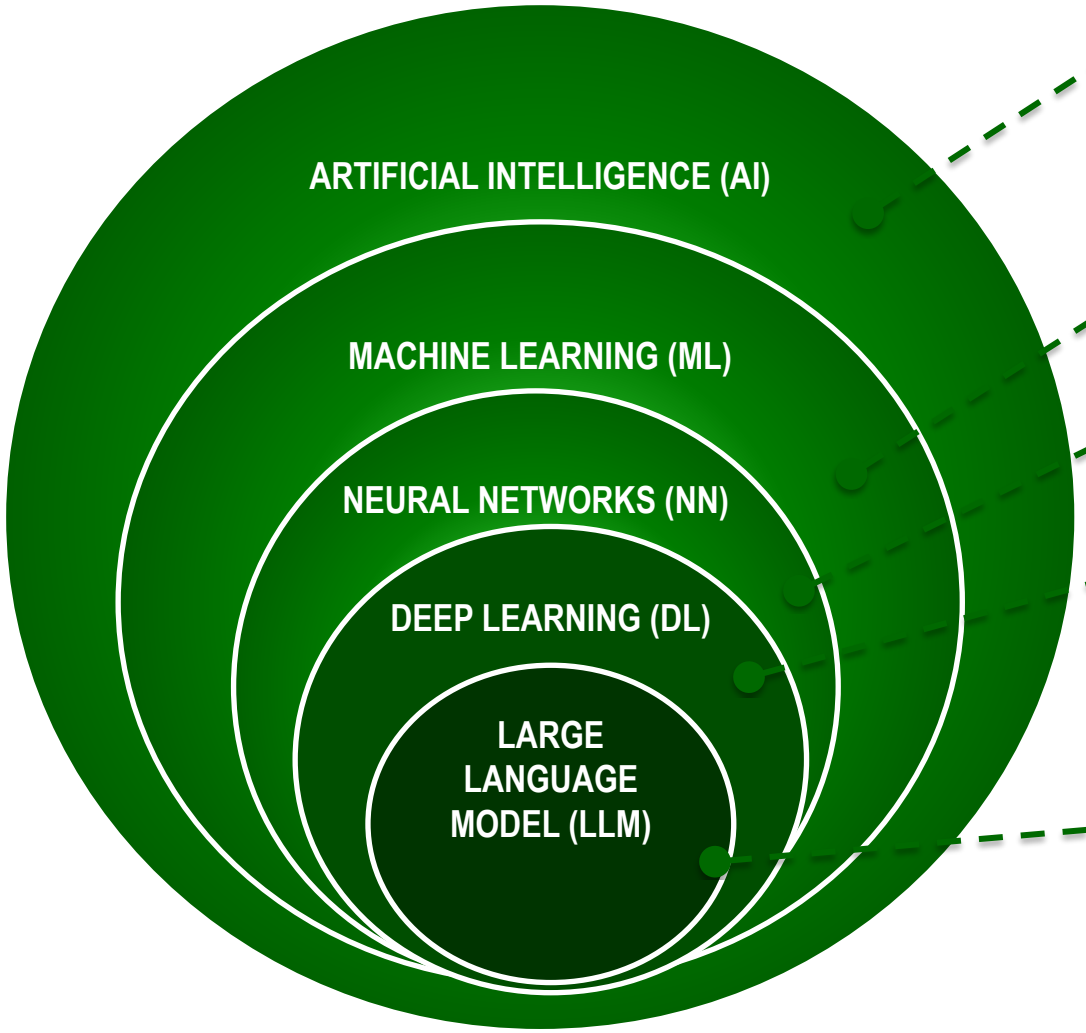

BC | Climate Resilience Summit 2026
Vancouver, Robson Square | March 2-3

Artificial Intellegence ≠ Machine Learning ≠ Large Language Models



ARTIFICIAL INTELLIGENCE

Any techniques that allow a machine to mimic human intelligence using logic, if-then rules, decision trees, and machine learning.

MACHINE LEARNING

A subset of AI that uses statistical techniques to learn patterns in data, enabling them to learn with experience (“training”).

NEURAL NETWORKS

A type of ML algorithm that processes data using interconnected artificial “neurons”.

