

LOCAL CLIMATE CHANGE VISIONING WORKSHOP

II Visualization Principles & Planning

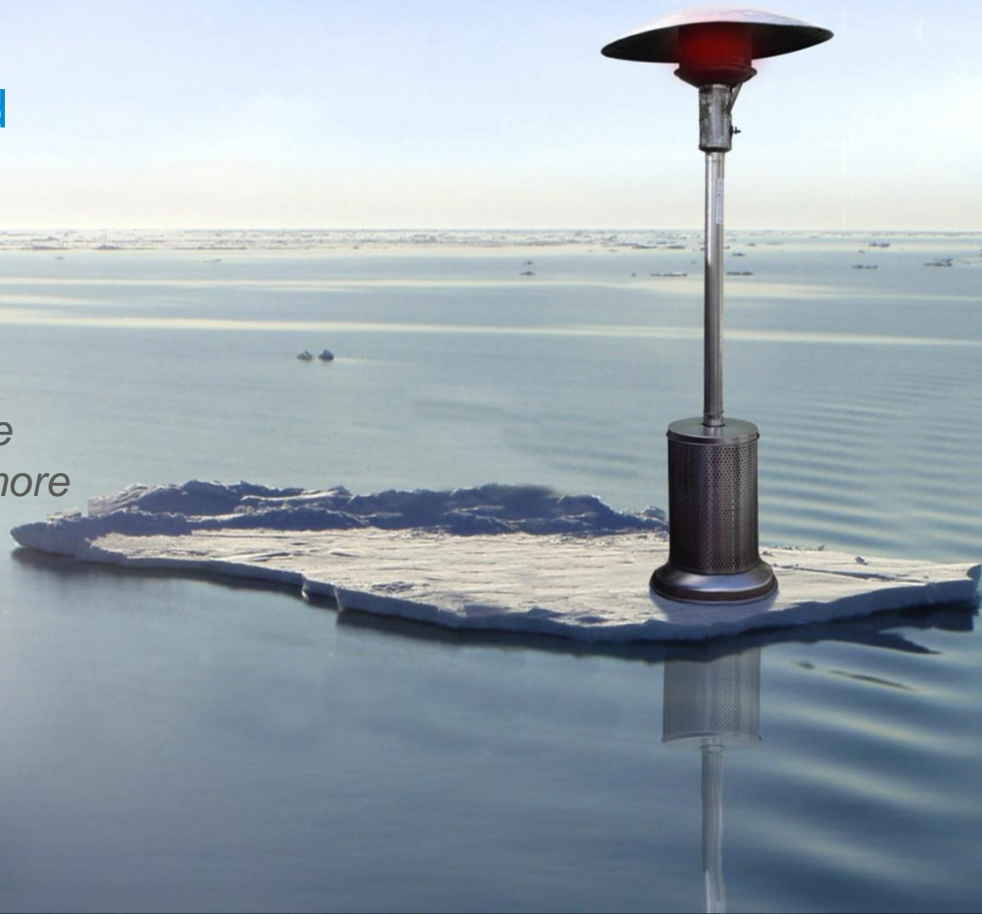
Stephen R. J. Sheppard

PhD., ASLA.

Collaborative for Advanced
Landscape Planning,
University of British
Columbia, Vancouver

*Eastern Regional Climate Change
Preparedness Conference, Baltimore*

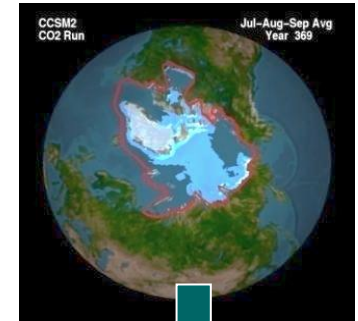
5 April 2016



II. Visualization Principles & Planning for Community Climate Change Scenarios

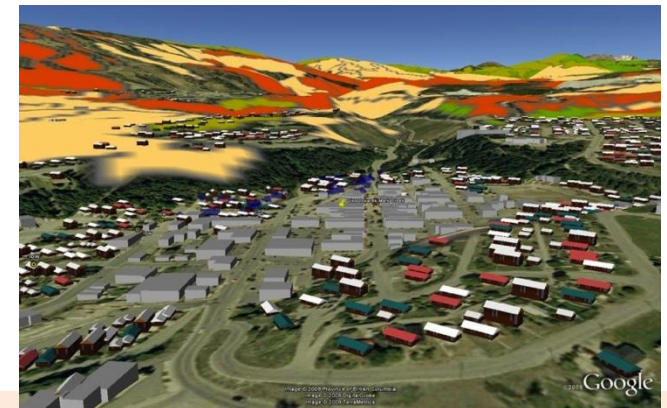
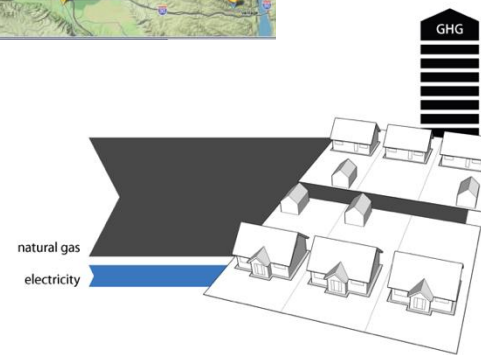
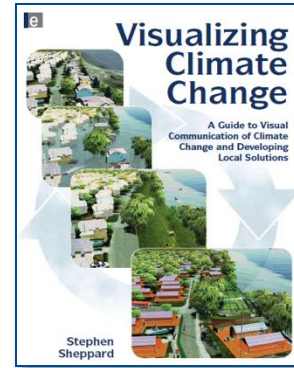
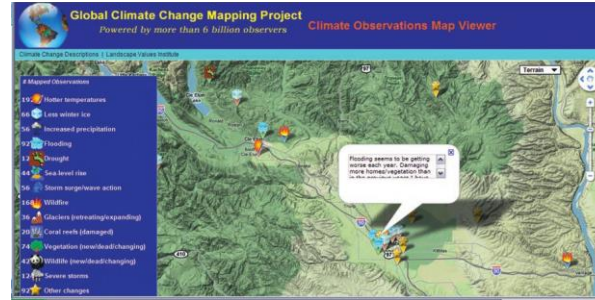
Goals:

- 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

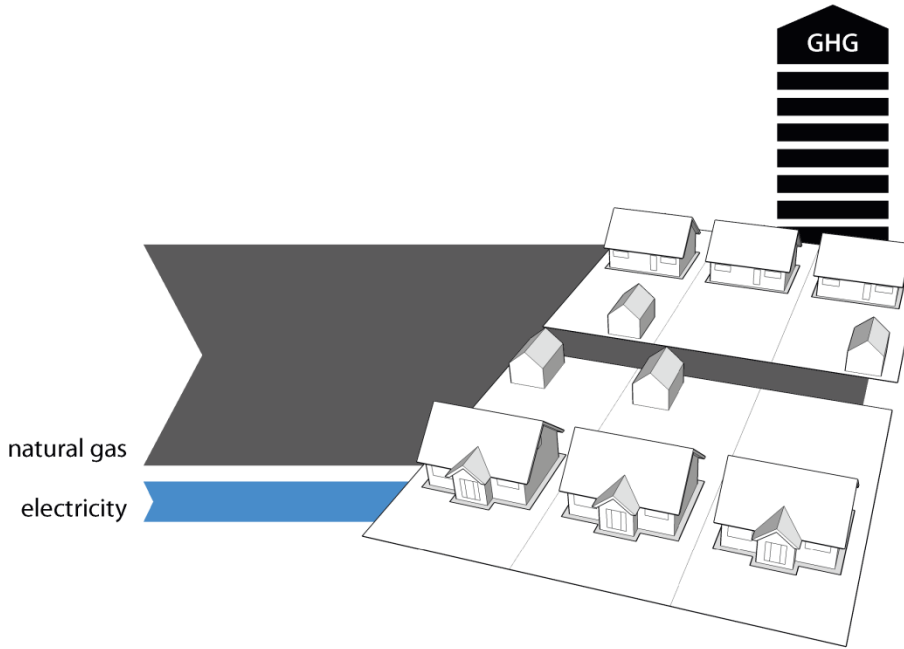


Various visual learning tools

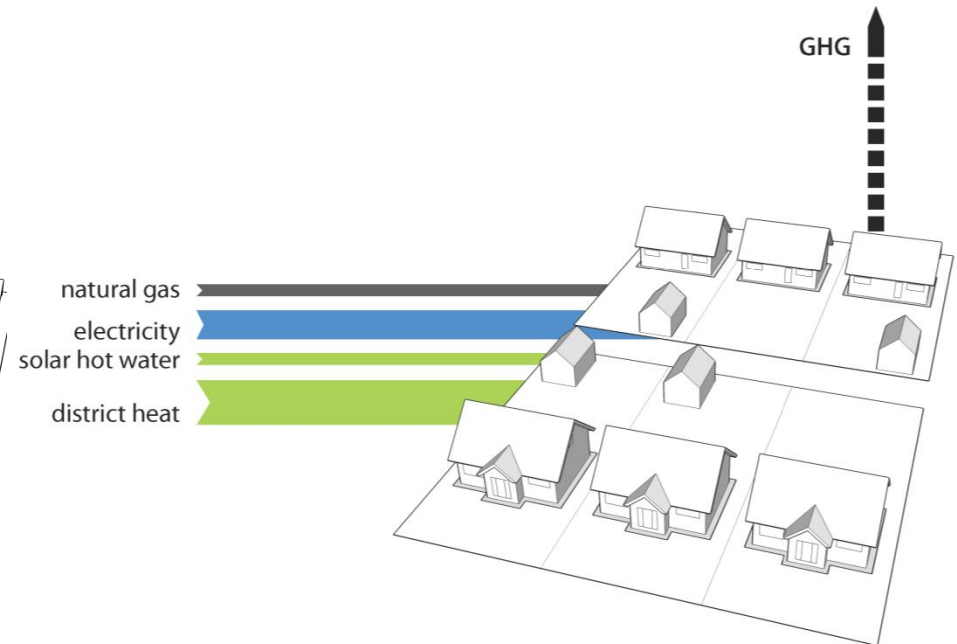
- Photos
- 2D Maps
- Info-graphics
- Landscape visualizations and video



