LOCAL CLIMATE CHANGE VISIONING WORKSHOP

II Visualization Principles & Planning

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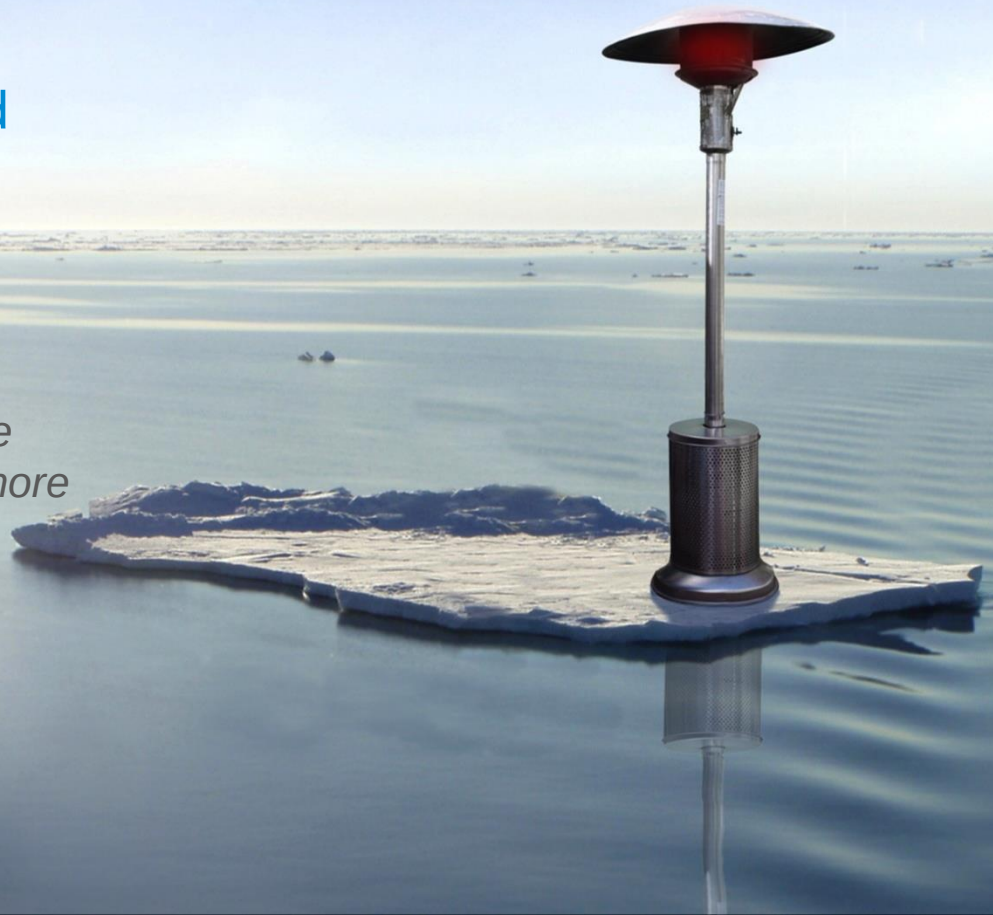
Eastern Regional Climate Change Preparedness Conference, Baltimore

5 April 2016



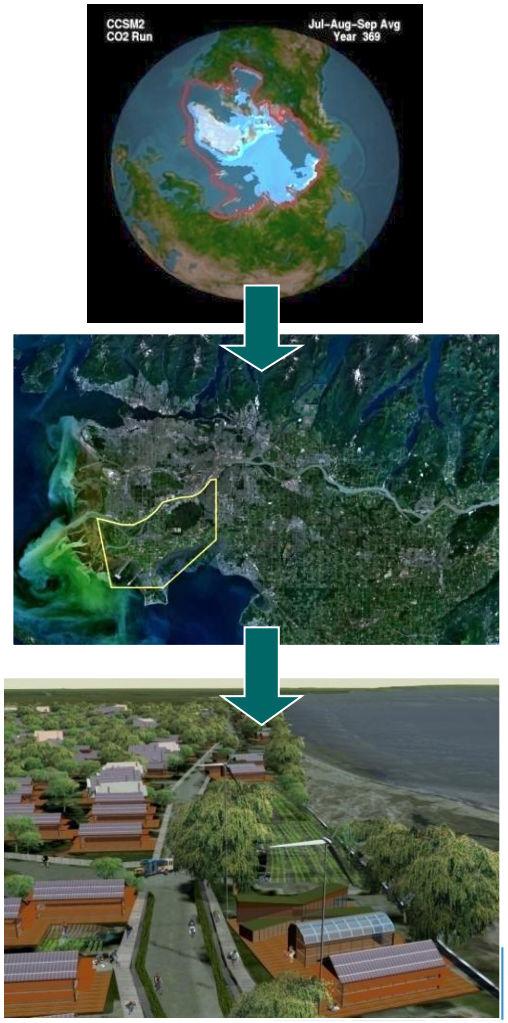
UBC CALP

II. Visualization Principles & Planning

for Community Climate Change Scenarios

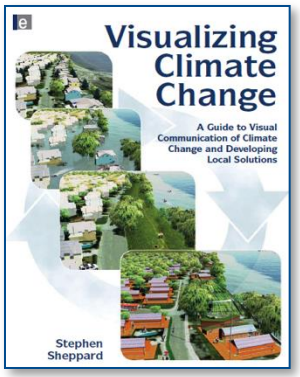
Goals:

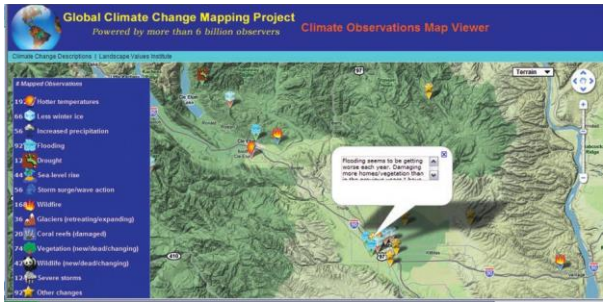
- Build awareness and support decision-making/policy change/behaviour change/social mobilization
- **Localize, spatialize, visualize** climate change impacts and solutions (mitigation and adaptation)
- Bridge to more formal planning/decision-making processes, add value

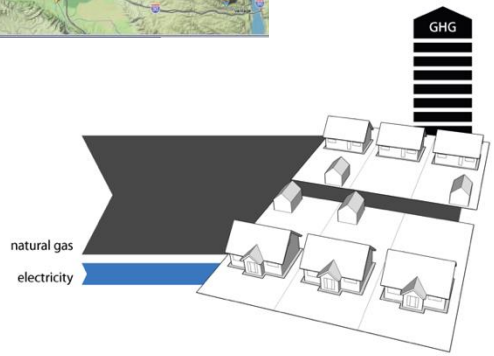


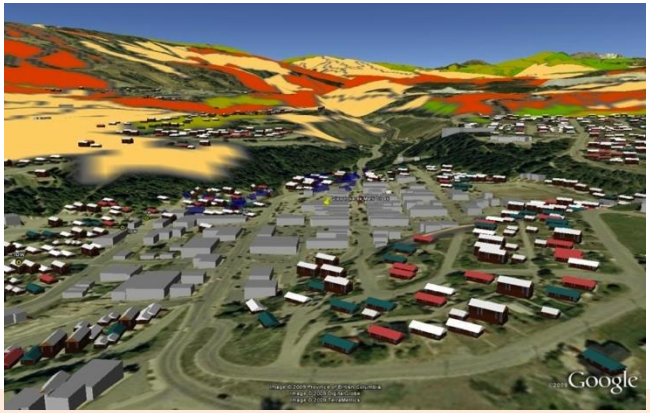
Various visual learning tools

- Photos
- 2D Maps
- Info-graphics
- Landscape visualizations and video

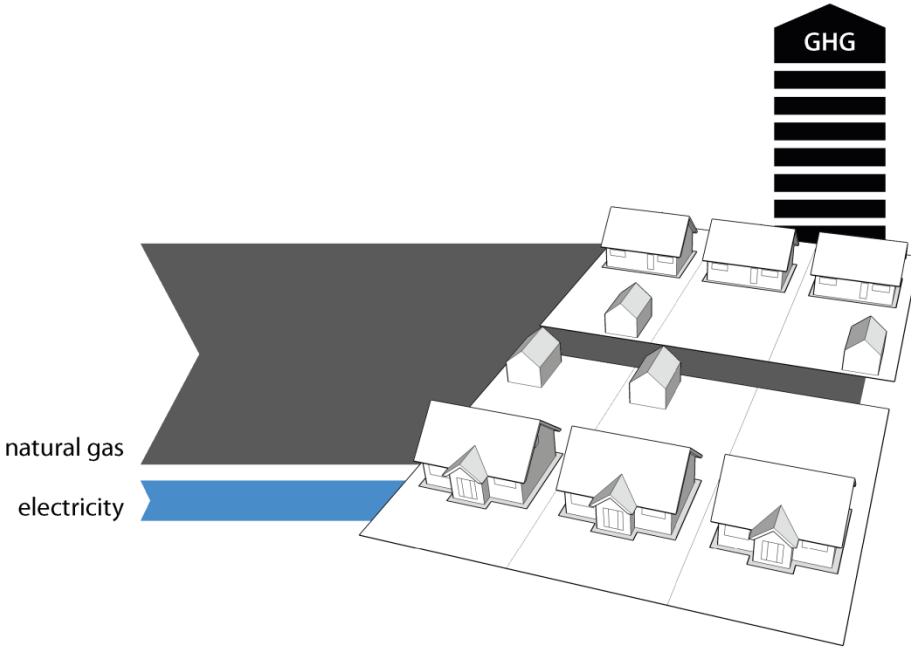




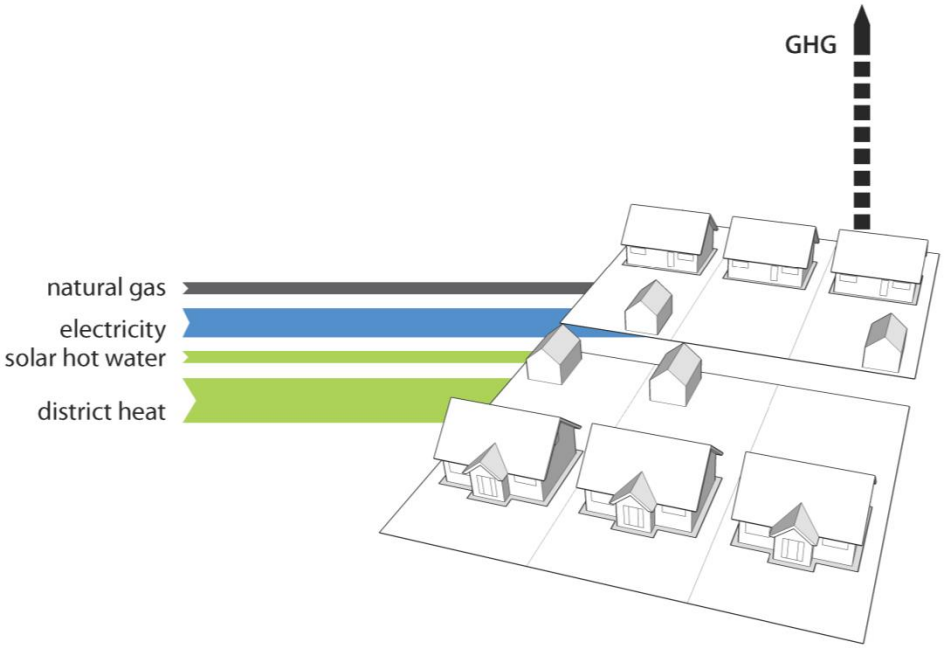




Visualizing energy/carbon flows through our communities



Prince George baseline energy use and emissions



Prince George with energy retrofits, renewables, and district heating.

