

ATLAS OF GOLD COMPOSITIONS FOR BRITISH COLUMBIA

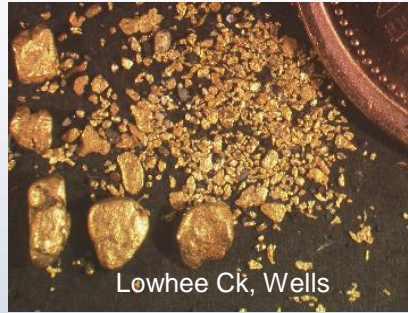


MDN
GEOSCIENCE LIMITED

Developing a New Tool for the Exploration Community



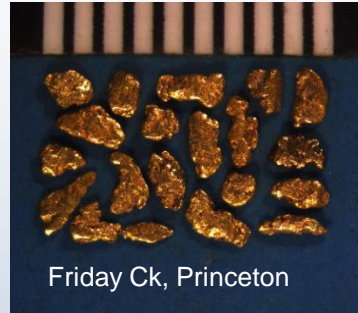
UNIVERSITY OF LEEDS



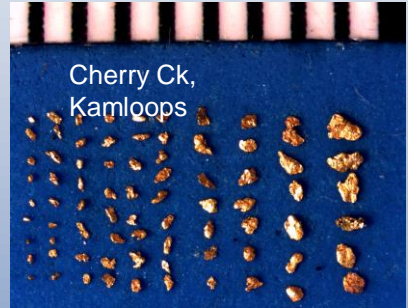
Lowhee Ck, Wells



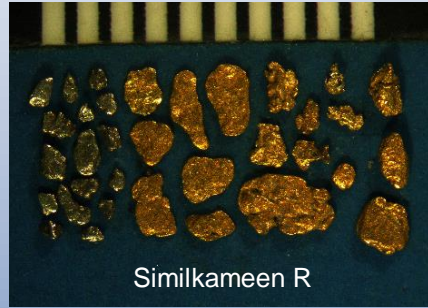
Moustique Ck, CGD



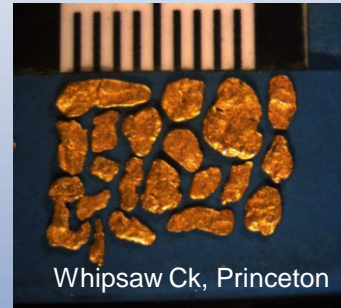
Friday Ck, Princeton



Cherry Ck,
Kamloops



Similkameen R



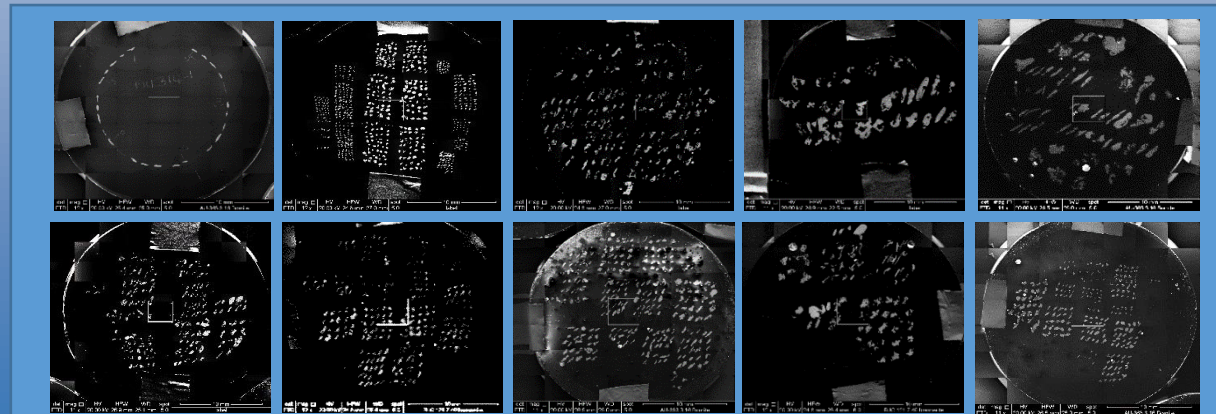
Whipsaw Ck, Princeton



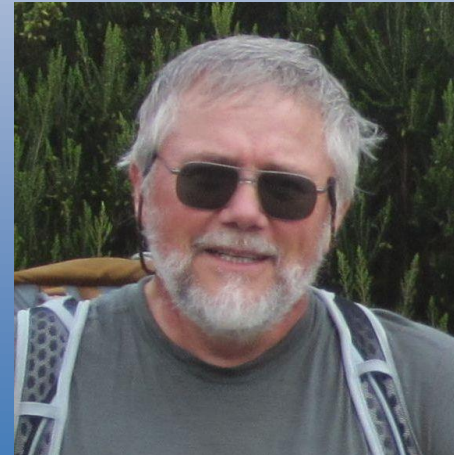
Rob Chapman



Britt Bluemel



SEM images of some polished blocks



**Jim
Mortensen**



**Rory
Murphy**



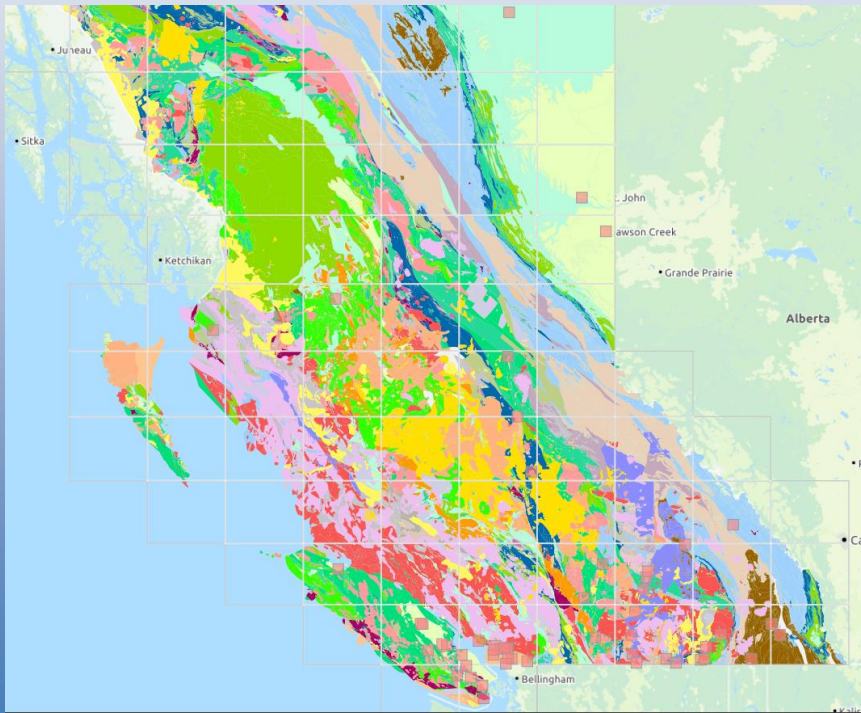
**Dave
Banks**

Project Overview: 1

What ?

We are developing a methodology whereby placer gold can be used as a deposit-style specific indicator mineral

Why is this useful?



2. Placer gold is widespread (not confined to placer mining areas).
The source deposit type may be unclear

3. If we could establish the type of deposit(s) that yield placer gold at any particular locality it would help targeting on the basis of local geology

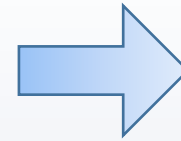
1. BC Geology is complicated

Project Overview: 2



Any scale of exploration project

Development of gold compositional Atlas



Analysis



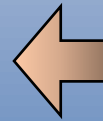
Compositional Signature



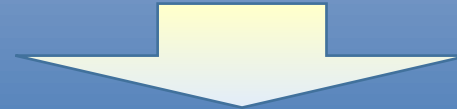
Comparison with deposit specific templates



