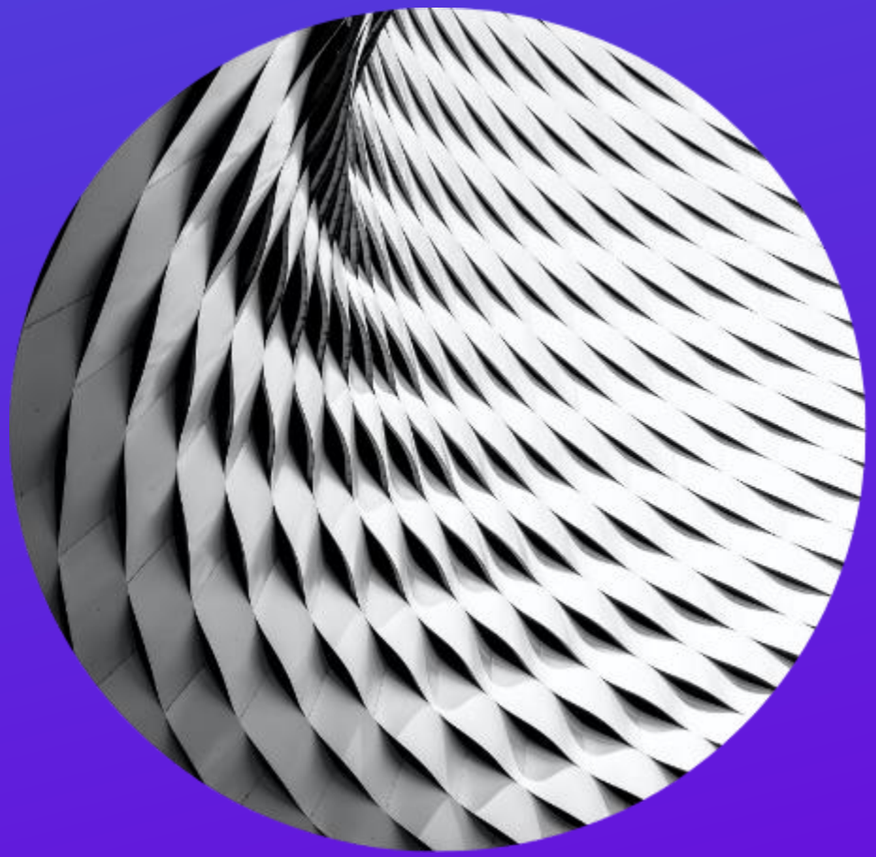
RemTech 2021, Banff
Friday, October 15th - Technology



Cloud Computing Technology

New and Innovative Approaches to Big Data

Khalid Lemzouji
& Peter Solymos

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The Management Triangle

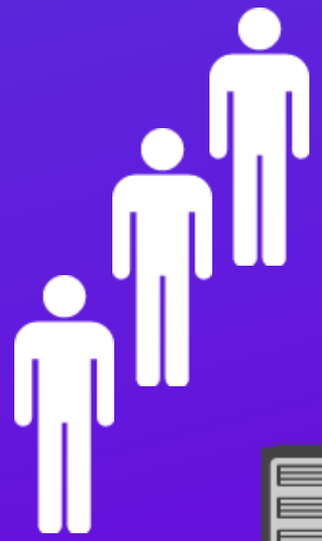
You Have to Balance the Scale

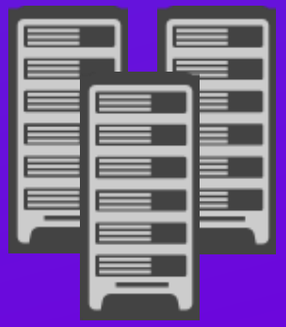
More Data = More Spending ???