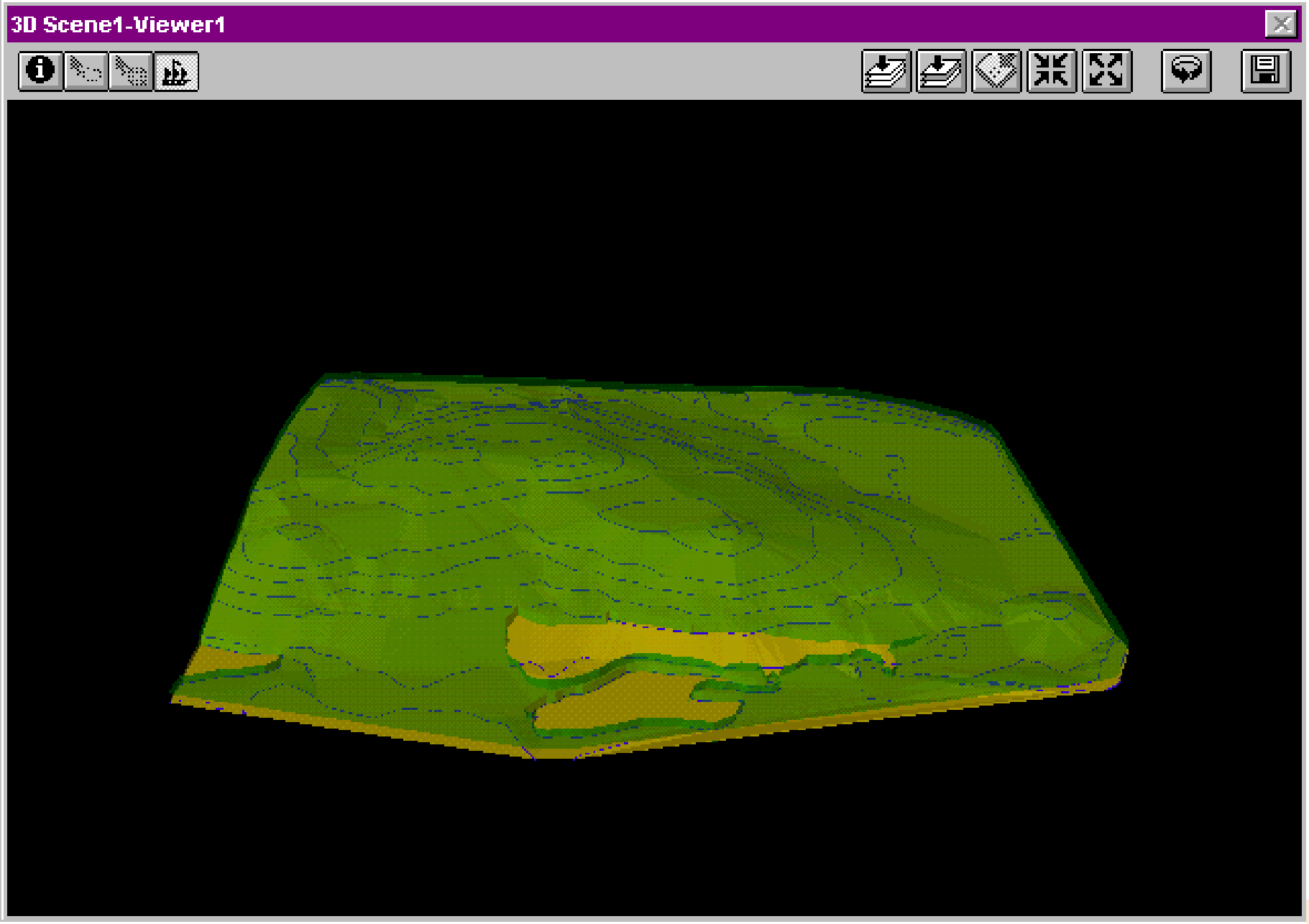
Landscape Visualization Types

MANUAL METHODS

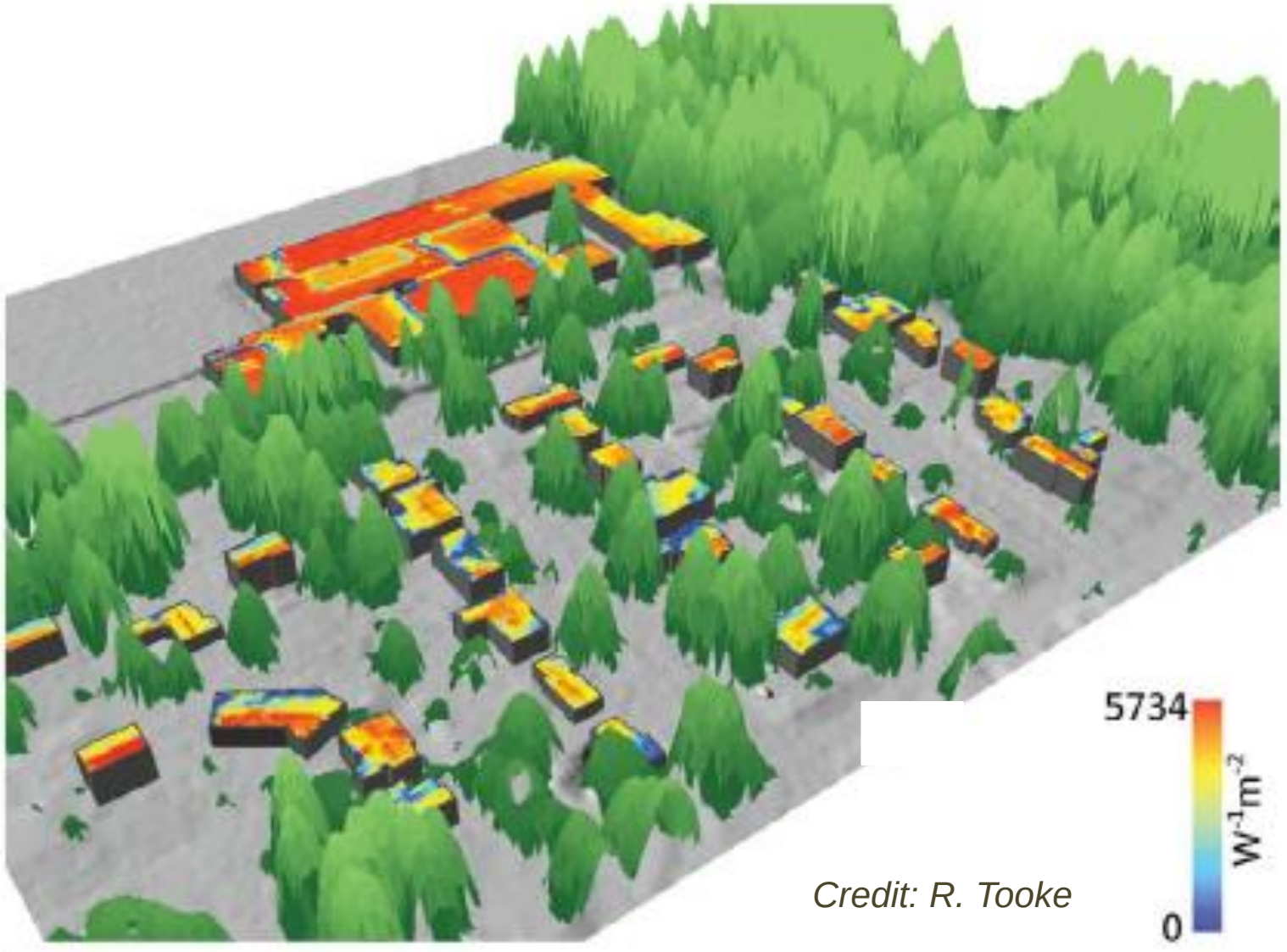
- **Artist's Rendering**
- **Scale Models**

COMPUTER MEDIA

- Photo Montage / **2D imaging**: eg. photoshop
- **3D Geometric Modeling**: eg. solid models, geo-visualisation (eg. Sketchup, ArcGIS)
- **2D/3D Hybrid Modeling**: eg. composite pictures & draped images (texture maps, Google Earth)
- **High-resolution 3D modelling** (eg. Visual Nature Studio, 3D Studio Max, Maya)
- **Animation & video**
- **Interactivity/Virtual Reality** (eg. Unity game engine)