DEEP LEARNING

Multilayered neural networks that learn to train themselves using vast amounts of data.

LARGE LANGUAGE MODELS

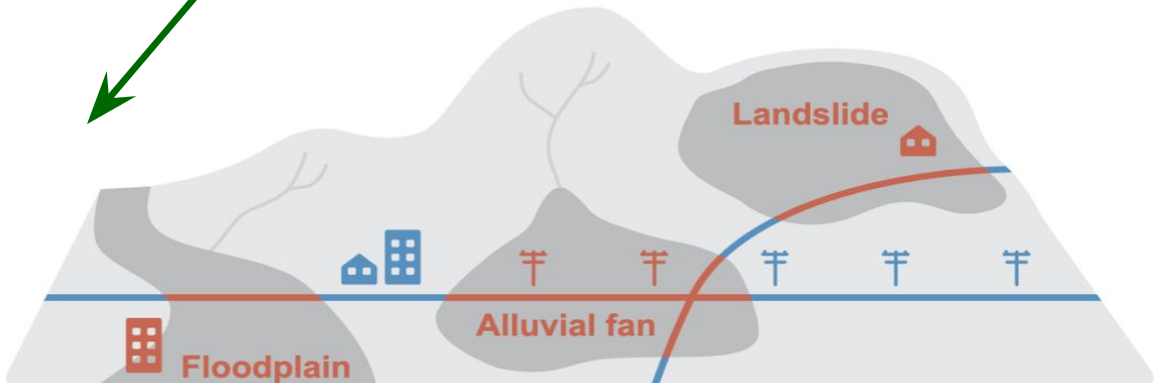
general-purpose AI systems trained on vast amounts of text that can understand language and generate human-like responses to questions, instructions, and prompts. They are not built for one specific task, but can be adapted to many different problems. **An agent** is a purpose-specific system built on an LLM that is configured with particular data, tools, and instructions to perform a defined task.

AI is being used broadly within applied earth science to improve efficiency and increase our understanding of natural processes.

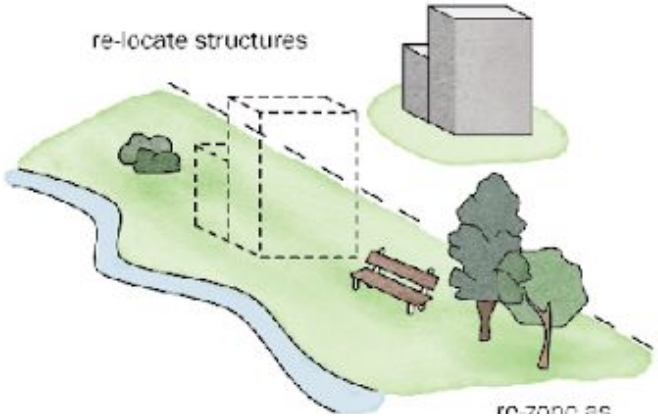
BGC's role in Climate Resiliency Projects:

Most of our AI development has been here

- **Enable spatial understanding of hazard areas in relation to what we care about.**



