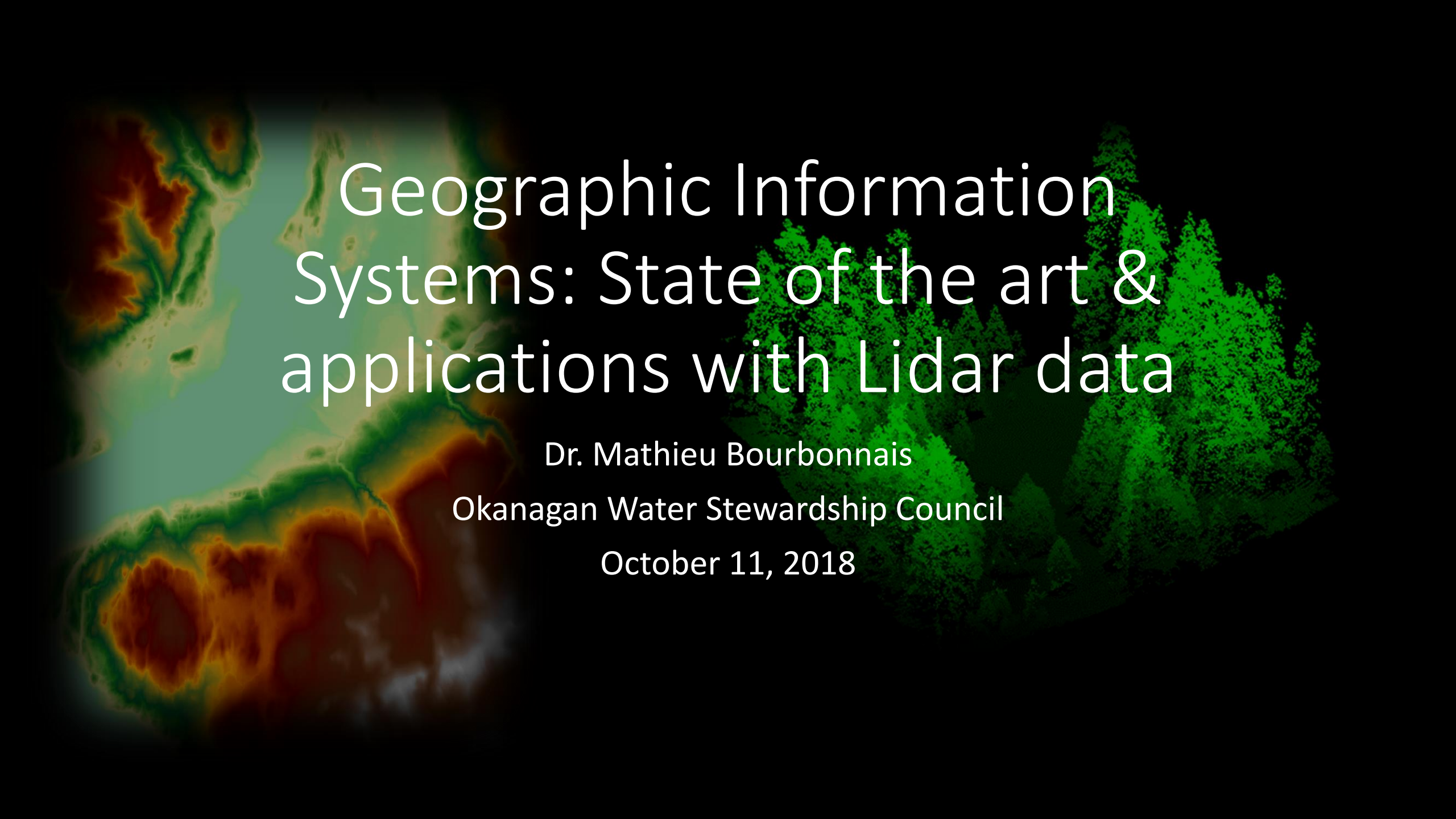


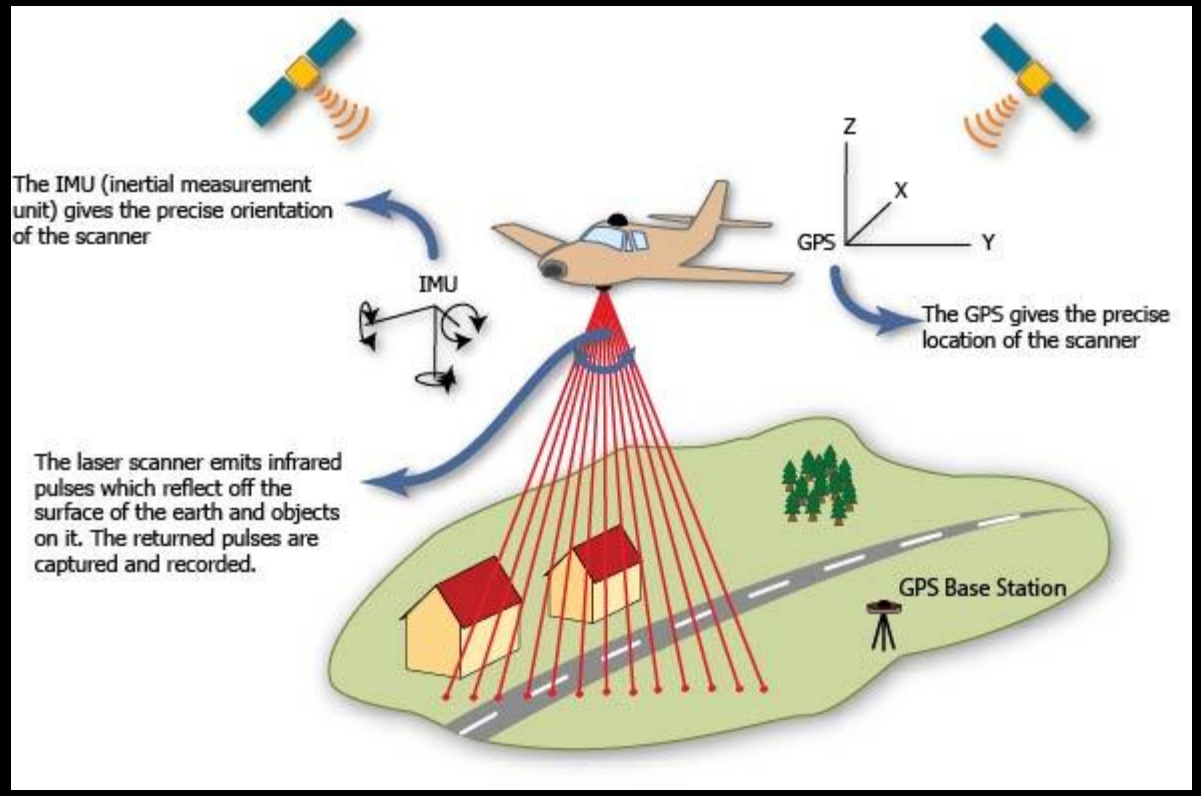
Geographic Information Systems: State of the art & applications with Lidar data

