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INNOVATIVE SOLUTIONS **TO BETTER MANAGE** FLOOD RISKS

06-06-2019

Floods in Canada and United States

- Floods are the most common natural hazards
- 17% of all the urban land in the USA is in flood risk zones
- 20 % of the Canadian population is at risk of flooding
- The available tools for municipalities do not ensure effective flood risk management
- Limited consideration of population and infrastructure vulnerability assessment

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- Developed in close collaboration with municipalities and the Ministry of Public Security of Quebec
- Tested in 7 municipalities in Quebec
- 1st prize at the Aquahacking 2018 challenge
- 2019 Social Entrepreneur Award - Mitacs

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- A decision support tool for municipal emergency services
- More effective flood risk management in prevention and response
- Different functionalities :
  - Dynamic flood mapping for forecasted or real-time flows
  - The floodwater depth at any point of the floodplains
  - Assessment of the vulnerability
    - Population
    - Buildings
    - Roads

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**Simulation of flooded areas for different flows,
Montmorency River, Quebec**

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Risque d'inondation pour la population

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Flood risk assessment online service

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In Prevention :

- Simulate flood scenarios corresponding to different flows (simulated or forecasted)
- Identify risk areas to raise public awareness
- Estimate potential damage to buildings and critical infrastructure
- Assess the consequences of extreme events associated with climate change
- Identify the essential infrastructures to be protected.

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In an emergency situation

- Assess the level of accessibility of roads
- Identify flooded or isolated buildings
- Provide detailed and real-time information to the stakeholders
- Guide the return operations of victims

After the event

- Simulate the extent of past flooding
- Analyze the carried out interventions
- Estimate the damage caused by the flood

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- Innovative flood risk mapping method:
  - Only based on data
  - Faster method than conventional approaches (hydraulic modelling)
  - Less costly
  - Global coverage

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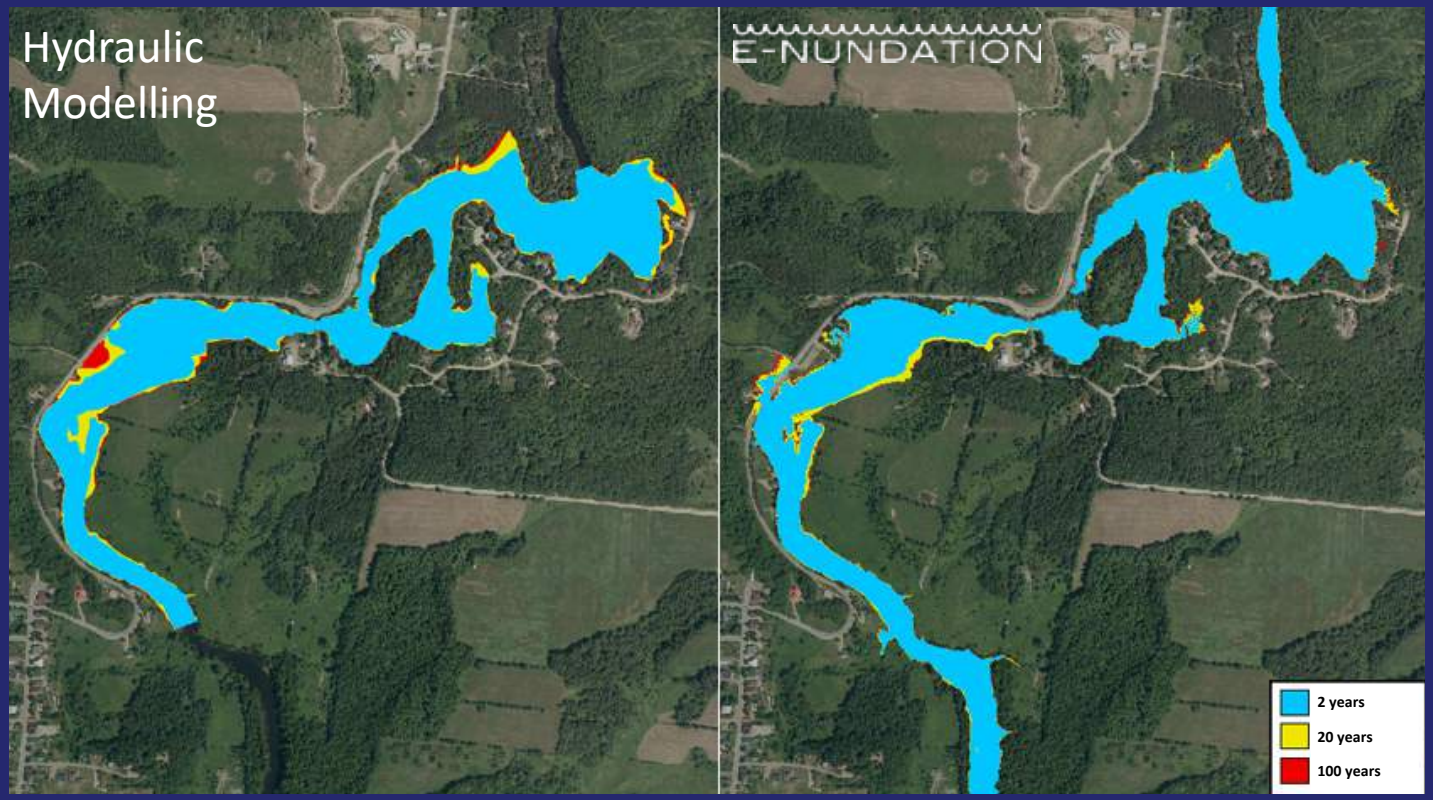