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

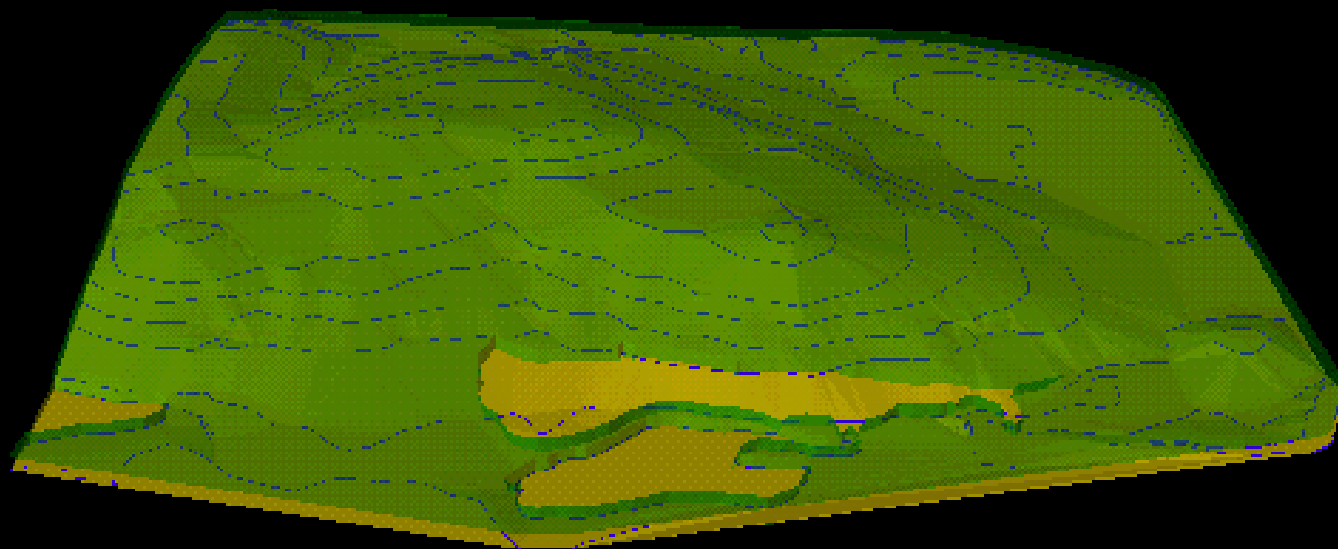
MANUAL METHODS

- **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



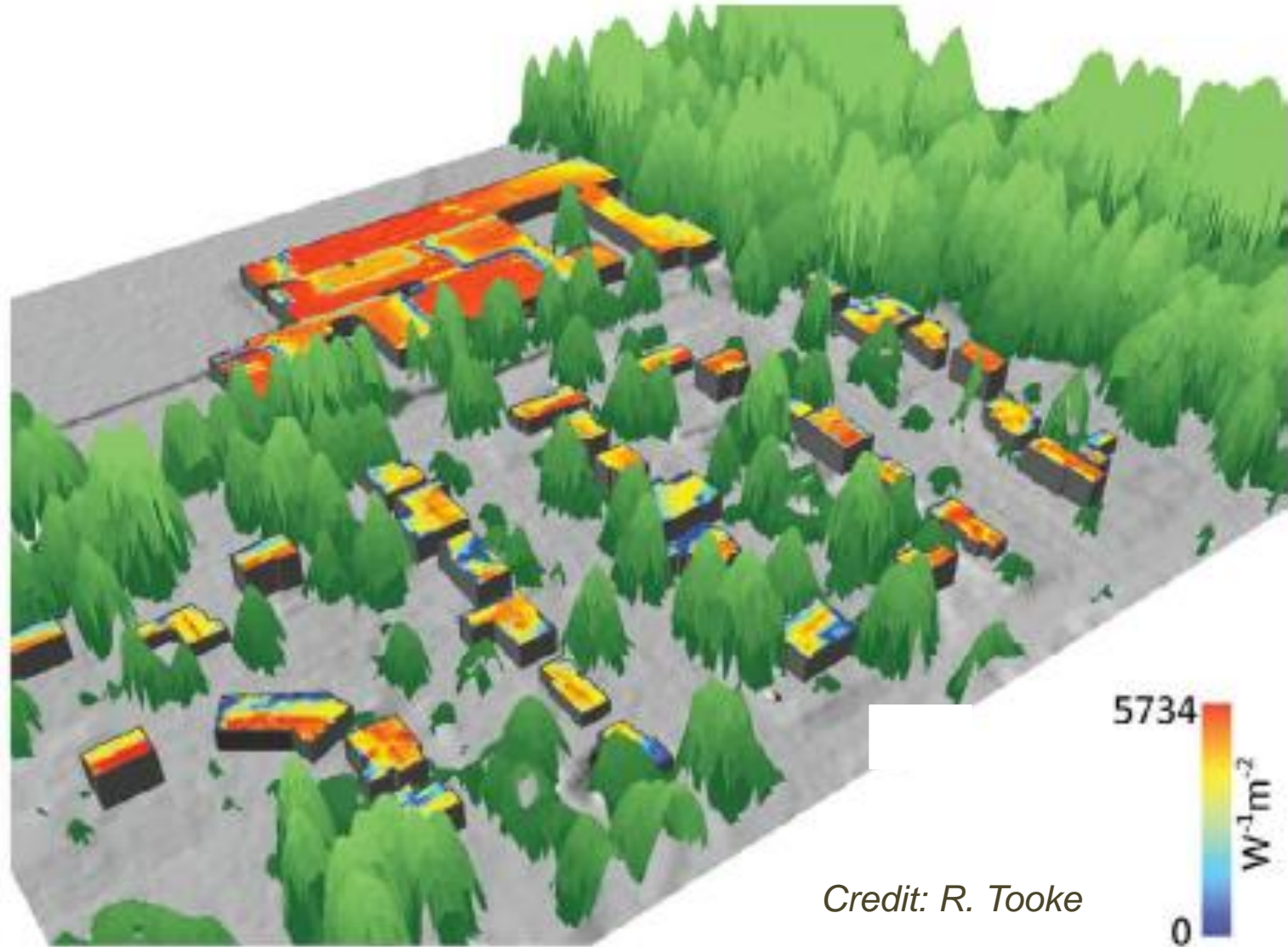
Start

Screen Thief

ArcView GIS Version 3....