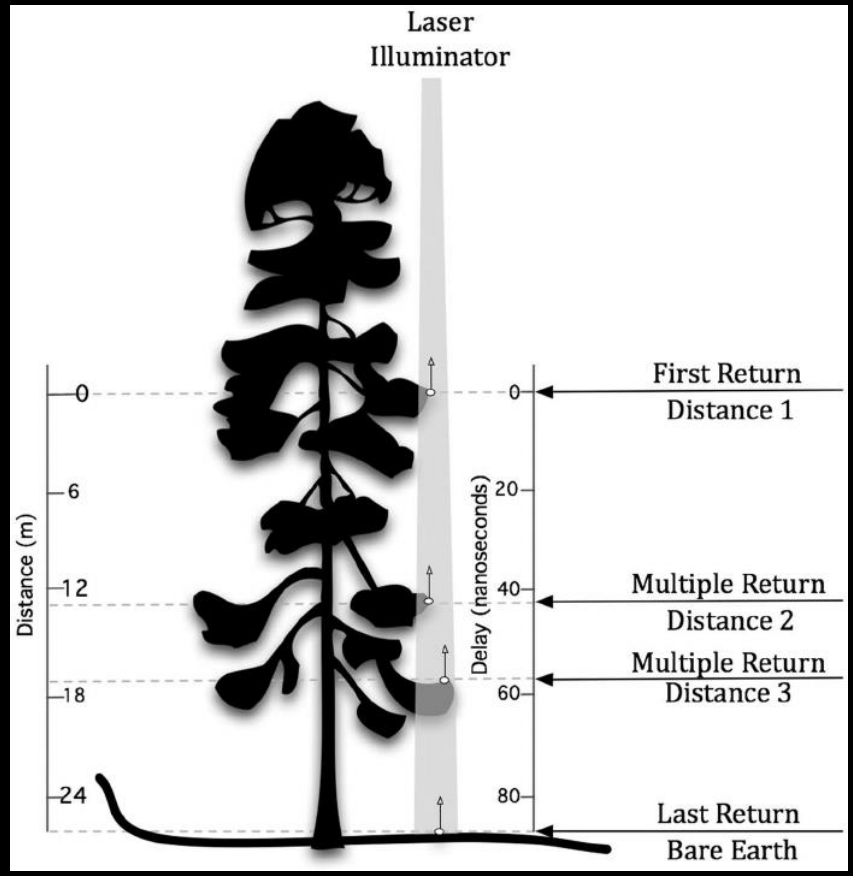
Dr. Mathieu Bourbonnais

Okanagan Water Stewardship Council

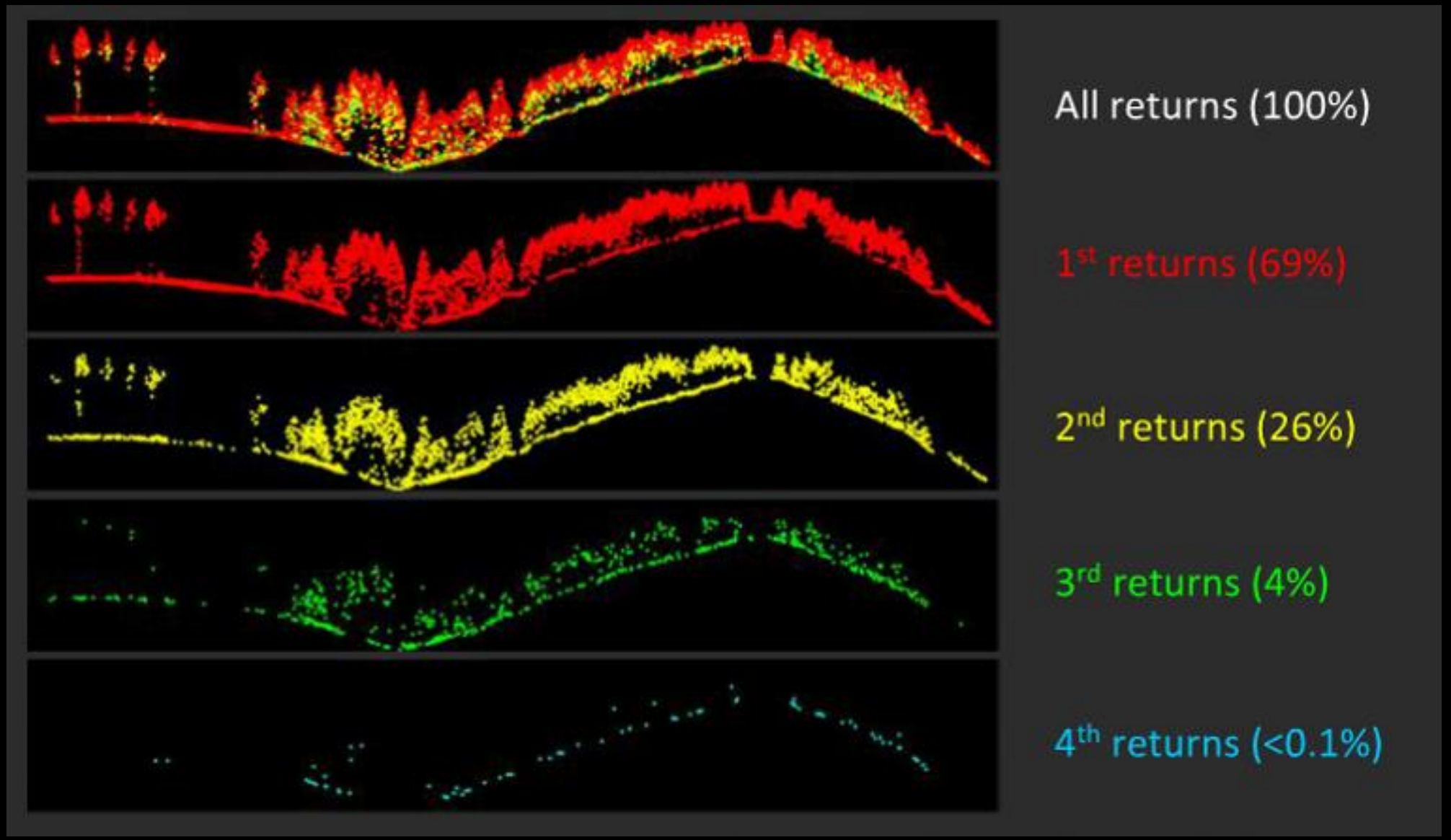
October 11, 2018

Lidar





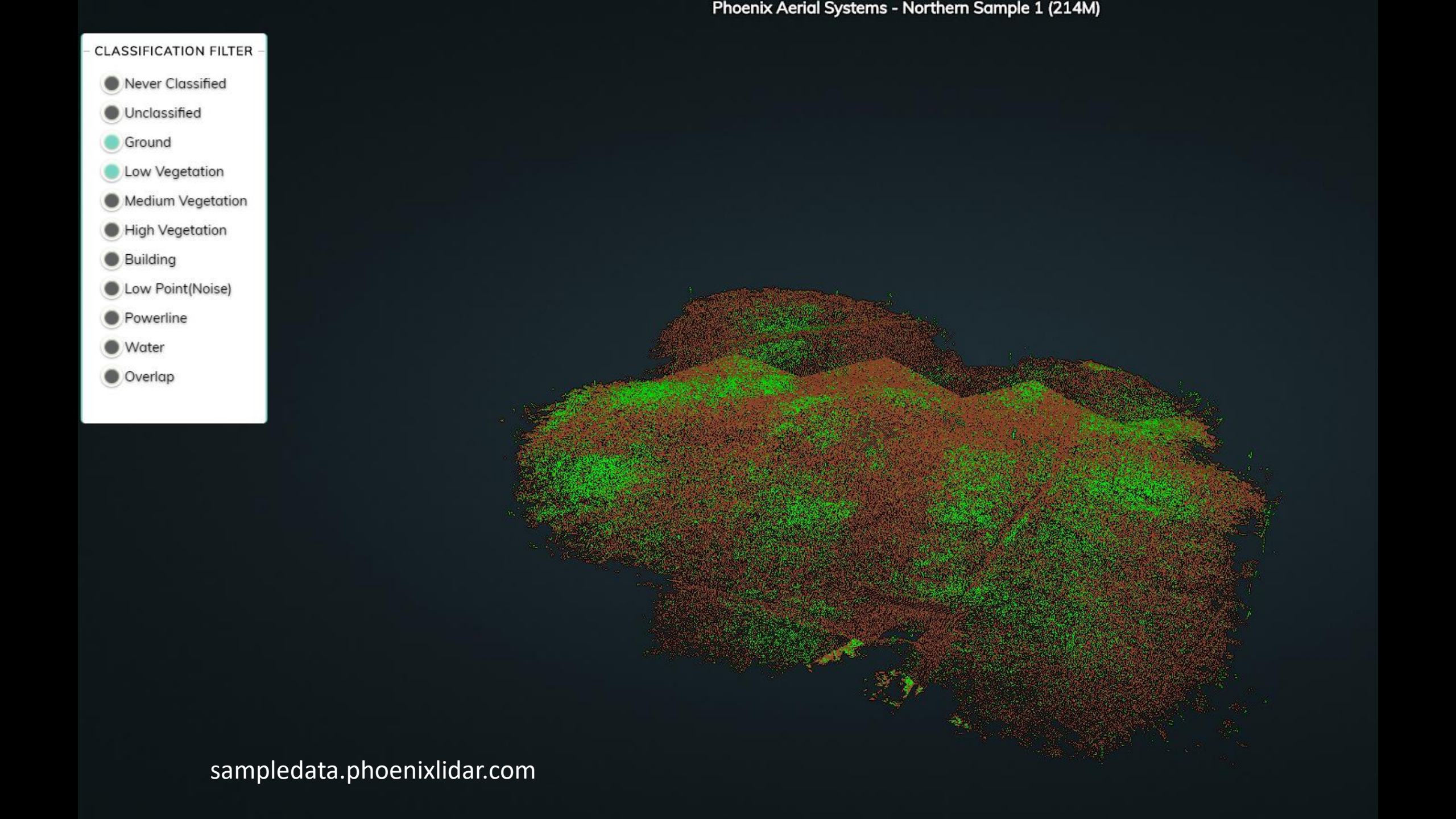
Garcia-Feced et al. 2011

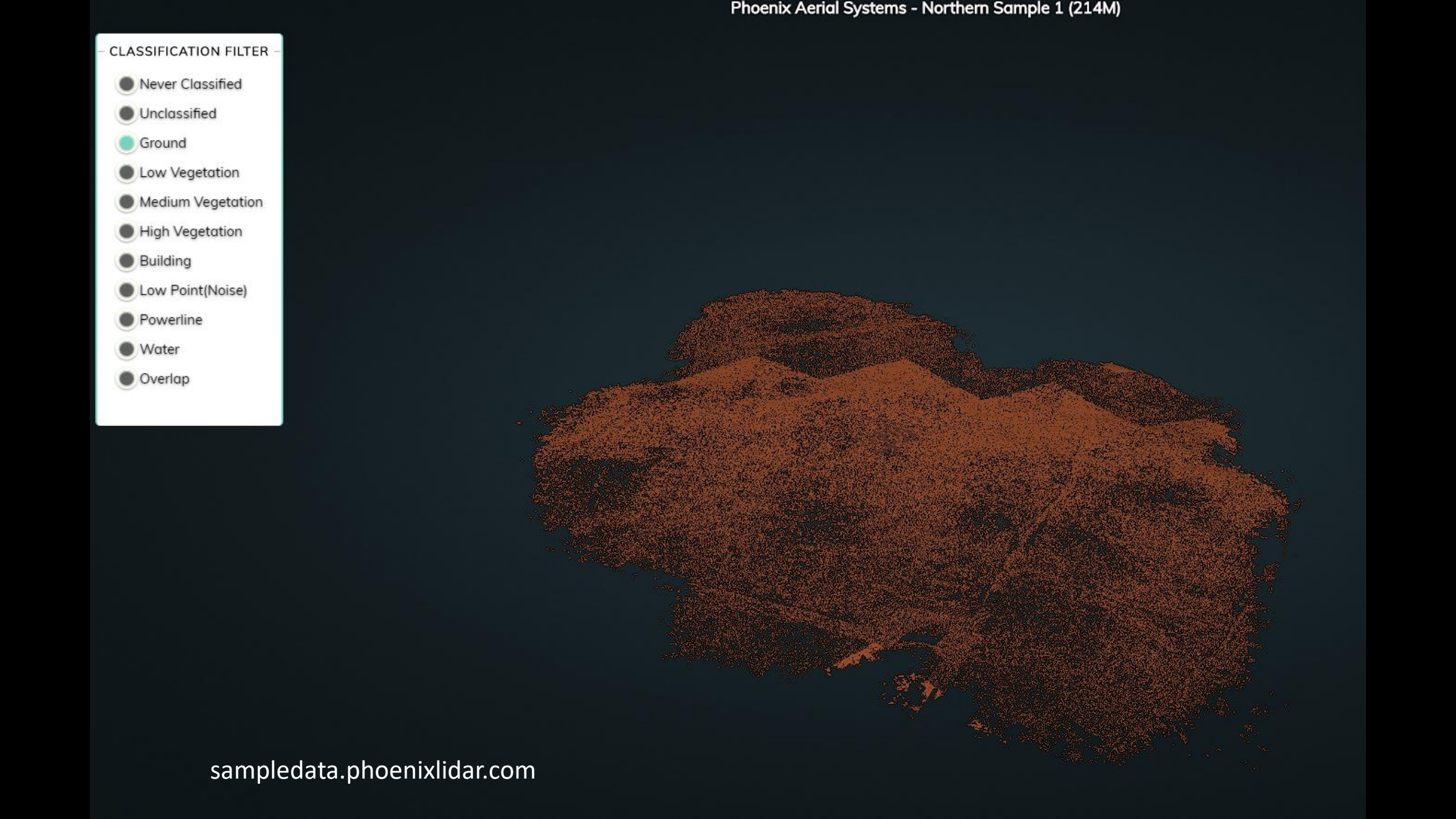


Humboldt State University

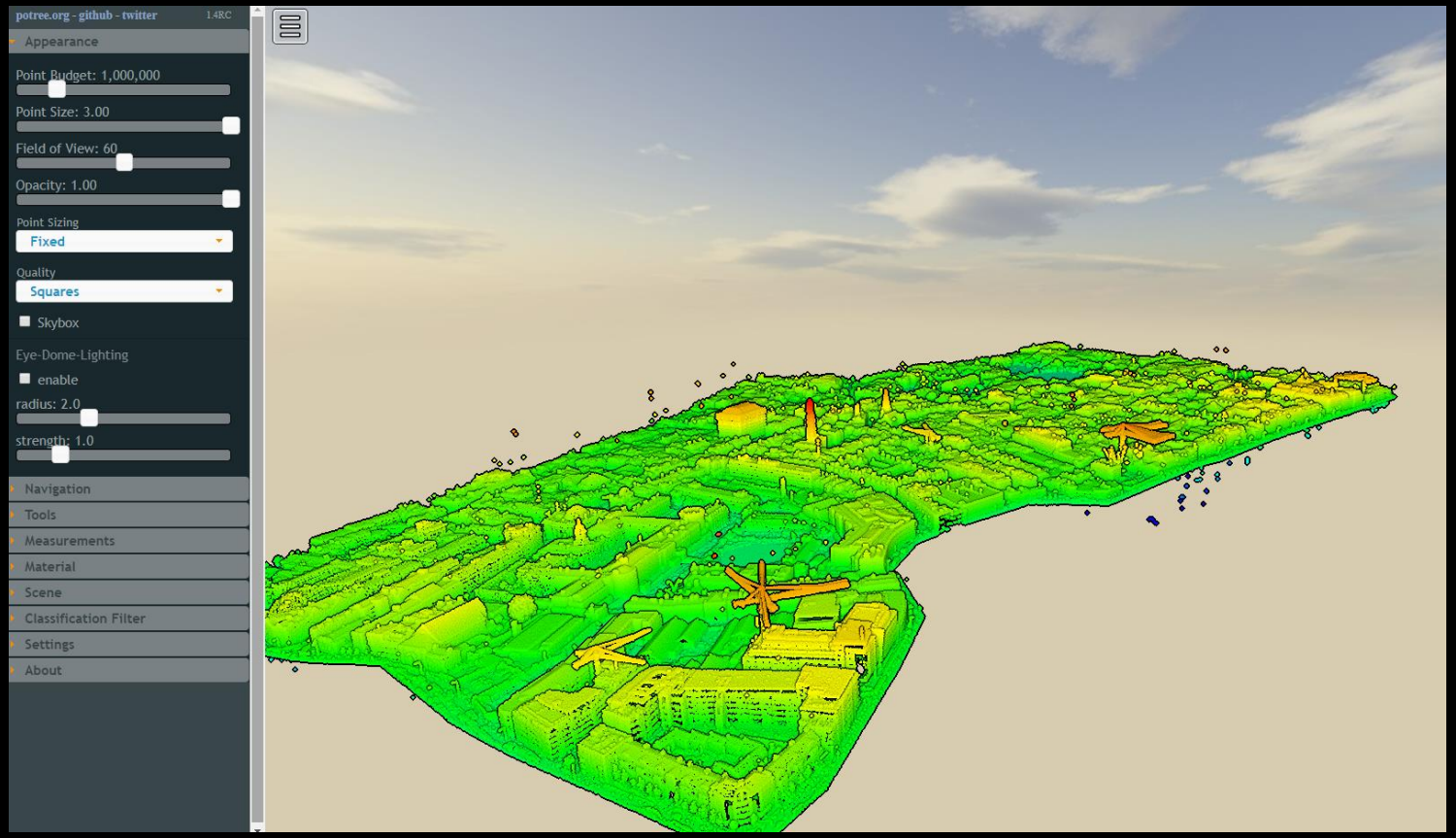
Phoenix Aerial Systems - Northern Sample 1 (214M)
CLASSIFICATION FILTER
Never Classified
Unclassified
Ground
Low Vegetation
Medium Vegetation
High Vegetation
Building
Low Point(Noise)
Powerline
Water
Overlap
sampledata.phoenixlidar.com

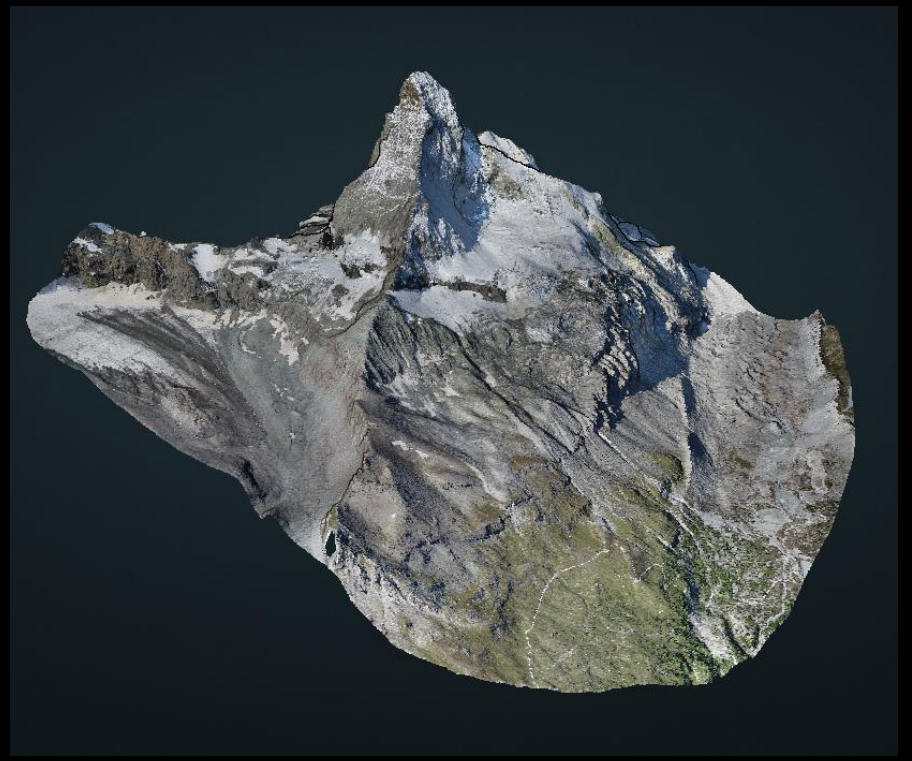
Phoenix Aerial Systems - Northern Sample 1 (214M)
CLASSIFICATION FILTER
Never Classified
Unclassified
Ground
Low Vegetation
Medium Vegetation
High Vegetation
Building
Low Point(Noise)
Powerline
Water
Overlap
sampledata.phoenixlidar.com


Phoenix Aerial Systems - Northern Sample 1 (214M)
CLASSIFICATION FILTER
Never Classified
Unclassified
Ground
Low Vegetation
Medium Vegetation
High Vegetation
Building
Low Point(Noise)
Powerline
Water
Overlap
sampledata.phoenixlidar.com


Phoenix Aerial Systems - Northern Sample 1 (214M)
CLASSIFICATION FILTER
Never Classified
Unclassified
Ground
Low Vegetation
Medium Vegetation
High Vegetation
Building
Low Point(Noise)
Powerline
Water
Overlap
sampledata.phoenixlidar.com

potree.org


potree.org - github - twitter
1.4RC
Appearance
Point Budget: 1,000,000
Point Size: 3.00
Field of View: 60
Opacity: 1.00
Point Sizing
Fixed
Quality
Squares
Skybox
Eye-Dome-Lighting
enable
radius: 2.0
strength: 1.0
Navigation
Tools
Measurements
Material
Scene
Classification Filter
Settings
About



