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Geomorphological land classification map and seasonal flood of the Stung Sen River floodplain

Naoko Nagumo^{1*}, Sumiko KUBO², Toshihiko Sugai¹

¹The University of Tokyo, ²School of Education, Waseda University

The Stung Sen River forms a 7-km-wide floodplain in its lower reach flows down central Cambodia. Lower reach of the river has one of the large populations in Cambodia, because provincial capital of Kampong Thom city and many villages are located. At Kampong Thom city, water level of the river changes 7 m annually because monsoon and dry seasons. This study tries to make land classification map by aerial photograph interpretation and geomorphological field survey, and characterize the floodplain in monsoon season and location of settlements.

Lower reach of the river is mainly composed of uplands and floodplain which includes back marsh, natural levee, meander scroll and abandoned channel. Back marsh is subdivided into the highest back marsh I, back marsh II and the lowest back marsh III. Back marsh III is widely distributed as it goes to downstream. In monsoon season, back marsh I is hardly inundated though back marsh II is partly inundated and back marsh III is submerged at the maximum. The channel of lower reach has rectangular cross section of about 6-7 m depth and meander scrolls and abandoned channels are well developed along the channel, on the other hand natural levees are poorly formed. That means floodplain especially along the channel becomes remarkably wet. Although the channel shifts frequently occur, meander belt which is composed of the channel, meander scrolls and abandoned channels rarely shifts. In floodplain, back marsh deposits of silt to clay accumulate with channel deposits of gravel to medium sand in the rate of 0.1-0.6 mm/yr. The channel deposits become thicker as it approaches to the channel, and also the particle size becomes larger. Therefore, inundation and lateral erosion risks in monsoon season are higher as it approaches to the channel, and also inundation risk becomes higher toward the lower end of the river. Although present settlements in the lower reach are continuously located along roads regardless of flooding risk such as inundation and lateral erosion risks, the most villages in 1950s were located on uplands or back marsh I which have lower flooding risk. In the region like lower reach of the Stung Sen River which has annual water level change, we probably need the vision that is to adopt the flooding situation rather than control.

Keywords: aerial photograph interpretation, land classification map, the Stung Sen River, monsoon, Cambodia