

FLOOD HAZARD MAPPING IN HOMALIN TOWN IN THE CHINDWIN RIVER BASIN

A. Bormudo^a Dr. M. K. Hazarika^a Ms. Htay Htay Than^b Dr. L. Samarakoon^a

^a Geoinformatics Center, Asian Institute of Technology, Pathumthani, 12120, Thailand;

Tel: + 66-2-5246148

E-mail: bormudo@gmail.com

^b Department of Meteorology and Hydrology, KabaAye Pagoda Road, Mayangon 11061, Yangon, Myanmar;

Tel: + 067-411031

E-mail: hthanh.dmh@gmail.com

KEY WORDS: Flood Hazard, Chindwin River

Abstract: The town of Homalin is situated in the Northwest part of Myanmar in the upper Chindwin River basin and it experiences a heavy rainfall annually. The normal annual precipitation in Homalin is about 2,200 mm and during the last 44 years the maximum daily rainfall recorded was 415 mm. The drainage area up to Homalin is 43,124 km² with very steep slopes at the Western and Northern part of the basin. Floods and landslides are therefore very common in this basin. Most of the settlements in Homalin town are located at the banks of the Chindwin River and therefore it is necessary to prepare the flood hazard maps in order to draw a strategy for preparedness and mitigation measures. In this study, the flood hazard maps for return periods of 10, 50, 100 and 500 years were produced using the annual peak flow data of 44 years from 1968 to 2011. HEC-RAS model was used for preparing the flood hazard maps. ALOS/AVNIR-2 images were processed to obtain the most recent landuse and landcover information of the study area, which was used as an input to the model. ALOS/PALSAR images were used to know the extent of flood in 2007 and calibrate the flood model. The model results showed that the maximum flood depth was 5.0 meters in 2007. The flood map derived from the ALOS/PALSAR data found to represent a 10-years flood, which was close to 2007 flood event. In order to know the population exposed to the floods of various return periods, a population density map was prepared at a 30 m x 30 m pixel size and overlaid with the hazard maps. It was found that a 500-years flood would affect nearly 47,000 residents in the study area. A field survey was conducted to understand the damage caused by the floods in recent years and damage curves were generated from the data collected through the survey. Interviews were conducted among the flood-affected residents in Homalin town to record the damages inflicted by floods. It was found that a flood of 500-years return period will inundate an area of 452 km². This includes paddy fields with damages up to 90 % around the Homalin town.