

# Data Mining Fruitful and Fun

Open source machine learning and data  
visualization.

Download Orange 3.39.0



Variation of a paper and presentation Semi-supervised lithogeochemical classification of the Tanami Group

[https://geoscience.nt.gov.au/gemis/ntgsjspui/bitstream/1/91415/1/DutheilAGES2021\\_paper.pdf](https://geoscience.nt.gov.au/gemis/ntgsjspui/bitstream/1/91415/1/DutheilAGES2021_paper.pdf)

[https://geoscience.nt.gov.au/gemis/ntgsjspui/bitstream/1/91415/3/DutheilAGES2021\\_presentation.pdf](https://geoscience.nt.gov.au/gemis/ntgsjspui/bitstream/1/91415/3/DutheilAGES2021_presentation.pdf)

# Orange Data Mining

Open source machine learning and data visualisation

- <https://orangedatamining.com/> and <https://github.com/biolab/orange3>
- Developed by University of Ljubljana (Slovenia)
- Shift the focus from learning python coding to learning machine learning
- Widget driven GUI
- 6-10 minute youtube videos on most modules
  - <https://www.youtube.com/@OrangeDataMining>
  - Watch 5-6 clips and you will be up and running



# Challenges of the Surficial Environment



**BIF or Laterite?**



**Boudin Chert or Quartz  
Vein?**



**Quartz Vein or Silicified  
Sandstone?**





# Lithogeochemistry – The Leveller

## Significant data readily available

- <https://dasc.dmirs.wa.gov.au/>

### Drillholes

- ▶ Mineral exploration drillholes (open file) - [GDA2020]
- ▶ Co-funded Drillholes - [GDA2020]
- ▶ Hylogger Drillholes - [GDA2020]
- ▶ Core library drillholes - [GDA2020]

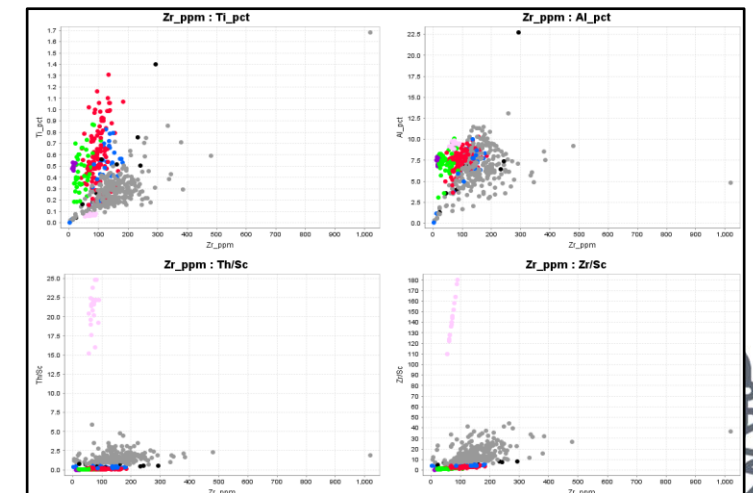
### Geochemistry & Mineralogy

- ▶ GSWA Geochemistry - [GDA2020]
- ▶ GSWA Geochemistry search online

Title	Link
Geochem online	<a href="http://geochem.dmp.wa.gov.au/geochem/">http://geochem.dmp.wa.gov.au/geochem/</a>

### Company Surface Sample Geochemistry - [GDA2020]

Last Updated	Size	File Format	
16/06/2025	686.78 MB	ESRI File Geodatabase	<a href="#">Download</a>
16/06/2025	667.02 MB	ESRI Shape File	<a href="#">Download</a>
16/06/2025	494.01 MB	MapInfo TAB	<a href="#">Download</a>