10:13 AM

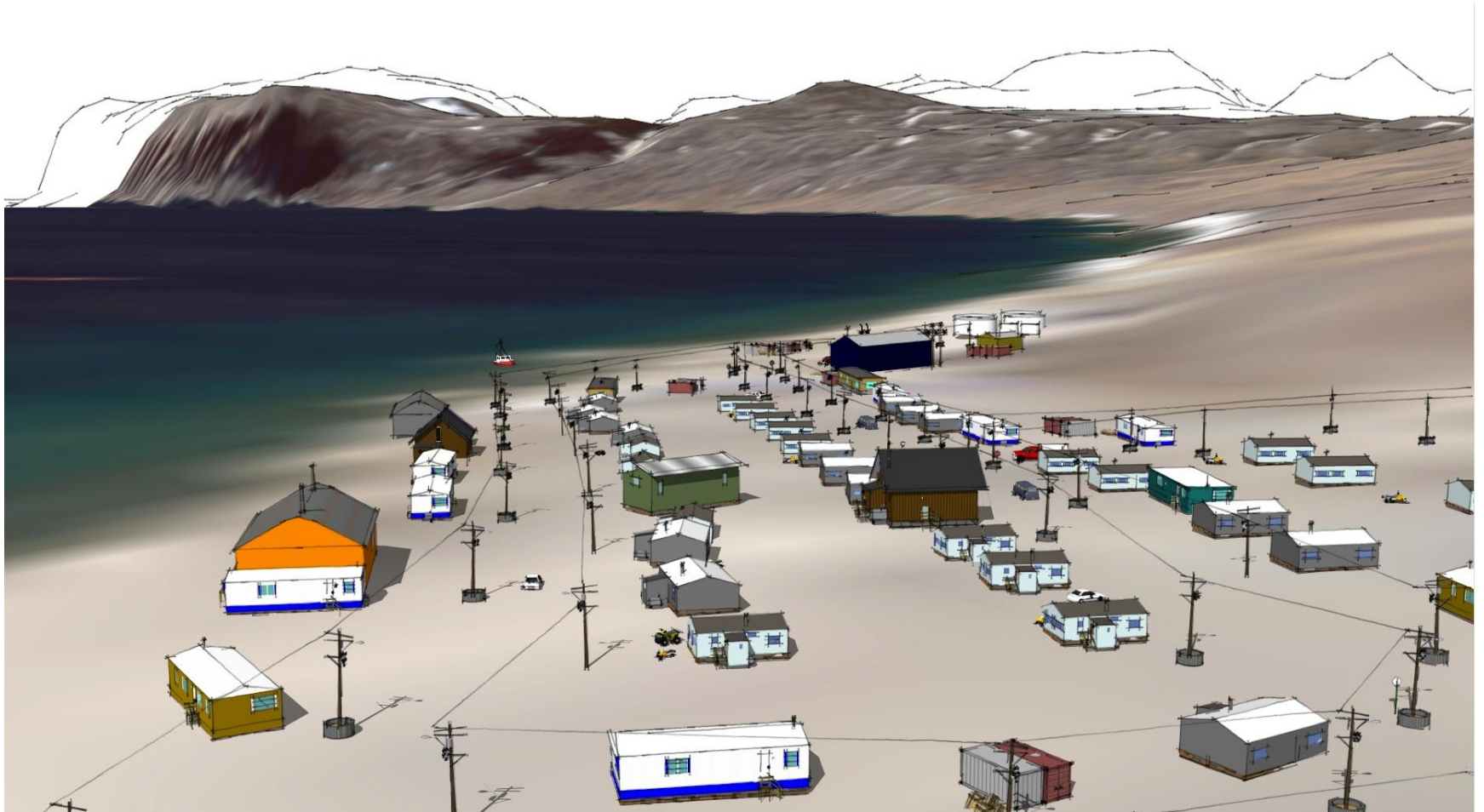
3D LiDAR Analysis



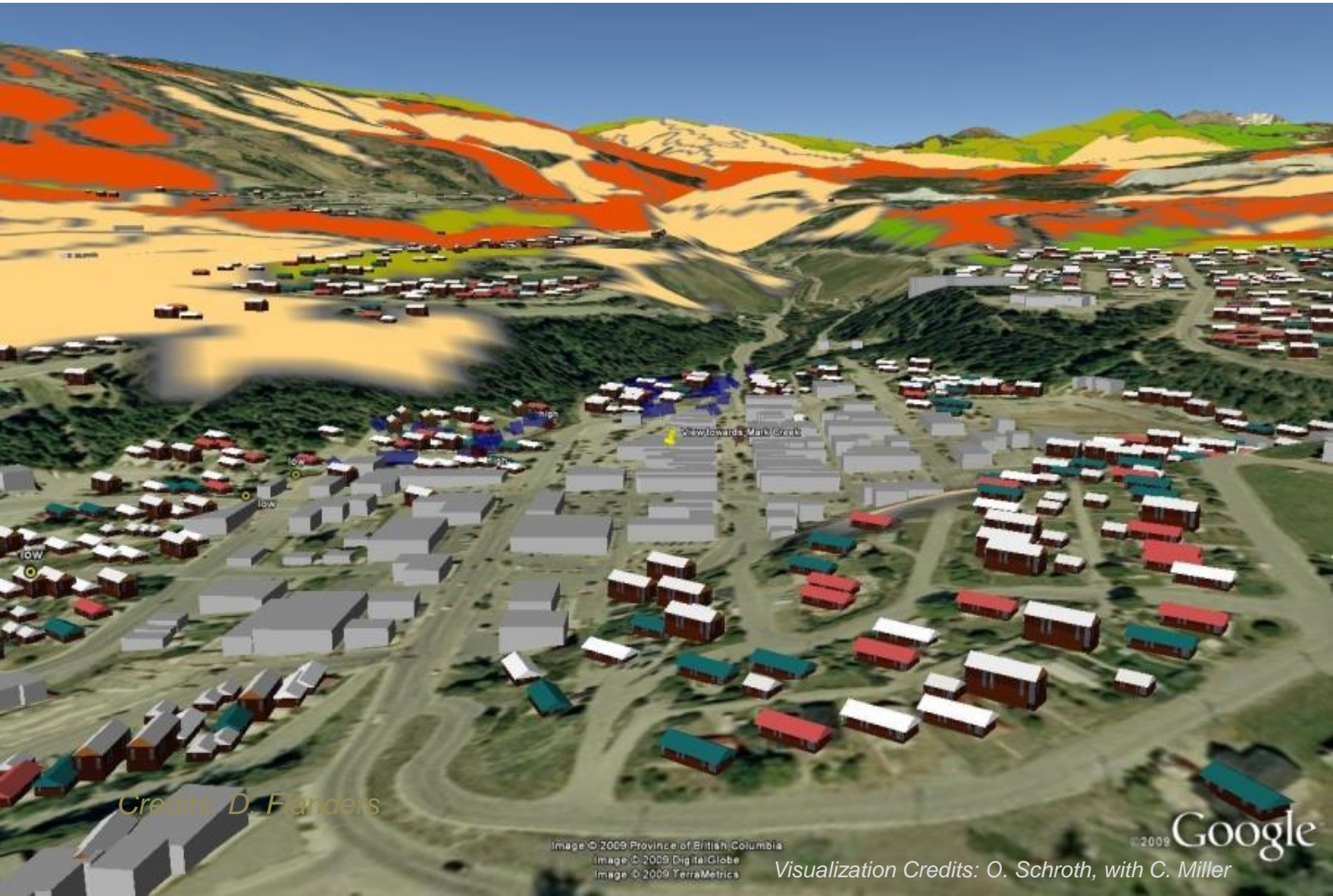
Credit: R. Tooke

Visioning Case Study: Clyde River, Nunavut

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



2.5D Landscape Visualization (draped)



Credits: D. Flanders

Image © 2009 Province of British Columbia
Image © 2009 DigitalGlobe
Image © 2009 TerraMetrics

©2009 Google

Visualization Credits: O. Schroth, with C. Miller

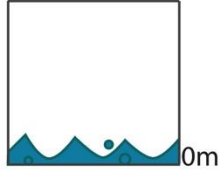


DIY photo-visualization



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

Baseline

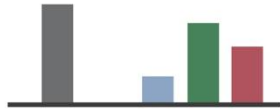


Indicator



Social

Performance



Indicator



Environment

Performance



Indicator



Economy

Performance



Rank

8



3D Landscape Visualization

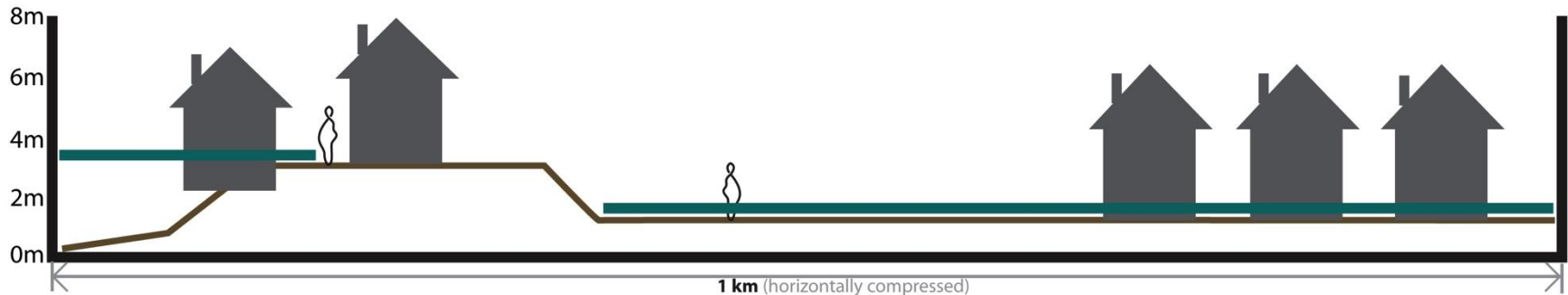
Damage Report: current inundation scenario