3D Scene1-Viewer1
Start
Screen Thief
ArcView GIS Version 3....
10:13 AM

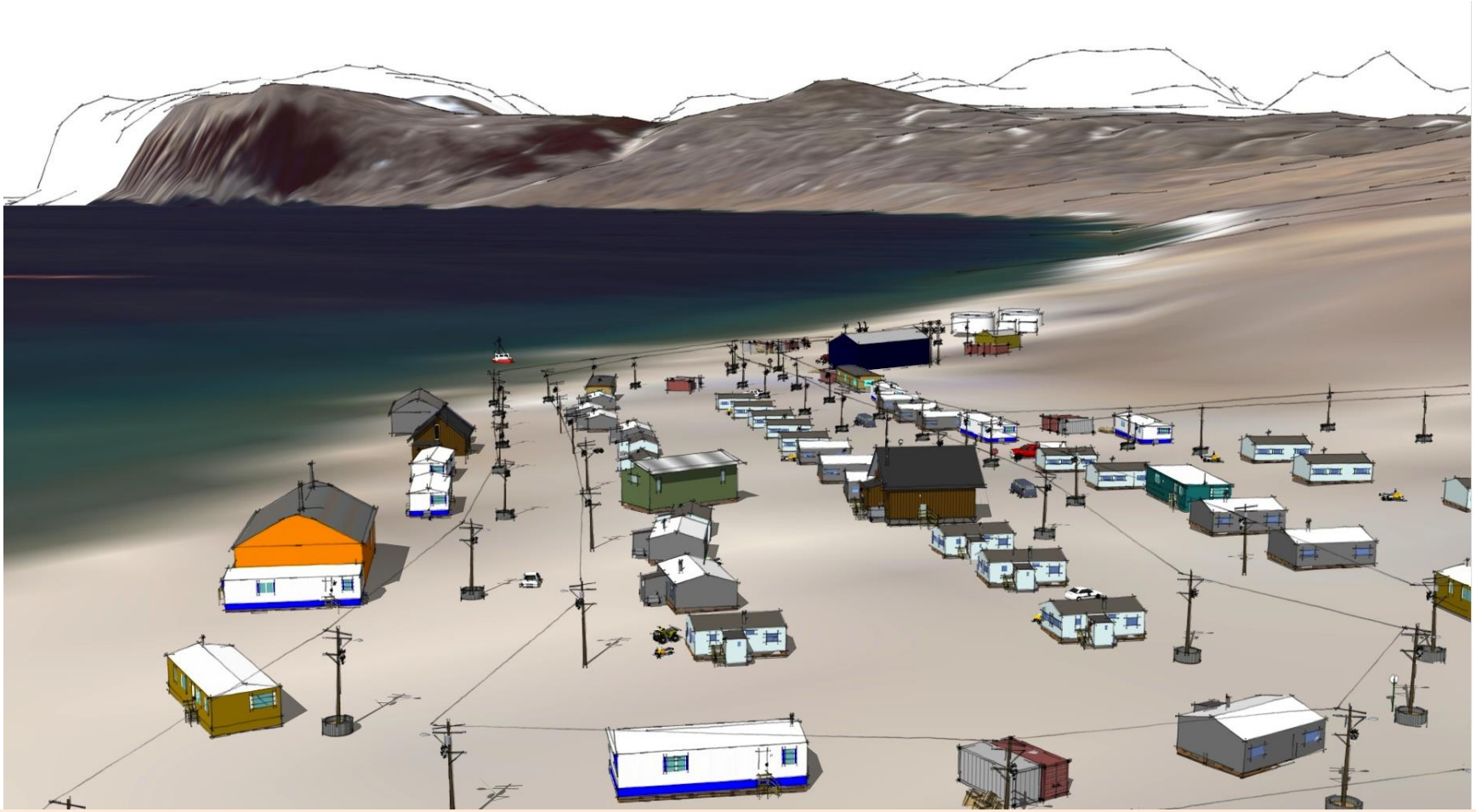
3D LiDAR Analysis



Credit: R. Tooke

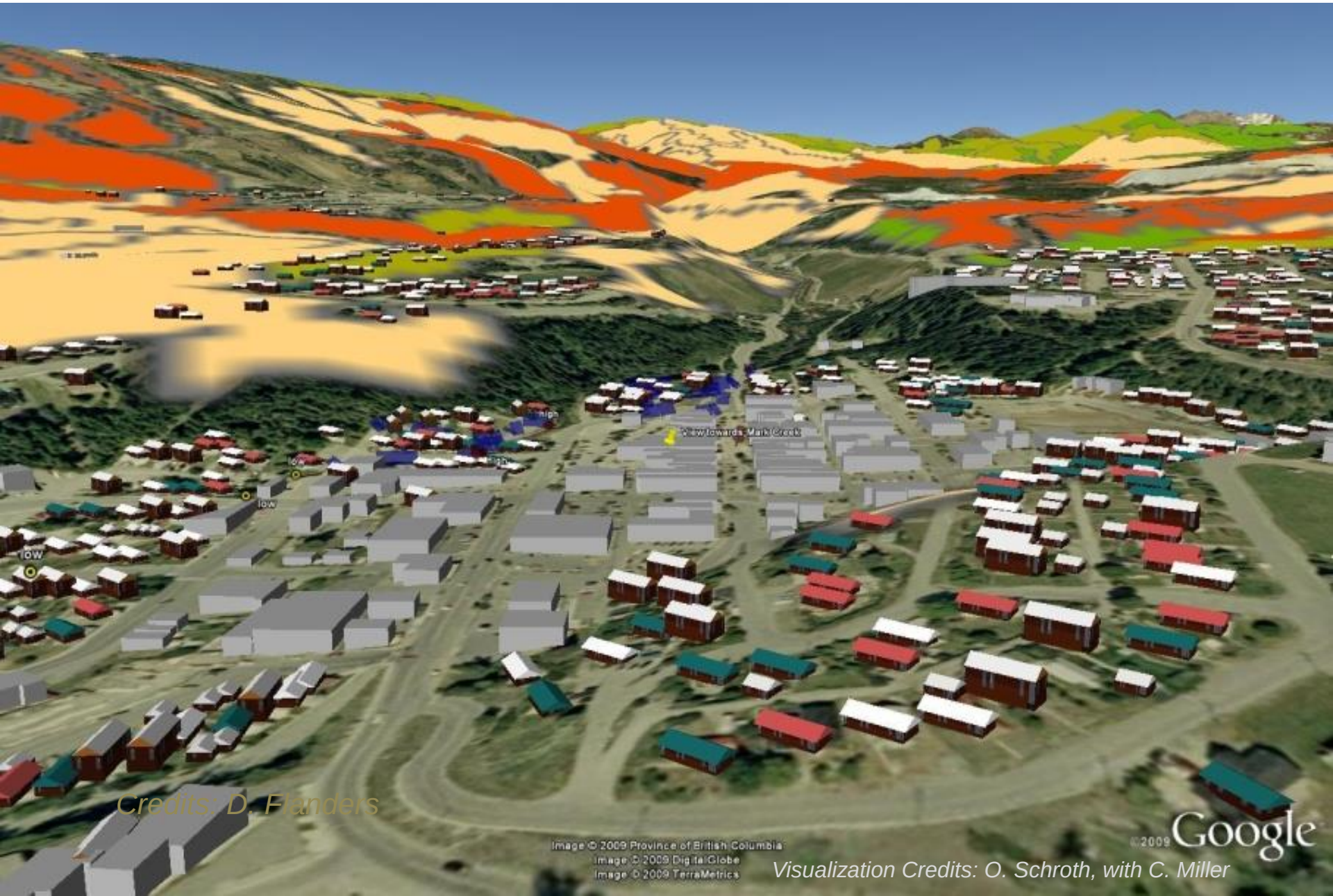
Visioning Case Study: Clyde River, Nunavut

….towards improved resilience and quality of life (Sketchup)



Clyde River Visualizations and scenarios:
D. Flanders, E. Pond, K. Tatebe, N. Sinkewicz, J. Cheng, CALP

2.5D Landscape Visualization (draped)



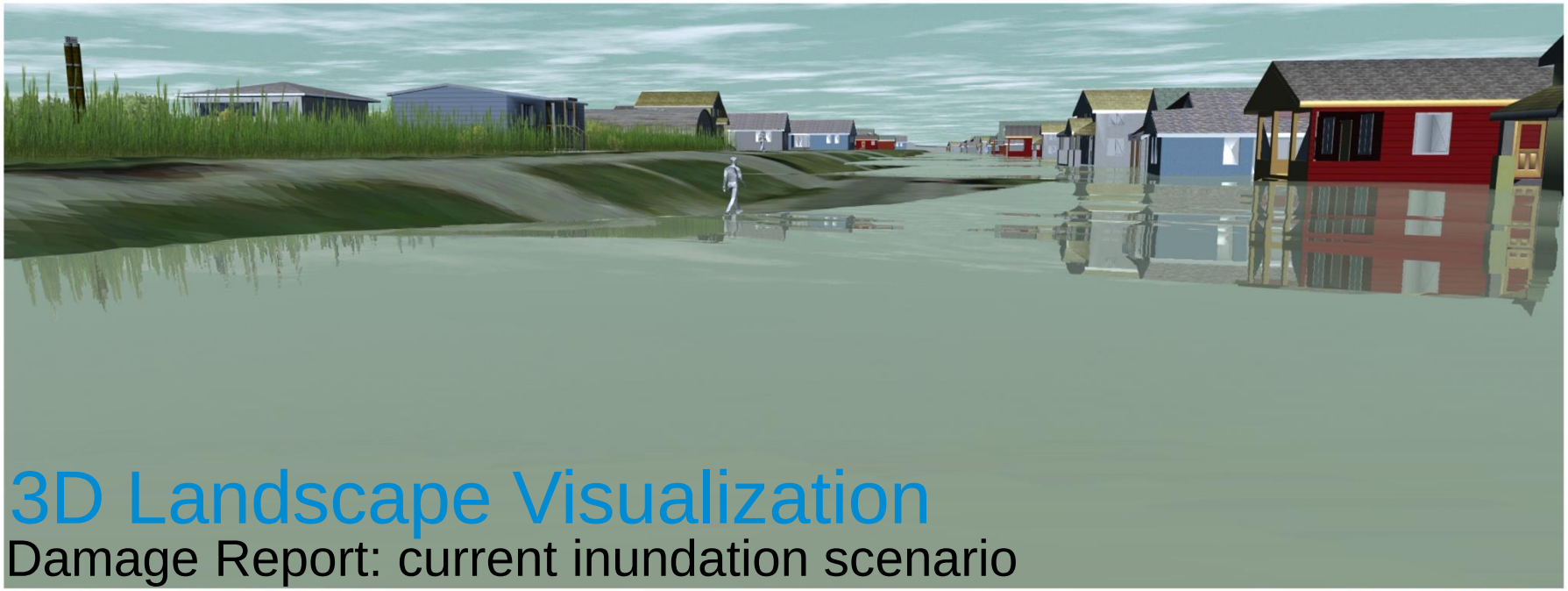
Credits: D. Flanders

Visualization Credits: O. Schroth, with C. Miller

DIY photo-visualization

Credit: Andrew MacFarland and Damion Dorn, West Vancouver Secondary School

Baseline	Indicator	Performance	Indicator	Performance	Indicator	Performance	Rank
0m	Social		Environment		Economy		8



3D Landscape Visualization

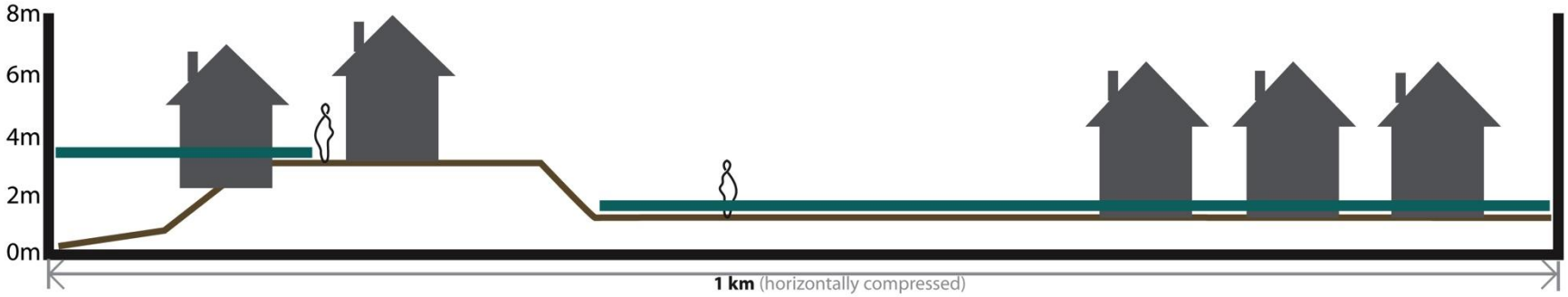
Damage Report: current inundation scenario