Quality

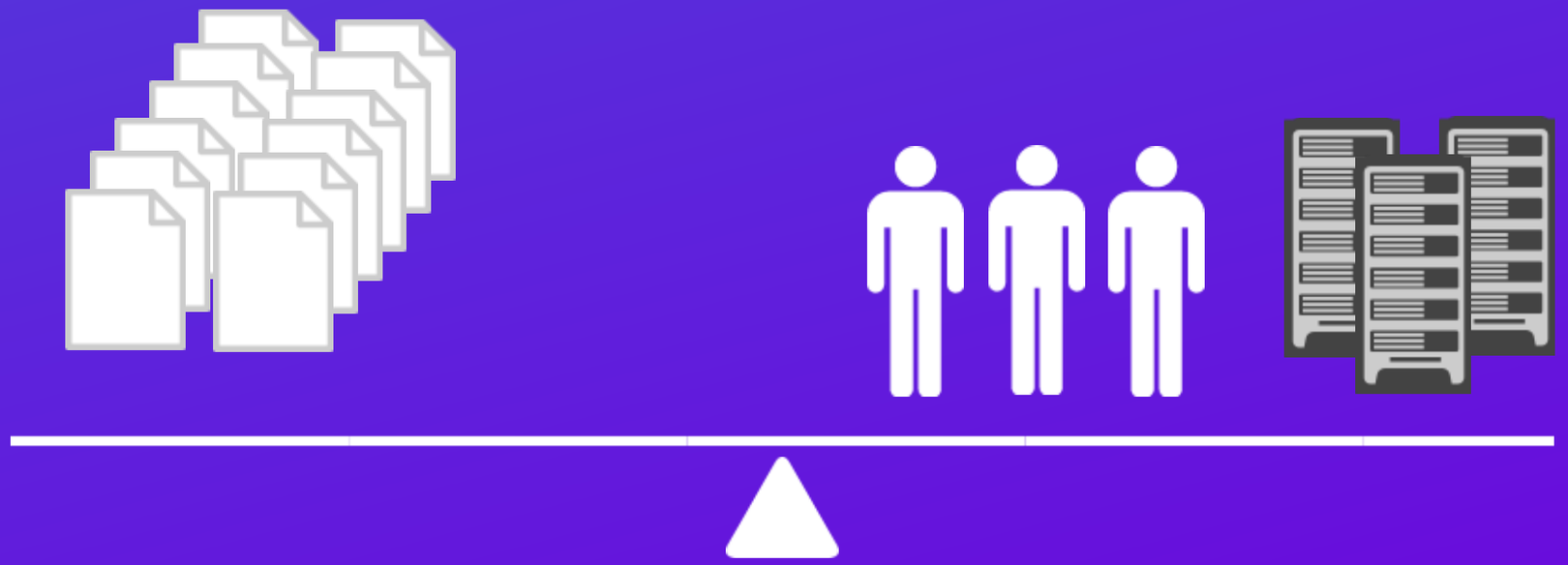
Time

Cost

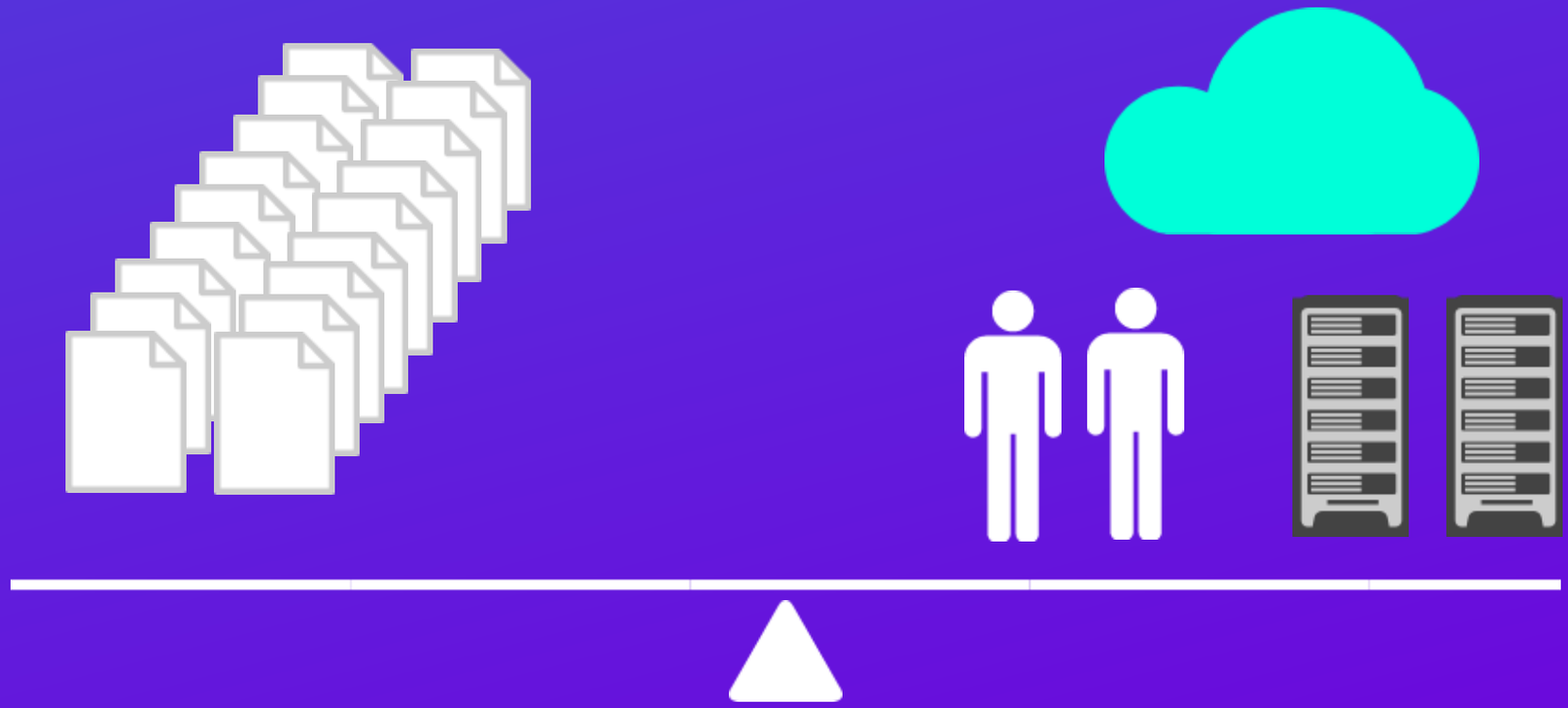




Do You Have the Budget?



The Cloud Can Be Your Unfair Advantage



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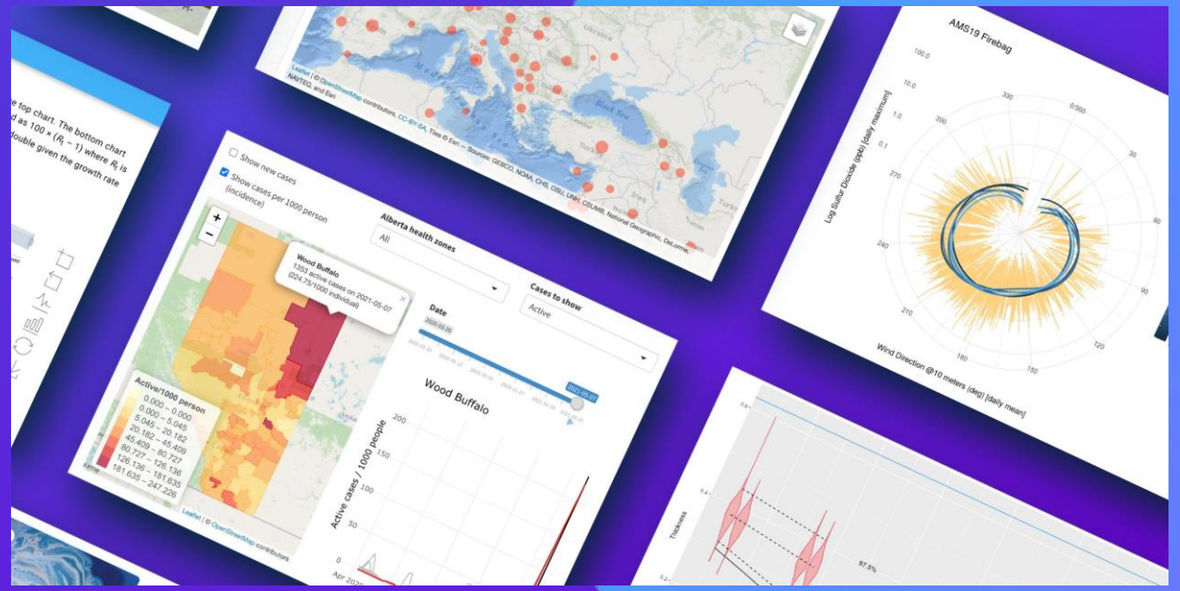


Example #1

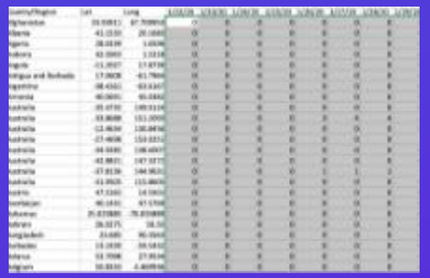
COVID 19

hub.analythium.io/covidapp

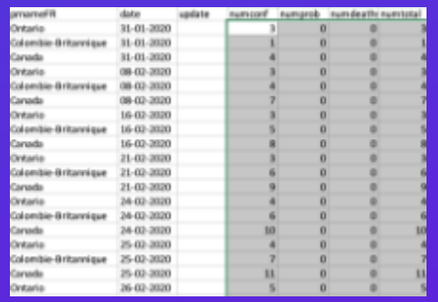
COVID 19 App

Fully Automated System

Wide format

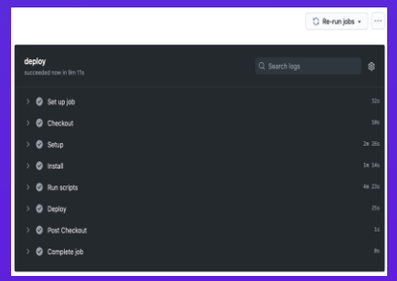


Long format



Unstructured

Data sources



Standardization
Forecasting
Deployment

Automation

API + Web apps

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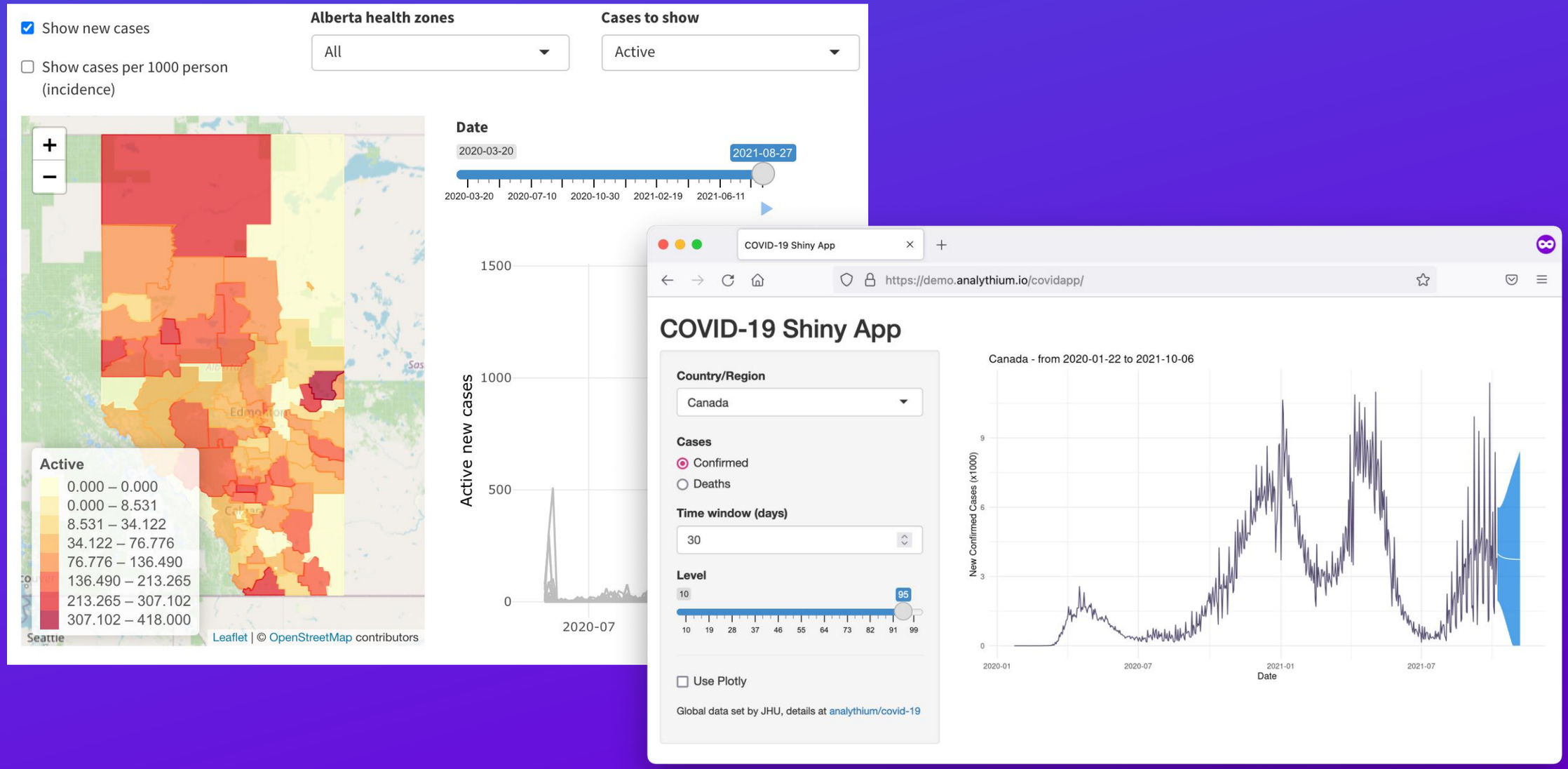
Interactivity + Forecasting



