



ABSTRACT

Impact estimation of high precipitation and land use/land cover change on the hydrologic response of Pampanga River Basin

Ivan Michael Basco Gabriel
MS Environmental Science

Adviser:
Mayzonee V. Ligaray, Ph.D.

Extreme cases of rainfall is a hazard that is widely experienced across the globe. The resulting frequency and intensity of flood this phenomenon has had seriously affected industries such as agriculture, transportation, and manufacturing, among others which caused huge ecological and economic losses. River flood and inundation is a type of flood that occurs during drastic runoff changes from water level rise due to several factors such as excessive precipitation and changes in the river hydrologic systems. Damages caused by river floods incur huge ecological and economic losses, hence it is important to assess river flood and inundation as part of risk reduction and management practices. Hydrologic modeling is a valuable tool used to study and project different scenarios related to hydrologic watersheds. These models can be used to predict and assess hydrologic responses to varying scenarios. In this study, remote sensing and hydrologic modeling will be used to assess the hydrologic response of the Pampanga River Basin in the Philippines under seasonal changes of wet and dry, and simulating its flooding tendencies under variable scenarios of land cover change. The tool to be used to simulate the models is the Soil and Water Assessment Tool (SWAT), which is a robust well-known hydrological model famous for researchers. Calibration and scenarios will focus on known flood events, with gridded climatological inputs for the SWAT simulations.