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



Ladner now with a flood dike view



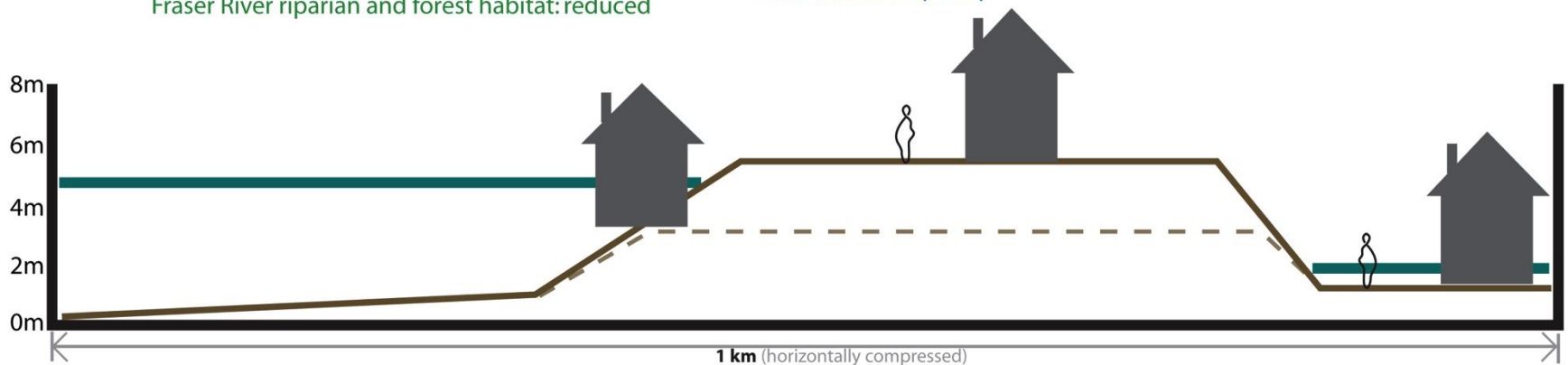
Damage Report: current inundation scenario

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



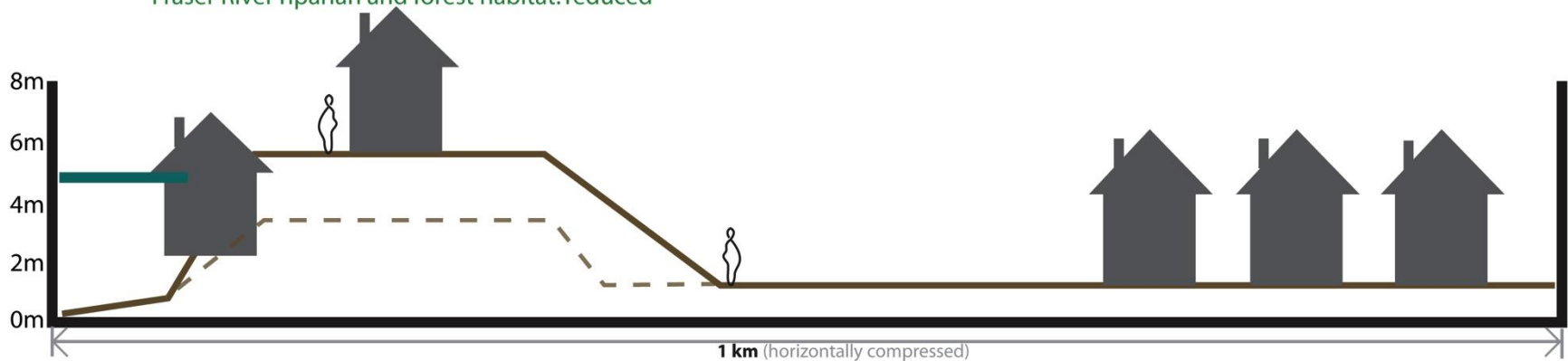
Water level of 4.9m : High tide (2m) + storm surge (1.3m) + sea level rise (1.2m) + wind set up (0.4m)

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

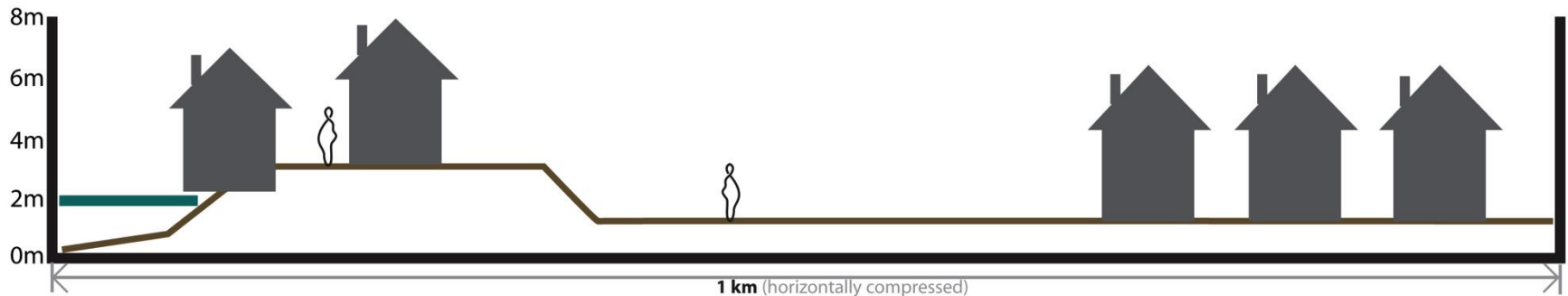


Water level of 2m : High tide (2m) + no storm surge +
no sea level rise + no wind set up

Existing 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

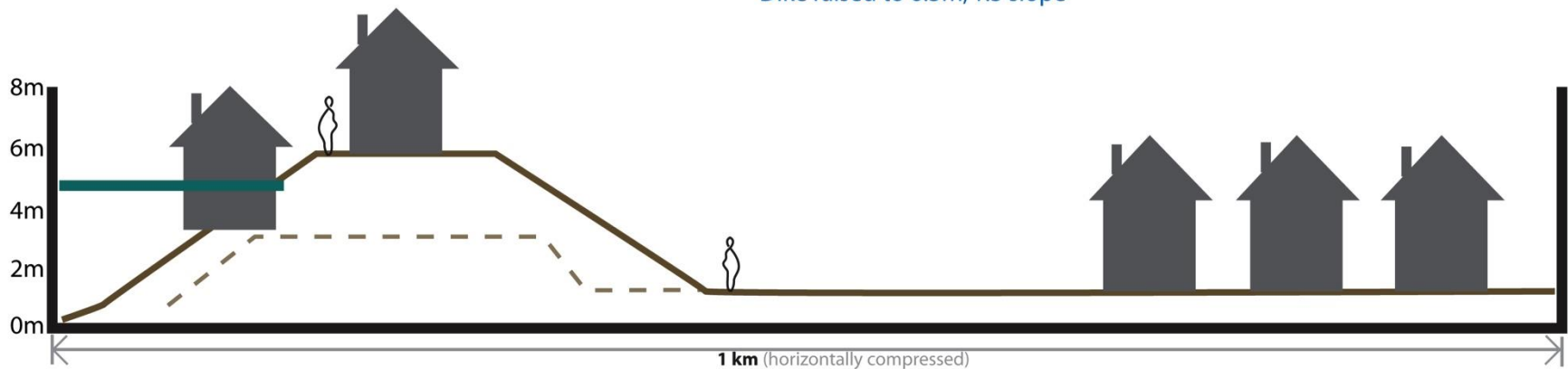


Water level of 5.7m : High tide (2m) + storm surge (1.3m) + sea level rise (2m) + wind set up (0.4m)

Houses on dike raised

Dike raised to 6.3m, 1:3 slope

Houses inside dike FCL: no change (1.6m)