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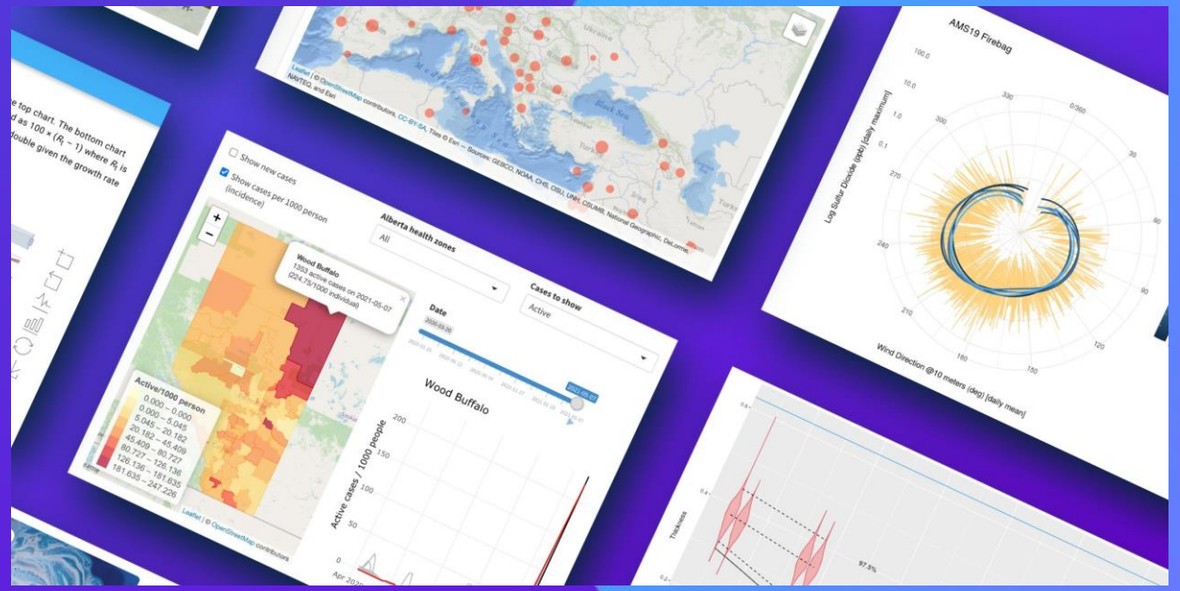

Example #2

Air Quality

blog.analythium.io/multivariate-air-quailty-data-exploration/

Hudreds of thousands of data points

Large number of variables collected

Streaming sensor data

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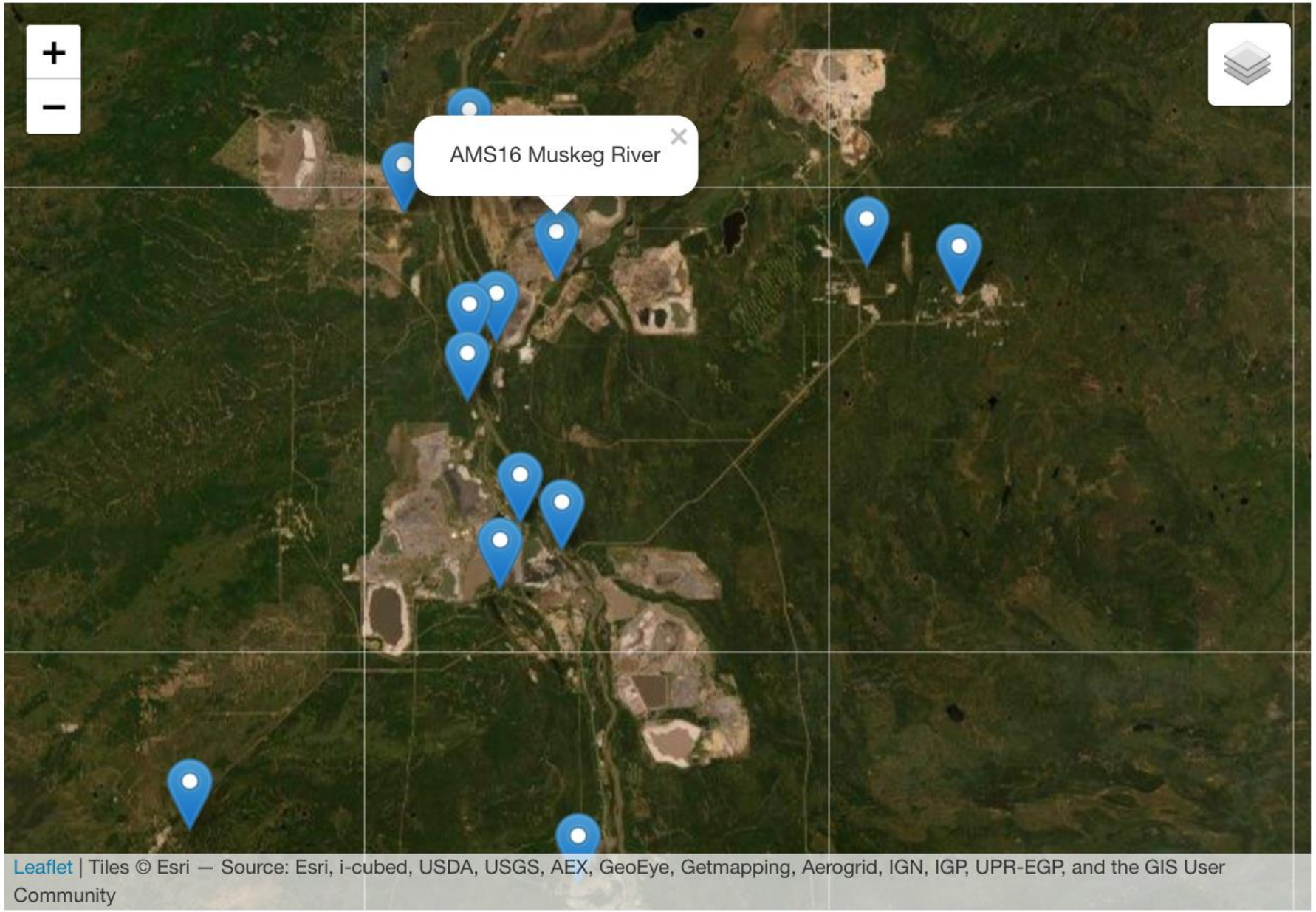
Select a site

Click on a pin in the map to select air quality monitoring site.