Establishing source deposit type



Methodology to interpret data



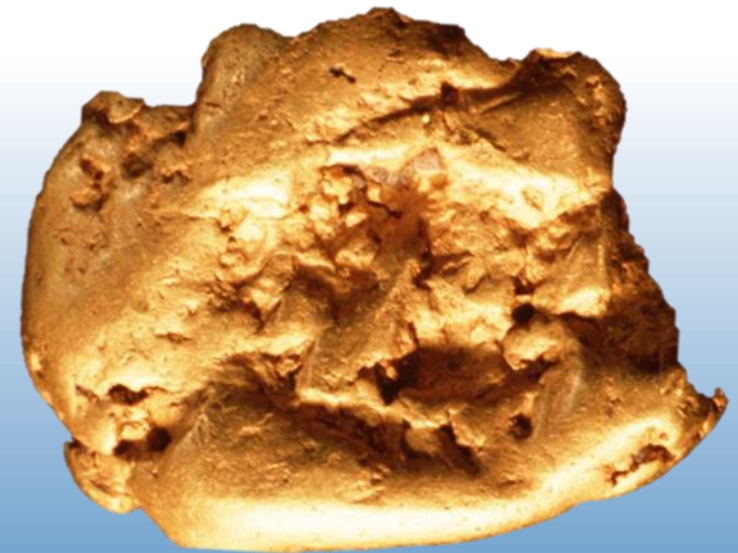
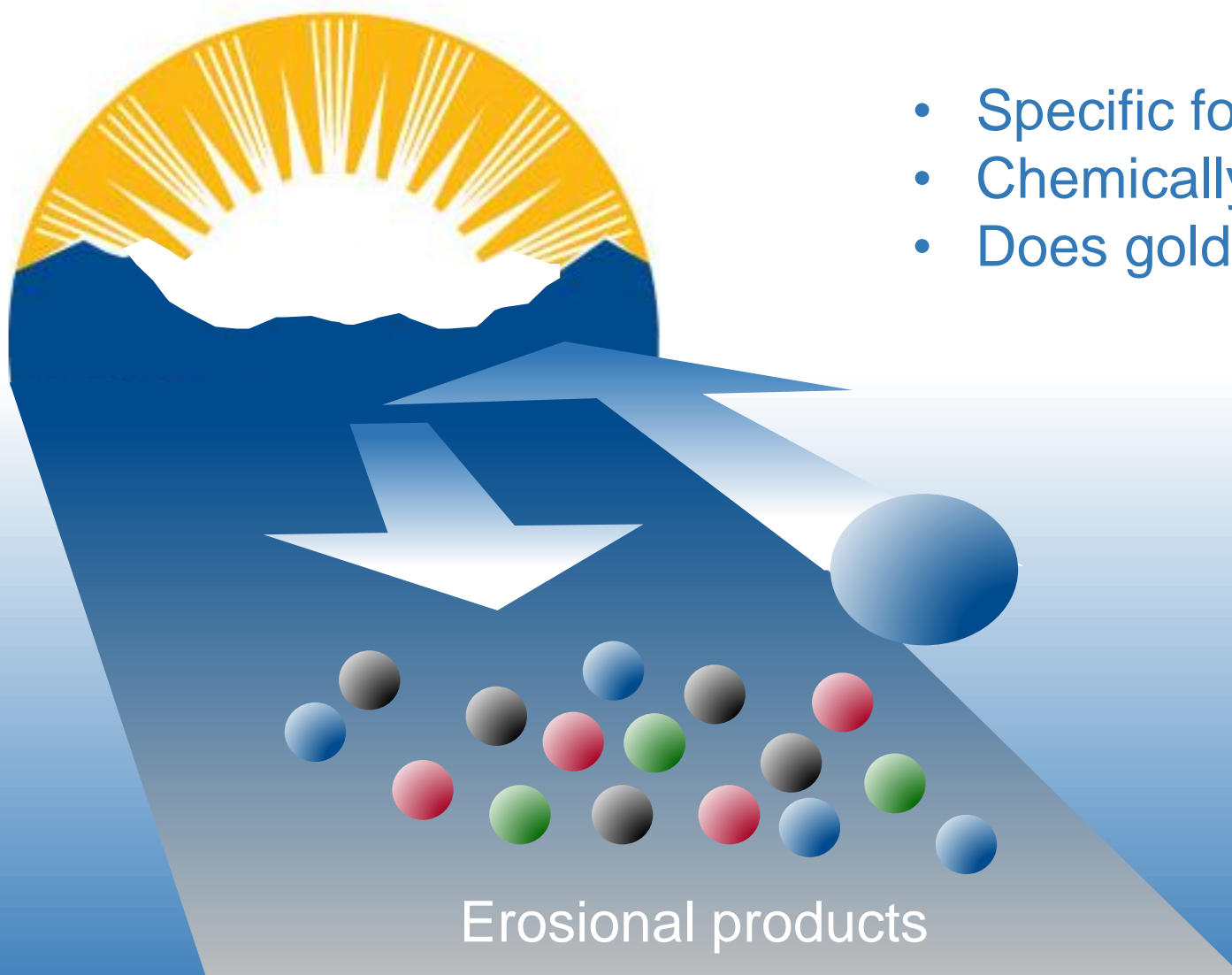
IMPROVED TARGETING

How will this be achieved ?

Project Principles: Indicator Minerals

Indicator Minerals need to be:

- Specific for the source of mineralization
- Chemically and physically durable
- Does gold fit the bill?



Project principles: Gold As An Indicator Mineral



Porphyry



Epithermal



Orogenic



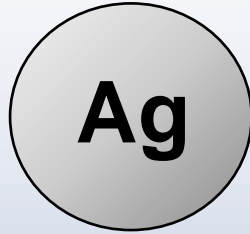
IRGD



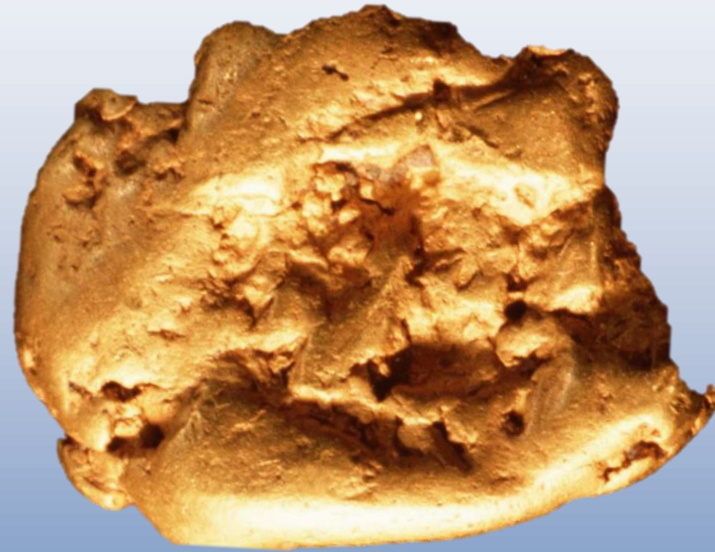
Skarn

Can we distinguish between gold from different sources?