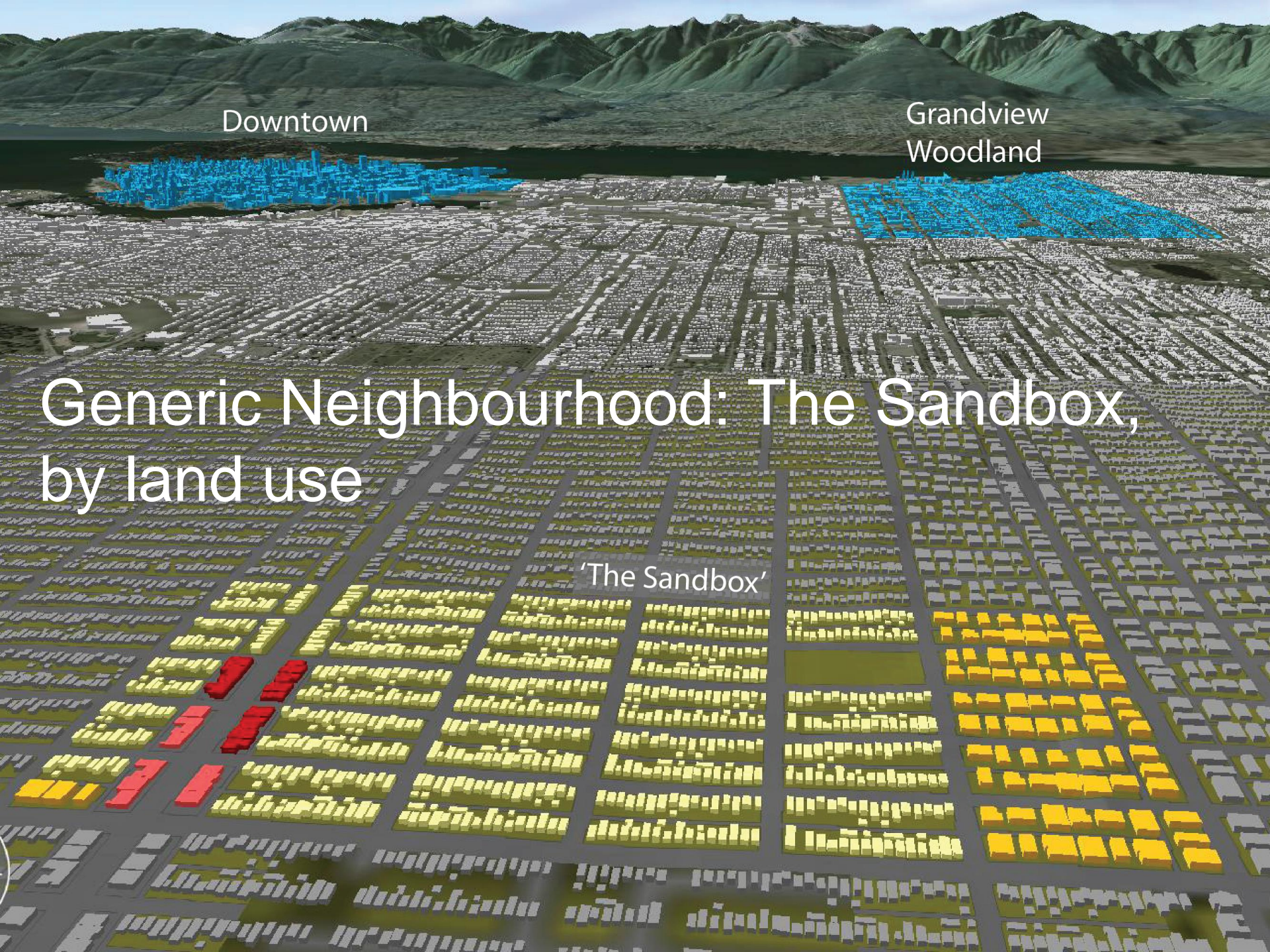


Downtown

Grandview
Woodland

Generic Neighbourhood: The Sandbox, by land use

'The Sandbox'