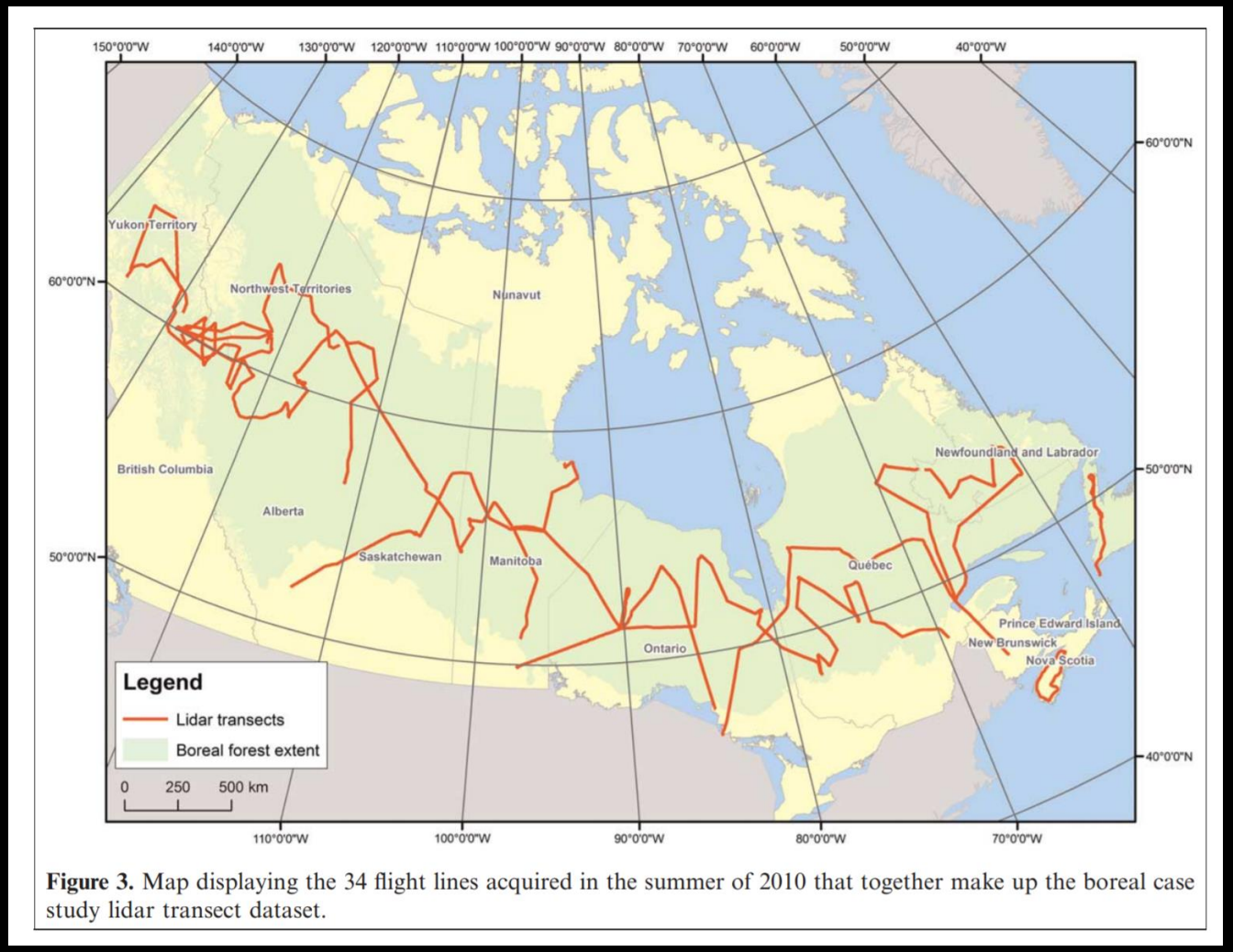
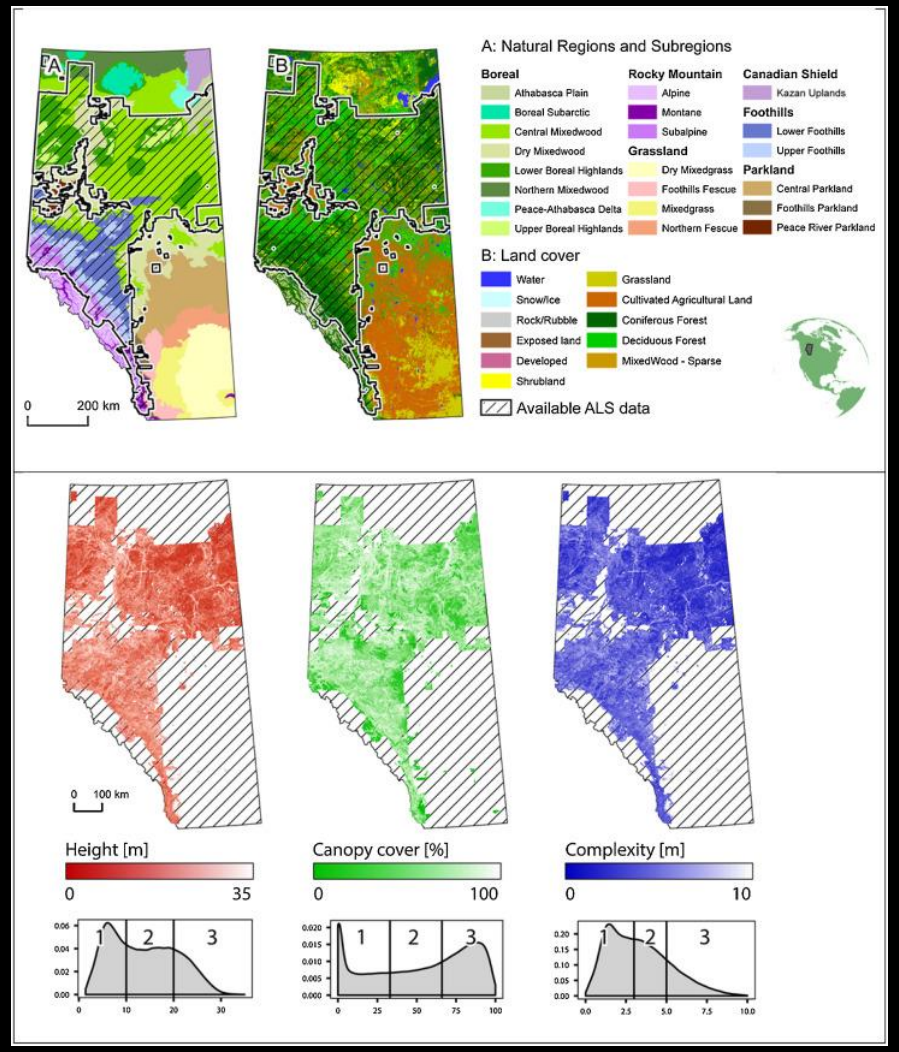


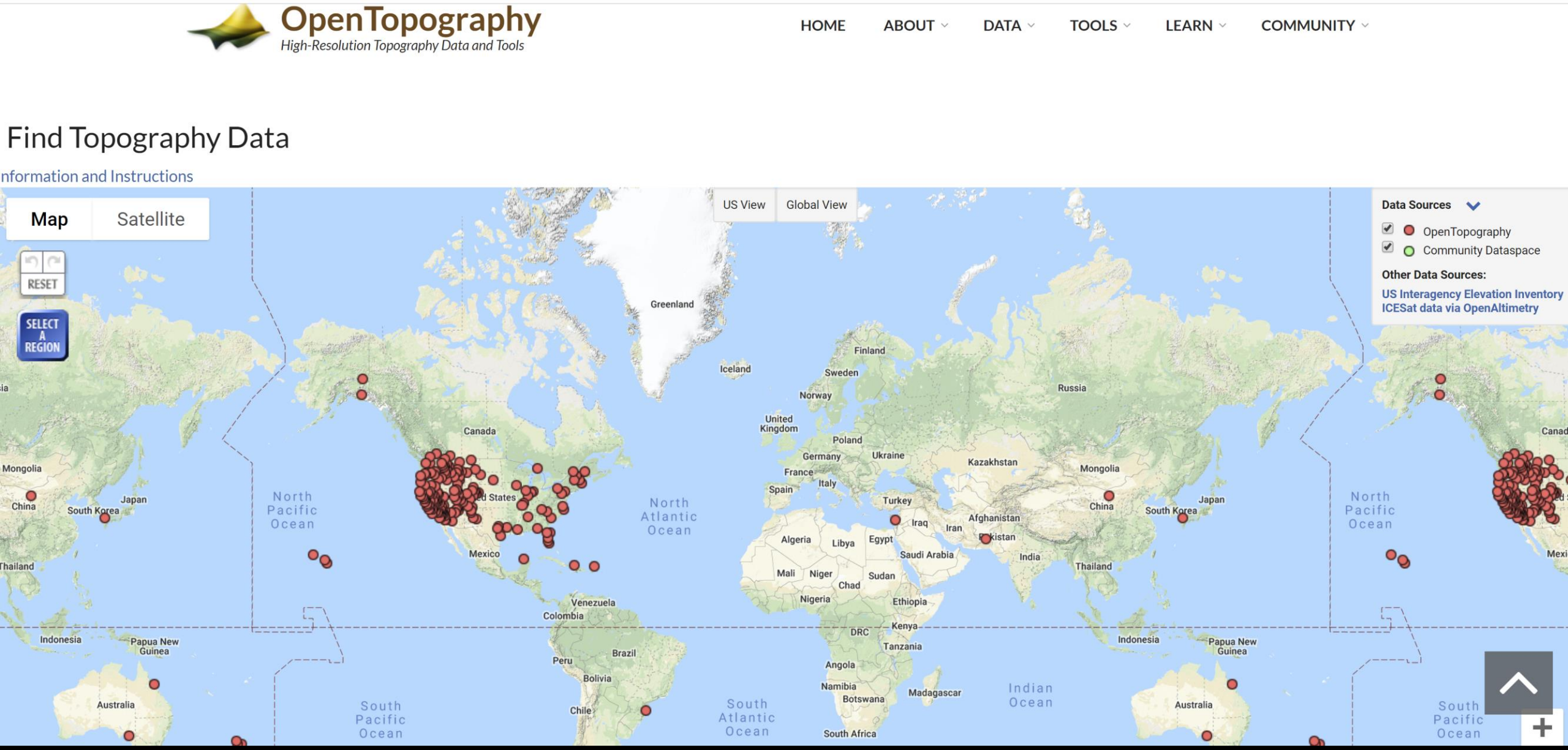
Figure 3. Map displaying the 34 flight lines acquired in the summer of 2010 that together make up the boreal case study lidar transect dataset.

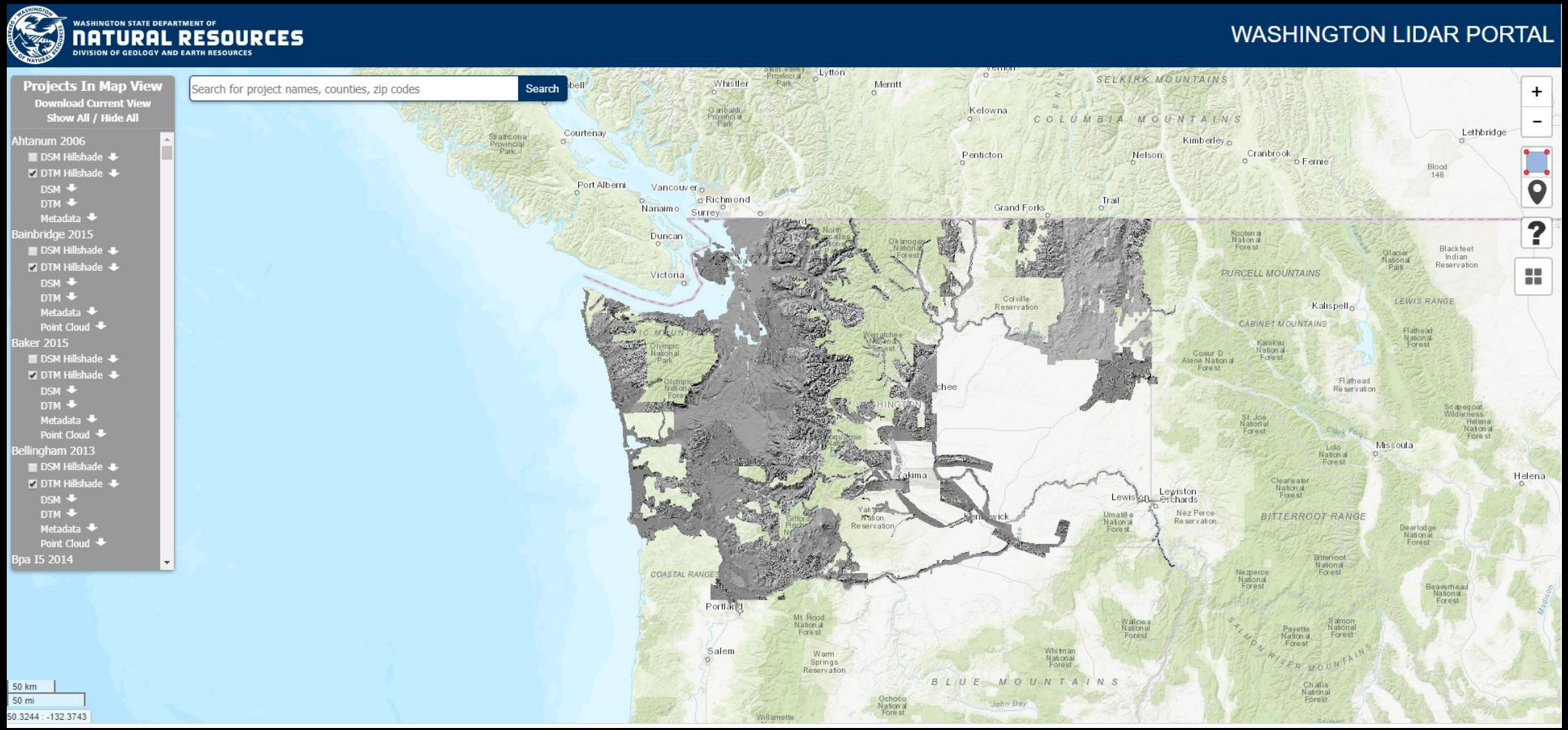
Wulder et al. 2012



Coops et al. 2016

https://opentopography.org/



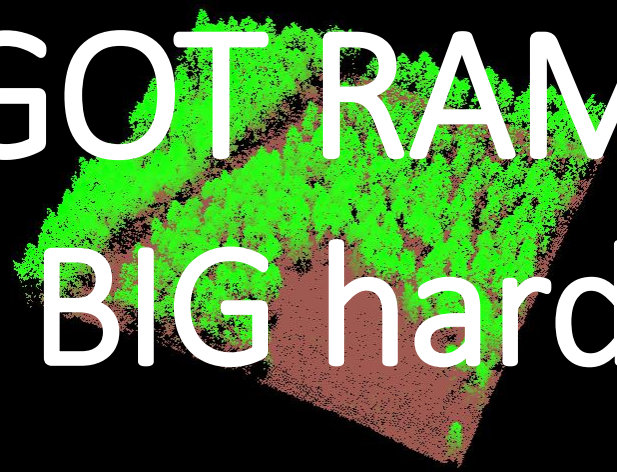

WASHINGTON STATE DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF GEOLOGY AND EARTH RESOURCES
WASHINGTON LIDAR PORTAL
Projects In Map View
Download Current View
Show All / Hide All
Ahtanum 2006
DSM Hillshade
DTM Hillshade
DSM
DTM
Metadata
Bainbridge 2015
DSM Hillshade
DTM Hillshade
DSM
DTM
Metadata
Point Cloud
Baker 2015
DSM Hillshade
DTM Hillshade
DSM
DTM
Metadata
Point Cloud
Bellingham 2013
DSM Hillshade
DTM Hillshade
DSM
DTM
Metadata
Point Cloud
Bpa I5 2014
Search for project names, counties, zip codes
Search
Whistler
Lytton
Merritt
Kelowna
Courtenay
Penticton
Kimberley
Cranbrook
Fernie
Lethbridge
Nelson
Port Alberni
Vancouver
Richmond
Nanaimo
Surrey
Grand Forks
Trail
Duncan
Victoria
Kalispell
Missoula
Helena
Lewiston
Portland
Salem
SELKIRK MOUNTAINS
COLUMBIA MOUNTAINS
PURCELL MOUNTAINS
CABINET MOUNTAINS
LEWIS RANGE
BITTERROOT RANGE
COASTAL RANGE
BLUE MOUNTAINS
SALMON RIVER MOUNTAINS
50 km
50 mi
50.3244 : -132.3743

rapidlasso

ArcGIS Pro

QGIS

GOT RAM?
And a BIG hard drive?