Interactive visualization

Build you own graph

Build intuitive understanding quickly

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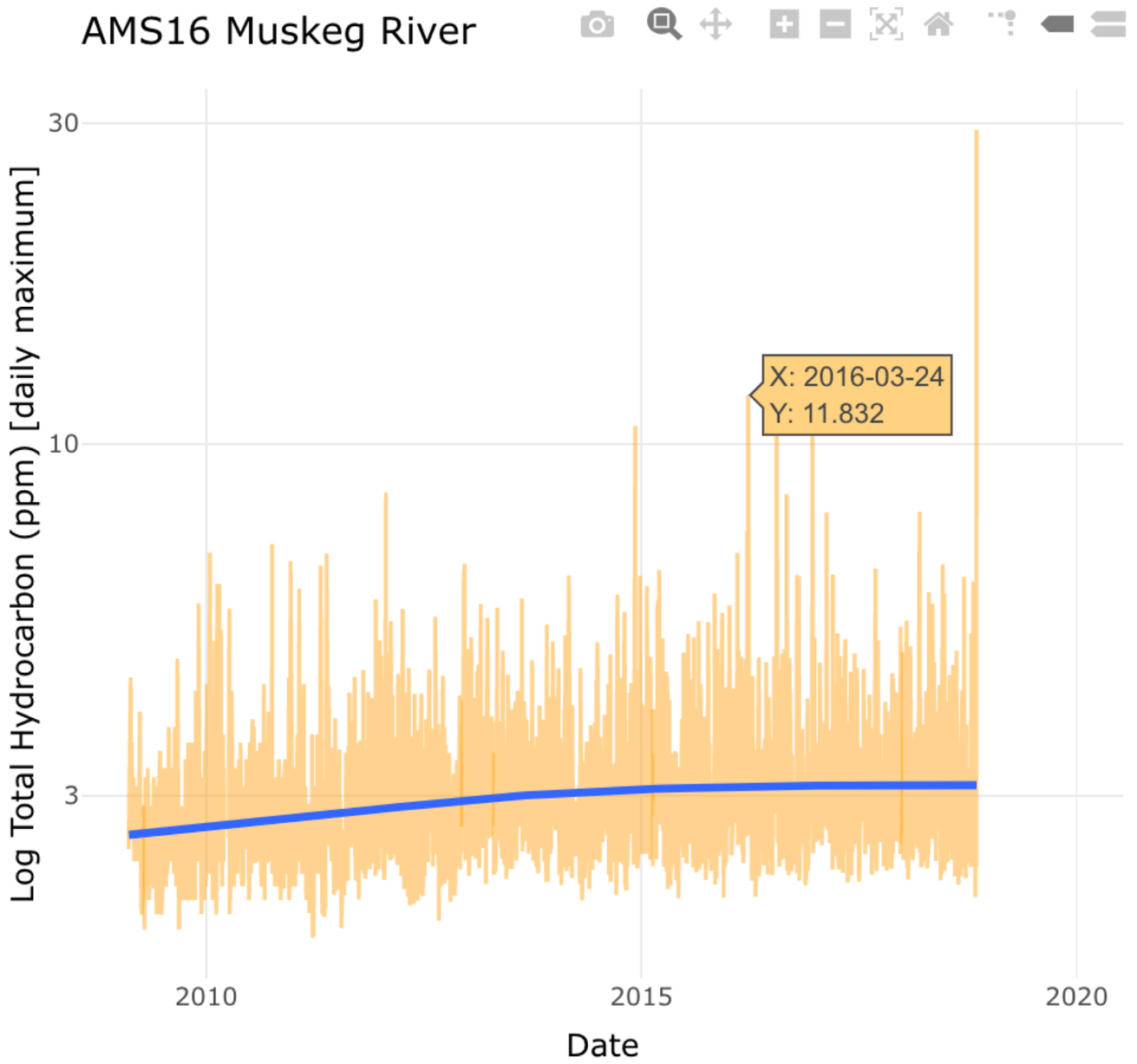
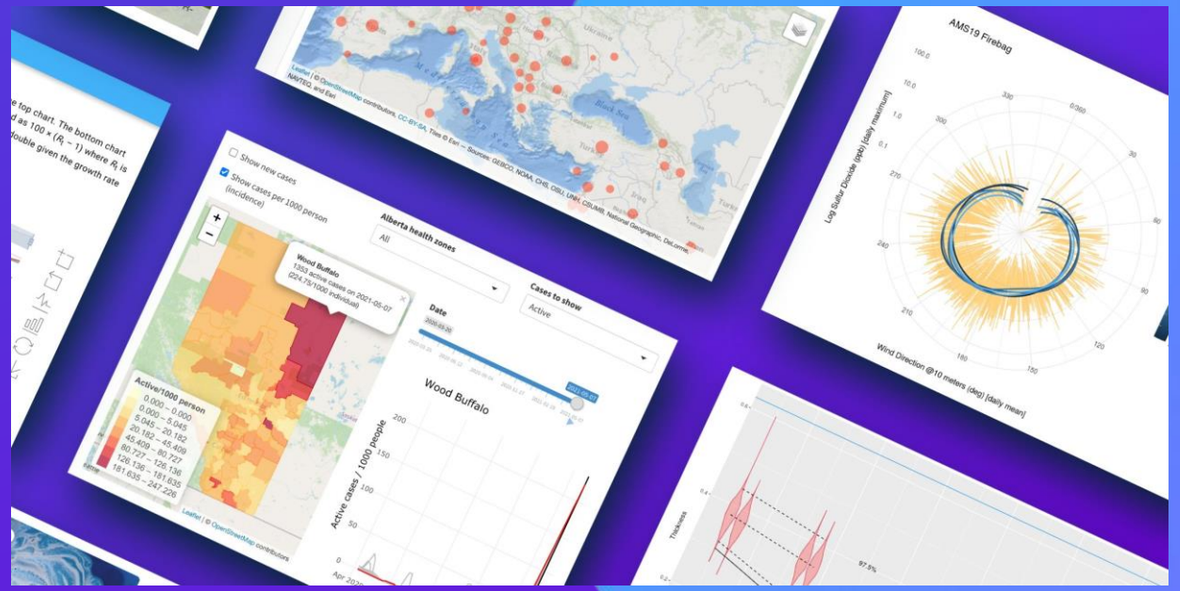
Now it's your turn!

Select variables and change settings to explore relationships.





Example #3
Adaptive Sampling

Yukon Government

Moose Abundance

Helicopter surveys

Adaptive sampling to improve estimates

Extrapolate to unsurveyed areas

Update hunting quotas

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Moose Counter 0.5-0

- Home
- Settings
- Data
- Explore
- Total
- Documentation

Data

Choose Survey CSV File

Browse... MayoMMU_QuerriedData.cs

Upload complete

Omit variables with too few surveyed levels

Convert integer to categorical

Filter data

Survey Name (`SURVEY_NAM`)

Yukon Territory Region (`YT_REGION`)

Interactive table | Data Structure

Show 10 entries Search:

	SURVEY_NAM	YT_REGION	SURVEY_YEA	SURVEY_ID	S_SET
1	Mayo	Northern Tutchone	2017	1	
2	Mayo	Northern Tutchone	2017	1	
3	Mayo	Northern Tutchone	2017	1	
4	Mayo	Northern Tutchone	2017	1	
5	Mayo	Northern Tutchone	2017	1	
6	Mayo	Northern Tutchone	2017	1	

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Moose Counter 0.5-0

- Home
- Settings
- Data
- Explore
  - Univariate
  - Multivariate
- Total
- Documentation