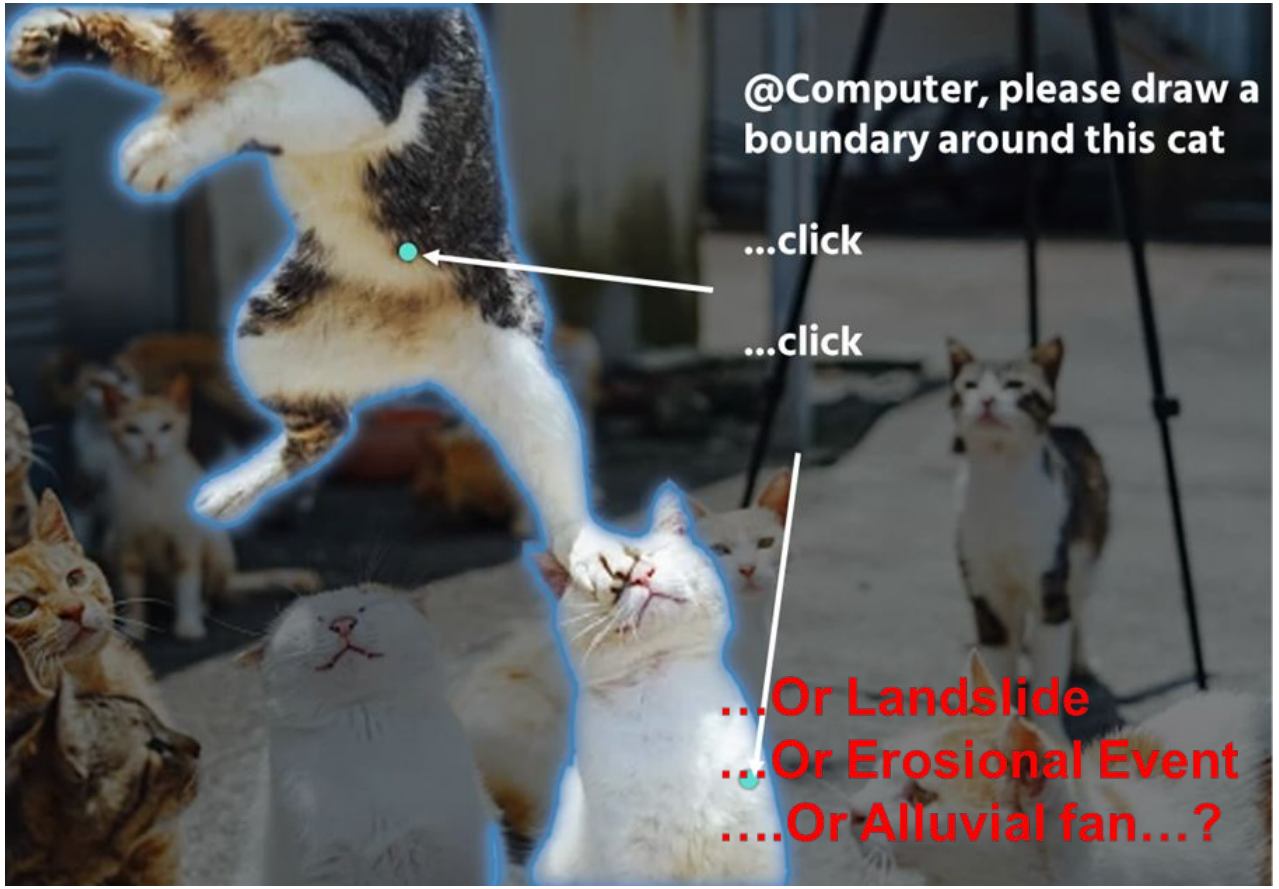
- **Strengthen risk-informed planning and regulation.**