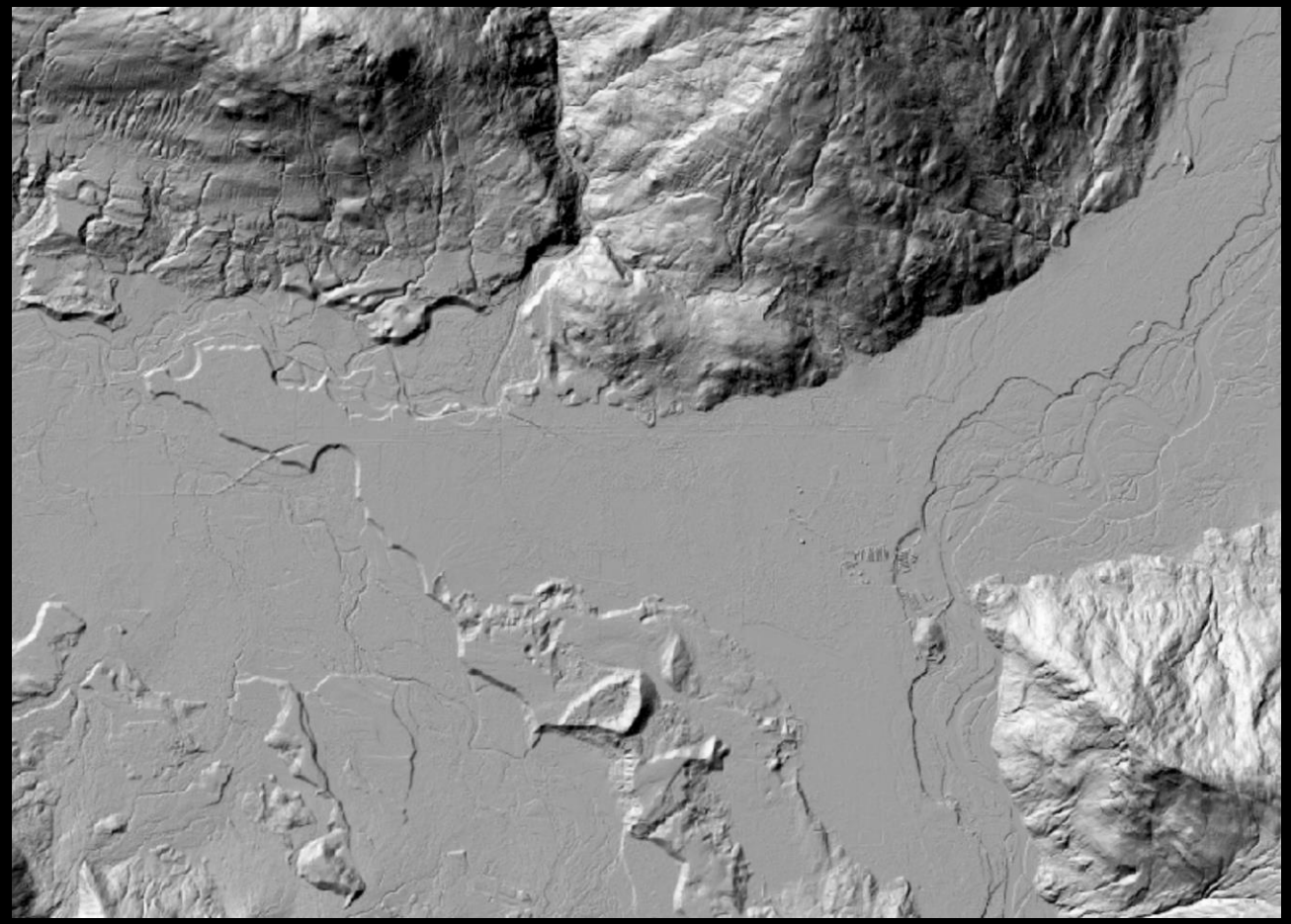
FUSION

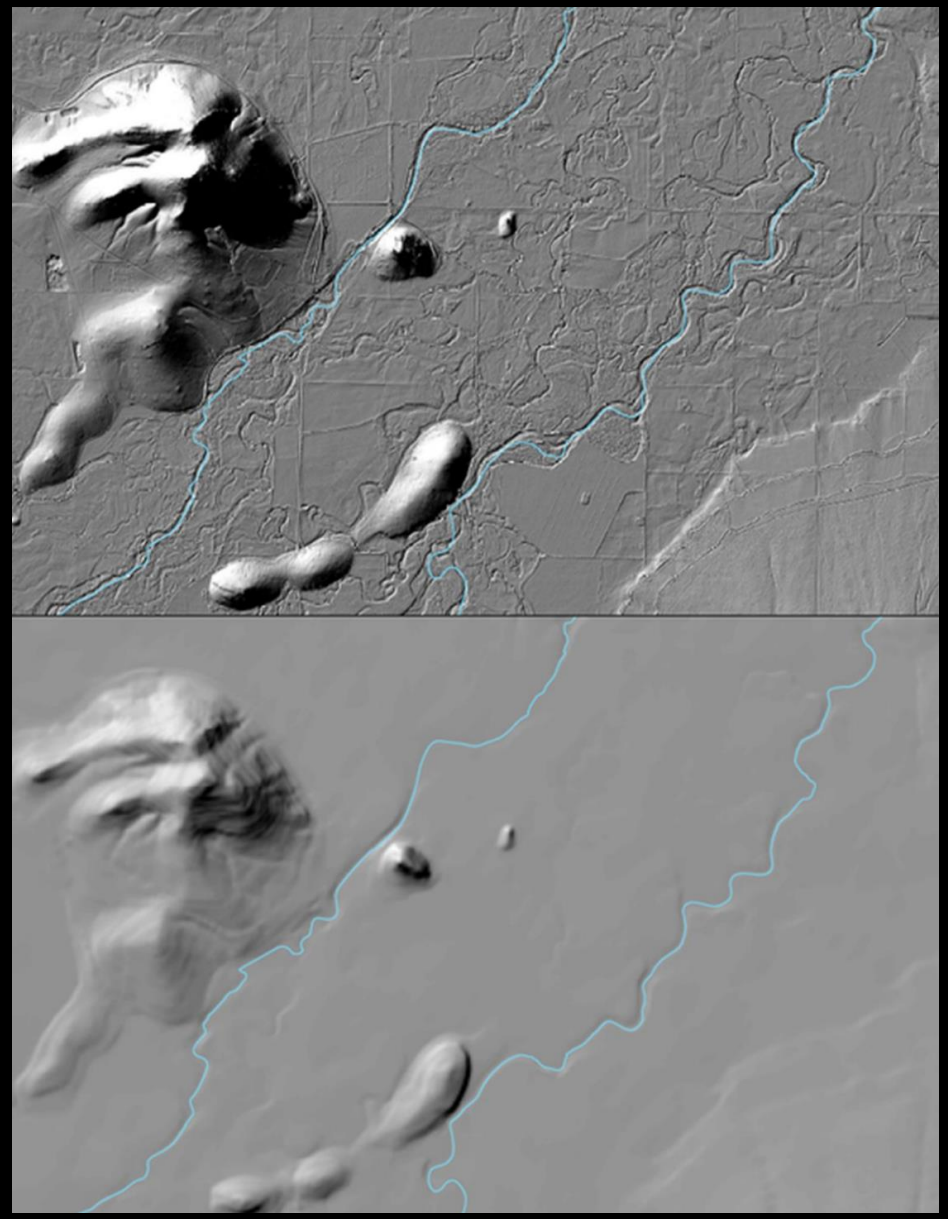
Providing fast, efficient, and flexible access to LIDAR, IFSAR and terrain datasets

FOREST SERVICE
US
DEPARTMENT OF AGRICULTURE

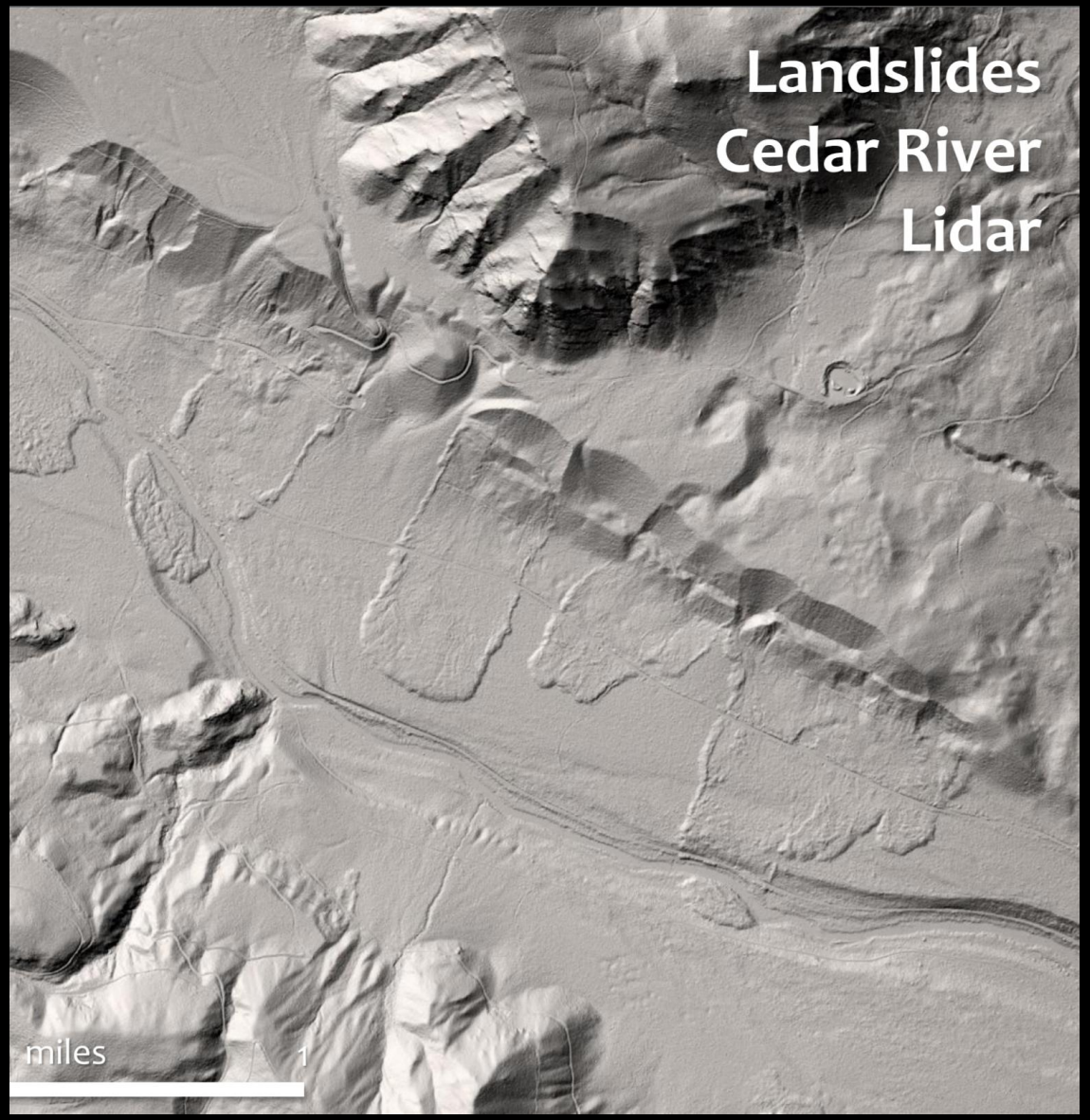
Robert J. McGaughey
Pacific Northwest Research Station