Water level of 3.55m : High tide (2m) + storm surge (1.25m) + no sea level rise + wind set up (0.3m)

Fraser River riparian and forest habitat: reduced

Current dike 3.2m

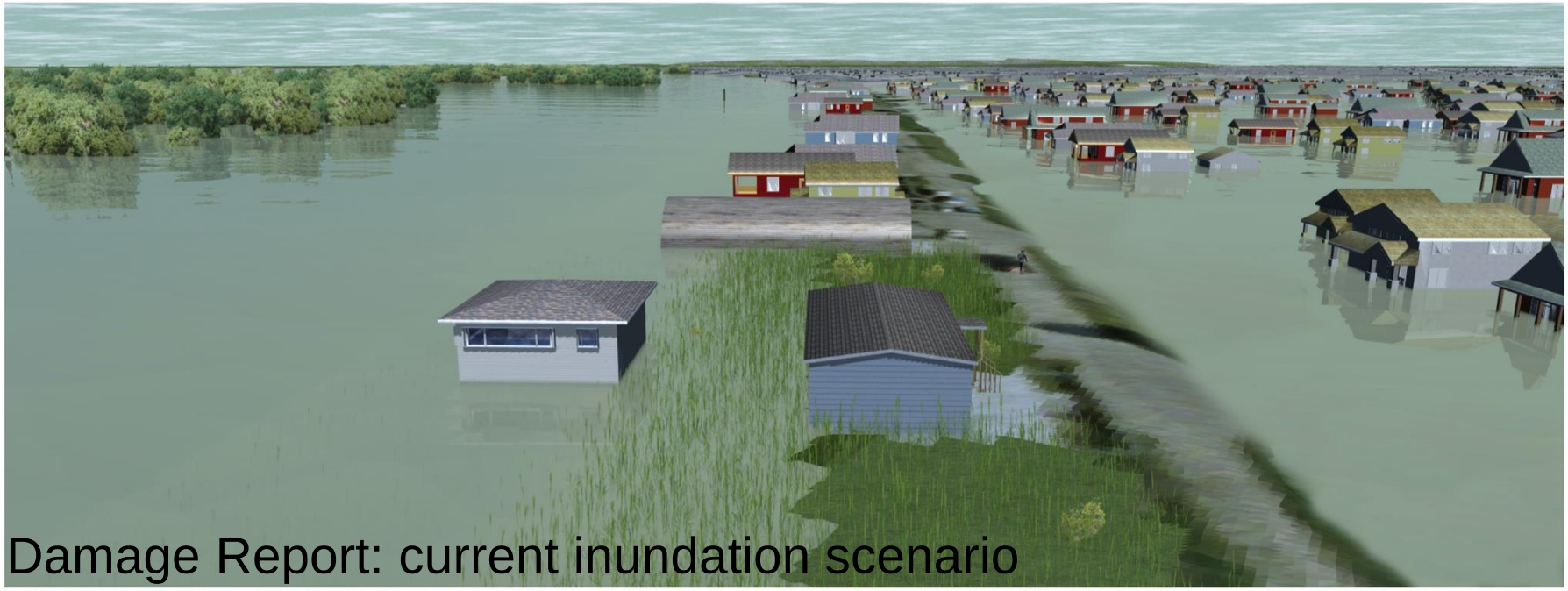
Houses inside dike FCL: no change (1.6m)



Standard formats for visualisation

- True time sequences ('time travel'): before/after, time lapse (eg. 2020, 2050, 2100)
- Side-by-side comparisons (eg. 'small multiples', scenarios, scenario variations)
- Presentation sequences (combos of the above)
- Immersion (eg. 'caves', headsets, OWL)
- Augmented Reality v. Virtual Reality
- Viewpoint types

Ladner now with a flood dike view



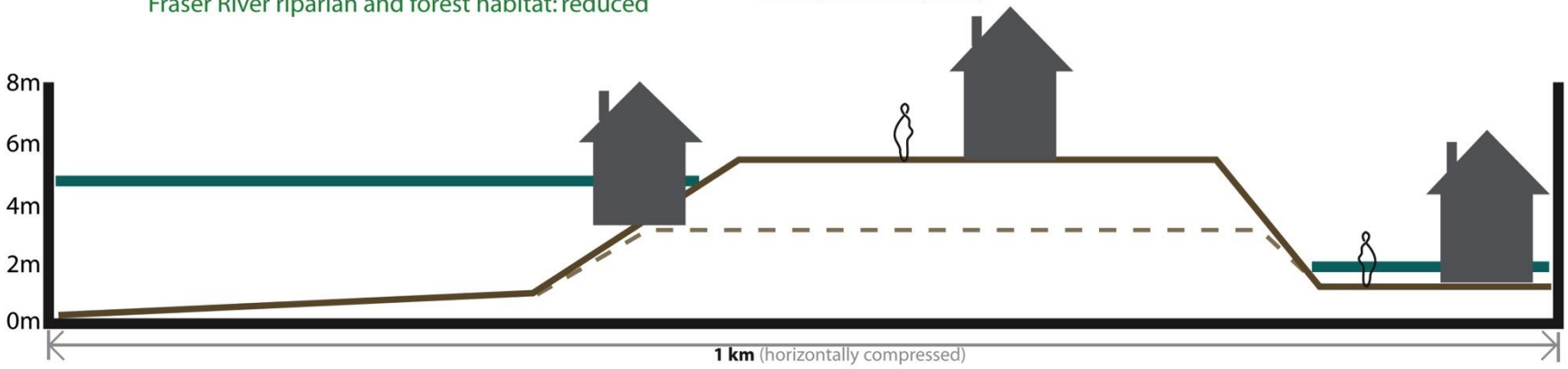
Damage Report: current inundation scenario

Water level of 3.55m : High tide (2m) + storm surge (1.25m) + no sea level rise + wind set up (0.3m)

Fraser River riparian and forest habitat: reduced

Dike not raised (3.2m)

Houses inside dike FCL: no change (1.6m)



Hold the Line scenario

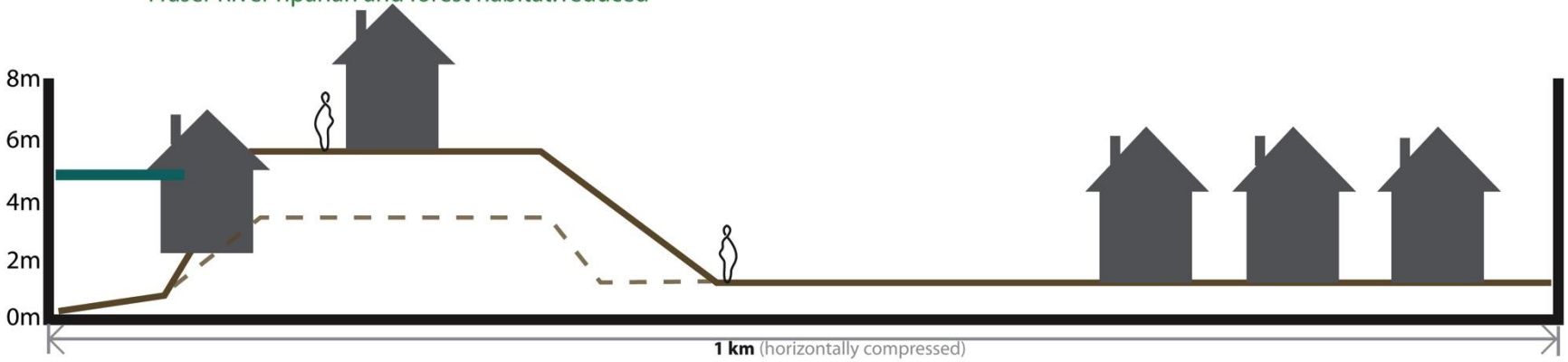
Water level of 4.9m : High tide (2m) + storm surge (1.3m) + sea level rise (1.2m) + wind set up (0.4m)

Fraser River riparian and forest habitat: reduced

Houses on dike raised

Dike raised to 5.5m

Houses inside dike FCL: no change (1.6m)



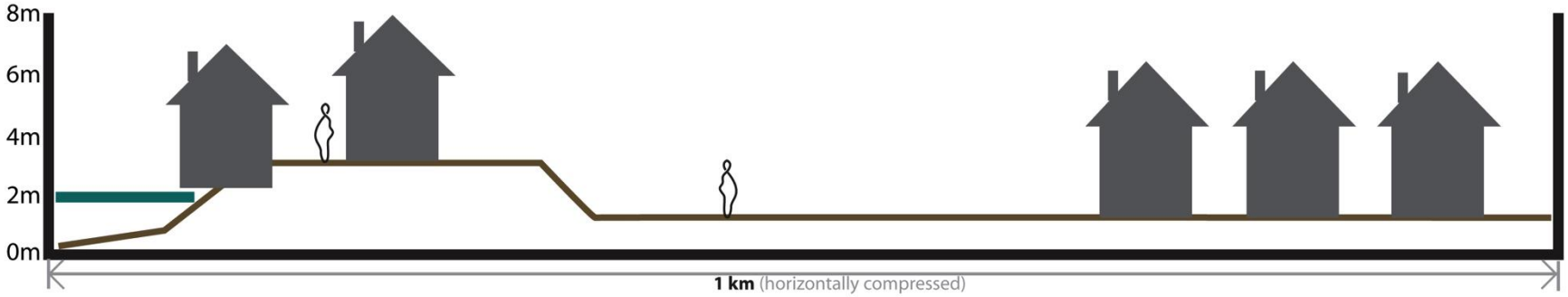
Ladner current street view

Water level of 2m : High tide (2m) + no storm surge + no sea level rise + no wind set up

Exisitng dike (3.2m)

Houses on dike: no change,
Houses inside dike: no change (FCL=1.6m)