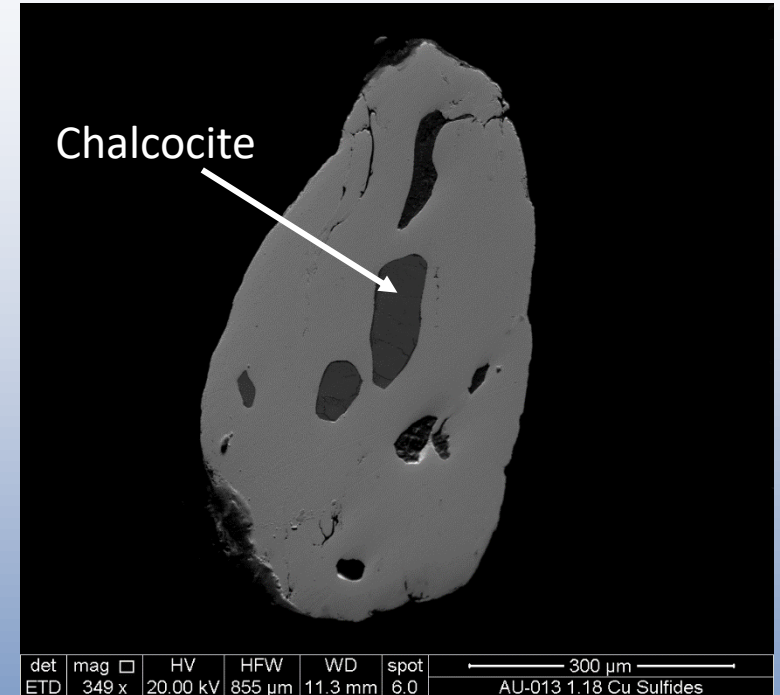
Project Principles: Features of Gold Particles That Can Be Useful Discriminants



Alloy compositions



Mineral inclusions

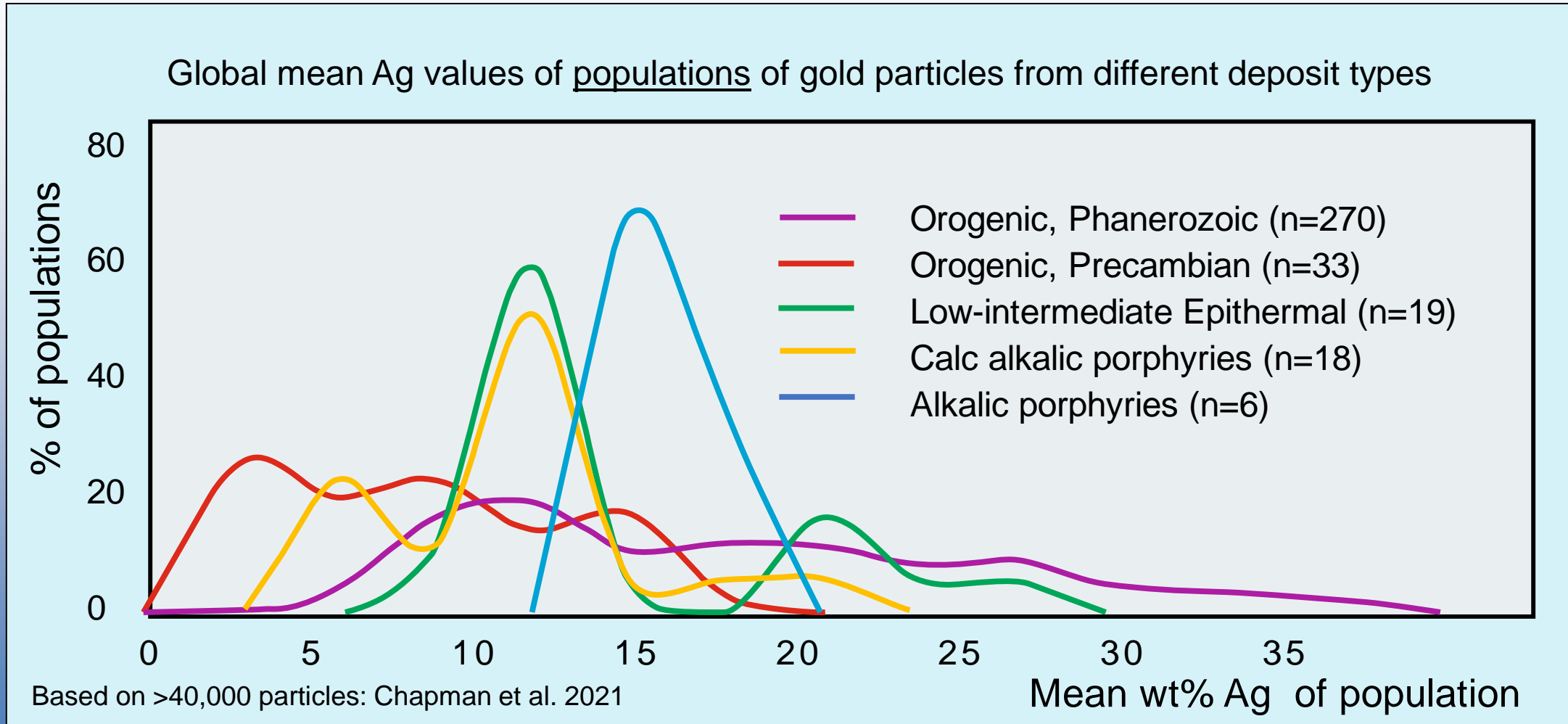


Does every gold particle from the same locality exhibit the same characteristics?