R

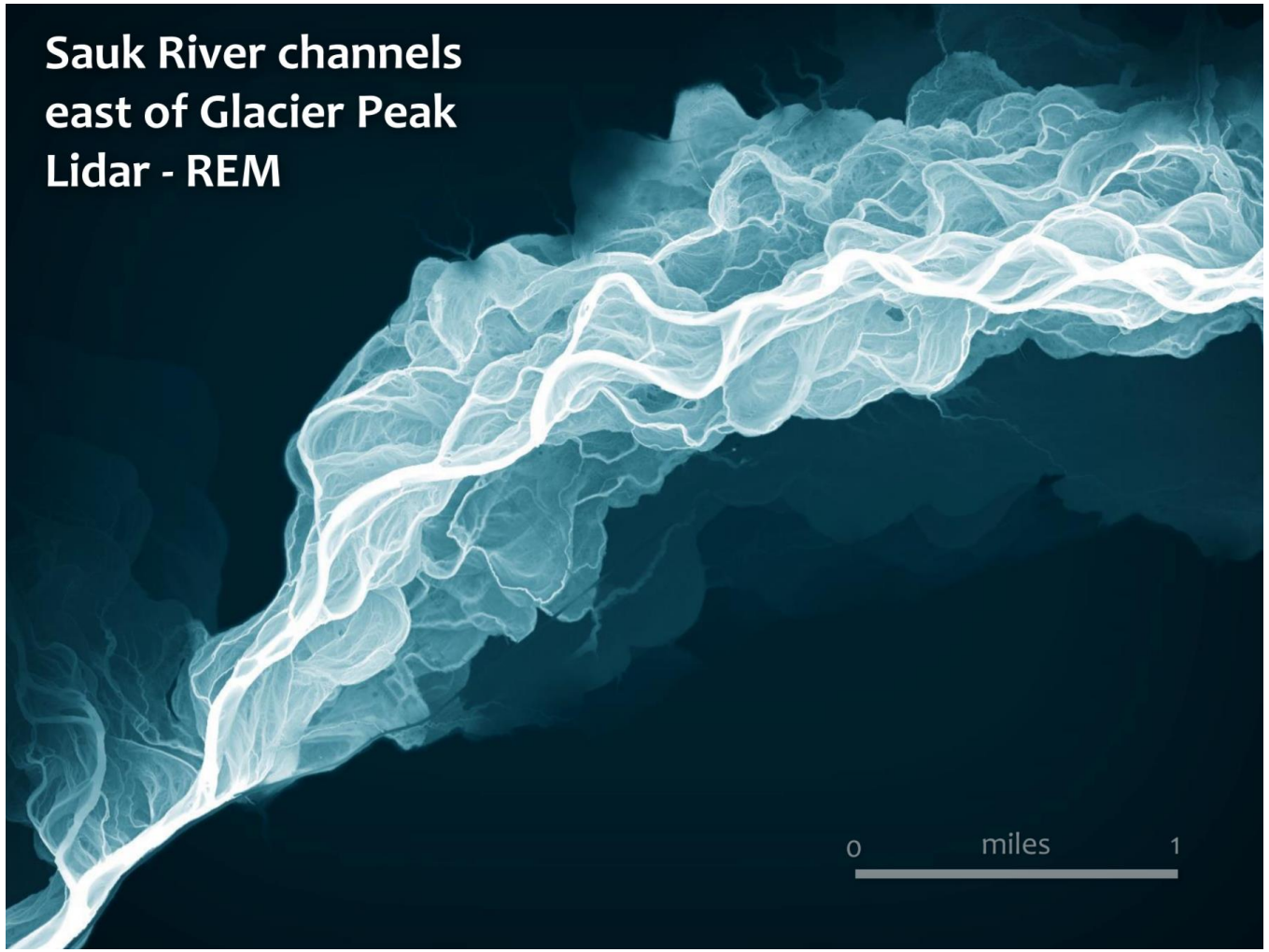


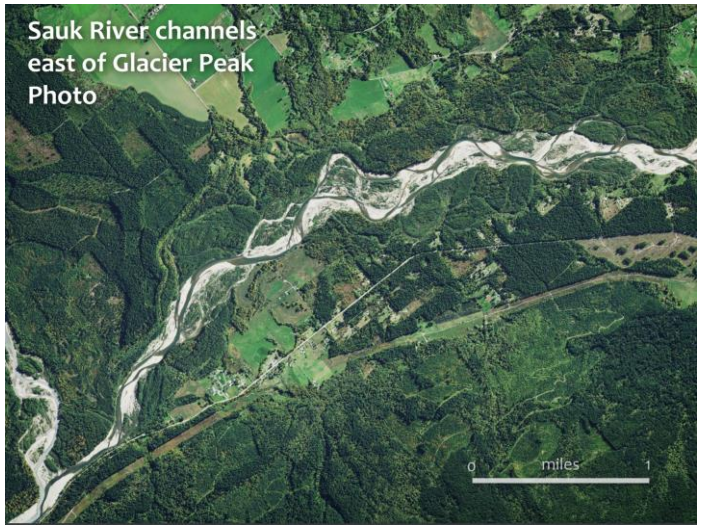


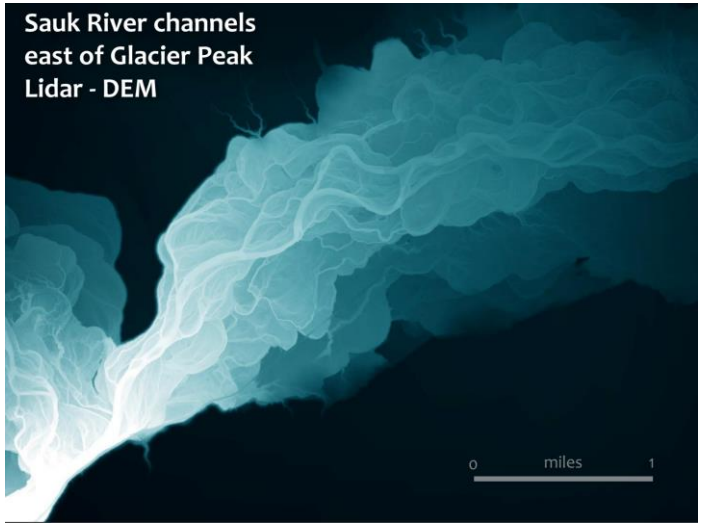
Stoker et al. 2016



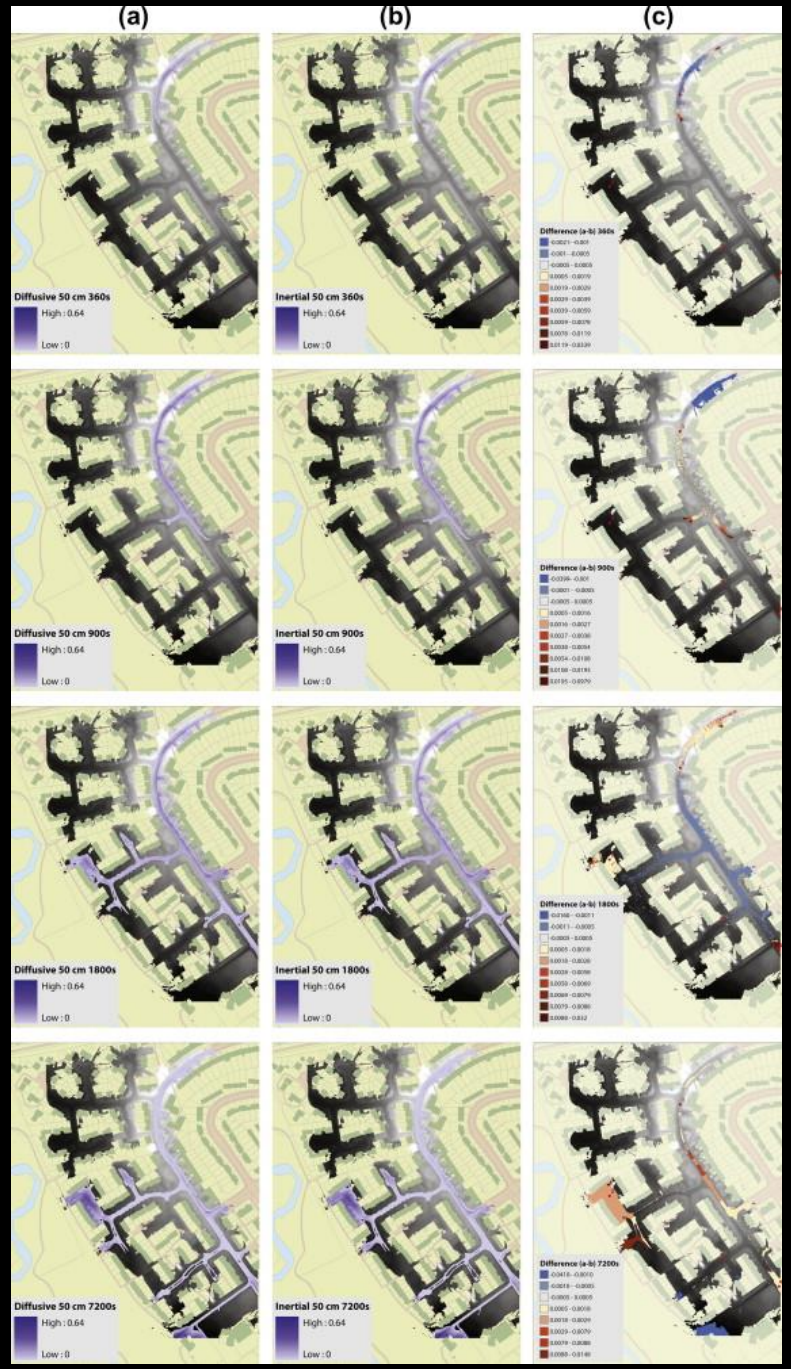
Coe 2016; Washington State Dept of Natural Resources



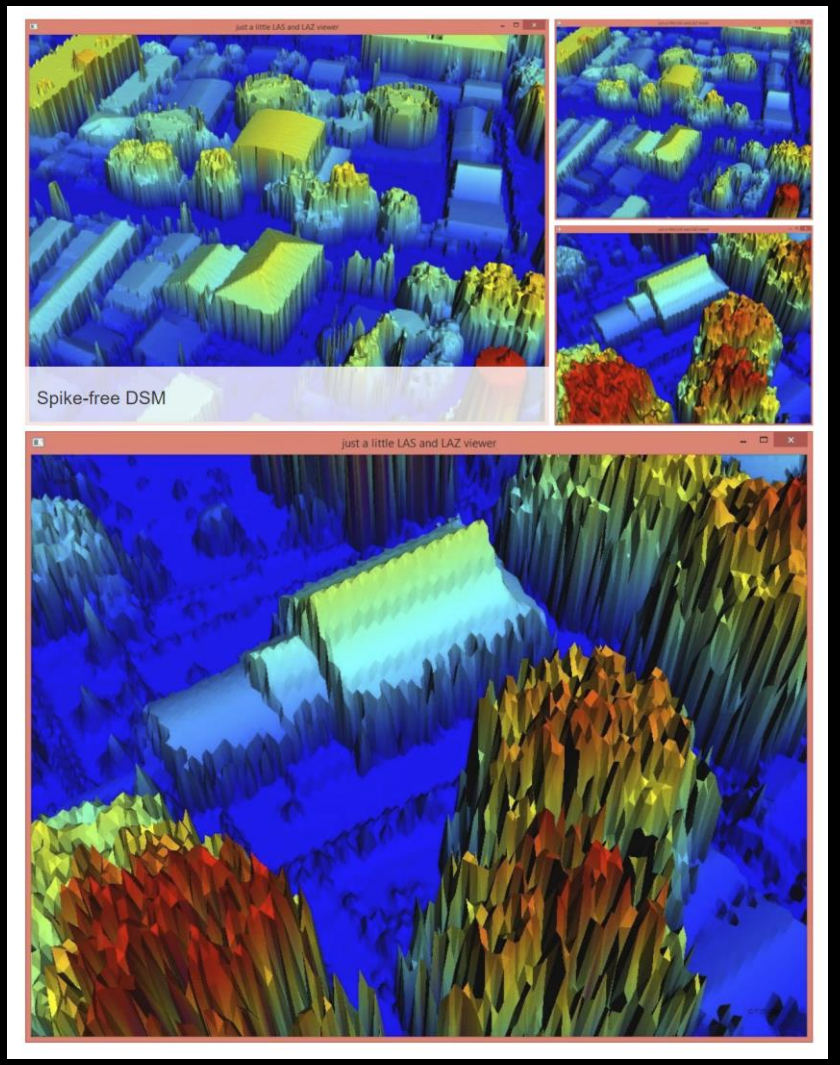




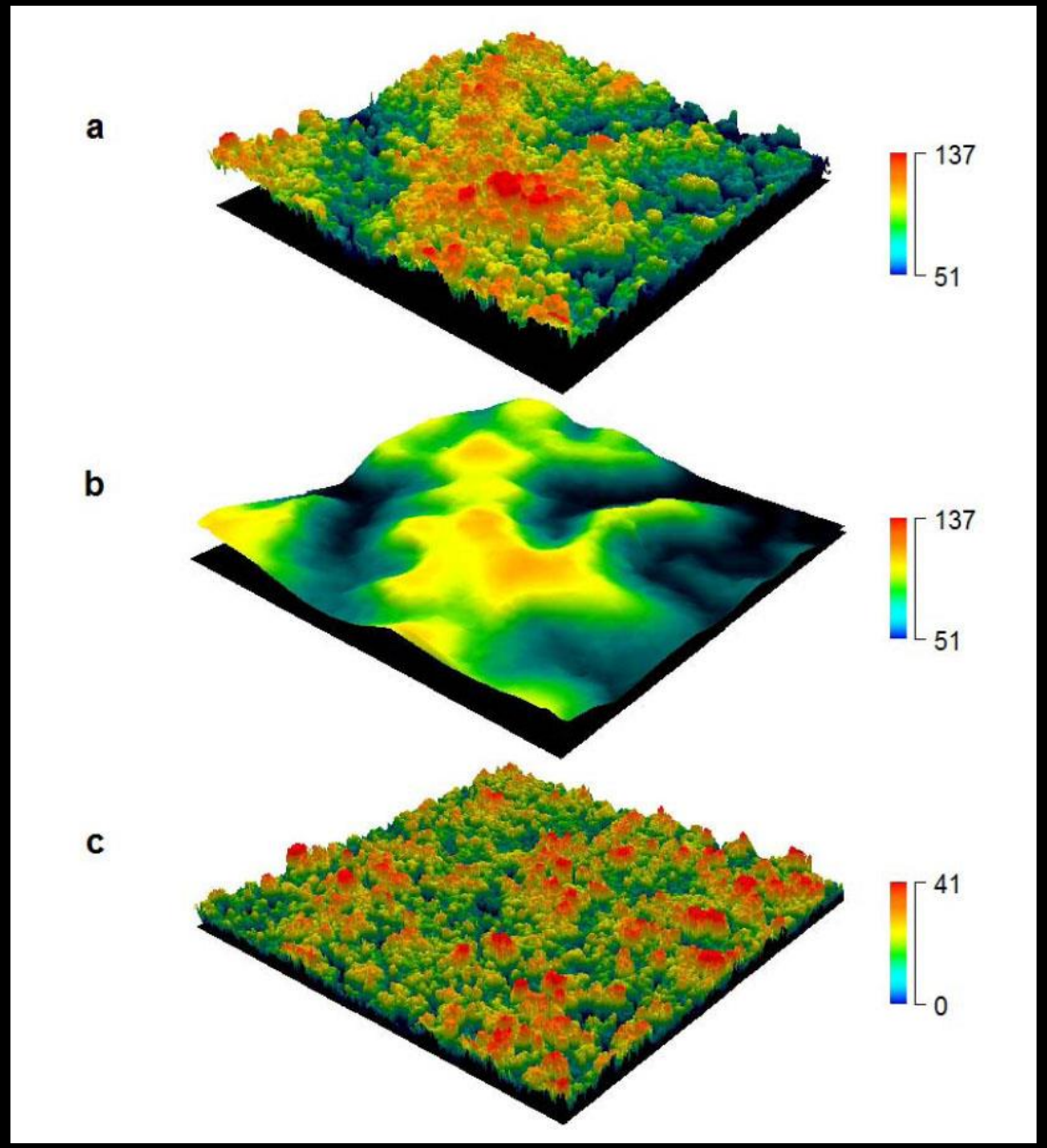
Coe 2016; Washington State Dept of Natural Resources