Univariate Exploration

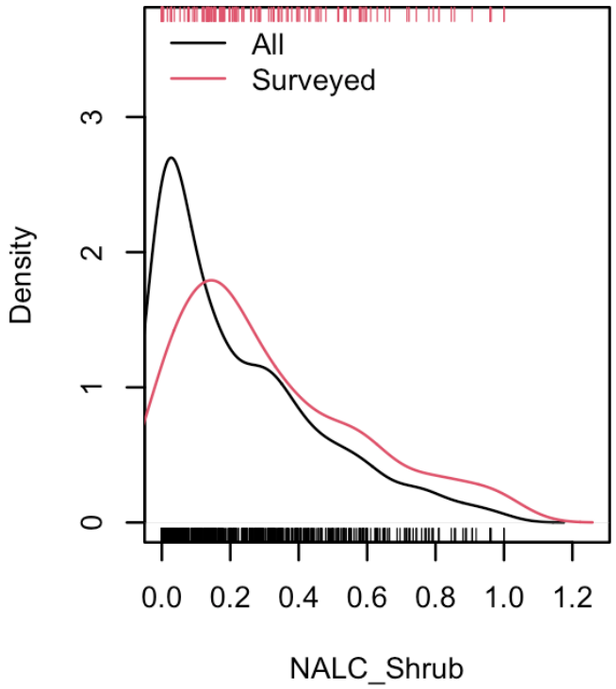
Univariate variable to explore

NALC_Shrub

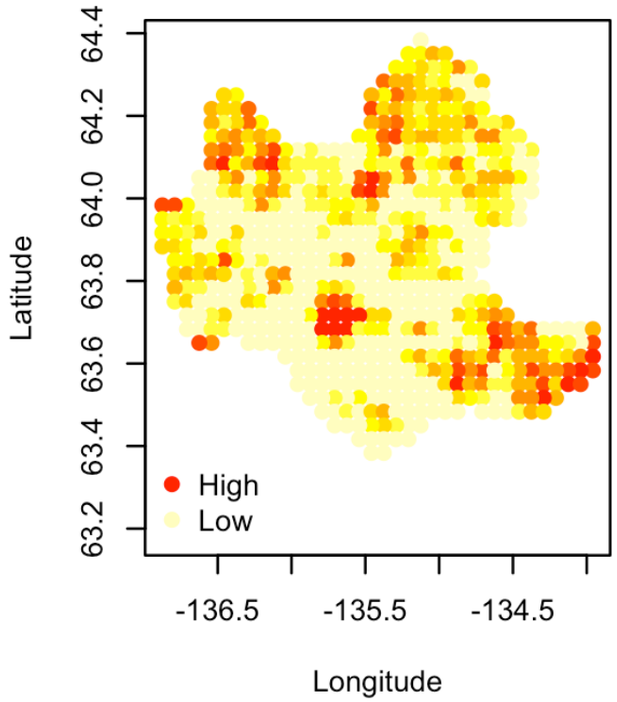
Distribution

P NB ZIP ZINB

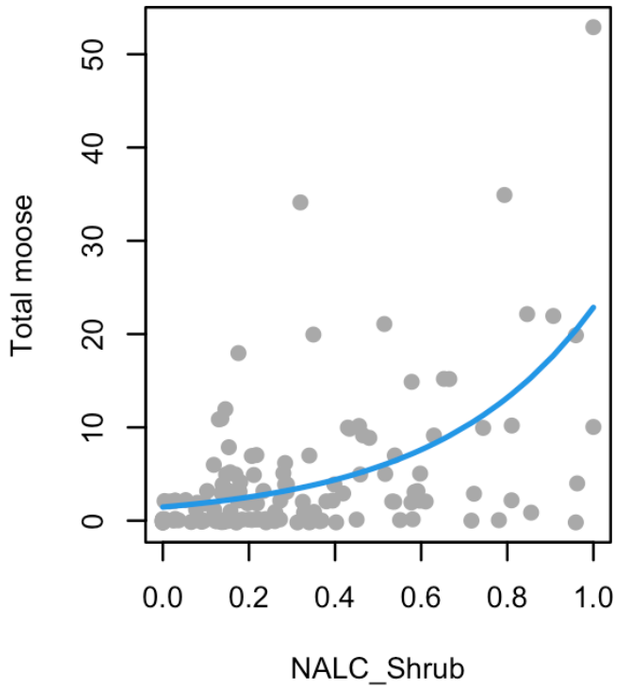
Density



Map



Total moose response



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Exploring Predictions

- Settings
- Data
- Explore
- Total
  - Models
  - Residuals
  - Prediction Intervals
  - Explore Predictions
- Documentation

Download results as Excel file

Map

Variable to map

Cell.accuracy

Number of colour-bins

2 5

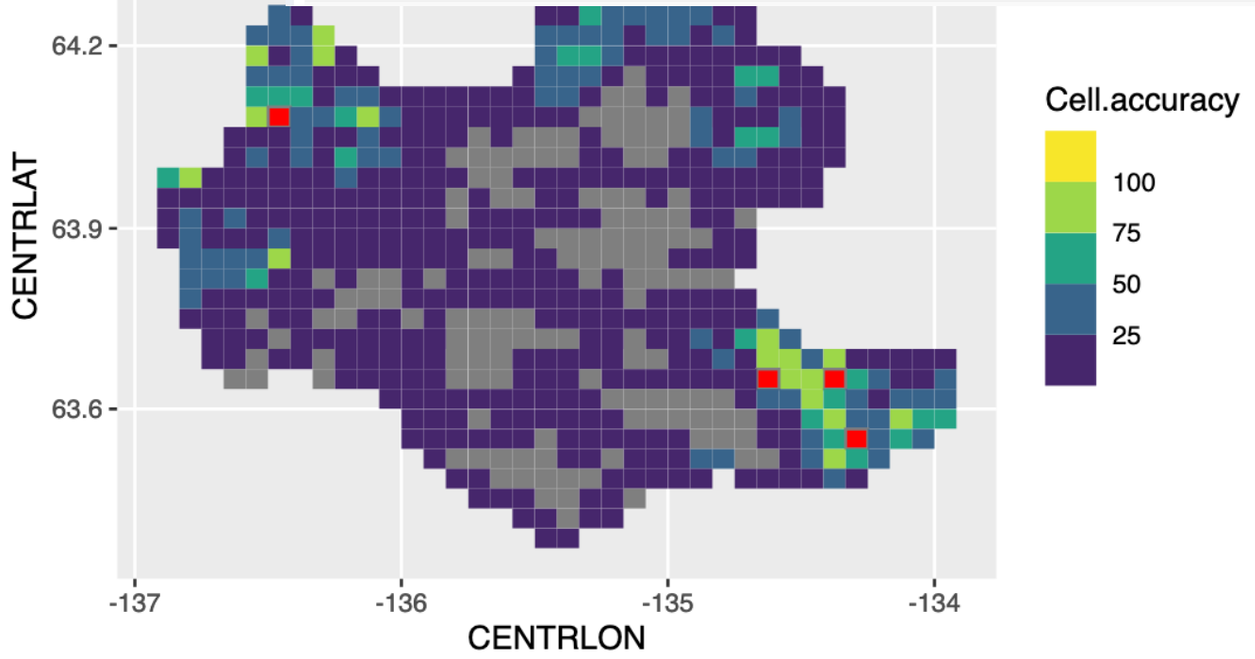
2 3 4 5 6 7 8

Data

Reset selection

Show 10 entries Search:

observed_values	fitted_values	Cell.mean	Cell.mode	Cell.pred	Cell.PIL	Cell.PIU	Cell.accuracy	Residuals	srv
594		17.394	3	10	0.000	102.000	102.000		false
434		15.51	3	9	0.000	99.020	99.020		false
622		20.416	4	11	0.000	99.010	99.010		false
597		19.61	4	11	0.000	98.505	98.505		false
438		17.31	3	10	0.000	98.030	98.030		false
612		21.514	4	13	0.000	98.000	98.000		false