# Data Sources

<https://geochem.dmp.wa.gov.au/geochem/>



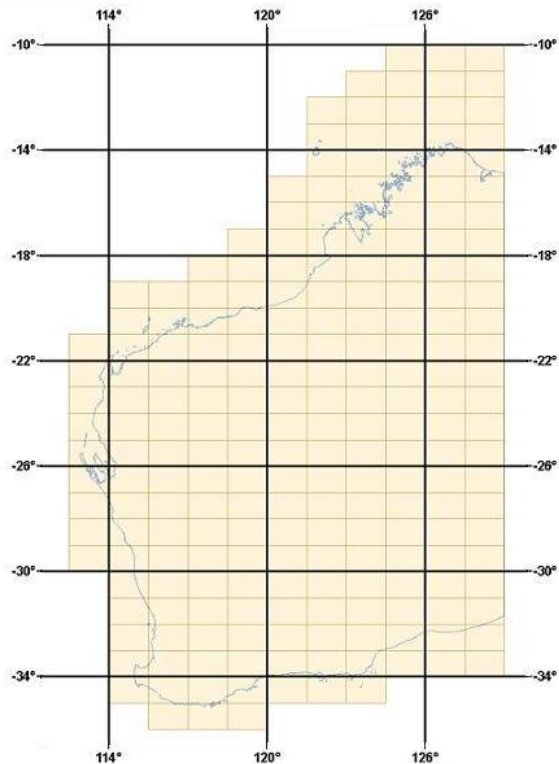
Government of Western Australia  
Department of Mines, Industry Regulation and Safety

## GeoChem Extract

West Australian Resource Information and Map Services

### Geochemistry Database Search

**Interactive Map Sheet Selection**  
Use this graphic to help you determine which map sheet or coordinate region you need. Mouse over the shaded area to display map sheet name.



**Whole State**  
Click here to download geochemistry data for entire state.

**Map Sheet**  
Select a map sheet name from the box below.

**Coordinates**  
Enter coordinates below as decimal degrees, e.g. 114.567 or as degrees and decimal minutes, e.g. 114 34.02. Note degrees and decimal minutes should be separated by a space.

Latitude Max	
<input type="text"/>	
Longitude Min	Longitude Max
<input type="text"/>	<input type="text"/>
Latitude Min	
<input type="text"/>	
<input type="button" value="Submit"/>	



Department of Energy, Mines,  
Industry Regulation and Safety

## GeoVIEW.WA

Getting Around

Identify Tools

Drawing & Measurement

Maps & Data Sources

Search

Printing

Help & Feedback

What's New?

**Open Project**  
Open/Save Project

**Save Project**

**Initial View**

**Full Extent**

**Previous Extent**

**Next Extent**

**Pan**

**Zoom In**

**Zoom Out**

**Identify**  
Find Data

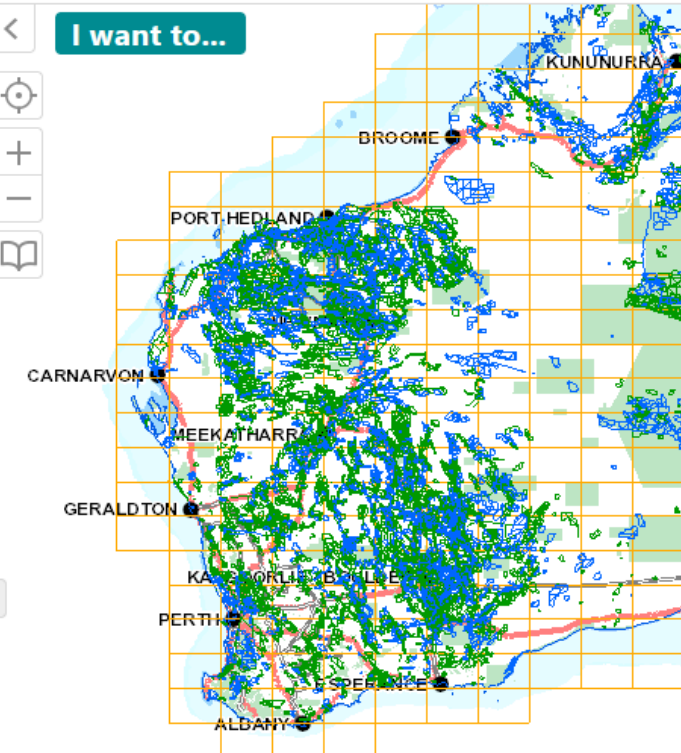
### WAMEX Search

Please select the type of search you would like to perform using the buttons below

[WAMEX Search Help](#)

[How-to video](#)