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



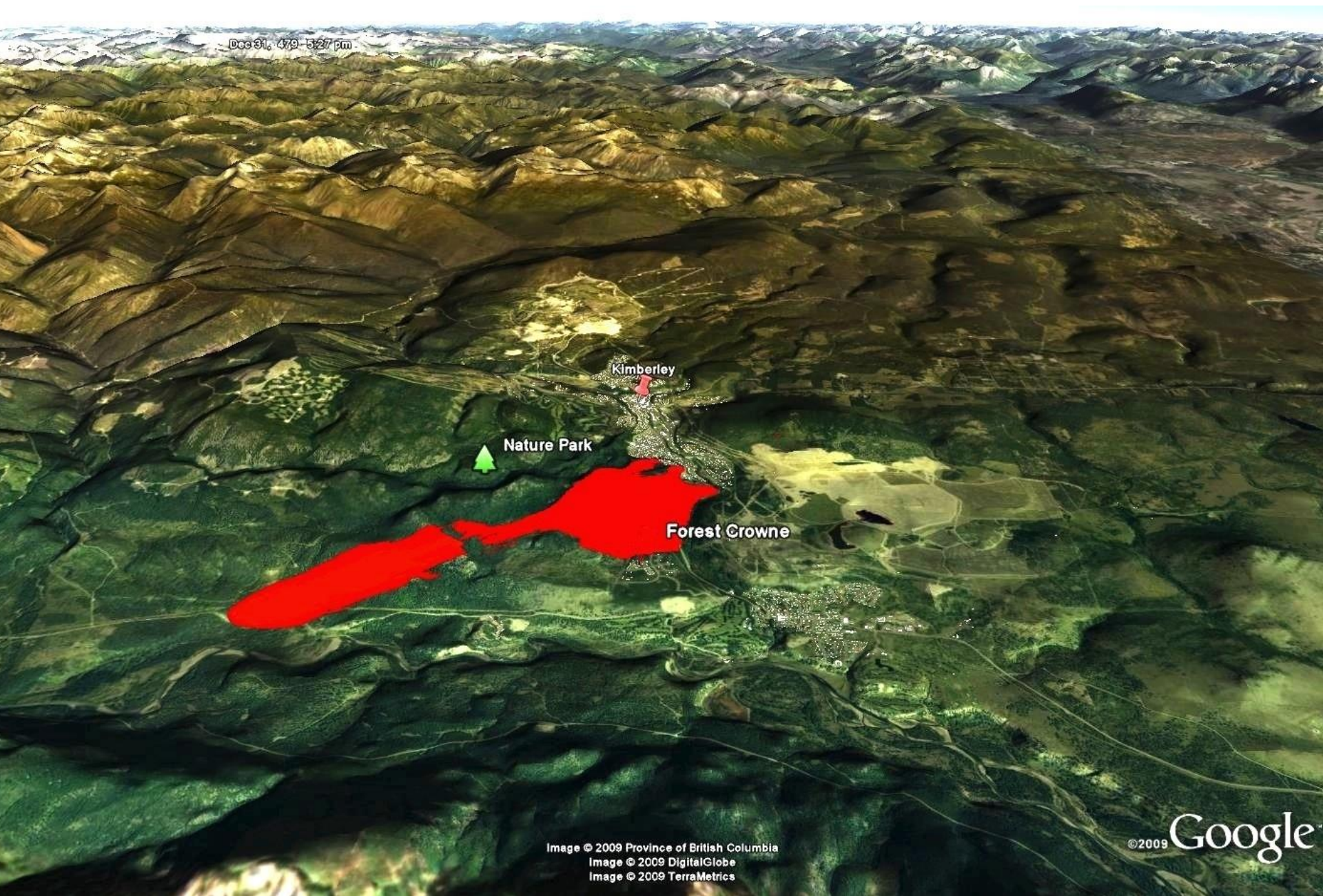
8/5



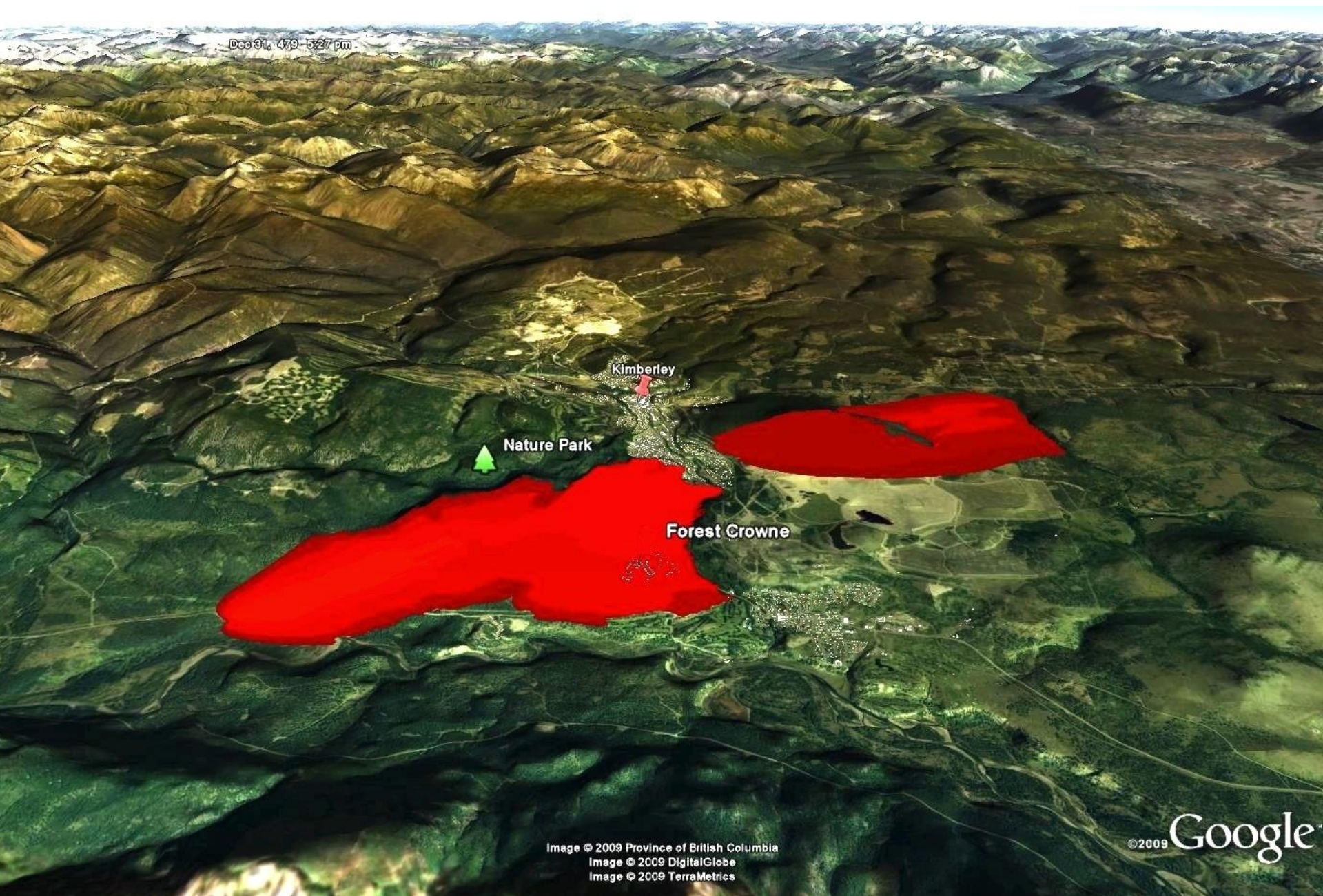
66/0



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

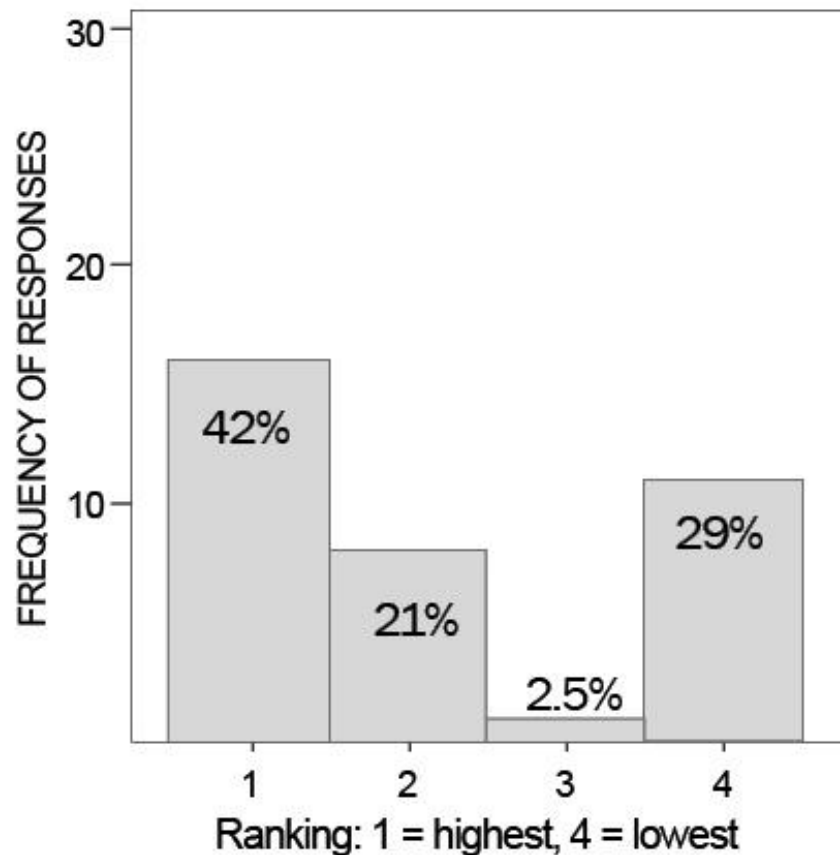


Fire-spread mapping (Farsite Model) *Courtesy of Bob Grey Consulting*



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

FEATURES

169 THE FUTURE IS GREEN It's getting hot out there, and not in a good way. As Al Gore calls on America to fight global warming, *V.F.'s* Green Portfolio page to more than 50 crusaders for environmental science, including Bette Midler, Laurie David, Edward Norton, and Arnold Schwarzenegger.

200 WHILE WASHINGTON SLEPT The White House has ignored climate change, but governments around the world are facing reality: if it is not done, rising sea levels could submerge coastal cities by the end of the century, or before. Armed with science, Mark Hertsgaard exposes the big-money politics to label global warming "a liberal hoax," and the way back from the edge. Photo illustration by John Blackford.

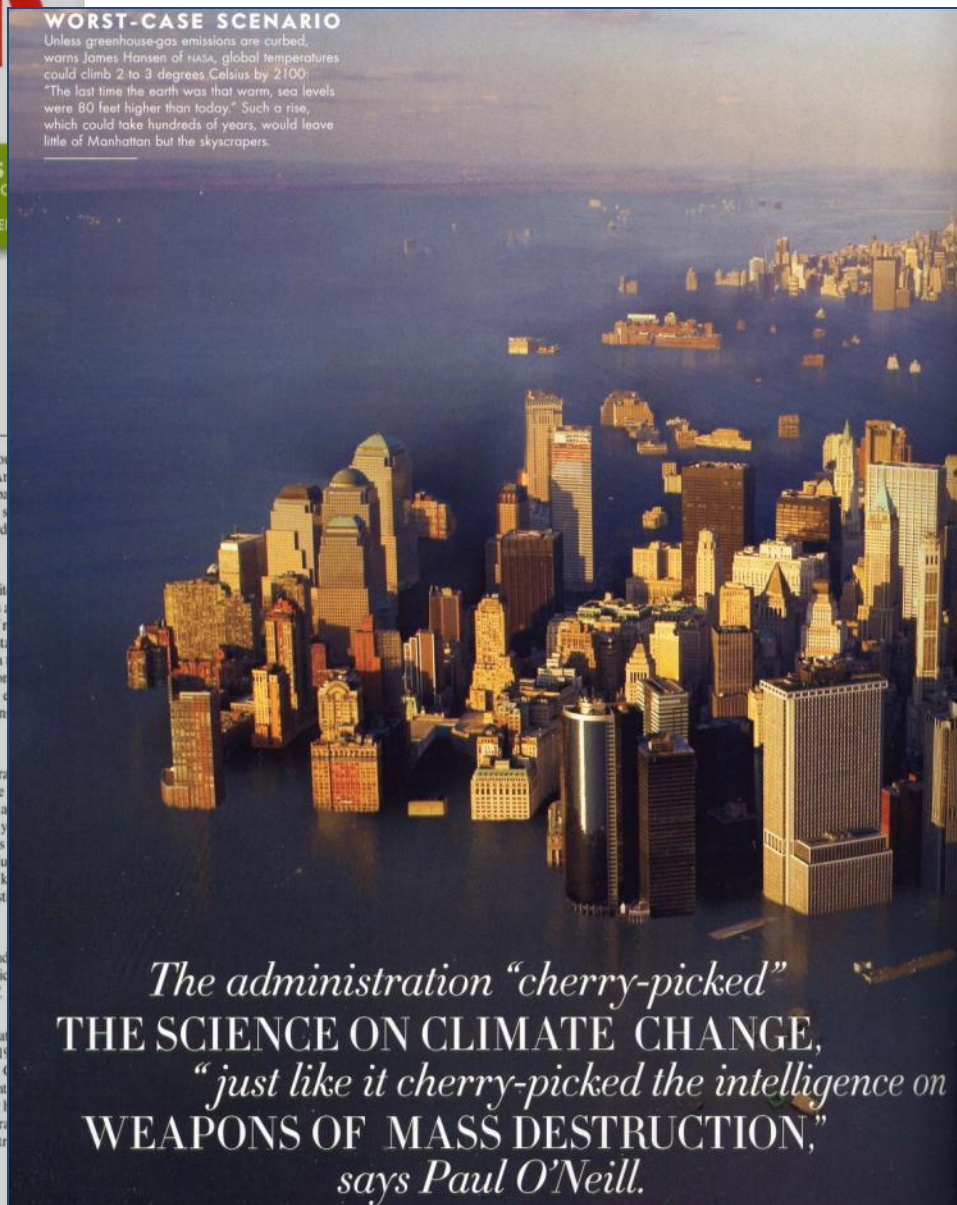
208 ALONE WITH THE STRANGLER The town of Belmont, Massachusetts, was home to a man named Sebastian Junger, whose family hired a carpenter named Al DeSalvo in 1962. Three years later, DeSalvo would confess to being the notorious Strangler. In an excerpt from his new book, Junger tells his mother's chilling encounters with a serial killer, the fear that gripped their town, and the quest for justice that never got answered.

214 HOT COUCH POTATO Wayne Maser and his wife, DiGiacomo, spotlight Keri Russell, whose fierce performance spring into action with *Mission: Impossible III*.

216 EVERYONE FELL FOR SUZY The inspiration for Audrey Hepburn's character in *Funny Face*, 19-year-old girl Suzy Parker enchanted Richard Avedon, George Clooney, and Eileen Ford. After surviving a car accident, she dazzled Hollywood in the 1950s. *Everything*, then walked away from the camera to raise a family of kids and kitchen. Laura Jacobs has the extraordinary tale of America's first top model.

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.