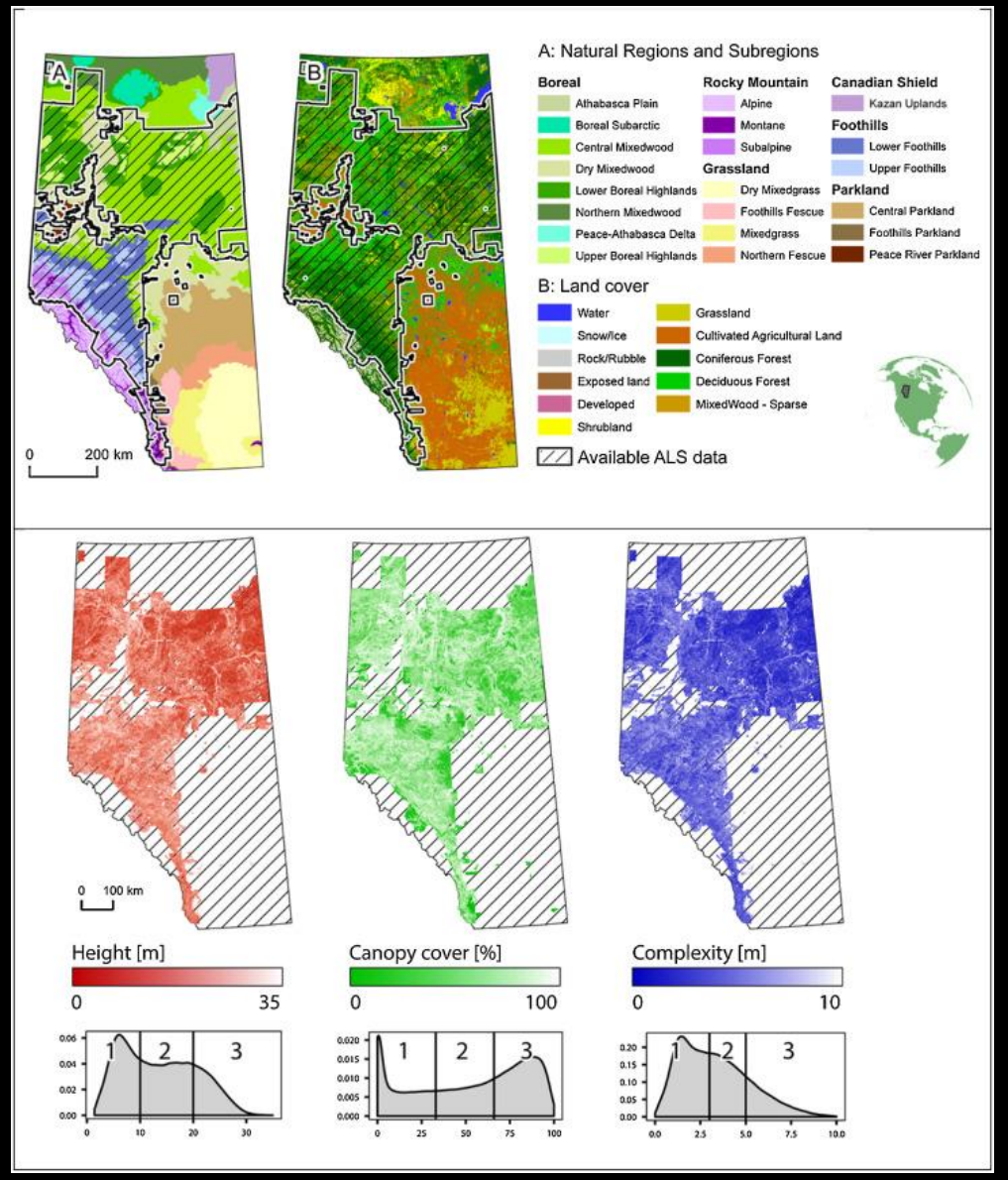
Fewtrell et al. 2011



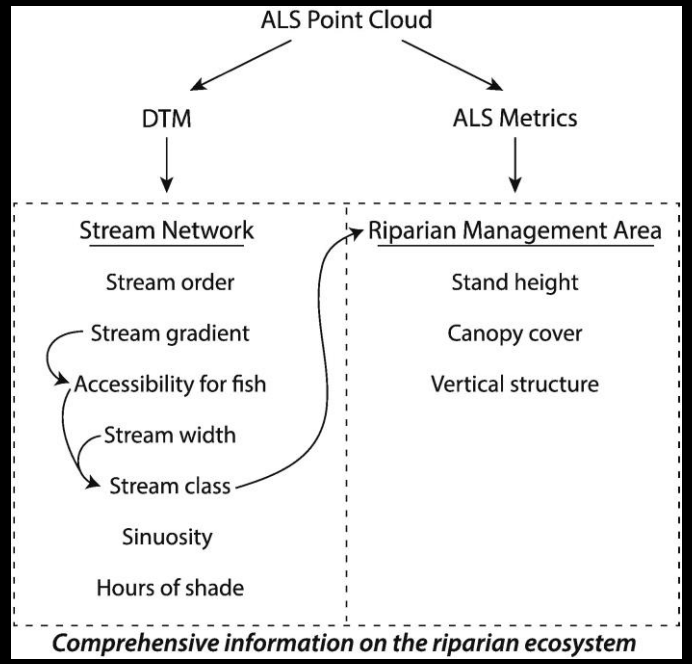
Rapidlasso.com

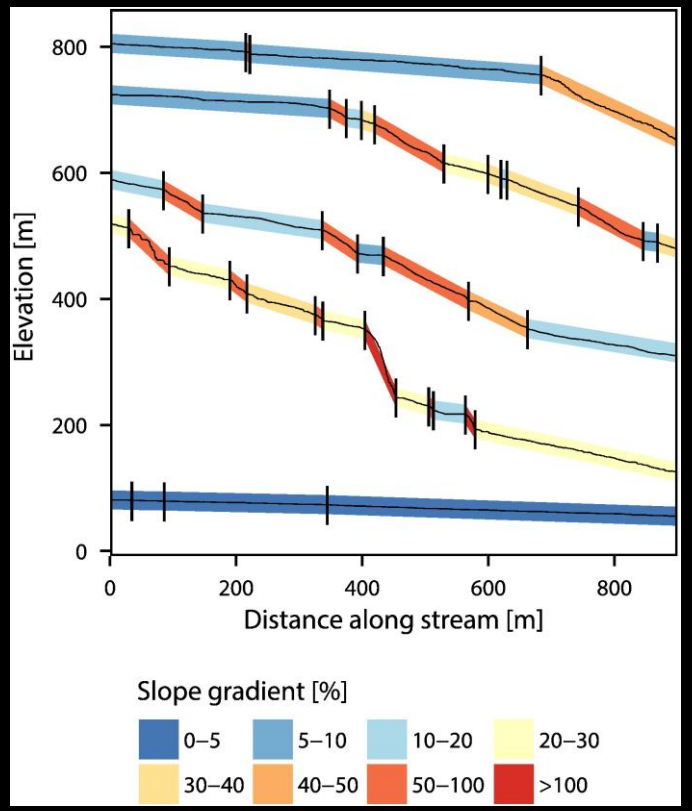


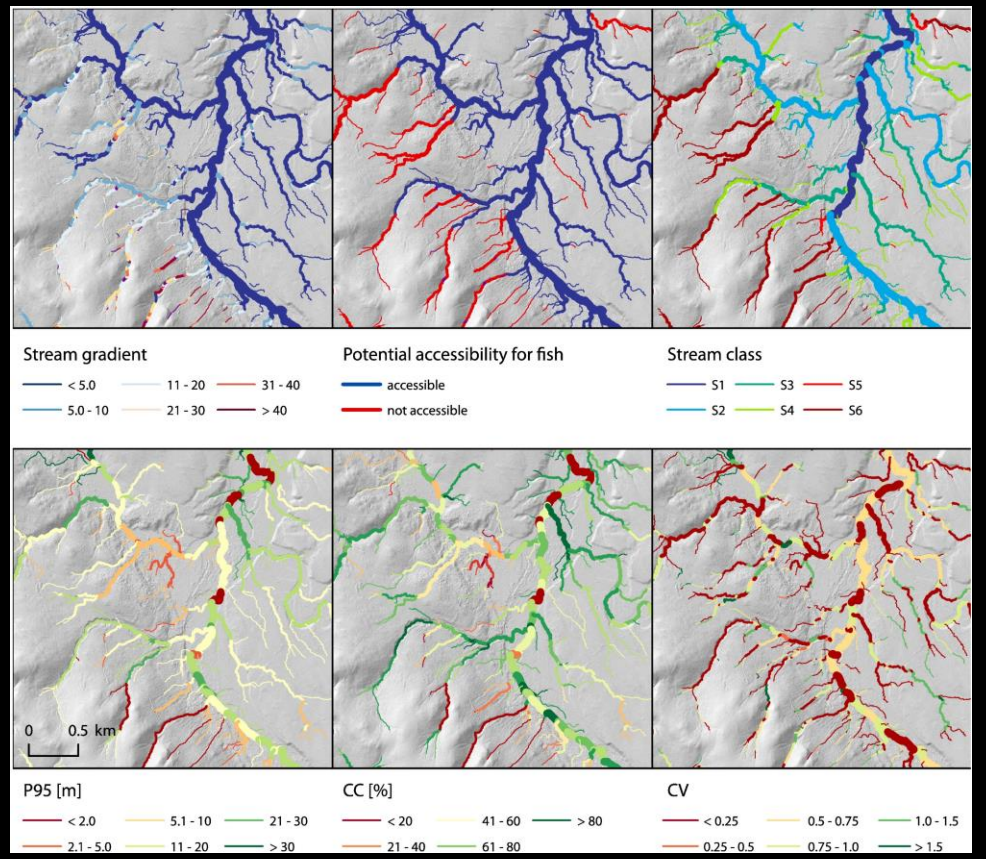
Kelner et al. 2009



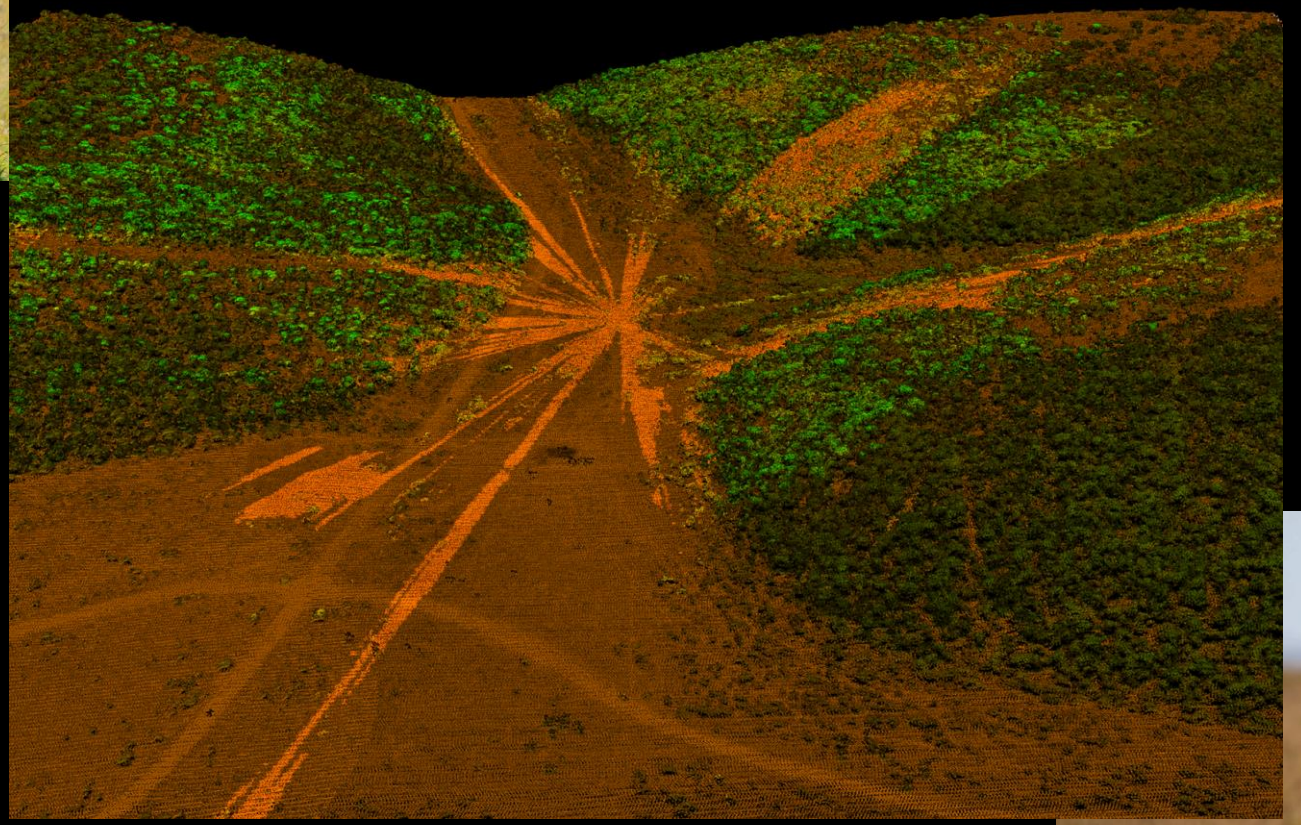
Coops et al. 2016

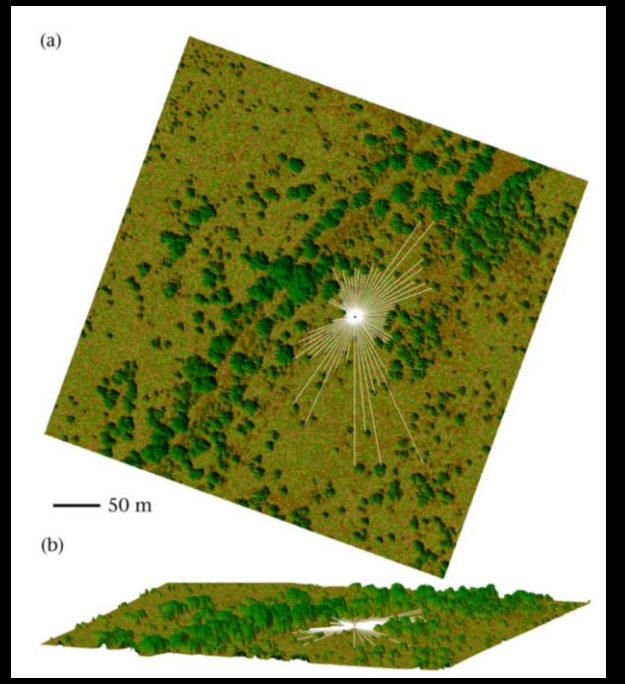




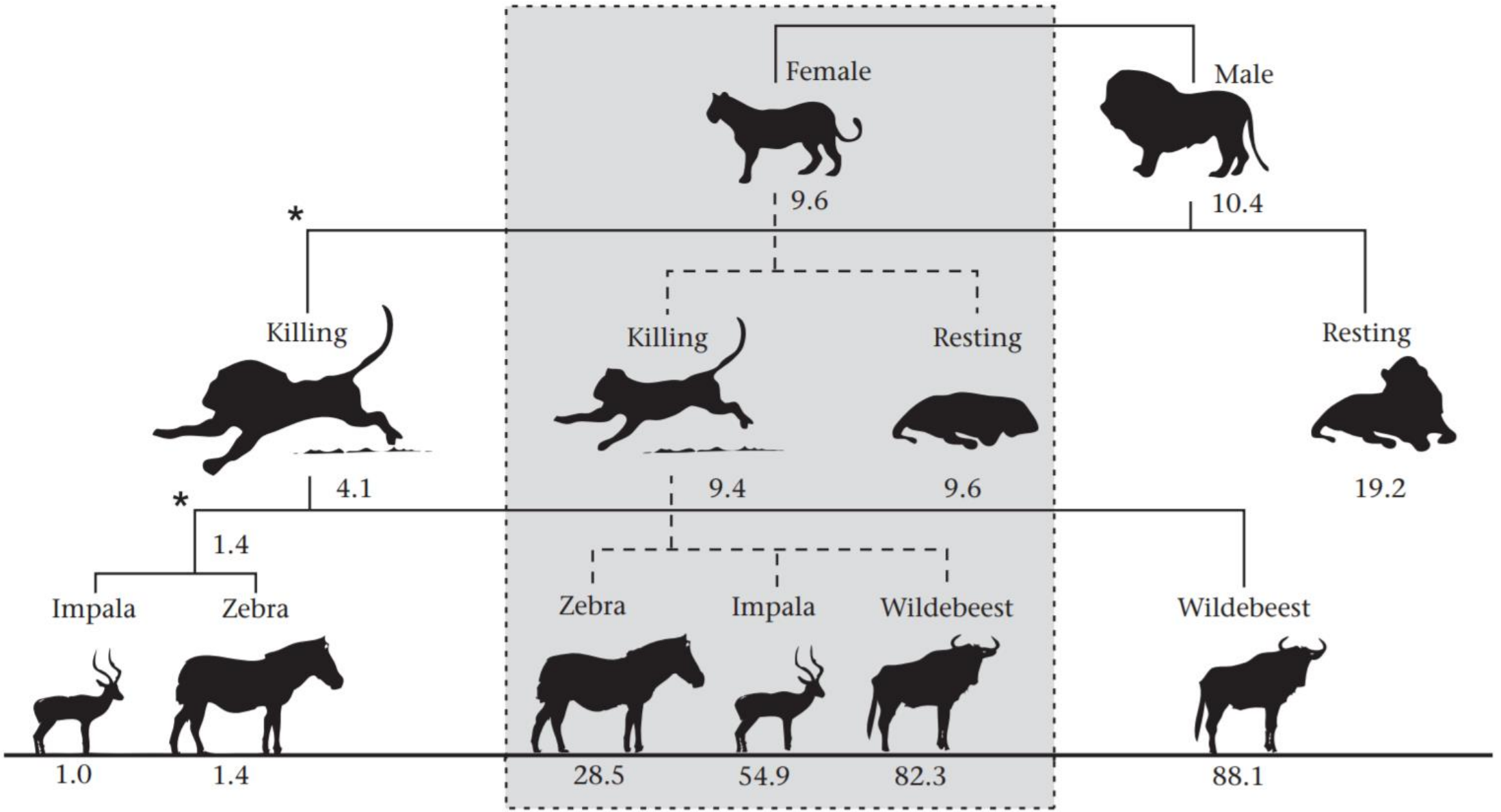


Tompalski et al. 2017

