Predictive Flood Mapping Tools to Improve Emergency Response and Flood Preparedness

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overview

- background
- available data sets
- integrating data sets using GIS based tool
- using the tool to trigger emergency actions
- web and mobile accessibility
- improve emergency preparedness
Rochester wanted to improve its emergency response to flood hazards.

Past floods shape future emergency planning.

How can the city get out ahead of the next flood?
three key elements to the predictive flood mapping tool

NWS flood forecasts

inundation map libraries

action triggers
National Weather Service provides short term flood forecasts at select stream gages.
inundation map libraries based on flood stage

rapid assessment of inundation extents before and during a flood

inundation map layers at 1-foot intervals

4-foot intervals shown here
four map libraries developed
integrating data to make a predictive flood mapping tool

- LiDAR ground elevations
- structure survey
- watershed hydrology
- floodplain hydraulics
- inundation map library
- flood stage forecast

Integrated GIS view
integrated GIS view

inundation layers
parcel data
infrastructure

pull latest flood stage forecast

run reports to identify affected parcels
GIS web mapping makes data more accessible
remote access and real time editing with GPS devices
### emergency response action triggers (examples)

<table>
<thead>
<tr>
<th>If this …</th>
<th>then …</th>
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<tbody>
<tr>
<td>NWS forecasts extreme precipitation</td>
<td>review potential inundation areas</td>
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<tr>
<td>NWS forecasts high flood stage</td>
<td>close roads and trails, protect properties</td>
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<tr>
<td>flood occurs</td>
<td>active flood fight</td>
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<td>collect photos and high water marks</td>
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<td>identify improvements to response plan</td>
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National Weather Service hosted libraries

USGS flood inundation mapper

http://water.usgs.gov/osw/flood_inundation/
integration of data and tools allows for better emergency planning and response
The integration of data and tools allows for better emergency planning and response.

Available data and tools:
- Flood stage forecasts
- Precipitation forecasts
- Inundation map libraries
- Other GIS databases
- Automated notification systems
- Web mapping
- GPS enabled devices

Application of data and tools:
- Connect forecasts to inundation maps
- Forecasts trigger emergency actions
- GIS web mapping makes data available to non-technical users
- Mobile devices allow remote access to data and can collect new data
integrating data allows for better emergency planning

- develop plans based on flood stage
- gain time for implementation
questions

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