- **Create conditions for future resilience-building at a local level.**

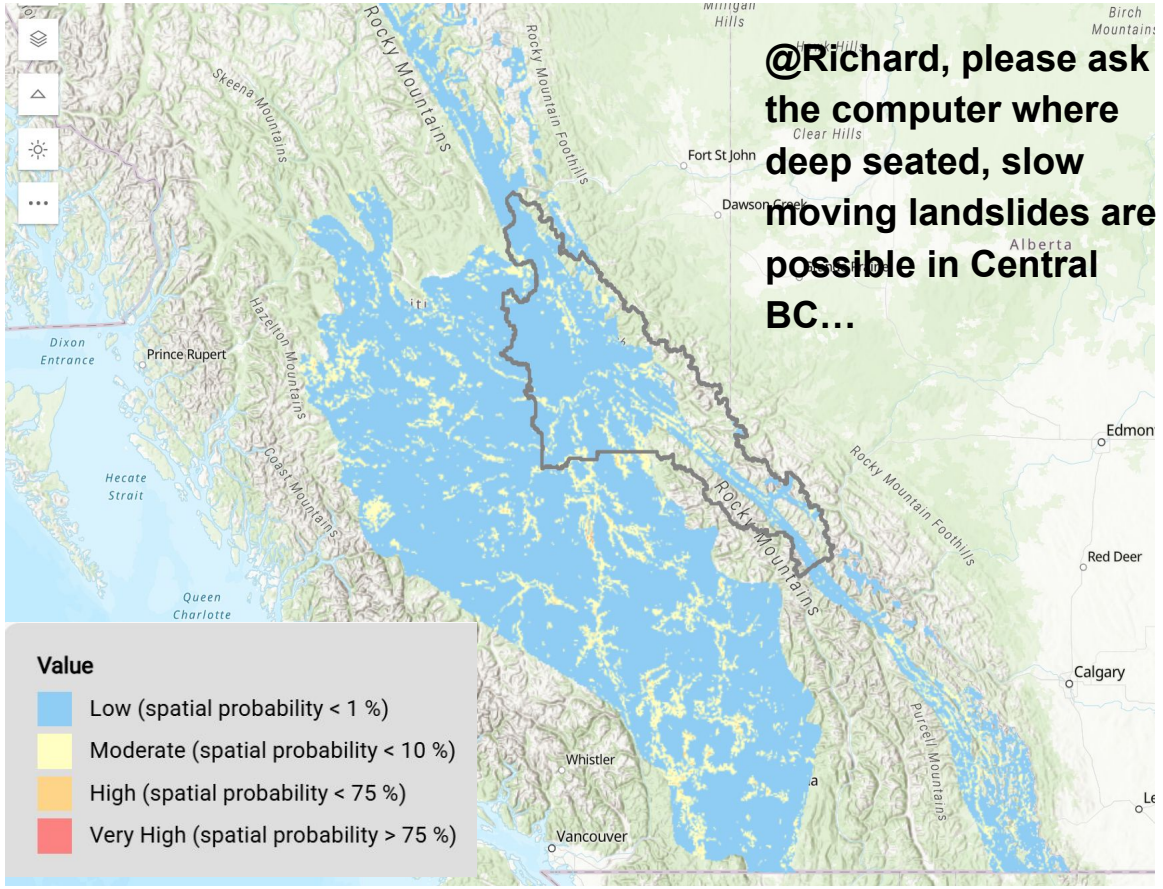
BGC is deploying operational machine learning models for various tasks, and has developed ad hoc machine learning models for various projects.

Operational Deep Learning Models



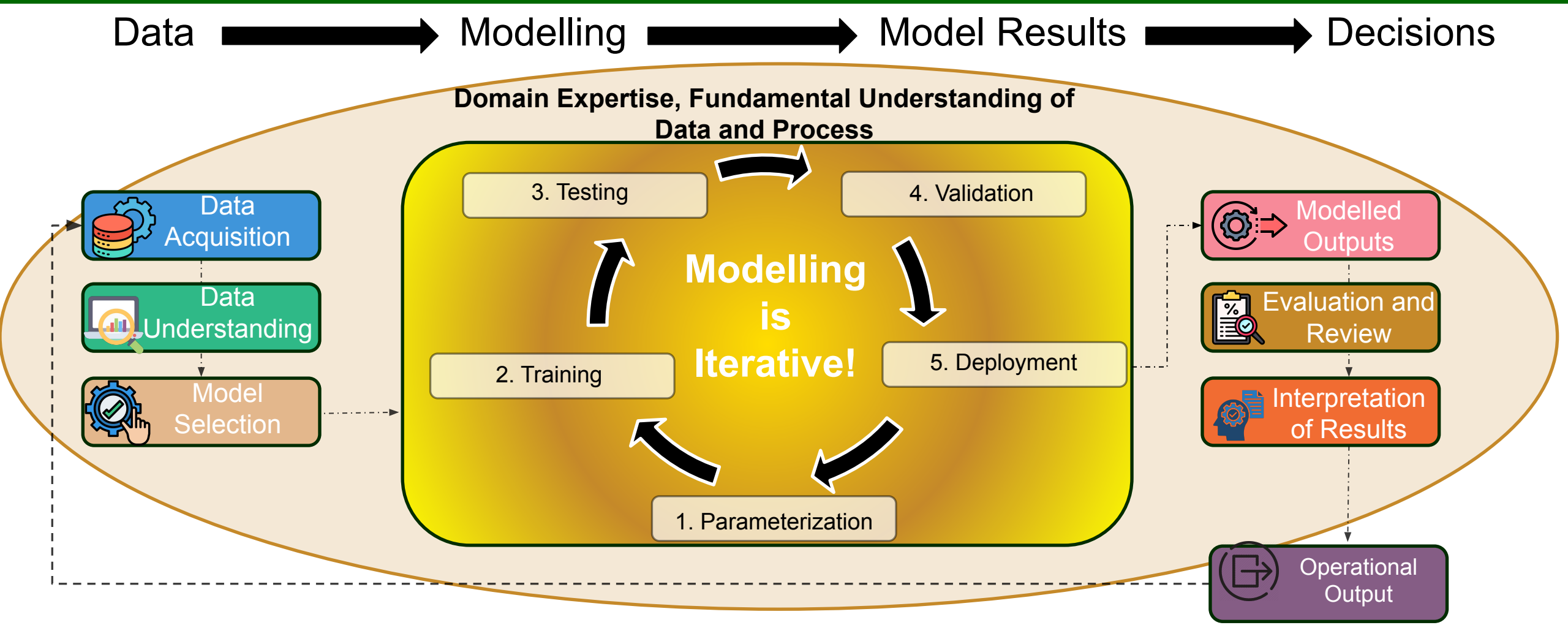
Historically trained on **Red**, **Green**, **Blue** images, refined as it is exposed to more data– production deployment.