Fraser River riparian and forest habitat: reduced



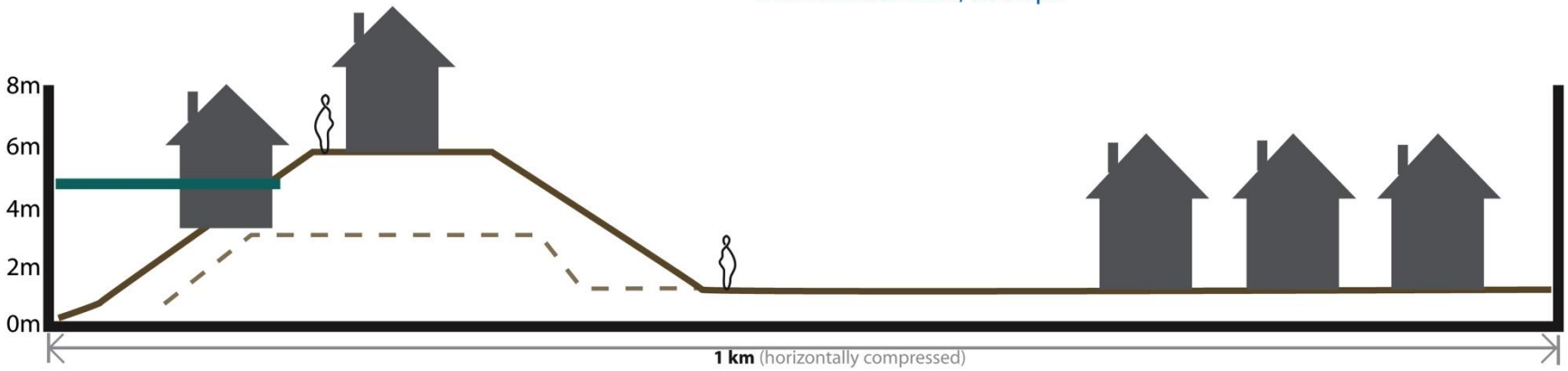
Hold the Line scenario

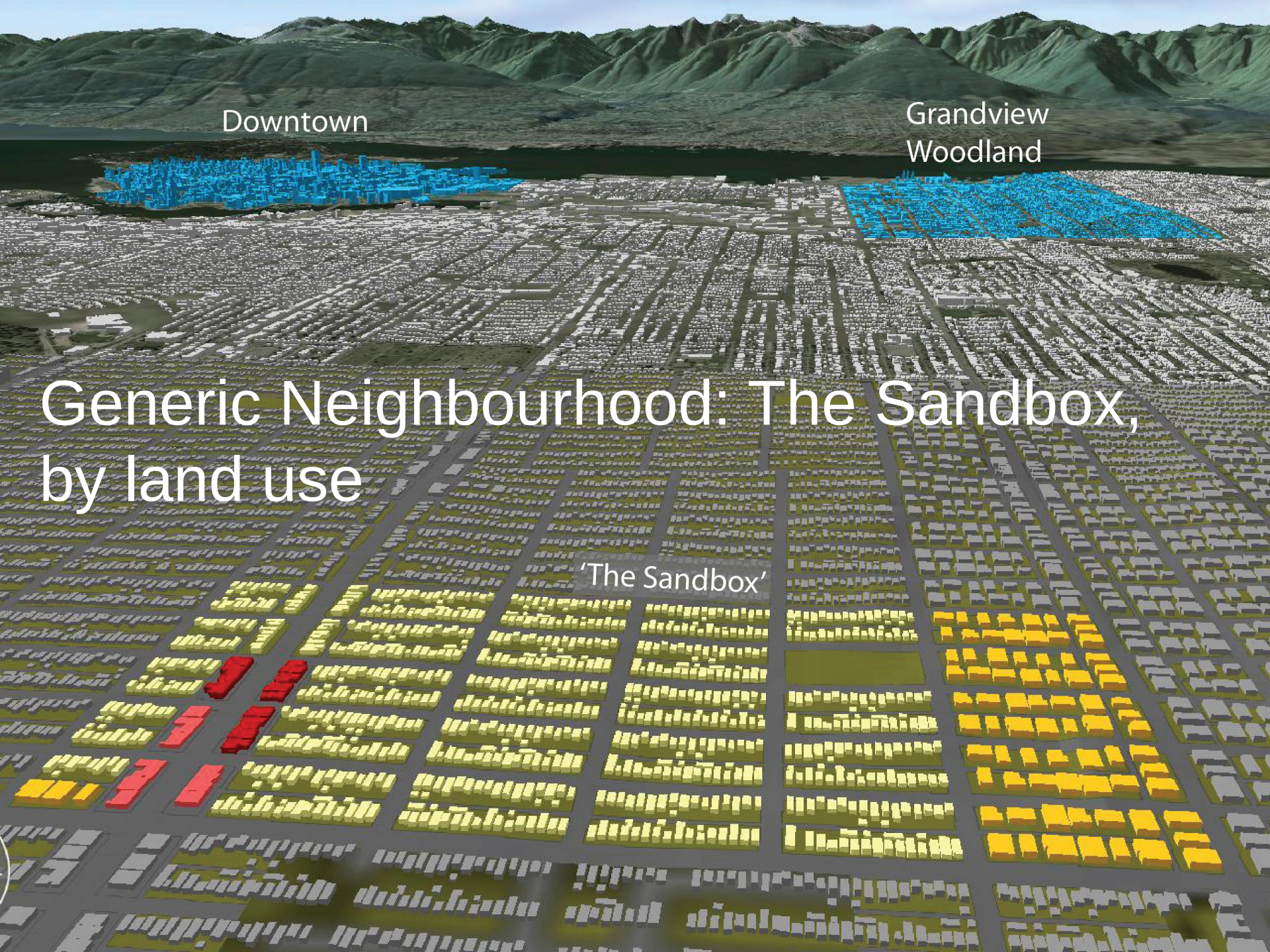
Water level of 5.7m : High tide (2m) + storm surge (1.3m) + sea level rise (2m) + wind set up (0.4m)

Houses on dike raised

Dike raised to 6.3m, 1:3 slope

Houses inside dike FCL: no change (1.6m)





Generic Neighbourhood: The Sandbox, by land use

Existing creek conditions

Creek restoration scenario (fish habitat and Cheam spiritual values)

- **Strongly preferred for spiritual/cultural purposes**
- **Emotional reaction of “recognition”**

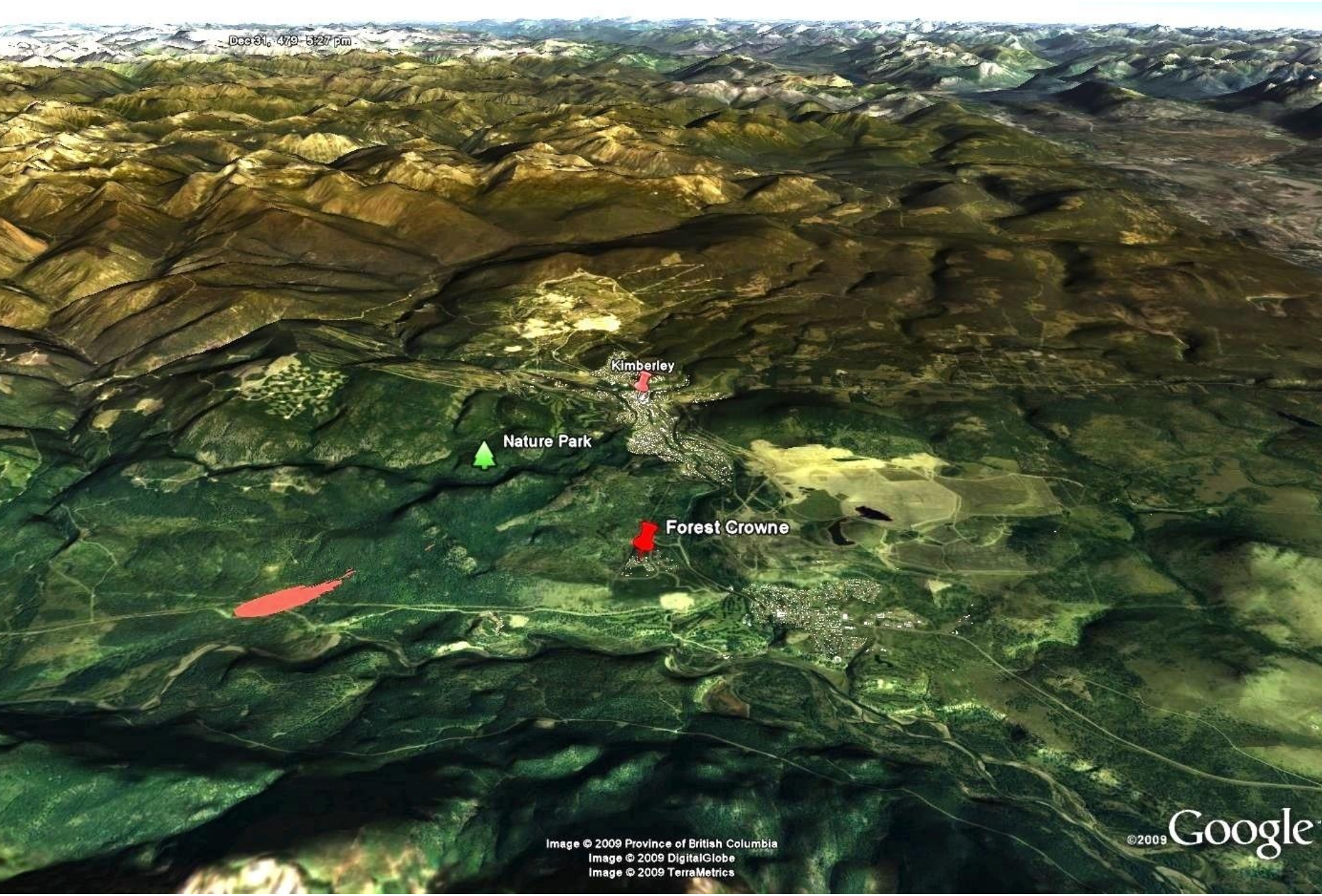
Cheam preferences for restoration options

Compatible/Incompatible (no. of comments):

