Univ. of Education, [2] ASAFAS, Kyoto Univ

The hyper arid to arid Namib Desert extends along the west coast of southern Africa. Little is known about late Quaternary climate changes in the desert. The Kuisev River is one of the major ephemeral rivers rising in the interior highland and crossing the desert. The underflow water of the Kuisev River creates a narrow oasis along the river.

Fluvial terraces are well developed along the middle reach of the Kuisev River near Gobabeb. These terraces can be classified into upper, middle 1, middle 2, and lower. The calcrete layers are founded on the middle 1 and middle 2 terraces, and gypcrete layers are founded on the upper terrace. The dead tree buried by the dune on the lower terrace was dated to 300 yr BP, and the calcareous crust on the middle 1 terrace was dated to 5300 yr BP.

The absence of calcrete on the present riverbed suggests that the middle 1 terrace was formed under different condition from present. The ground water level could be higher than present at 5.3 ka yr BP, and the calcite was precipitated by active capillary evaporation of the ground water. The lower terrace and middle 2 terrace are also supposed to be formed during wet periods. The presence of the water-soluble gypsum crust does not suggest the significant increased rainfall during the late Quaternary period. The paleohydrologic environment of the terrace forming periods likely involved increased rainfall in the interior highland east of the desert.