Task-Based Machine Learning Models



Models that are trained and run for a specific purpose, updates require manual intervention, re-training– ad hoc deployment

This technology is accessible to anyone, but quality outputs are dependent on careful design and fundamental understanding of data, modelling techniques, and the end use.



For some applications this is an ongoing process - “living” models are refined as they are exposed to more data. For others model development stops when the output is generated.

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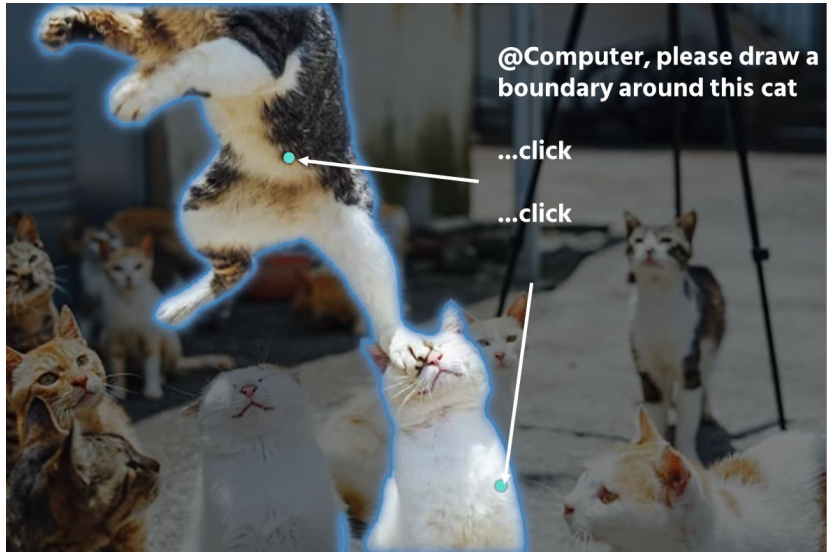
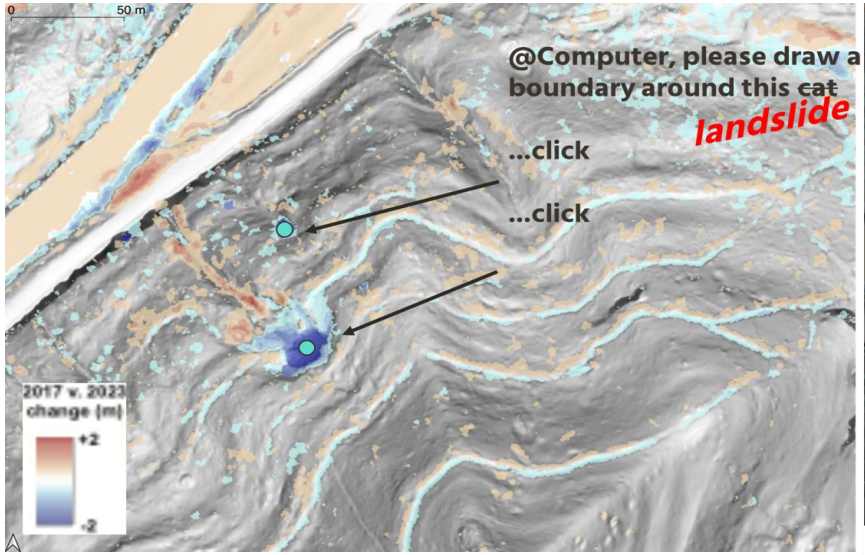
Landmarc is an operational deep learning application which interprets lidar change detection data to identify and map landslides