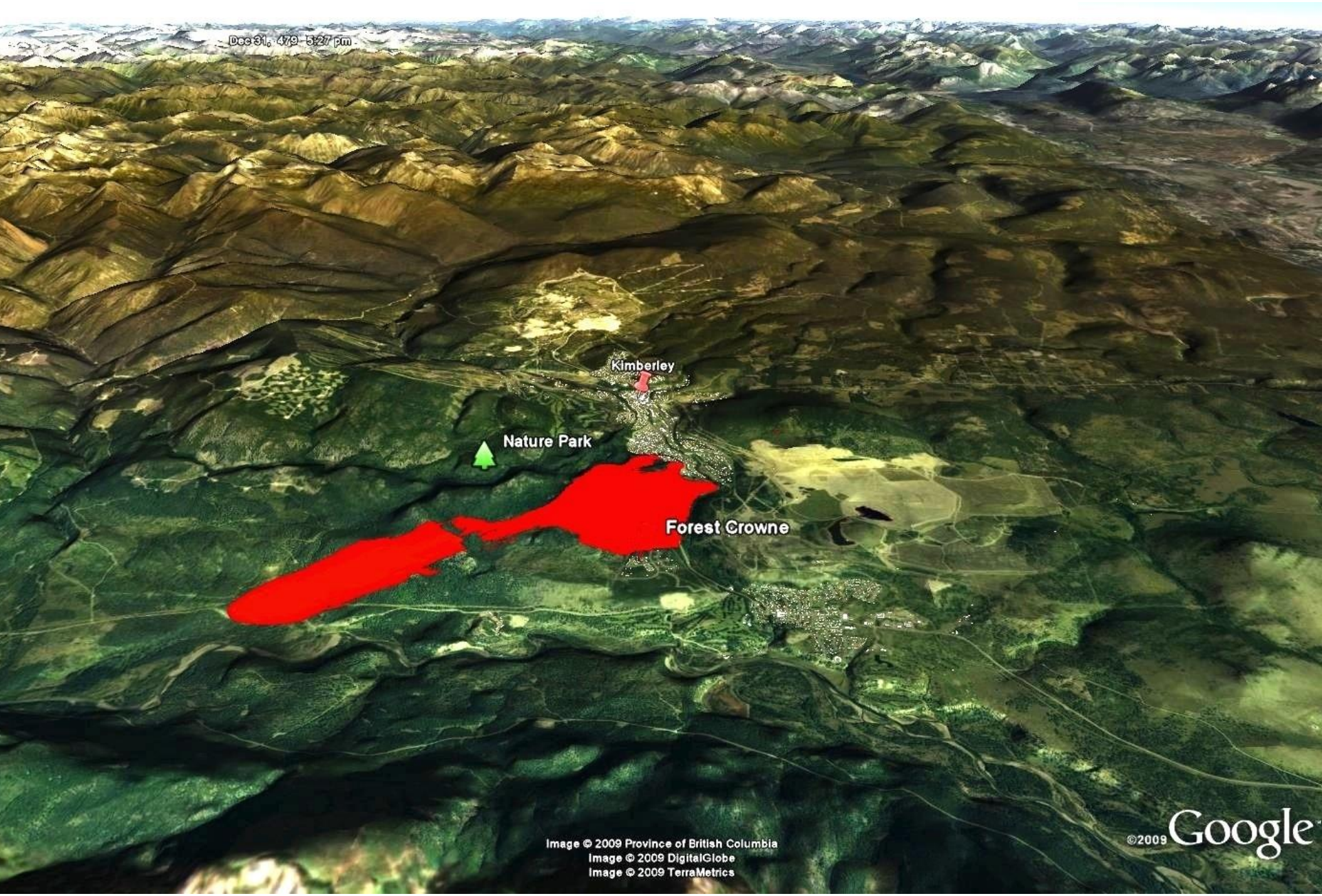
0/12

8/5

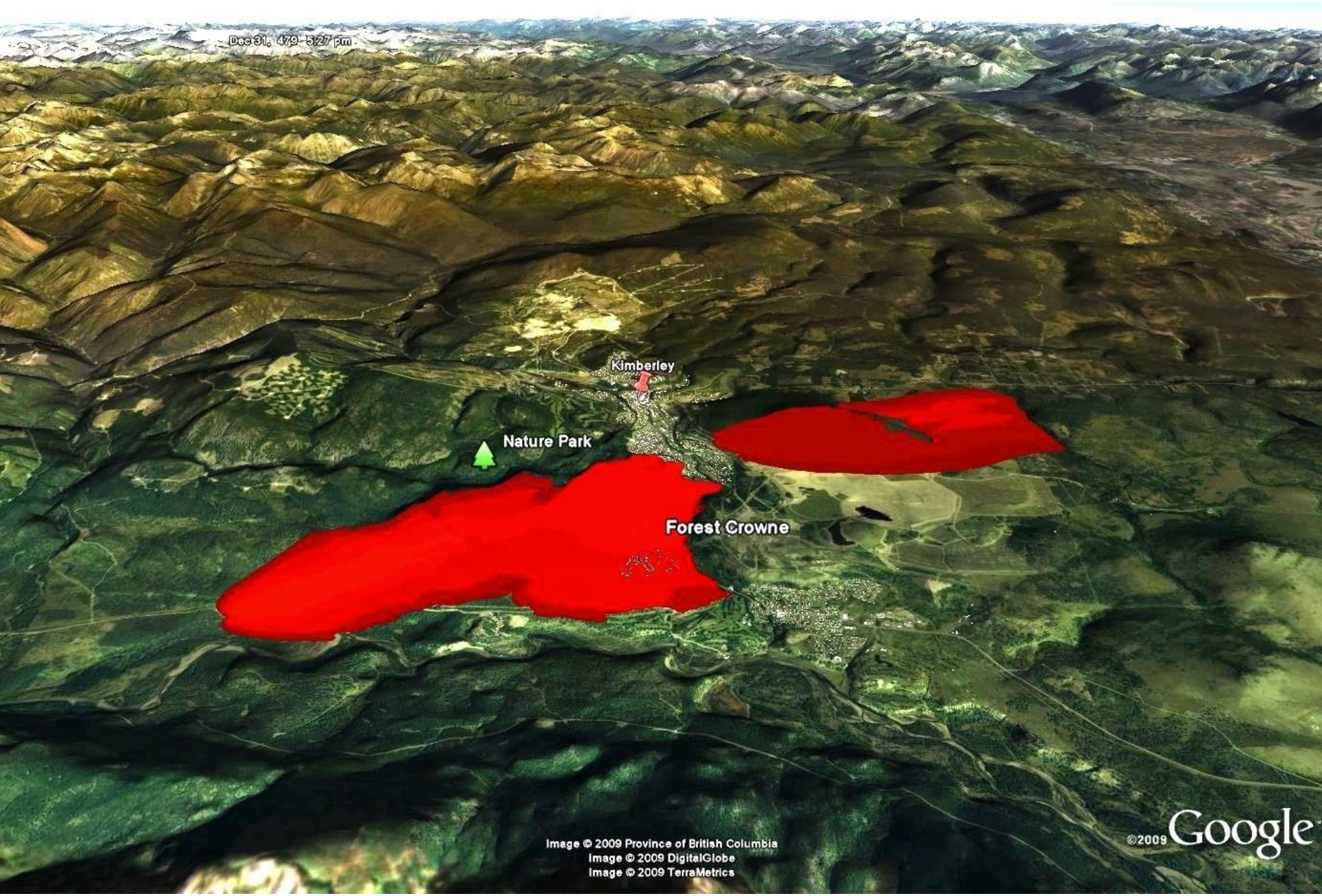
66/0



Fire-spread mapping (Farsite Model) *Courtesy of Bob Grey Consulting*

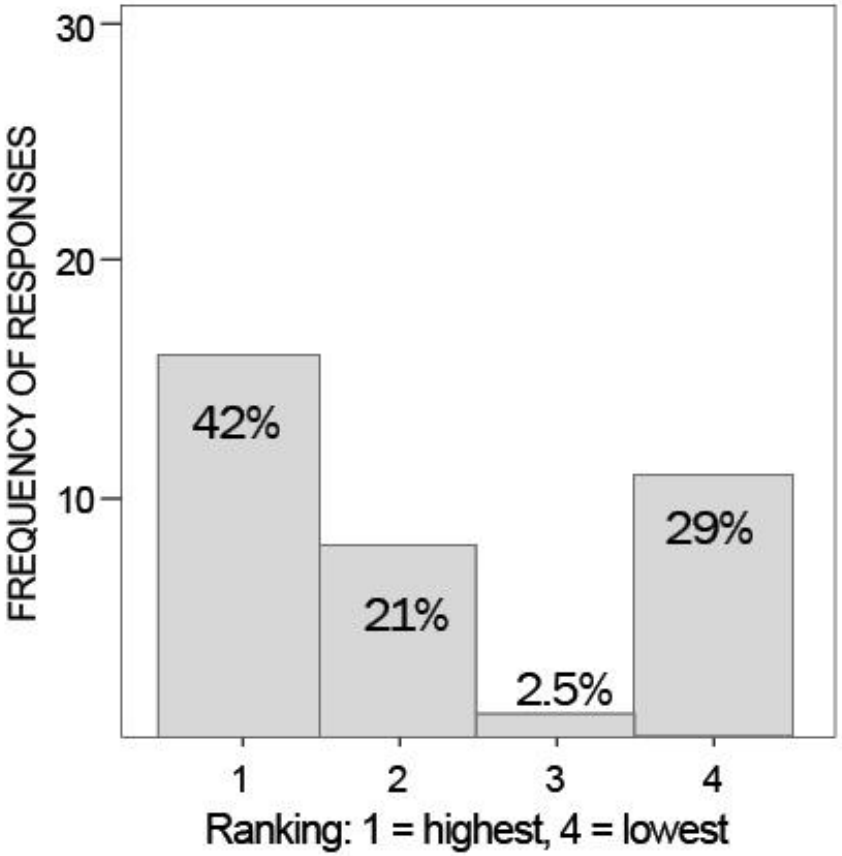


Fire-spread mapping (Farsite Model) *Courtesy of Bob Grey Consulting*

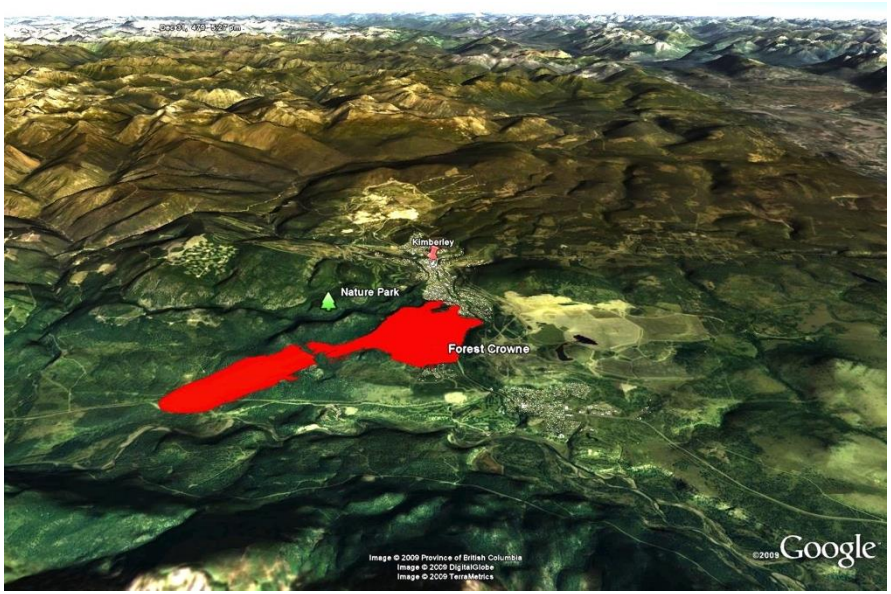


Fire-spread mapping (Farsite Model) *Courtesy of Bob Grey Consulting*

User evaluation of interactive Google Earth usage in Kimberley public meeting



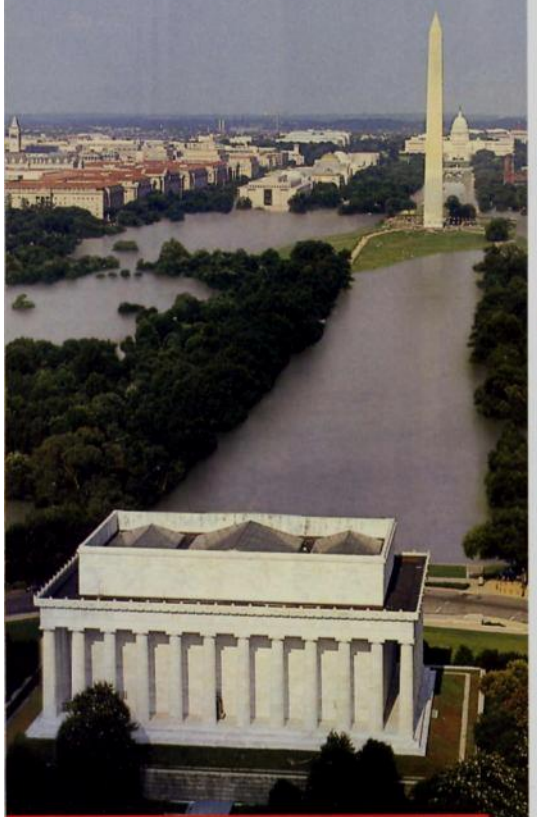
Respondents n=38, valid n=36
Mean: 2.190,
Standard Deviation 1.305



VANITY FAIR

May 2006

ON VANITYFAIR.COM THIS
•ECO-LINKS: WHERE YOU CAN
TO SAVE THE EARTH
•PORTFOLIO: 20 MORE ECO-HE



WARM WATER
IS THIS THE FUTURE OF WASHINGTON, D.C.? 200

FEATURES

CONTINUED ON PAGE 34

WORST-CASE SCENARIO
Unless greenhouse-gas emissions are curbed, warns James Hansen of NASA, global temperatures could climb 2 to 3 degrees Celsius by 2100. "The last time the earth was that warm, sea levels were 80 feet higher than today." Such a rise, which could take hundreds of years, would leave little of Manhattan but the skyscrapers.