NO

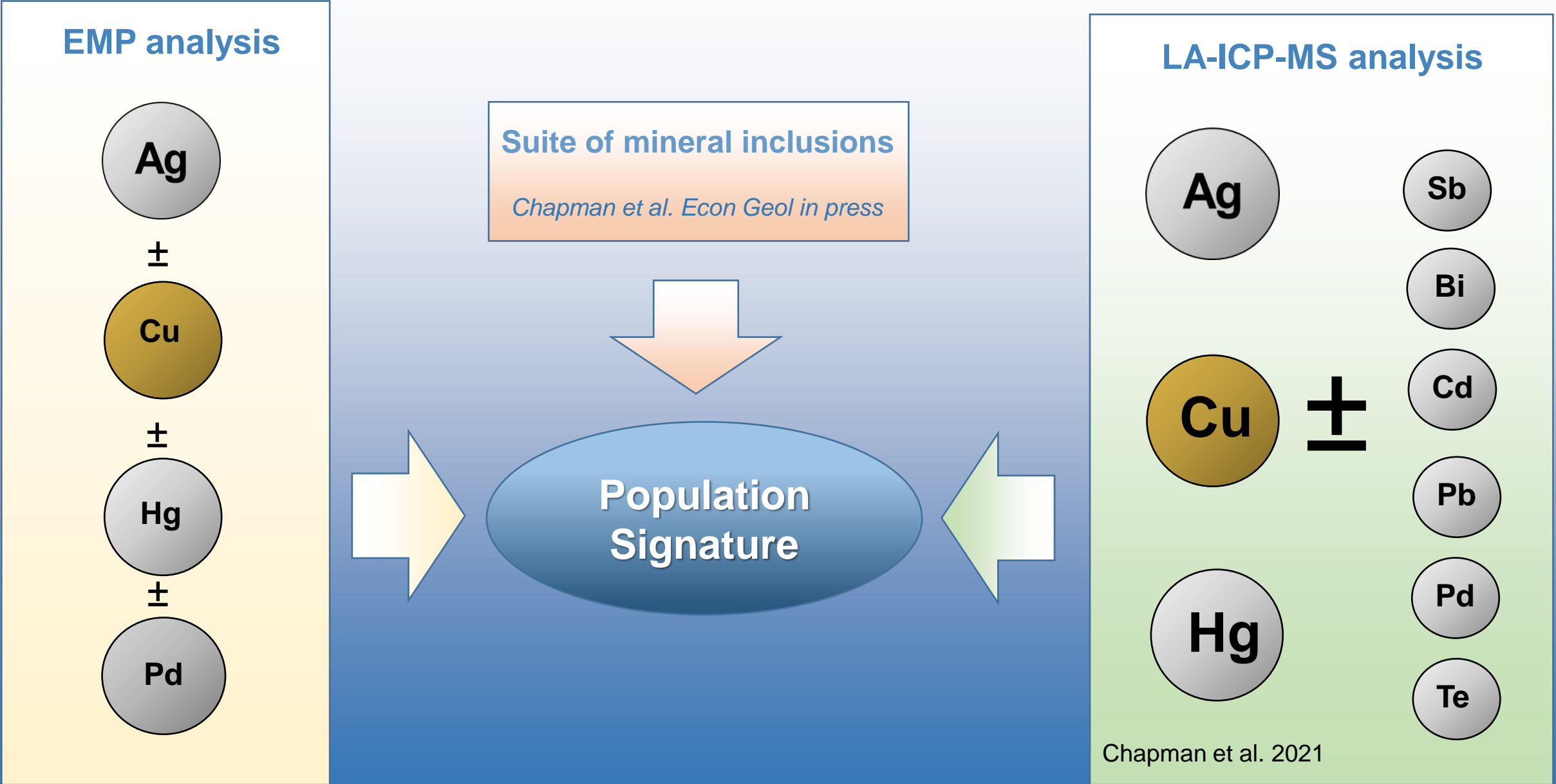
Need to study compositional RANGES in populations of particles from each locality

Project Principles: What's The Problem With Using Fineness As A Discriminant ?



Take away message: Ag isn't much use on its own.....