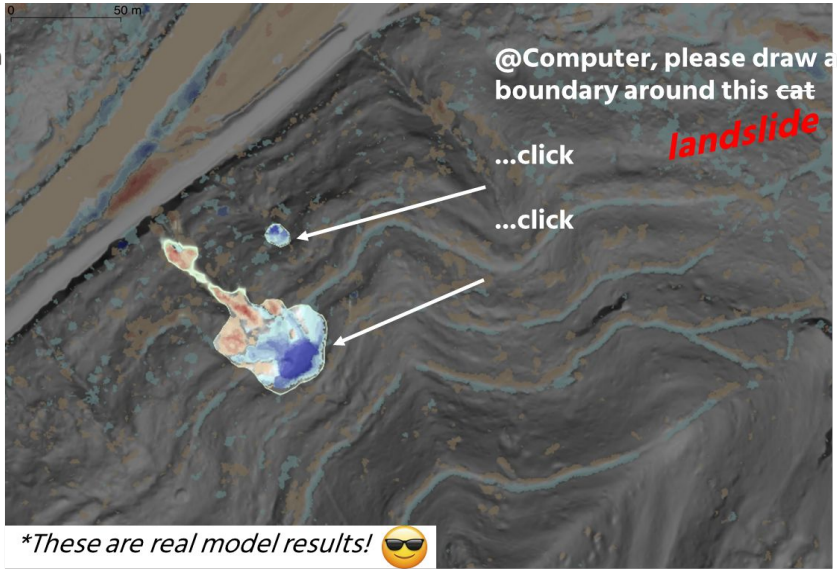
BGC is developing LandMARC to build efficiency and consistency in how landslide inventories are created



Historically trained on **Red**, **Green**, **Blue** images



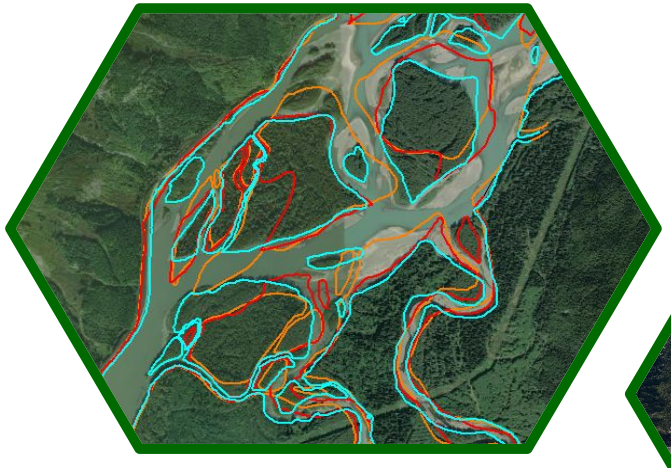
BGC is training a computer vision model to discern between change caused by landslides, and change that is caused by other processes (e.g. anthropogenic change, systematic error in data)



