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CE 394 K.3: GIS in Water Resources Engineering

Term Project Proposal

Title: Flooding in the Philippines

Significance: While blessed with water resources, flooding remains an issue in the Philippines as it is beset by typhoons annually especially during the rainy season. Currently, the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) is the main governmental institution that is concerned with flooding. Moreover, Project NOAH and nababaha.com are the closest that the government has in disseminating flood hazard maps. The website nababaha.com describes their flood hazard maps as "useful only for knowing where not to be during extreme heavy rainfall". According to the website, the hazard maps may also be used for local emergency response.

Doubtless, these projects have saved many lives. However, they uses fall short of their objectives when a flood strikes without warning (for example, how can someone know that a flood is coming? How will he evacuate? He may even ask if it is really necessary to evacuate or not.) This problem is exacerbated in impoverished regions in the Philippines where people do not even have access to the internet.

In contrast to Project NOAH and nababa.com, forecasting systems such as that of the National Flood Interoperability Experiment (NFIE) of the United States or the Global Flood Awareness System (GloFAS) developed by the European Commission and the European Centre for Medium-Range Weather Forecasts (ECMWF) provides a real-time warning system and emergency response. This project advocates that the Philippines have a similar flood warning system.

General Objective: This term project aims to provide a terrain analysis of and set-up a flood forecasting system for the upper part of Luzon.

Scope and Limitation: While creating a unified flood forecasting system for the whole Philippines is the vision of this project, this project will only focus on the upper portion of Luzon (regions I, II, III, IV-A, NCR) due to time constraints.

Methods: This project will leverage on the output GloFAS to create a flood forecasting system of Luzon. First, a discussion of the Philippine Government's methods to address the issue of flooding will be made. This will also be done to the gamut of non-governmental organizations (NGOs) in the Philippines that also address flooding. Next, terrain analysis will be conducted in which the DEM will be sourced from SRTM. The land use of Luzon will also be determined. Furthermore, meteorological will be obtained and stream delineation will be performed. Finally, hydrologic models will be created from the data obtained.