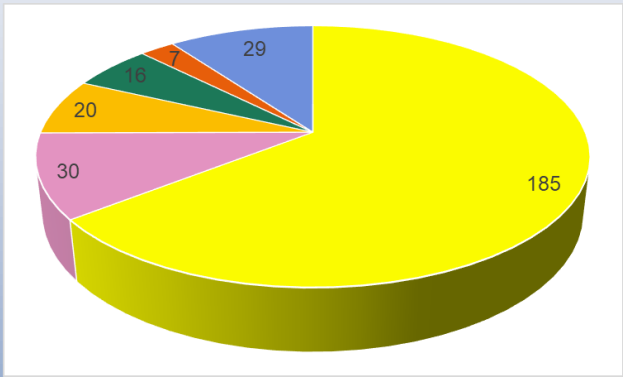
Project Principles: We Characterise Gold From A Locality By Compositional Range



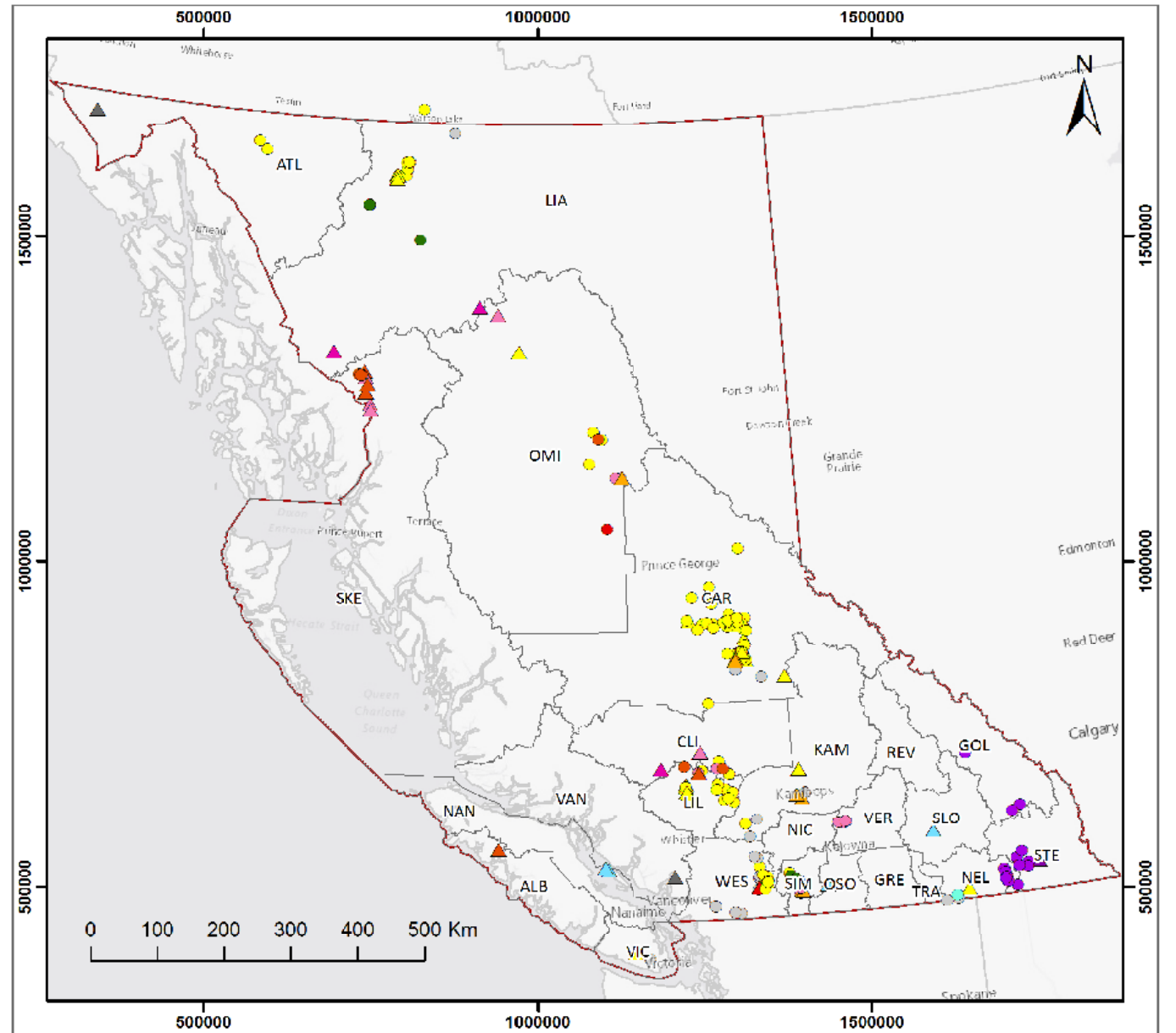
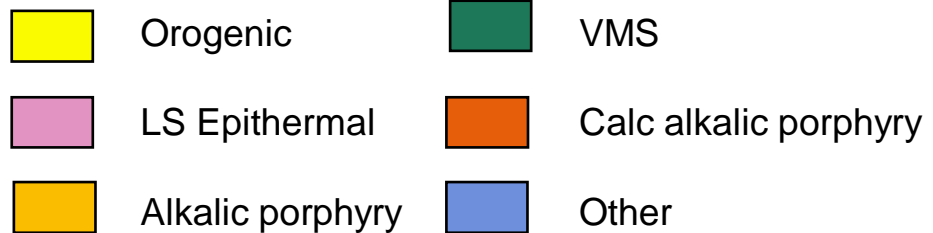
Project Outcomes: Data base