	CSI
2 years	**0,88**
20 years	**0,86**
100 years	**0,86**

Flood Zones : Hydraulic modelling vs e-nundation
Petite Nation River, Quebec

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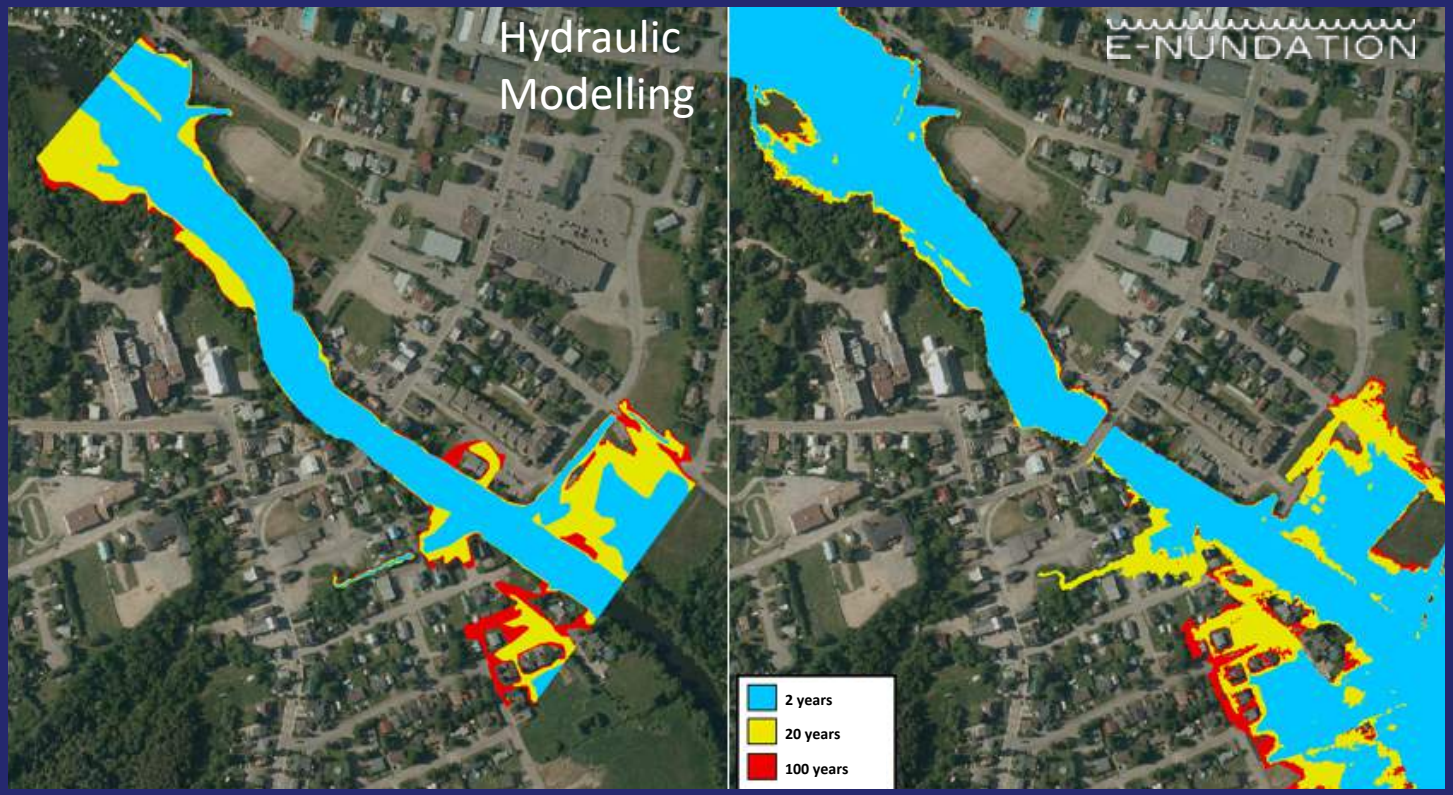

	CSI
2 years	**0,77**
20 years	**0,81**
100 years	**0,85**

Flood Zones : Hydraulic modelling vs e-nundation
Petite Nation River, Quebec

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18 avril 2017 – Real situation – drone photo

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Simulated flood zones using e-nundation

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e-nundation…

For a more resilient society against flood risks

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Thank you for your attention

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