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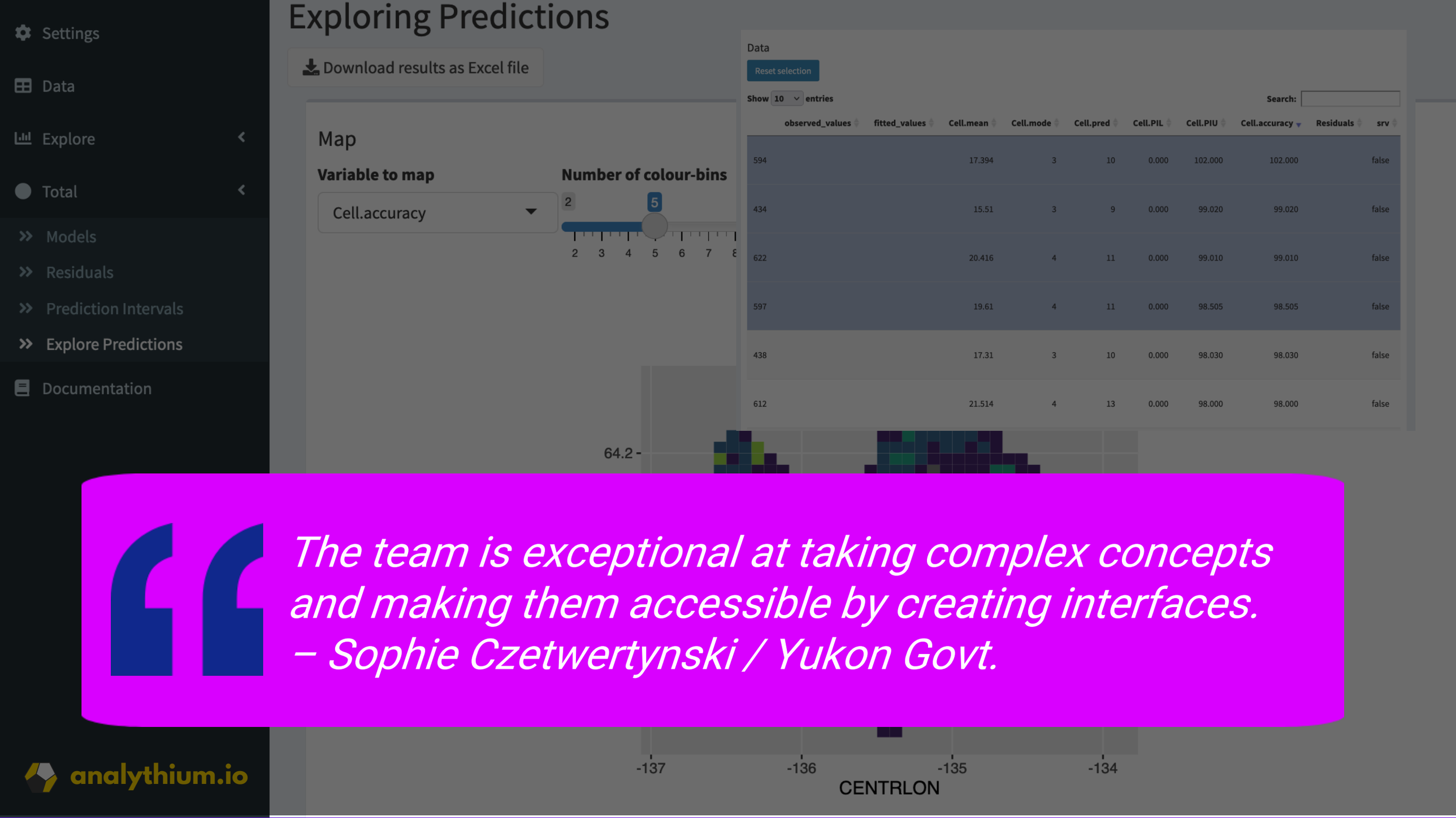
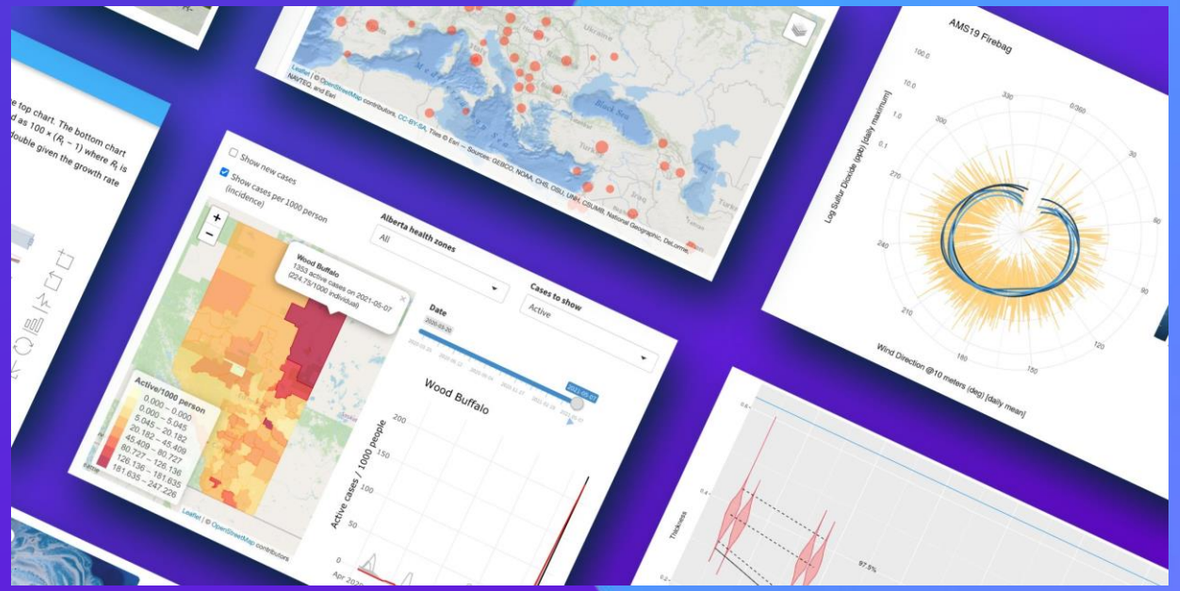


The team is exceptional at taking complex concepts and making them accessible by creating interfaces.
– Sophie Czetwertynski / Yukon Govt.



Example #4
Cloud Database

Government of British Columbia

Cloud Database and Computing Training

01

Needs assessment, discovery

15-people team

Managing their own databases

200M records on desktop

Need to demonstrate ROI

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Cloud Database and Computing Training