New and existing data from UBC and UoL sample collections

12509 particles
from 353 localities

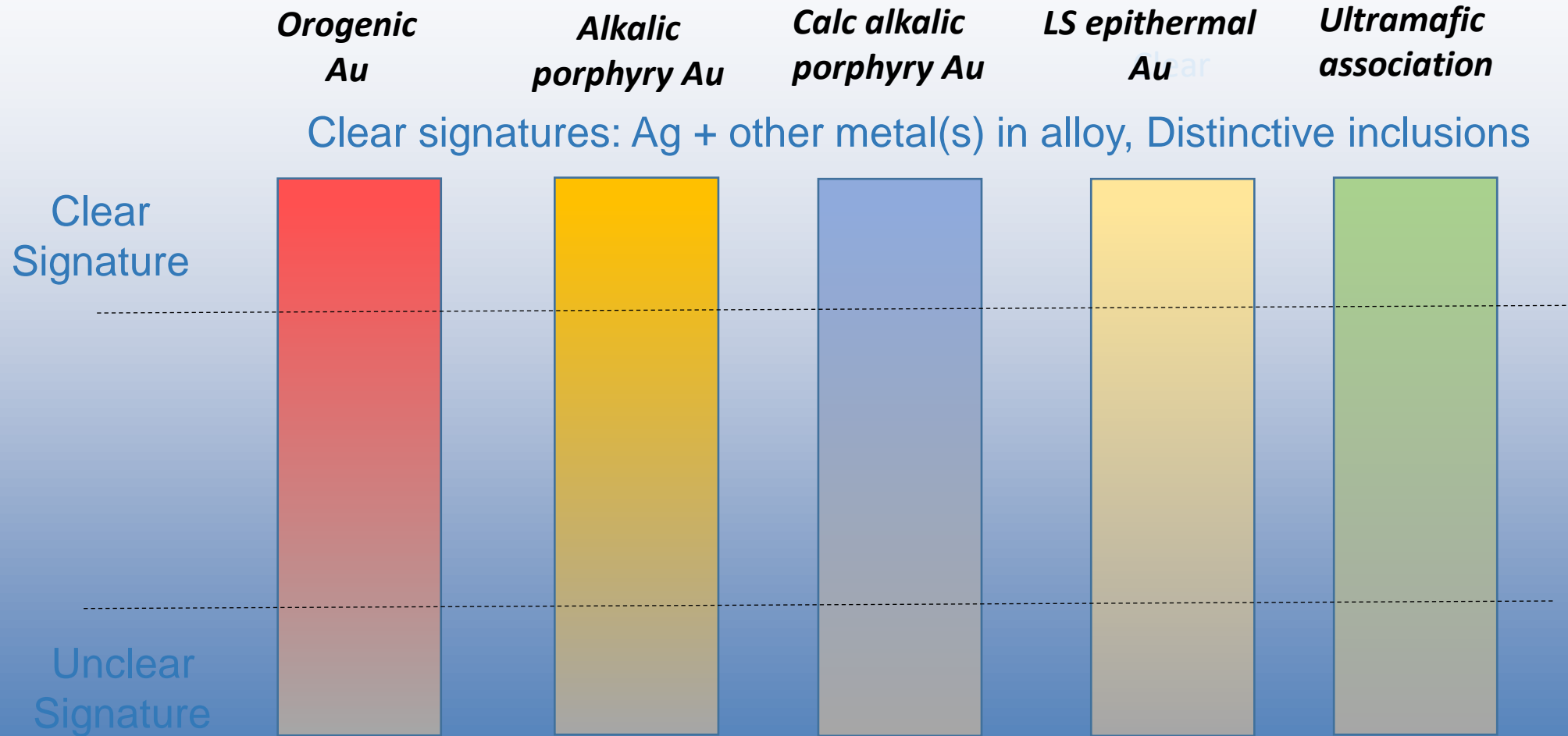


Mineralization style



Project outcomes: Do signatures correspond to deposit type ?