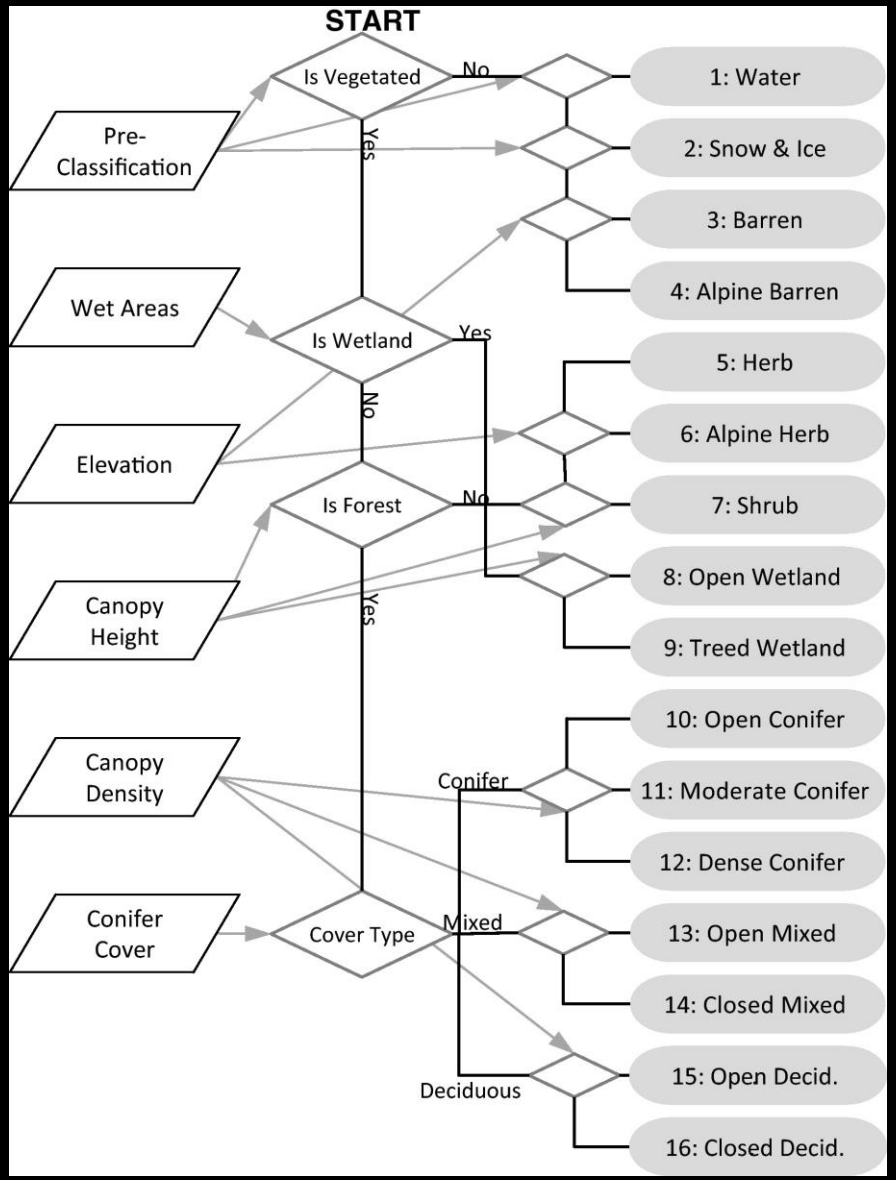


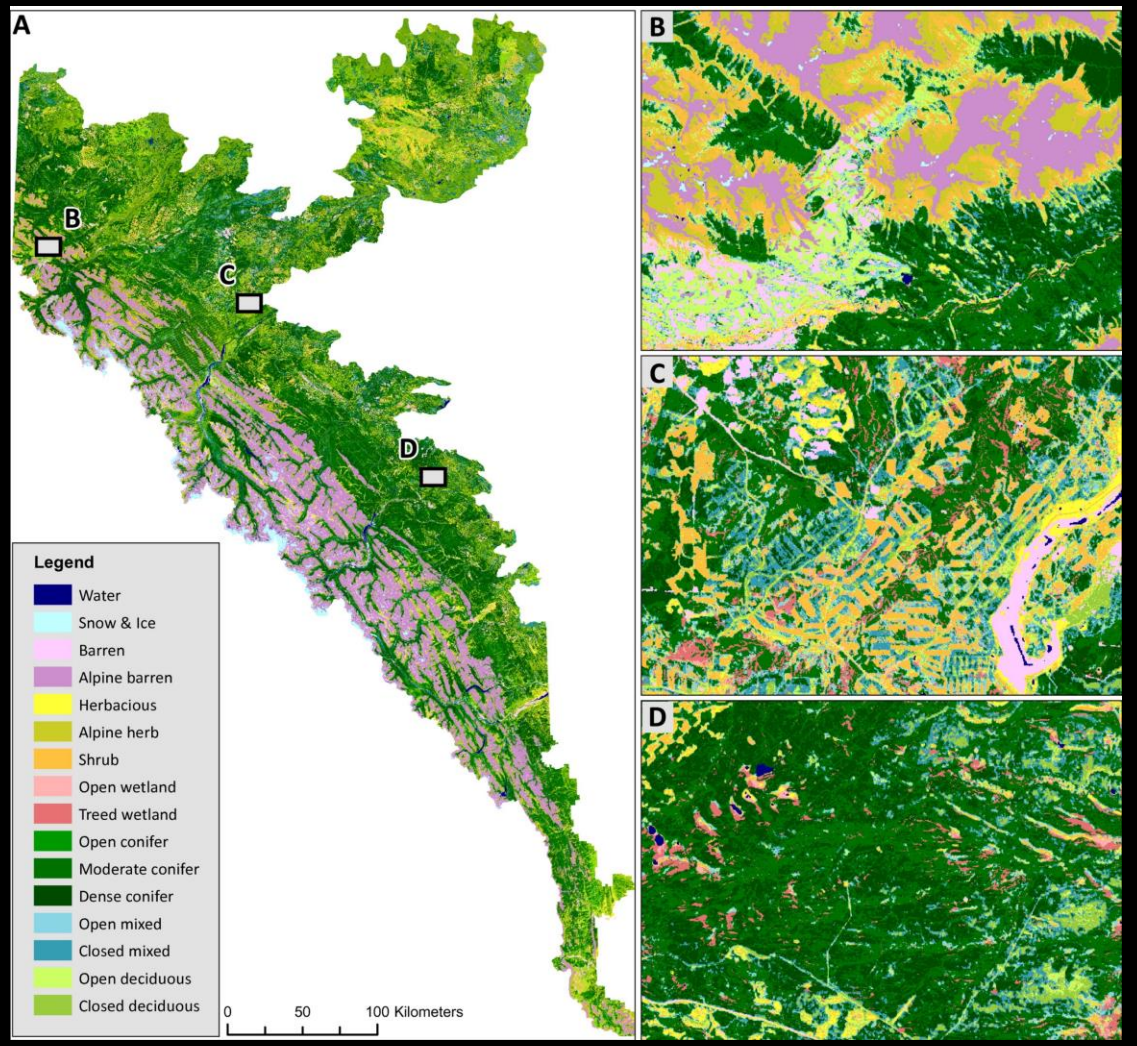


Loarie et al. 2014; Davies et al. 2016

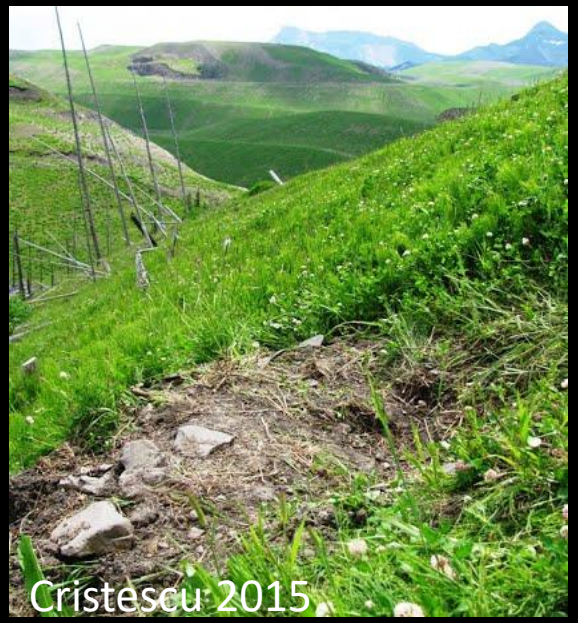


Loarie et al. 2014

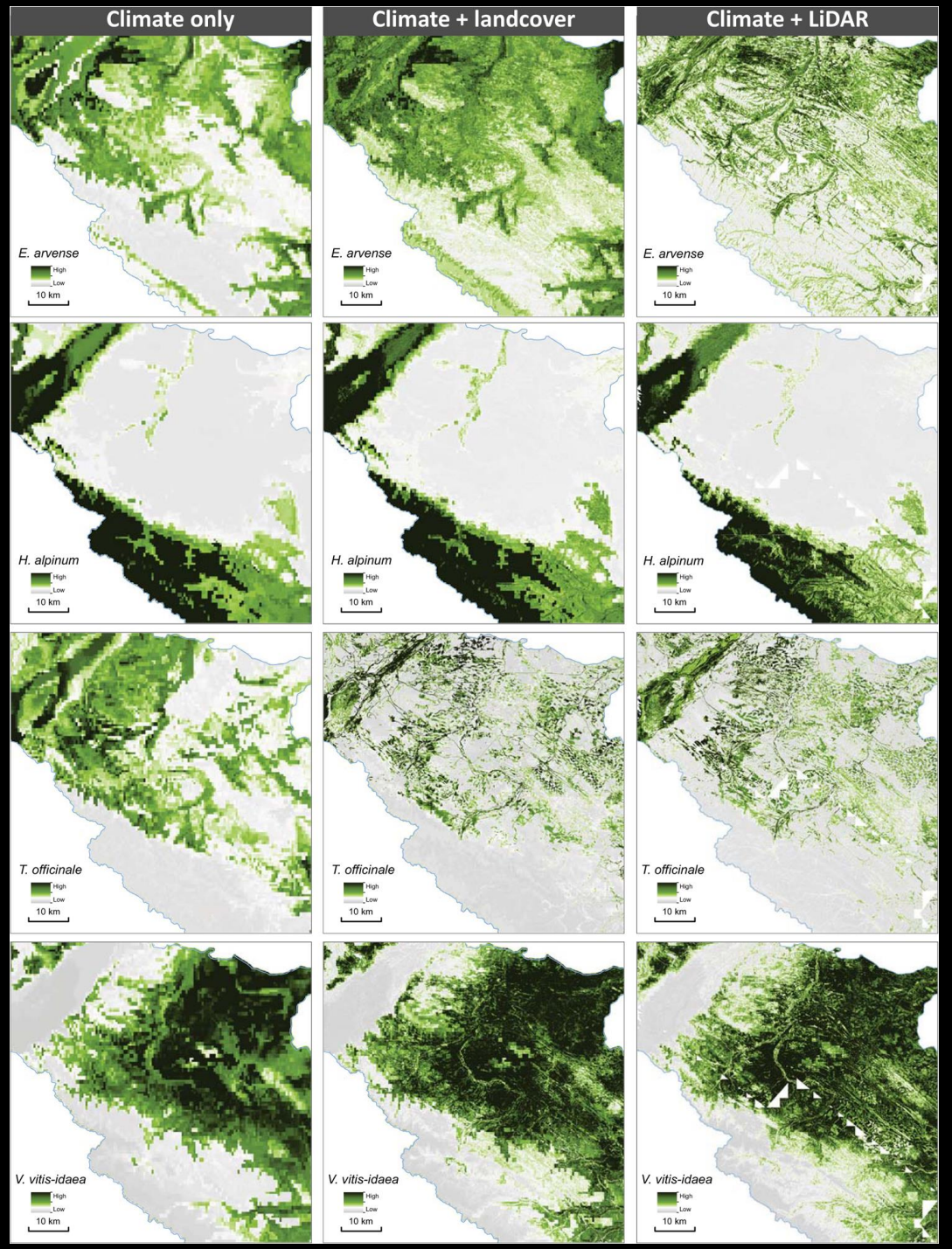




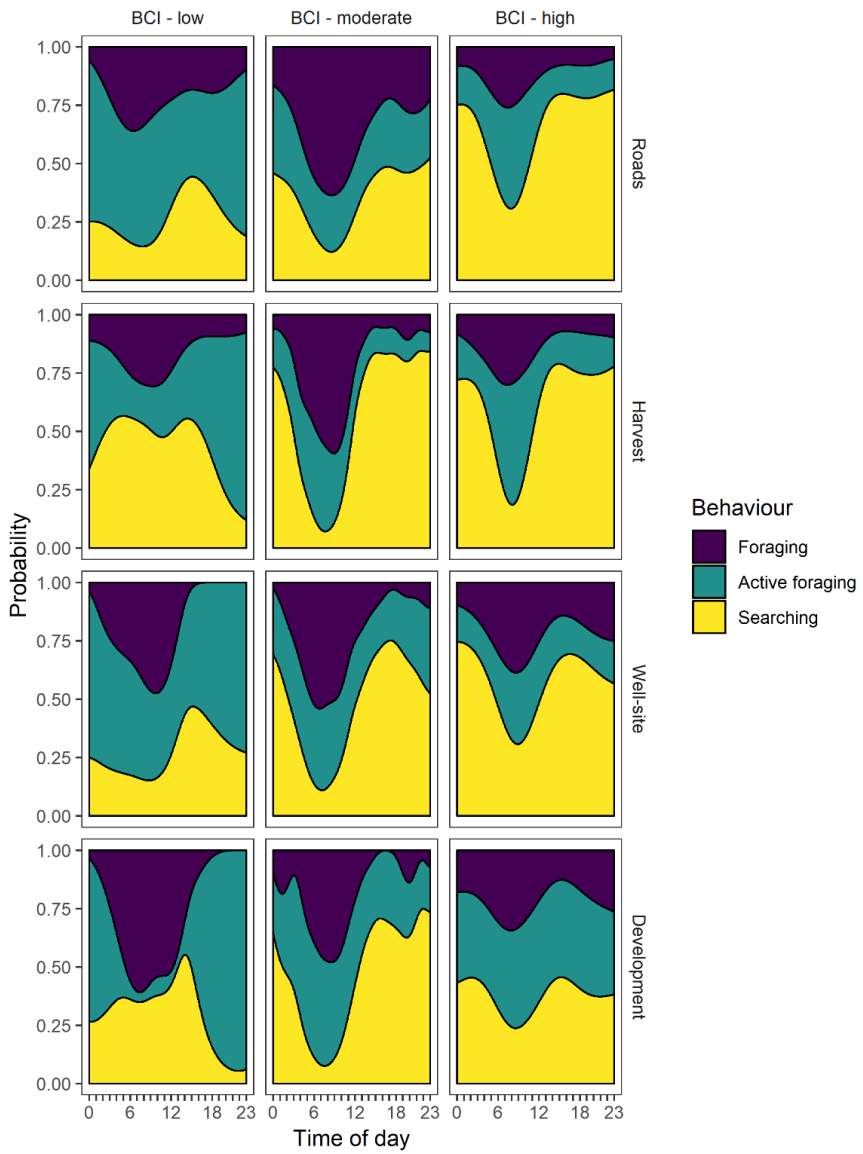
Nijland et al. 2015



Nijland et al. 2014



fRI; Parks Canada



Bourbonnais et al. 2018

Parks Canada Parcs Canada

(a)

