

Seasonal and long-term analysis of land cover/use change in Barotze floodplain, Zambia

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Abstract

The Barotze floodplain, situated in the upper Zambezi river basin in western Zambia exhibits dynamic phases of land cover/use caused by periodical flooding of the mainstream. Micro topography of the plain surface formed through long-term hydrological processes generates land units with various characteristics. The local ethnic group, Lozi, has been efficiently utilizing the land resources of the plain in an indigenous manner and maintained stable basis of living and food production since the 17th century. On the other hand, rich vegetation of bush and forest in sandy upland is rapidly encroached by cultivation as the increasing number of migratory population settle in and carry out extensive crop production. The present paper describes classification of land units and their uses within and around the floodplain, and analyzes seasonal/decadal change of their state through satellite image interpretation, in order to evaluate the potential land resource for the upholding of current and future population in this area.

During dry season, the vast expanse of grassland inside the plain called *libala* provides feeds for cattle, which can fertilize prepared plots for cropland. When rain starts in December, maize and vegetables are planted on the small mounds called *lizulu*, most of which remain above water in the peak period of flooding and thus provide locations for permanent settlements. Dropping water level thereafter enables another cropping on the slope with swampy depressions.

Landsat TM imageries acquired in September 1986 and April 1995 were used to analyze 1) seasonal states of land resource in the floodplain, and 2) decadal change of land cover and forest resource in upland. Results indicated that 80 to 87% of the land stays under water in flooding period, and that forest coverage has dropped from 56 to 44% in upland during the 9 years.