YES BUT



Clear signatures: Ag + other metal(s) in alloy, Distinctive inclusions

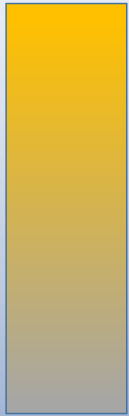
Unclear signatures: Ag data only

Project outcomes: Helping you to interpret signatures

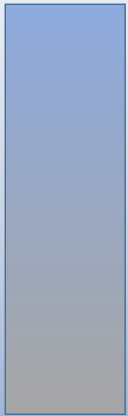
Orogenic
Au



Alkalic
porphyry Au



Calc alkalic
porphyry Au



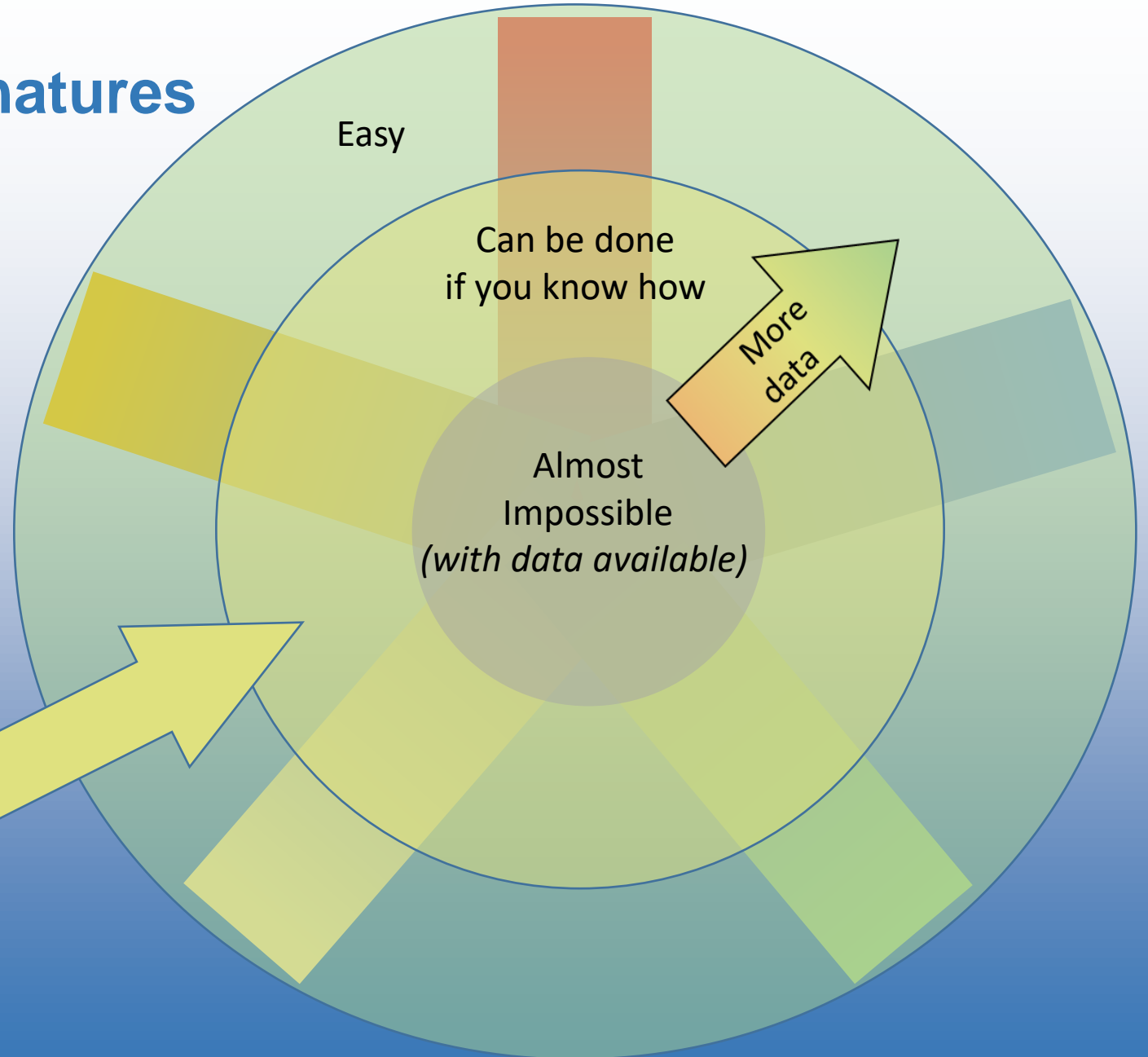
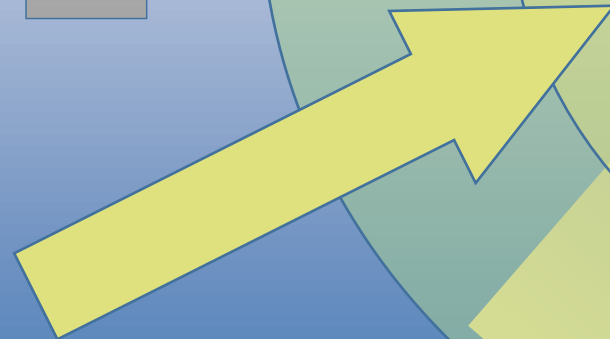
LS epithermal
Au



Ultramafic
association



Project input:
Helping you address
this area



Britt: How to figure it all out using witchcraft

Project Wrap Up

1. Complete LA-ICP-MS analysis
2. Wrap up SEM analysis of some sample suites from UBC (including skarns)
3. Refine compositional templates
4. Publish data base
5. Produce 'user manual'
6. Project launch at Roundup 2022

Thanks for your attention, and questions?