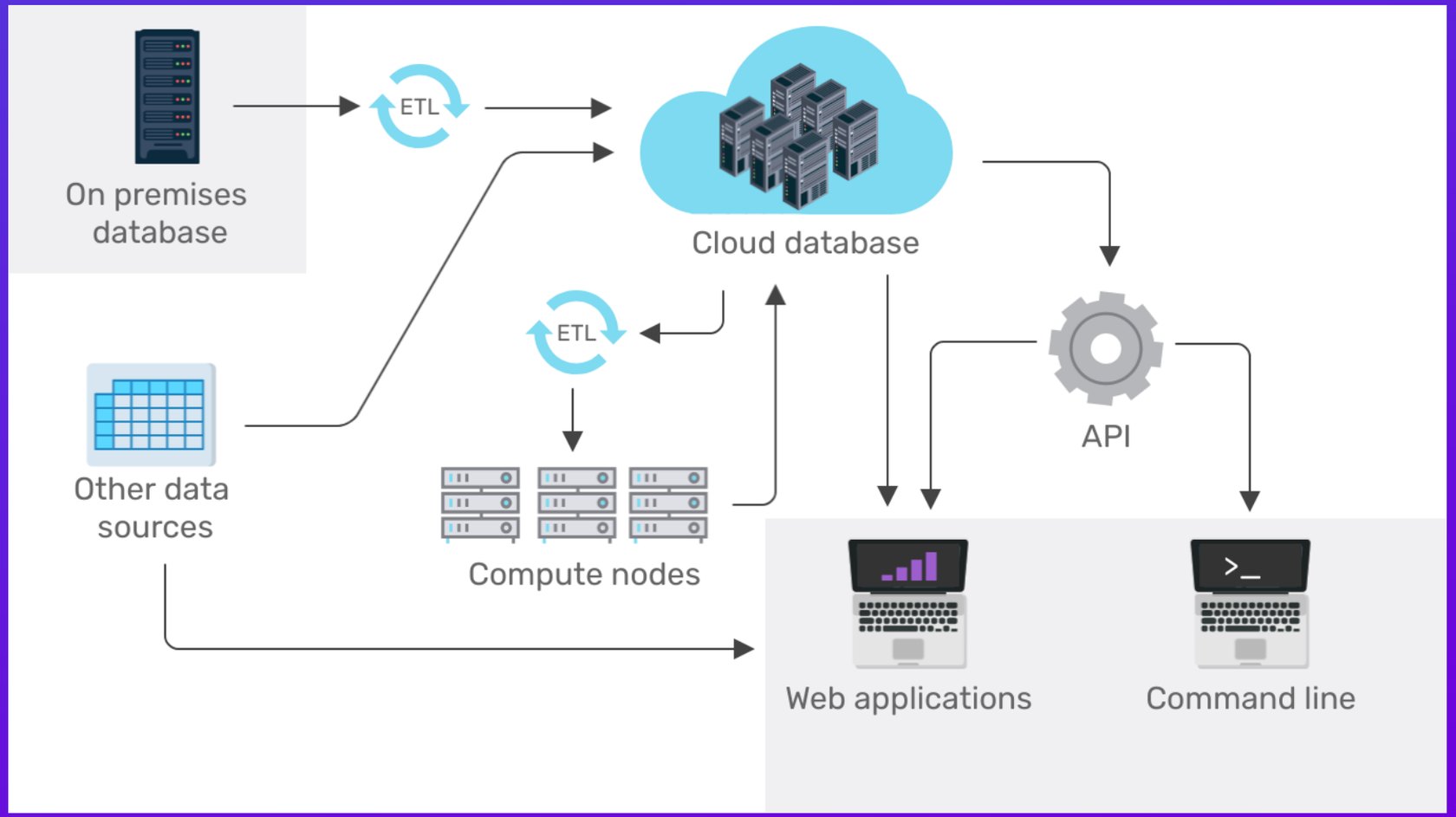
02

PoC cloud infra, cost-benefit analysis

<$1000/mo

Centralized team control panel

Ungoing support



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Cloud Database and Computing Training

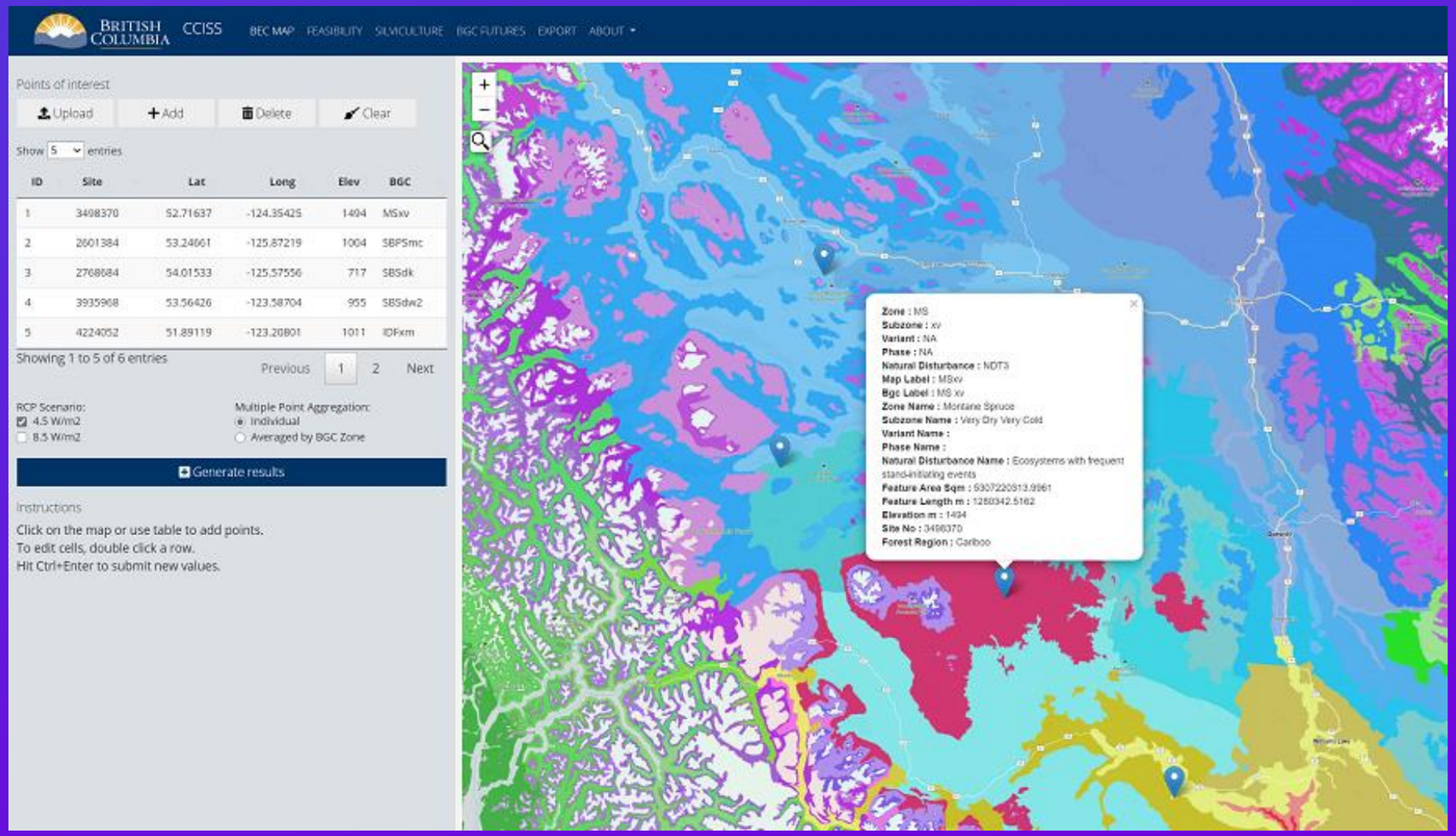
03

Climate Change Informed Species Selection Tool

What should we stock so that it survives?

200M points

Cloud database with centralized access



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Cloud Database and C

03

Climate Change Informed Species

> *Thank you for introducing us to cloud computing ... helped us find a system that meets our needs.*
> *– Dr. Tyler Muhly / Govt. of British Columbia*

Wh
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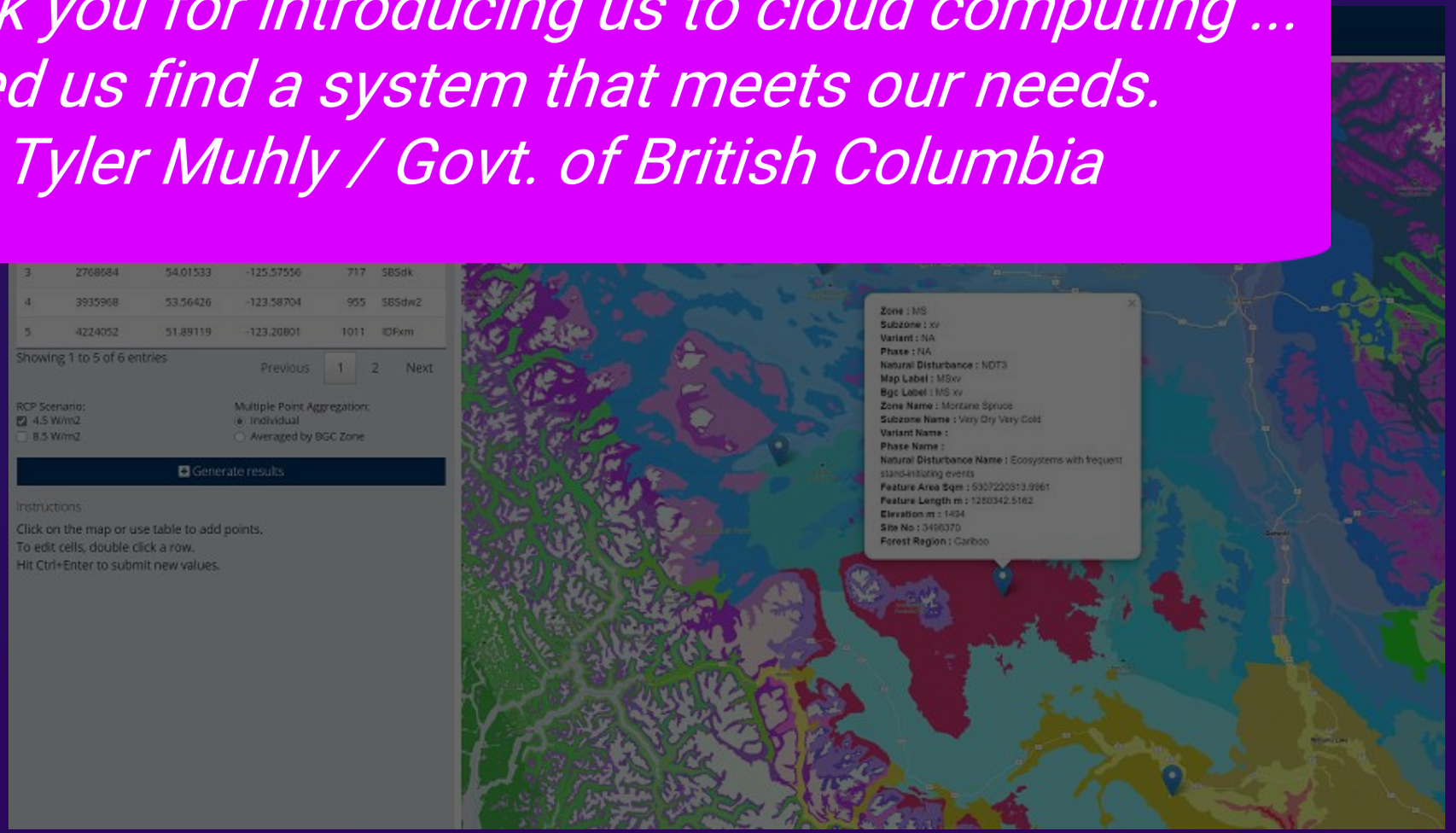
surv

