

Gully erosion in Western Kenya

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Received October 29, 2003 Accepted December 24, 2003

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Arid and semi-arid lands in Kenya are suffering from extensive soil erosion. Especially in the Lake Victoria basin in Western Kenya, soil erosion is developing into big gullies while are seriously threatening the inhabitants. During the period of July and August in 2003, we carried out an environmental field study on the biggest gully in Ndori Village, Nyando District, Nyanza

Province (Fig.1)

The Lake Victoria basin has been forming within Precambrian basement under the tensional tectonics of the Kavirondo Rift since the Miocene age. Thick piles of Quaternary fluvial and lake deposits infill the basin area and they are covered with black-cotton-soil. Detailed mapping of the gully distribution (Fig.3) revealed the serious condition of the erosion at this site (Figs.2, 4 and 6). The annual erosion rate reaches up to 20 m at the gully head (Fig.6) and the height of the gully sidewall reaches 14 m (Fig.5). If the gully erosion proceeds at the current rate, houses and cultivated land located upstream and around the gully will be lost in the near future.

Our research project intends to elucidate the basic process of the soil erosion in Kenya, based on geological, geographical, ecological and agricultural field studies. Recommendations for anti-erosion measures in the hazardous areas will be also made in this research.

This study is supported by the Grant-in-Aid for Overseas Scientific Research No. (A) (2) 15253006 from the Japan Society for the Promotion of Science.

Reference

Ministry of Energy and Regional Development of Kenya, 1987, Geological map, geostructural map and geogravity map of Kenya, 1:1,000,000.

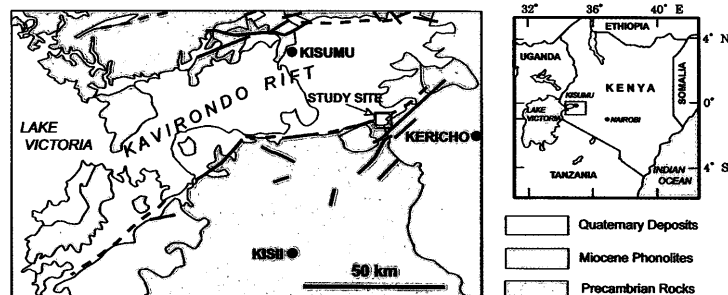


Fig.1 (centre). Geological map of the Kisumu area, Western Kenya (simplified from the Ministry of Energy and Regional Development of Kenya, 1987). The study site is located in the headstream of “wadi”, one of tributaries of Awach-Kano River. Vast amounts of surface flow converge on the site from southern hillside during heavy rains.

Fig.2 (bottom). Big gullies are cutting deeply into the inhabited and cultivated plain. Friable black-cotton-soil covers the plain widely and is underlain by the Quaternary deposits varying from gravel to silt. Sidewalls are about 14 m in height.



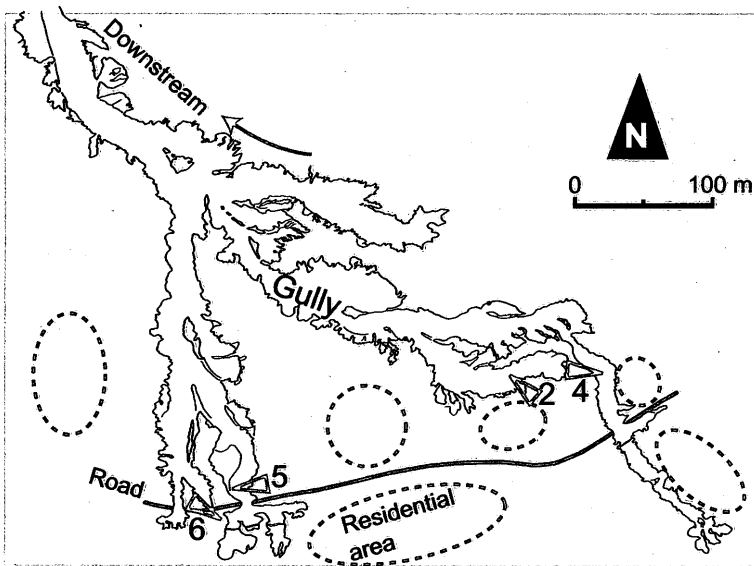


Fig.3 (upper). Detailed distribution of gully has been mapped in this field study. Camera angles and locations of the photographs inserted in this report are also indicated by red-coloured numbered arrows.

Fig.4 (centre left). Bank failure induced by lateral erosion. The gully edge is threateningly close to the residential area. Sidewalls are about 12 m in height.

Fig.5 (centre right). A typical geologic section of the area. The Quaternary deposits underlie the top black-cotton-soil.

Fig.6 (bottom). Headword erosion also proceeds rapidly. The erosion rate reaches up to 20 m/y.

