Identifying Potential Flood Risk Areas

Using GIS and Hydrological Modeling Tools

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Flooding is a costly and devastating problem with impacts foreseen to increase in frequency and severity under conditions of increased urbanization and changes in climate patterns. In this research, hydrological modeling tools will be used in conjunction with GIS to test floodplain and community susceptibility to a variety of flood hazard scenarios based on differing conditions of population distribution (depending on future development) and precipitation (due to changes in climate) for a portion of the Cuyahoga River watershed in northeast Ohio. Maps will be generated identifying which communities are more likely to receive flooding damage under the varying scenarios. This work also will compare the differing model-generated susceptibilities to flooding to susceptibility shown on the federal floodplain map to assess amounts of agreement between models and floodplain maps as well as the strengths and weaknesses of federal floodplain maps. A sensitivity analysis will also be performed on model parameters to understand uncertainties of the generated results.