(b)

(a)

(b)

(c)

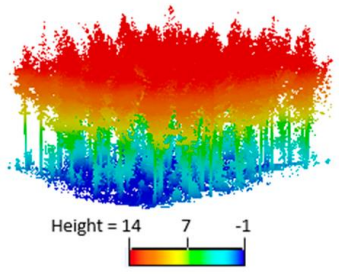
(a)

(b)

(c)

(d)

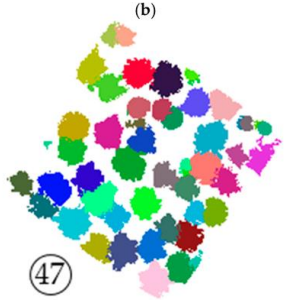
Yang et al. 2016



(a)

(b)

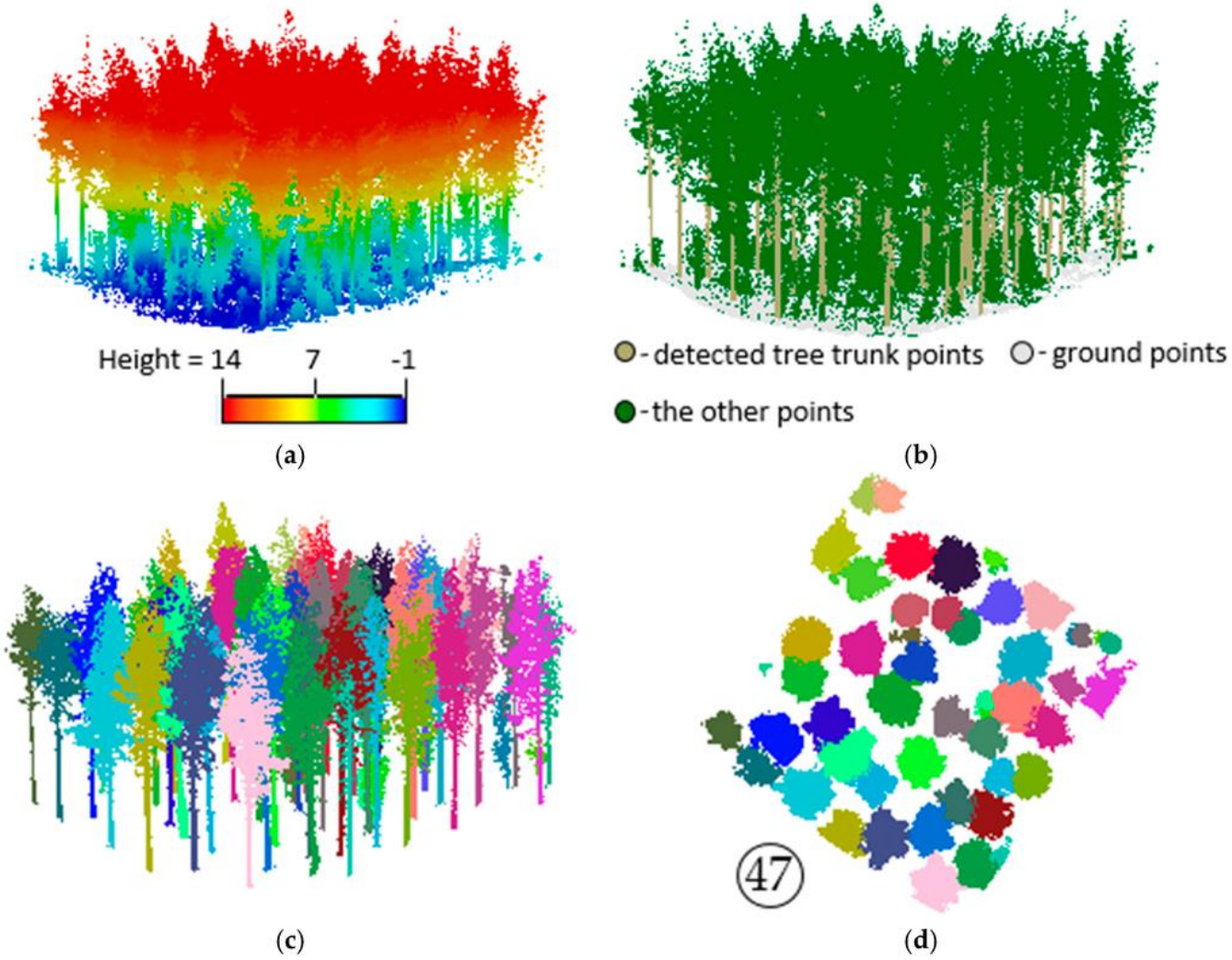
(c)



(d)

firesmart.ca

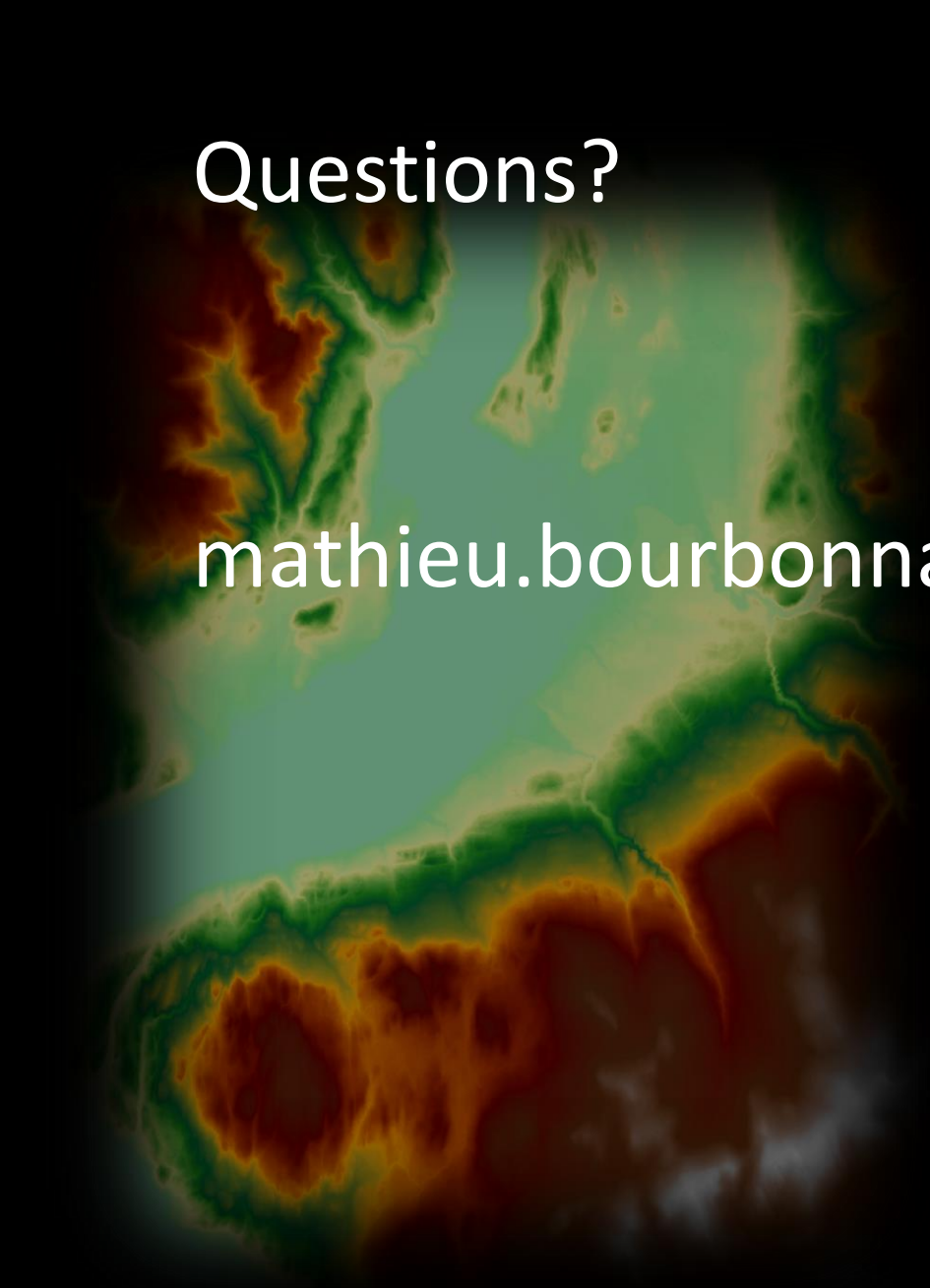
Whistler, BC

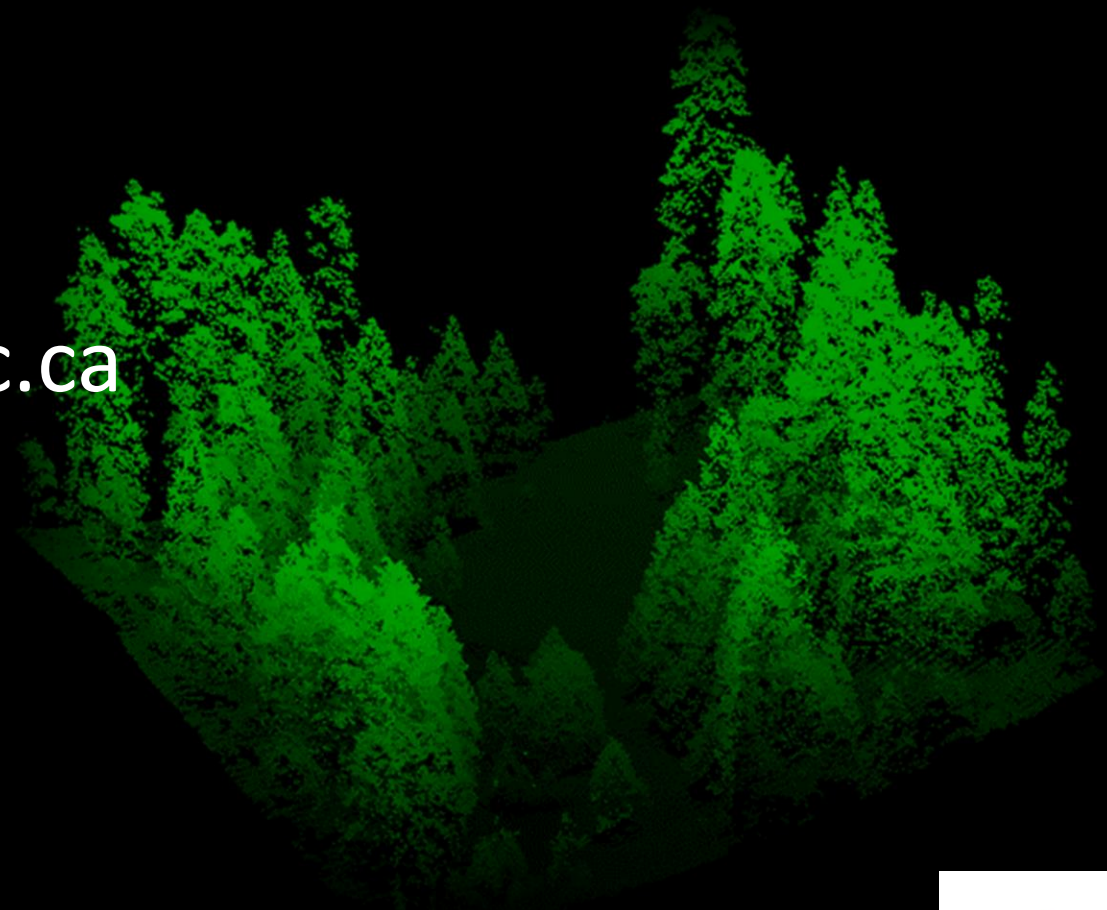


Yang et al. 2016

Questions?

mathieu.bourbonnais@ubc.ca





a place of mind

UBC