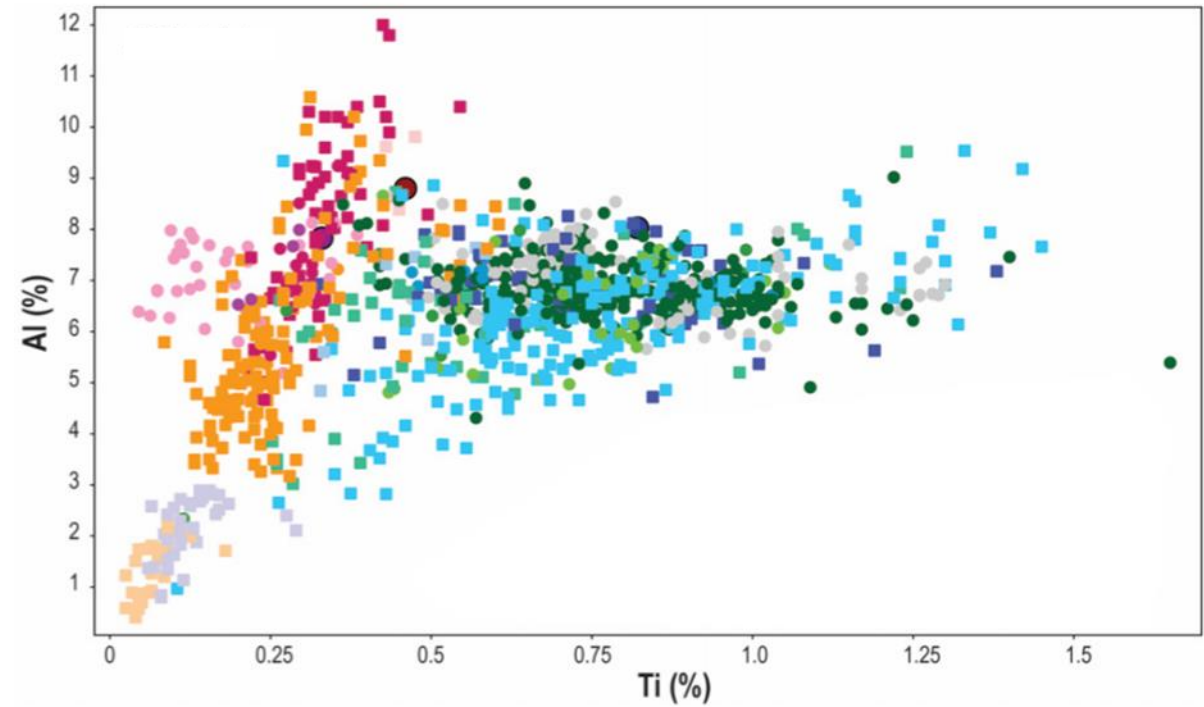
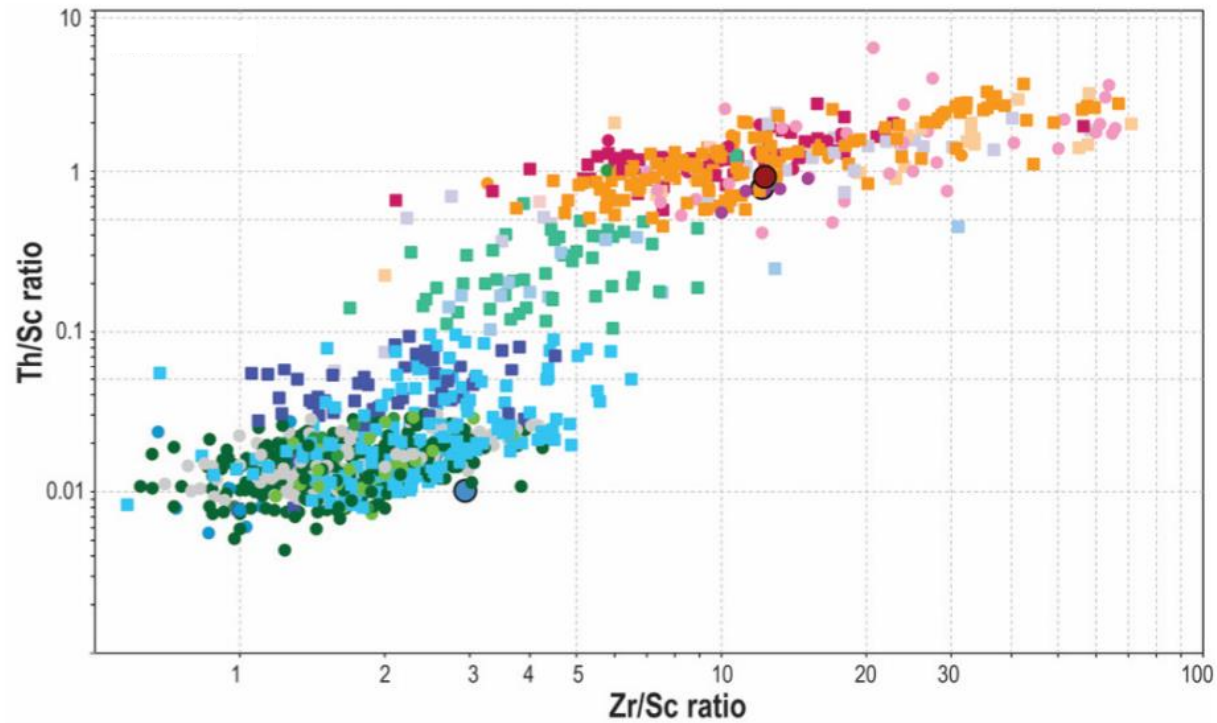
**I want to...**