WARM WATER

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

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

Collaborative for Advanced Landscape Planning
British Columbia Regional Adaptation Collaborative

Climate Change Planning & Visioning Training Module 3: Visualization Design & Production

Training Module 1: Spatial & Local Scenario Building
Training Module 2: Data Integration

Funded by:



Natural Resources
Canada

Ressources naturelles
Canada

Canada



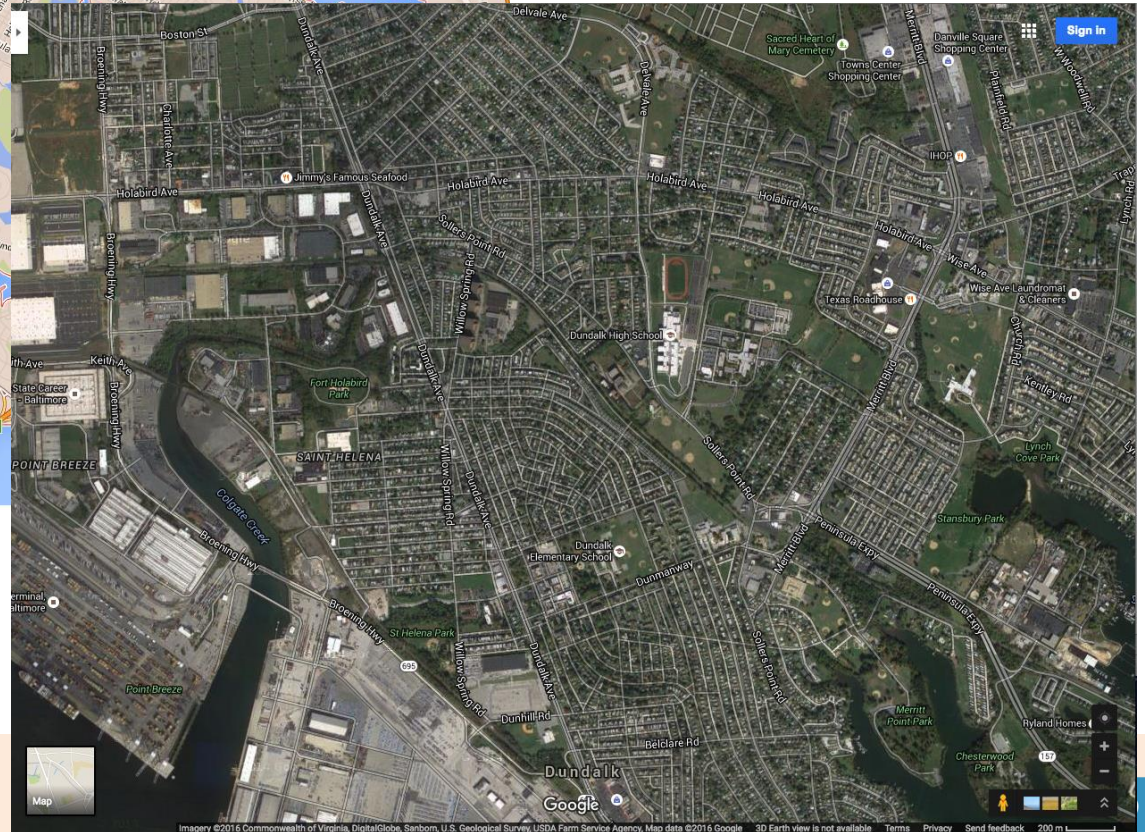
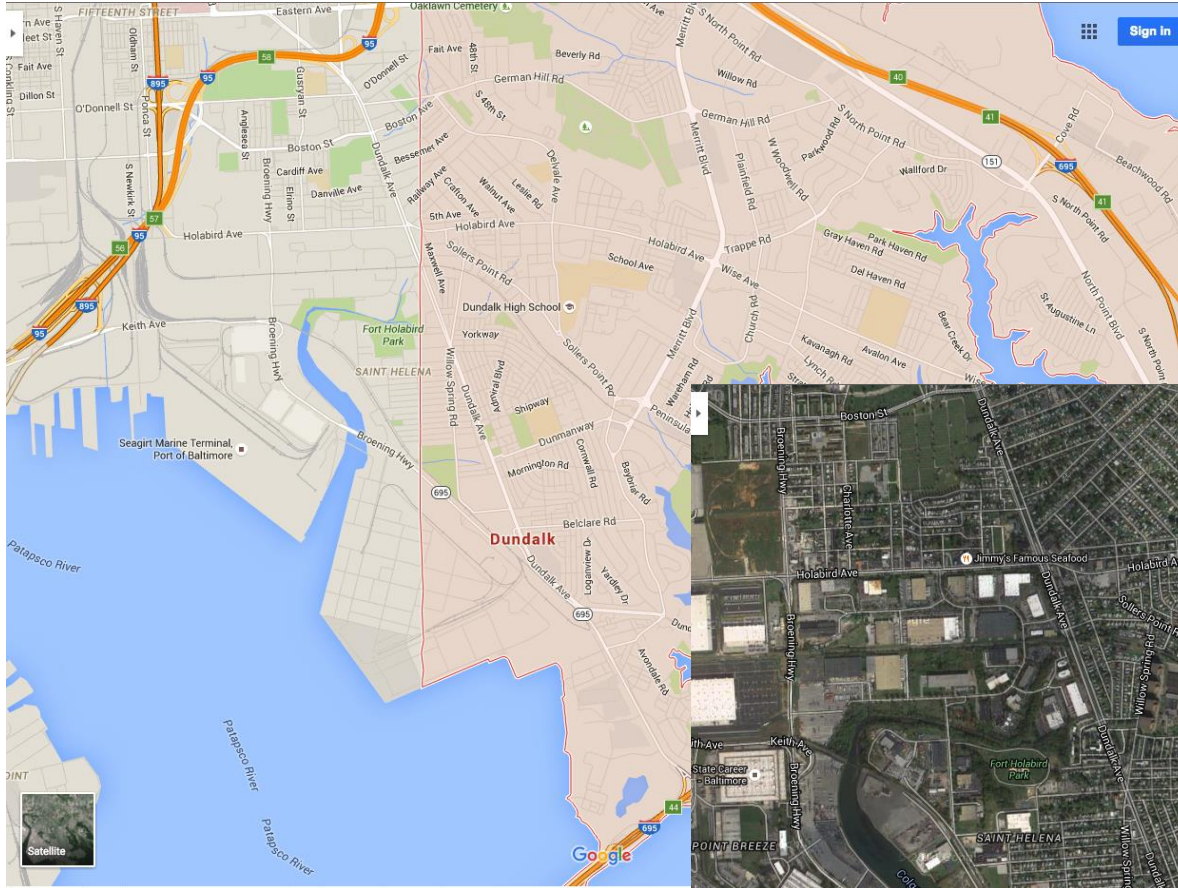
Exercise II: Visualization Planning

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:

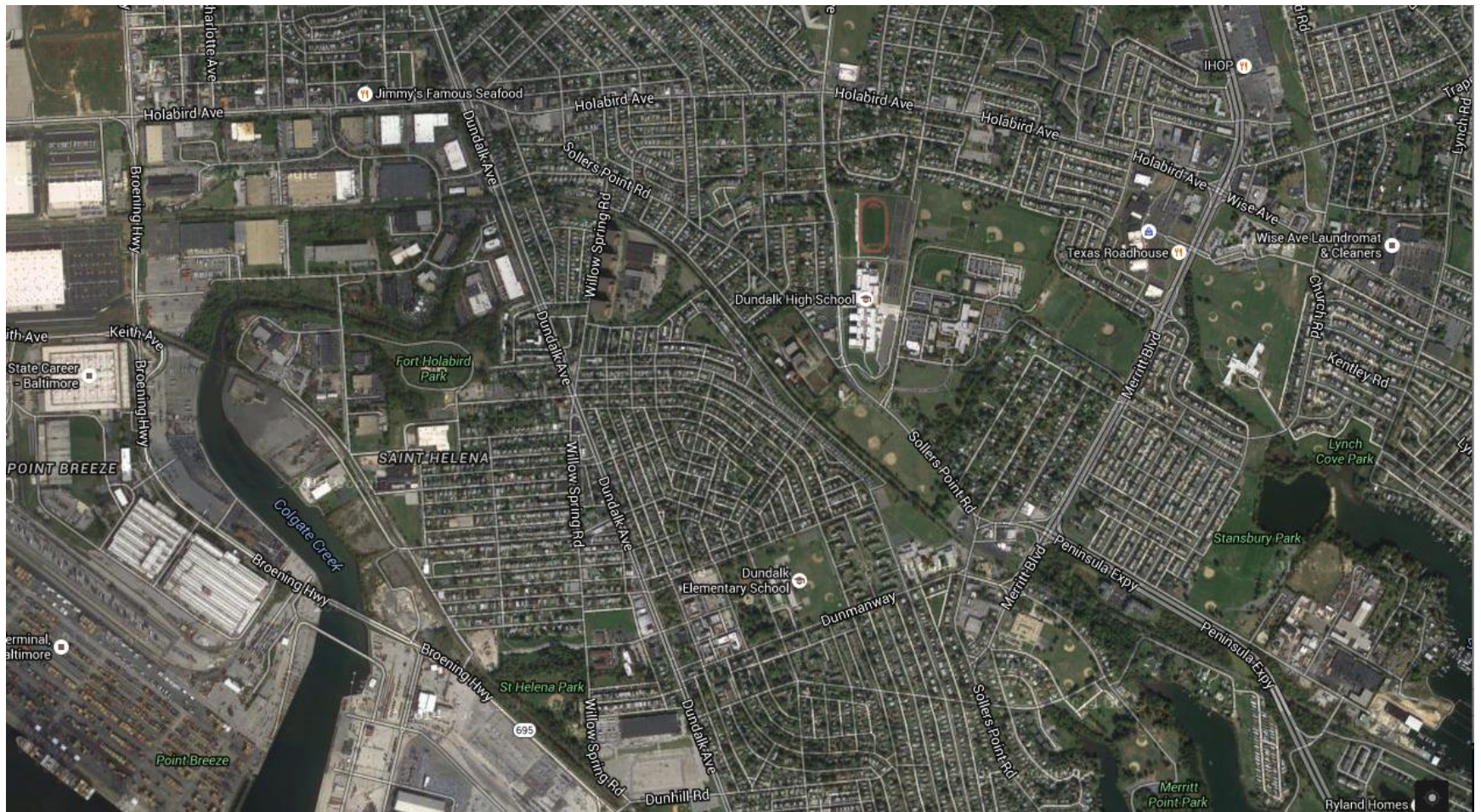


- **Audience** – local council, interested stakeholders
- **Purpose** – early engagement to support further community planning for adaptation & mitigation, and **initial learning** about local climate change issues
- **Global Scenario** – IPCC RCP 8.5

