TOPOGRAPHIC WETNESS INDEX

A GIS Approach to identifying areas at risk or identifying areas at risk of urban flooding

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What is TWI and where did in come from?

- Steady state index that's capable of predicting areas susceptible to saturated land surfaces and areas that carry the potential to produce overland flow.
- First developed by Keith Beven & Mike Kirkby In 1979
 - TOPMODEL- model simulate the hydrologic fluxes of water throughout watershed
 - Wetland identification, vegetation ecology, and tracking malaria.





TWI Formula

Formula: TWI = In (a/tanβ)

- a is the upslope contributing area
- β is the topographic gradient (slope)

Inter function I



Data Processing



- The best results come for high resolution digital elevations models (DEM)
- Best to keep DEM to watershed boundaries to reduces errors



I thought this presentation was about urban flooding?

Where is TWI being used in Illinois?

- Prevalence and cost
- Climate trends and climate change
- Effectiveness of projects, programs, and policies
- Strategies for reducing urban flood damages
- Technology and data for the identification of areas susceptible to urban flooding





Where is TWI being used continued...

StormStore: A feasibility study examining stormwater credit trading in Cook County

November 2017



Contract Report 2017-02 April 2017

Topographic Wetness Index Urban Flooding Awareness Act Action Support Will and DuPage Counties, Illinois

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Land and Hydrologic Analysis for Stormwater Detention and Volume Control Trading Exchange in Cook County, Illinois

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QUESTIONS