The administration "cherry-picked"
THE SCIENCE ON CLIMATE CHANGE,
"just like it cherry-picked the intelligence on
WEAPONS OF MASS DESTRUCTION,"
says Paul O'Neill.

Principles for ethical & effective communication on climate change with visual media

- **Clarity** - **vivid, easily seen and understood**
- **Credibility** - **honest, balanced, verifiable**
- **Engagement** - **interesting and accessible**
- **Connectivity** – **relevant, personal, integrated**

- **Feasibility** – **practical, cost-effective, replicable**

See also Code of Ethics for visualization (Sheppard, 2012)

CALP Training Module: Visualization Design and Production

http://delta-adaptation-bc.org/wp-content/uploads/Visualization_Module_Final_web.pdf

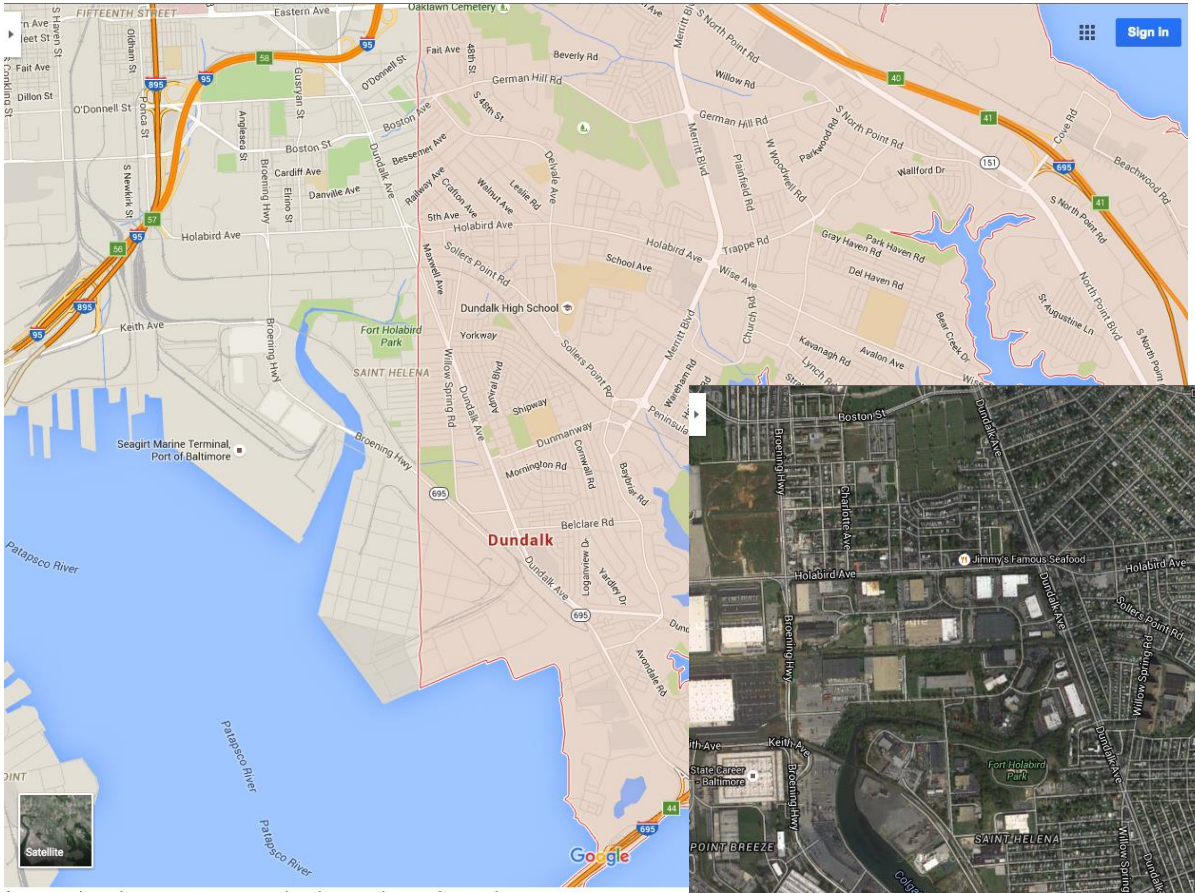
Exercise II: Visualization Planning

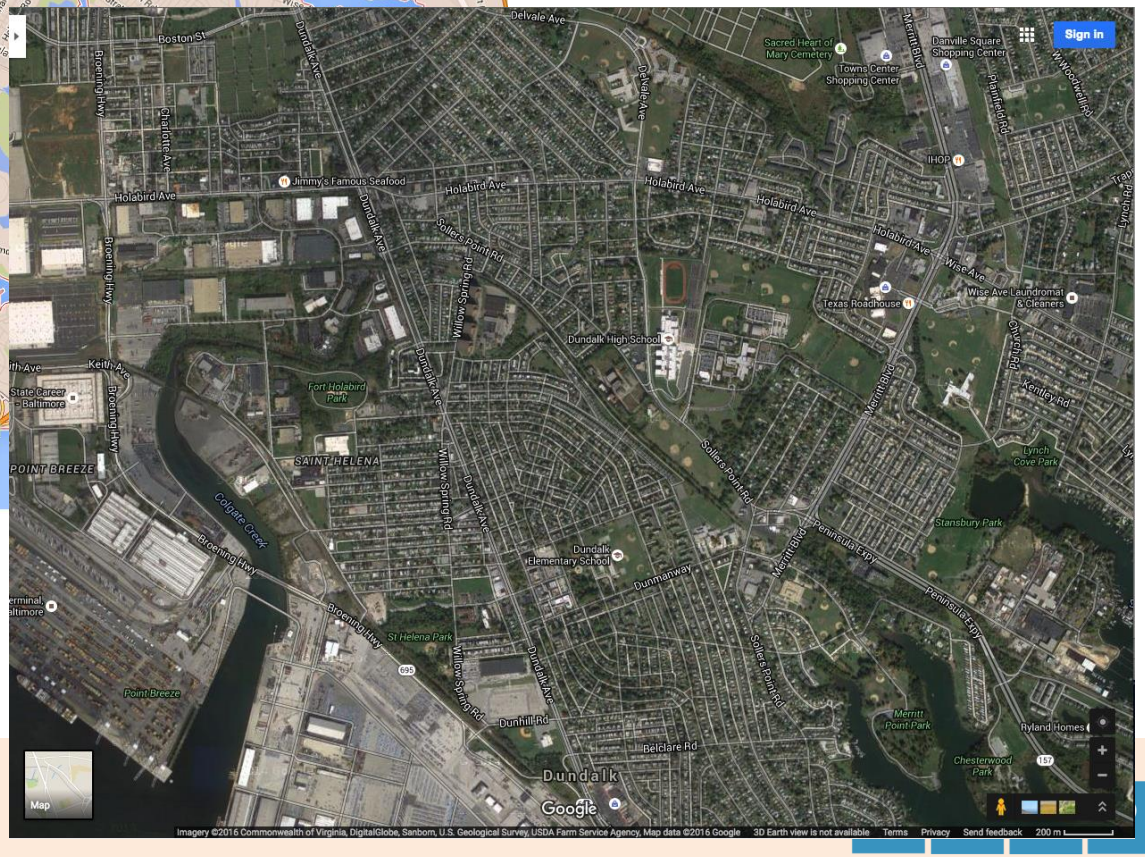
Goal: Planning compelling visualizations to explain climate change scenarios & implications for the Dundalk community *(25 minutes)*

Tasks:

1. *Identify image **content** on 2nd response form*
2. *Identify/map visualization **locales in Dundalk***
3. *Mark/label **viewpoints** on map*
4. *Note **realism levels** (if time allows)*
5. *Note ideas **for presentation format** (if time allows)*