**Review**

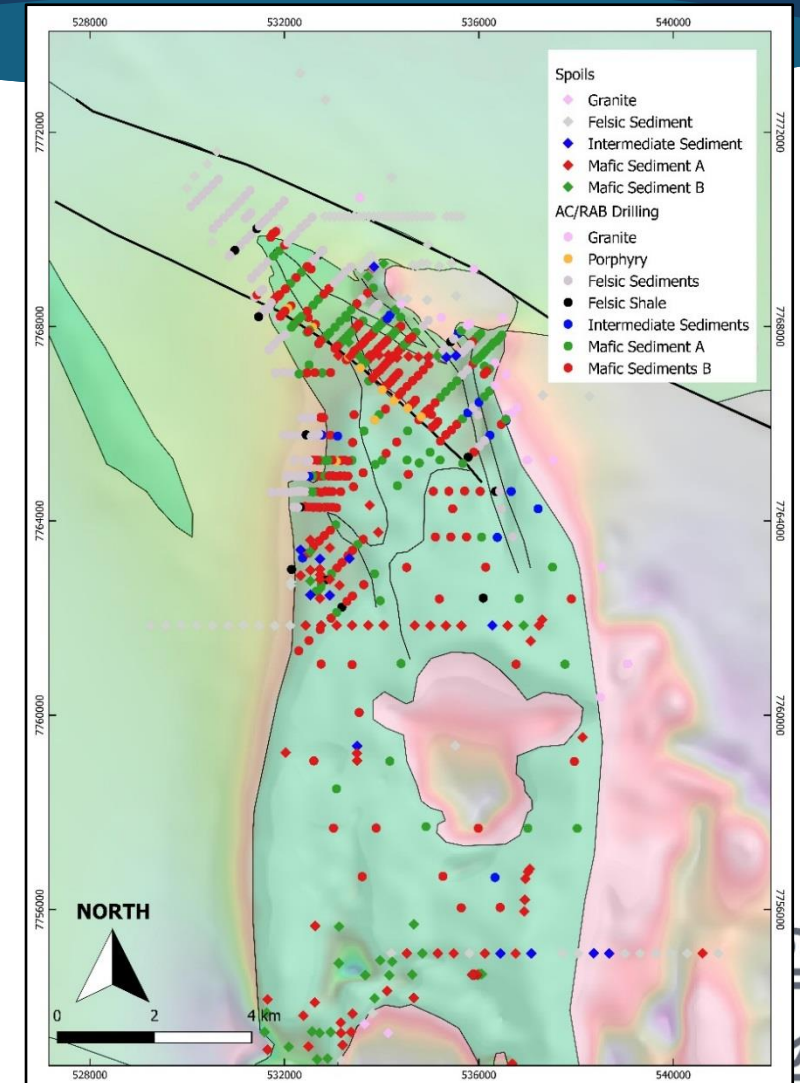


# Lithogeochemistry