Visualization planning tasks:

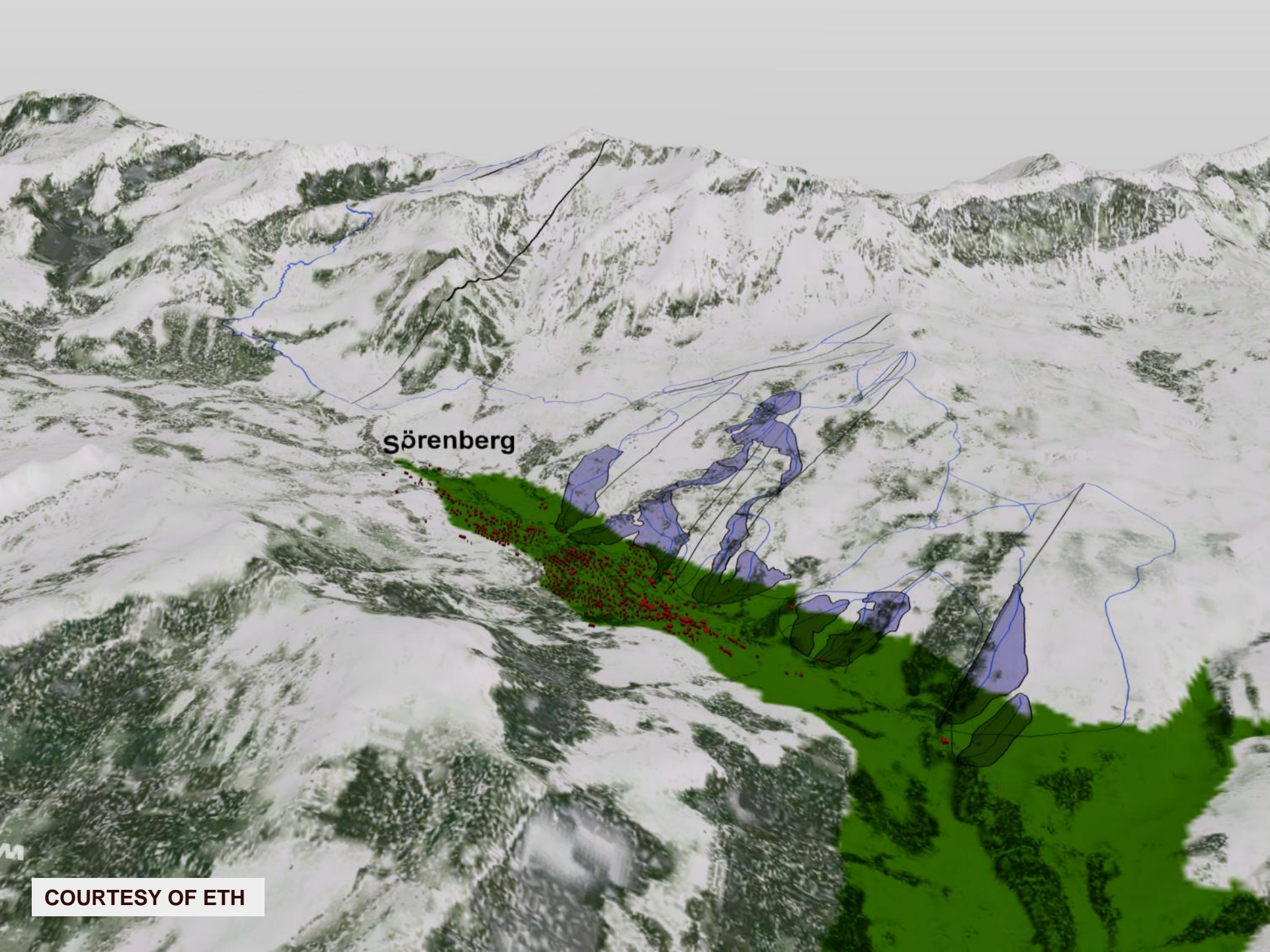
1. **Image content:** *list important/resonant impacts/solutions to visualize for at least 1 of your scenarios*
2. **Locales:** *map 2+ suitable areas/locations/landmarks for these visualizations to address*
3. **Viewpoints/view directions:** *map & label 2+ specific or typical viewpoints (ground, aerial 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?

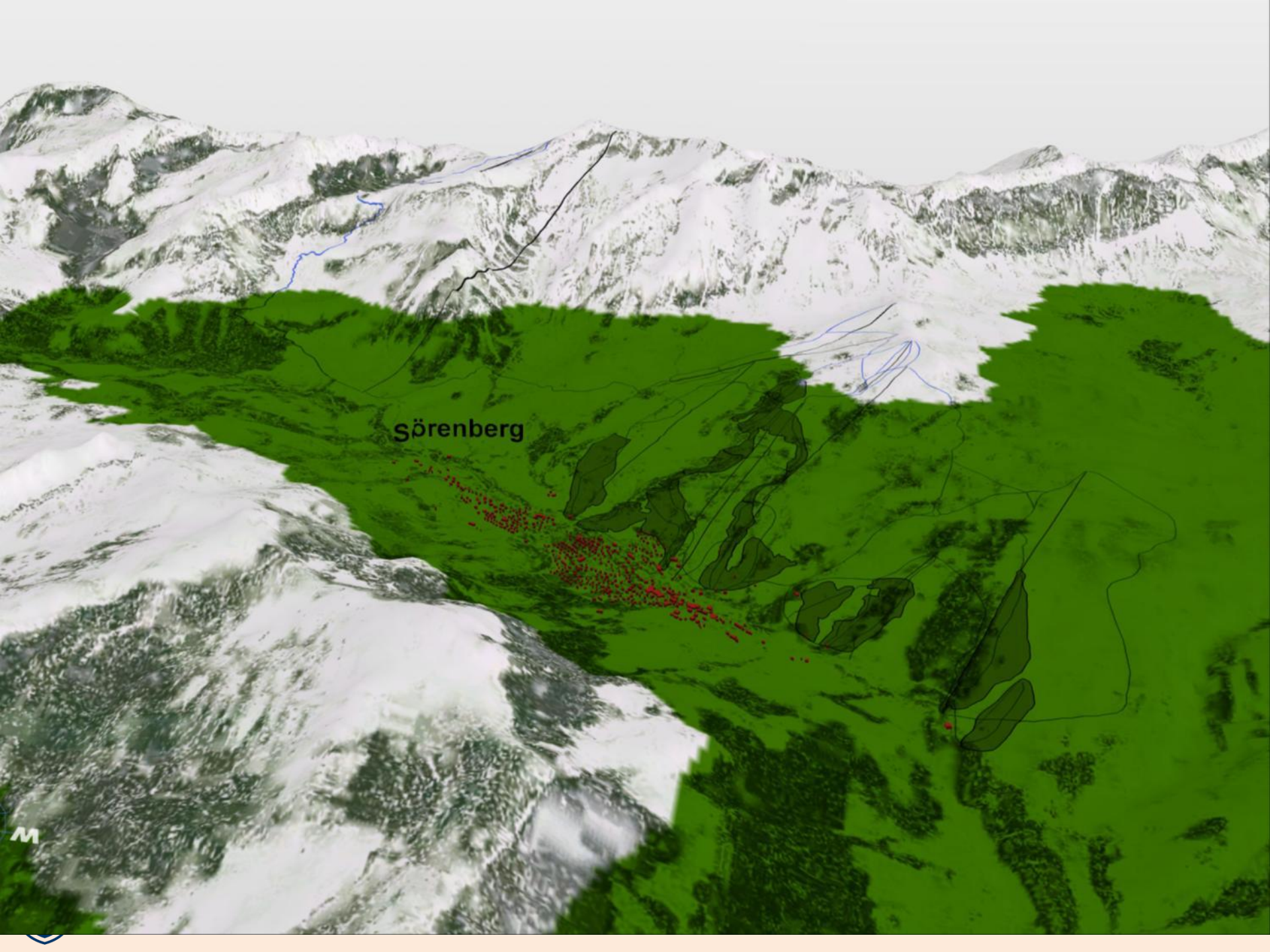


Overview discussion: your takeaways so far?

- 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?



Sörenberg



Sörenberg