Use the same maps of Dundalk Community





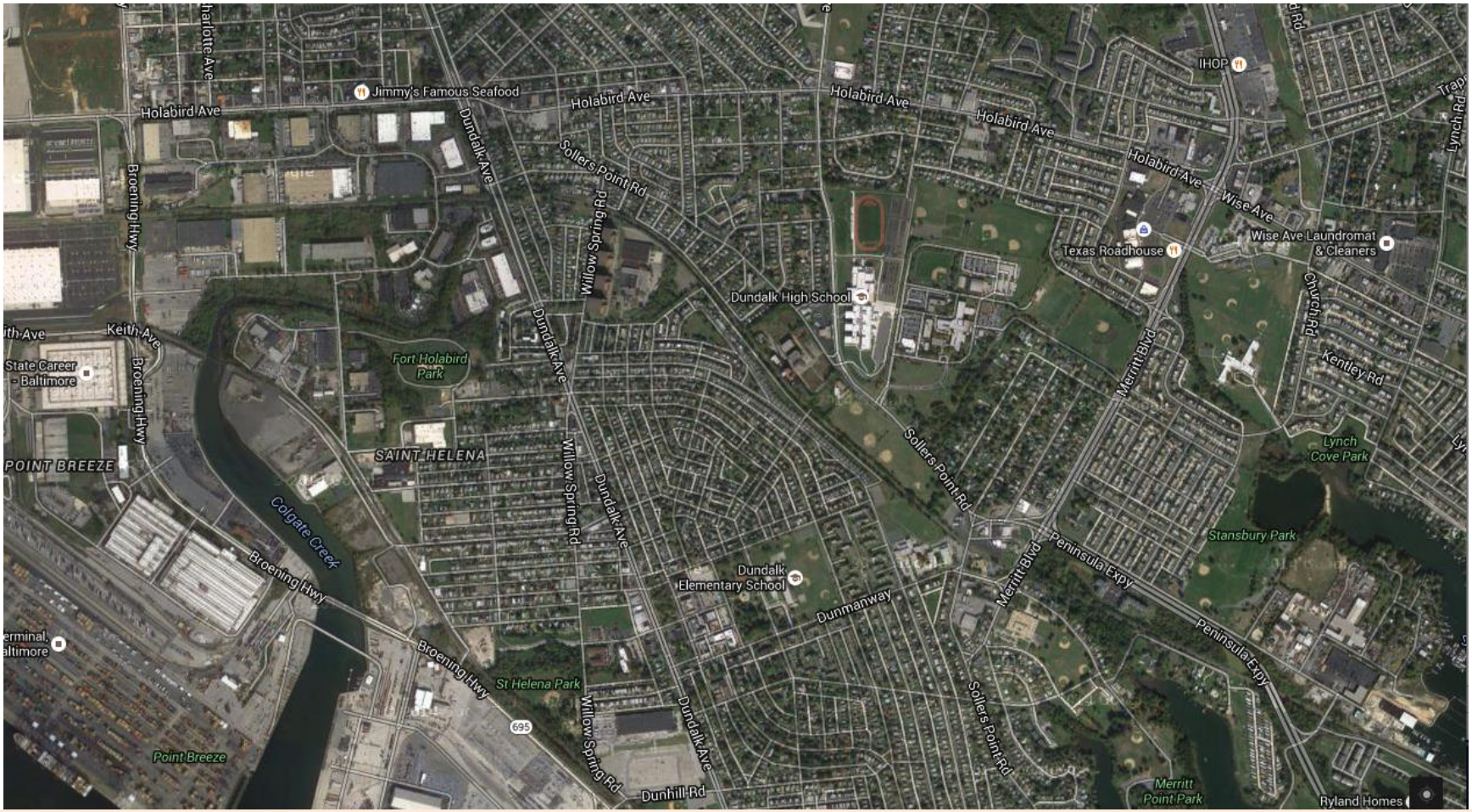
Visualization Assumptions:

- ***Audience*** *– local council, interested stakeholders*
- ***Purpose*** *– early* ***engagement*** *to support further community planning for adaptation & mitigation, and* ***initial learning*** *about local climate change issues*
- ***Global Scenario*** *– IPPC RCP 8.5*

Visualization planning tasks:

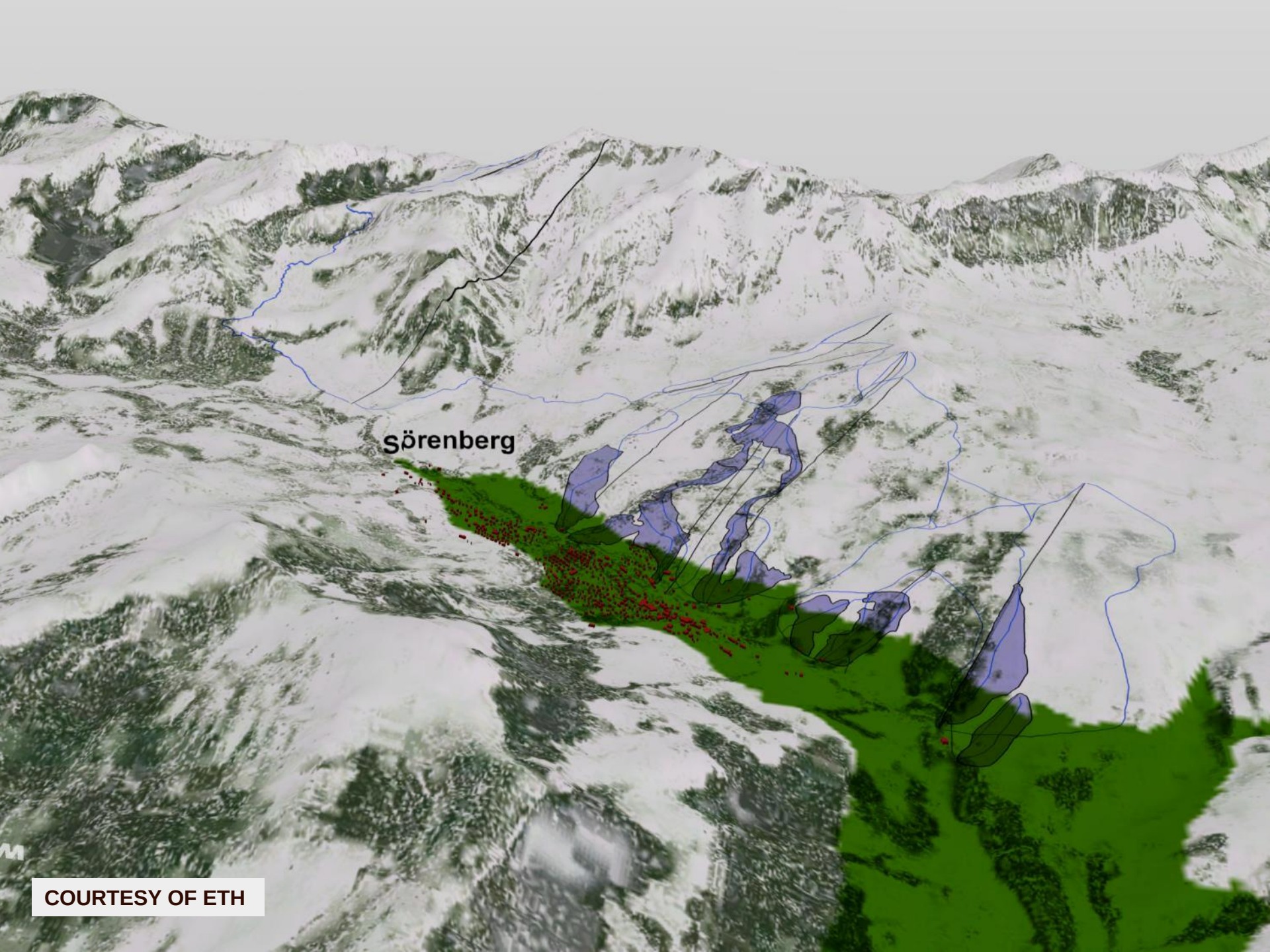
1. ***Image content:*** *list important/resonant impacts/solutions to visualize for at least 1 of your scenarios*
2. ***Locales:*** *map 2+ suitable areas/locations/landmarks for these visualizations to address*
3. ***Viewpoints/view directions****: map & label 2+ specific or typical viewpoints (ground, aerial oblique)*
   - *use Streetview if necessary)*
4. ***Realism level/software type*** *if known****:*** *eg. photoshop, Sketch-up, Google Earth, VNS, etc*
5. ***Presentation format(s):*** *eg. before/after, time lapse, side by side scenarios, animation, interactive, onsite installation, etc.*

Selected examples of planned viz?



Overview discussion: your takeaways so far?

- Which impacts lend themselves to viz?
- Which solutions lend themselves to viz?
- How could you visualize less visible/iconic issues/solutions?
- What were your most promising ideas?
- Biggest risks of visualization?



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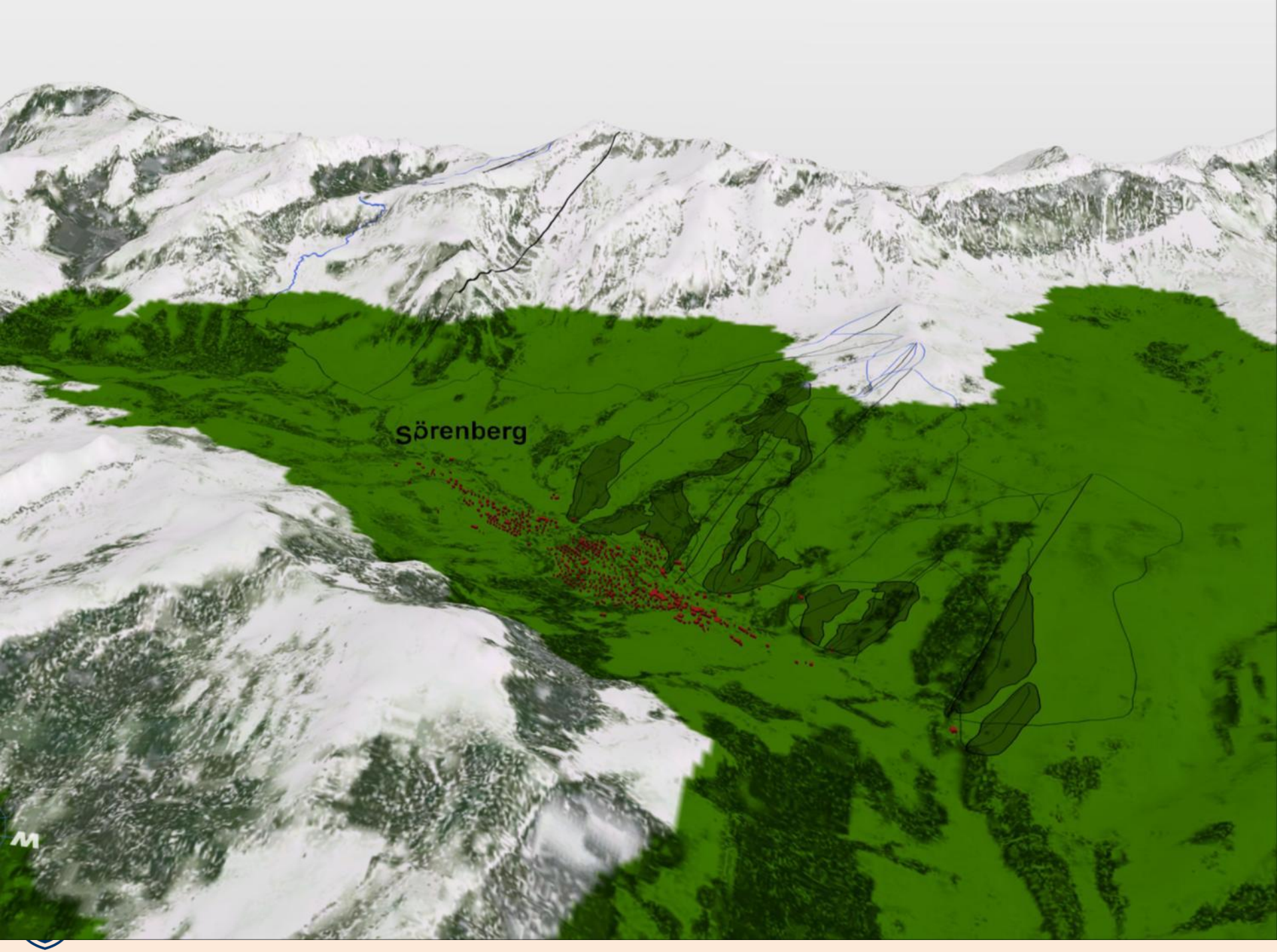
Sörenberg