The model ingests DEM data and LCD to produce landslide boundaries at scale

Project Team: Corey Scheip, Aron Zaradka, Alex Mitchell

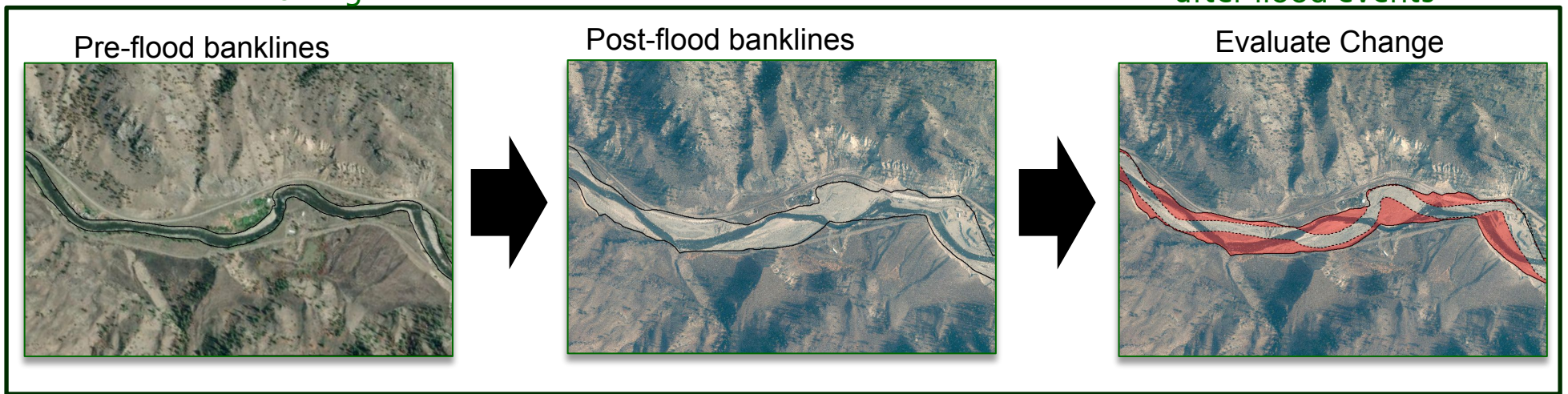
RiverBankAI is a machine learning application used to rapidly morphological change caused by flooding



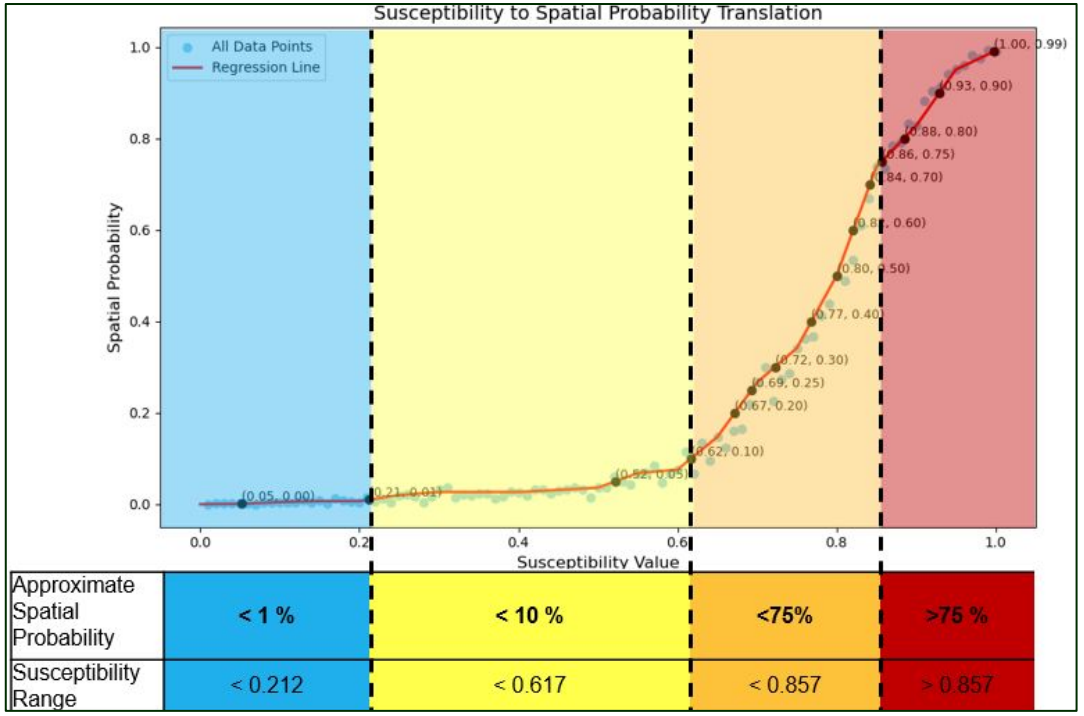
Automated historical assessments of river change

Regional-scale assessments of river response to floods

Near real-time **erosion monitoring** immediately after flood events



BGC deployed a machine learning model to map landslide susceptibility across central BC



The model used for this project was a decision-tree based machine learning algorithm called XGBoost