200M points

Cloud database with centralized access



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Cloud Database and C

03

Climate Change Informed Species

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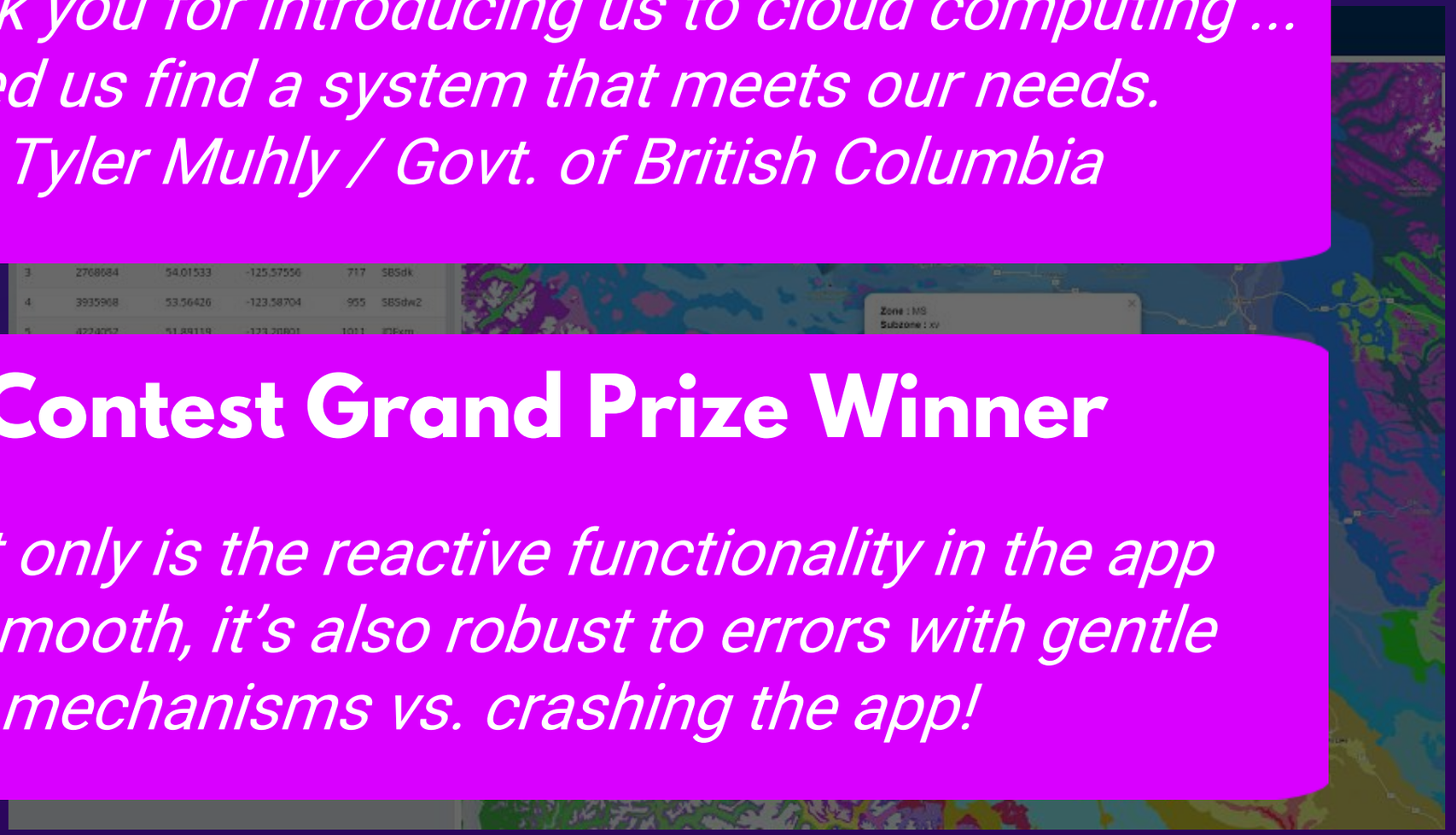
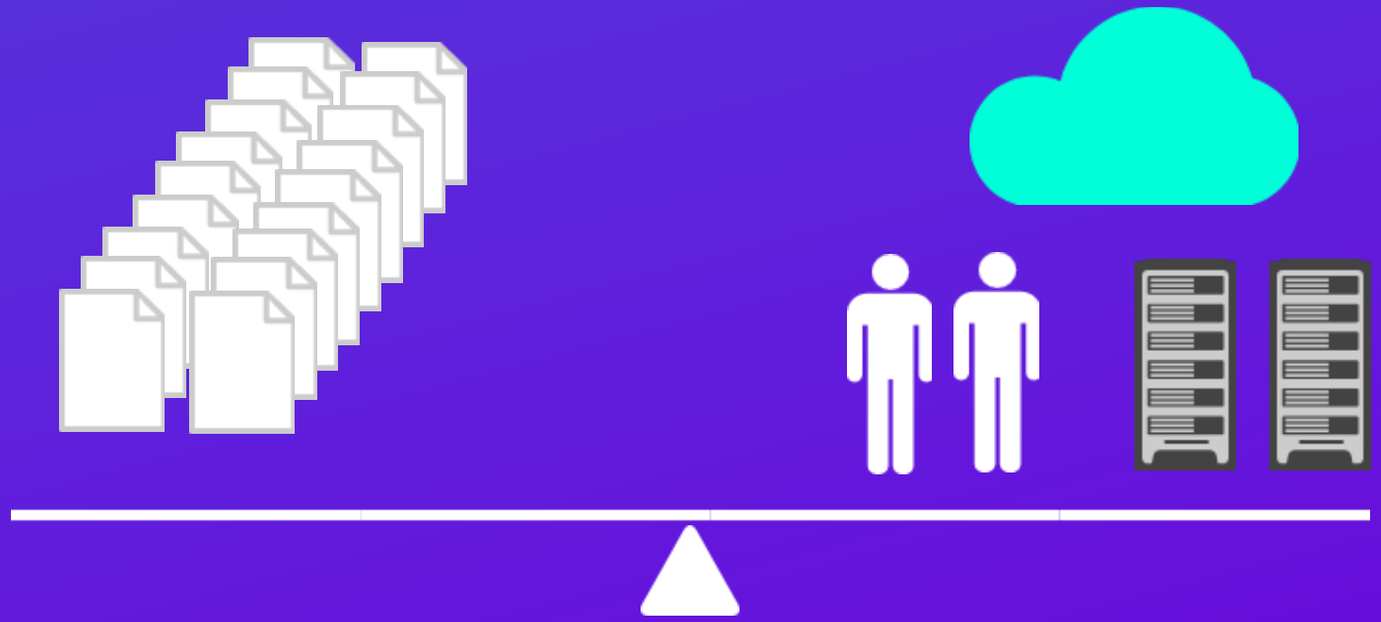


Shiny Contest Grand Prize Winner

Not only is the reactive functionality in the app is smooth, it's also robust to errors with gentle fail mechanisms vs. crashing the app!

Tip The Scale to Your Advantage!



Thank You!
analythium.io
hello@analythium.io