A Systematic Framework for GIS based Natural Hazard Assessment

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What?

1. State of Nature Maps

State of nature maps are layers such as surficial geology, slope angle, bedrock type, slope aspect etc.

⚠ No forecasting

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2. Hazard Inventory

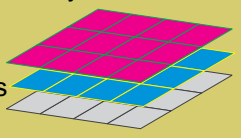
⚠ No forecasting

Inventory consists of dangers which are described by their mechanics, geometry, size and intensity. The minimum requirements for the inventory include hazard type, geographic co-ordinates, photograph, unique name, observation date, magnitude, and activity.

+ GIS Model

- Index Overlay Model
- Fuzzy Logic Model
- Bayesean Weights of Evidence Model
- Hazard Inventory is used for calibration

Deliverables:
- Density Maps
- Activity Maps
- Distribution Maps



Why?
Where?

3. Hazard Susceptibility

Relative probability that a danger will occur within a given area

⚠ **Forecasting in terms of area, not time.**

Deliverables: - Hazard Susceptibility Maps

+ Trigger

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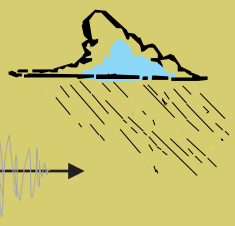
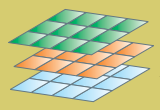
4. Triggering Potential

Absolute Frequency Understood



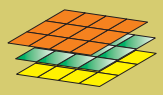
Relative Frequency Understood



Hazard Assessment Maps

Absolute probability that a danger of a certain size will occur in a certain period of time.

⚠ **Forecasting in terms of area and time.**



Hazard Potential Maps

Relative probability that a danger will occur within a given area from a triggering mechanism

⚠ **Forecasting in terms of area, not time.**

When?

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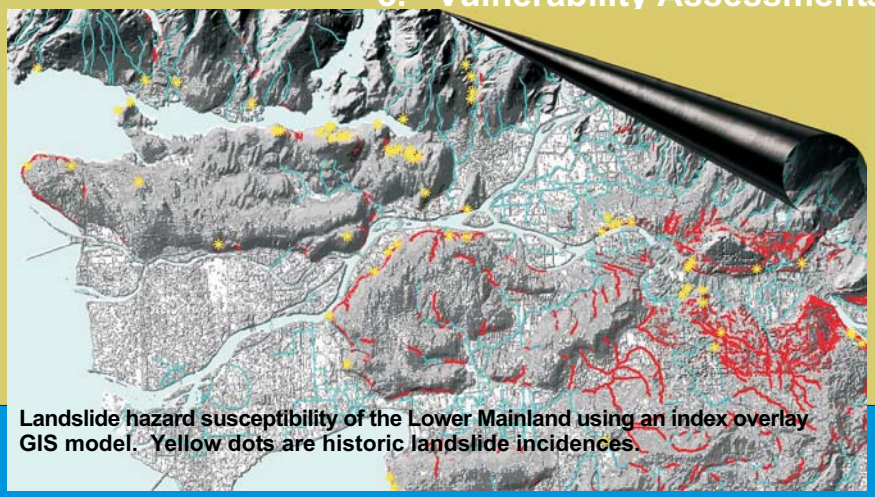
5. Vulnerability Assessments

How are the elements impacted by the hazard. Assessments include runout analysis and retrogression analysis

How?



Landslide hazard susceptibility of the Lower Mainland using an index overlay GIS model. Yellow dots are historic landslide incidences.

How Much?

Increasing clarity
increasing cost per sq. km