# Lithogeochemistry

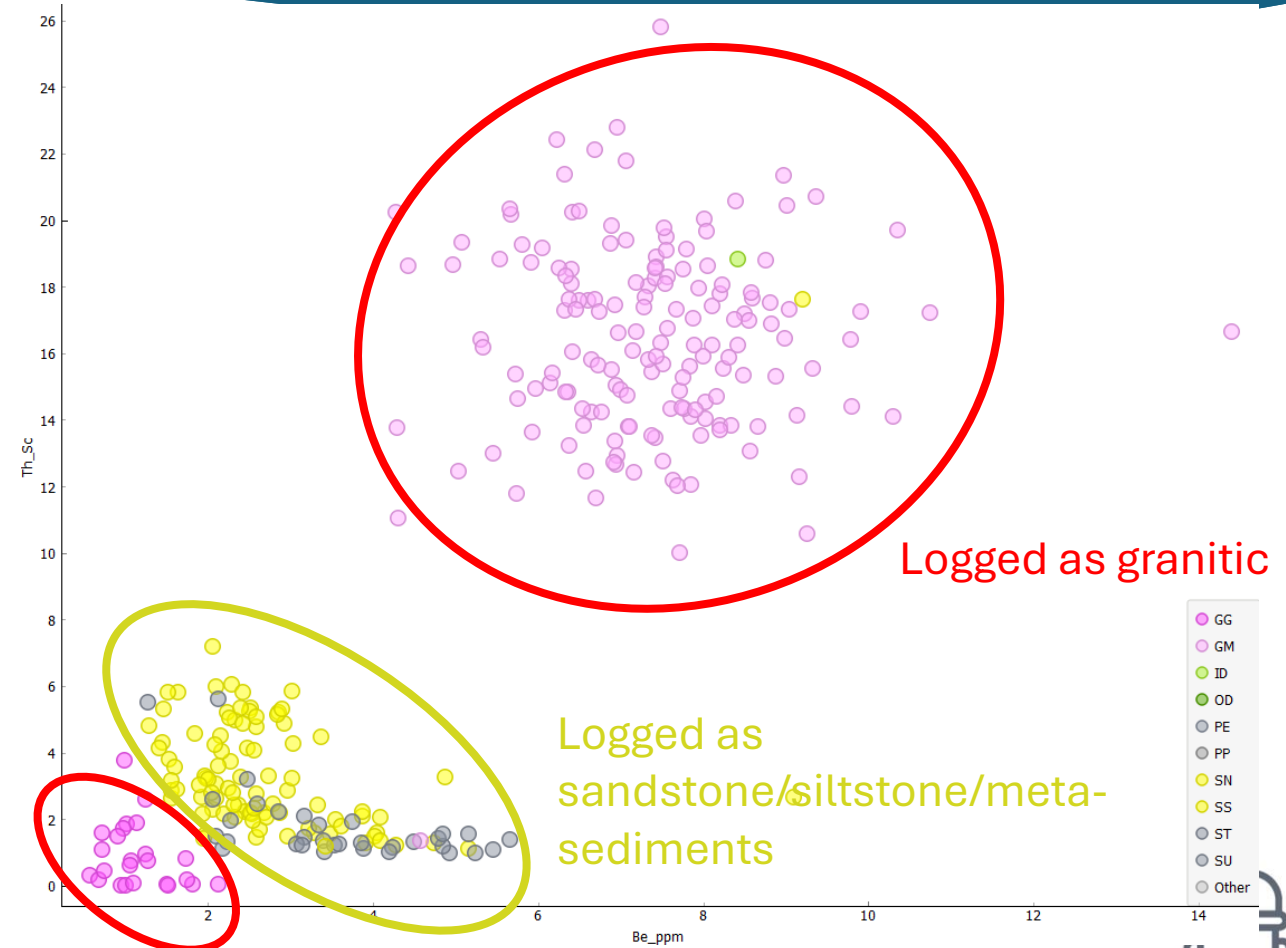
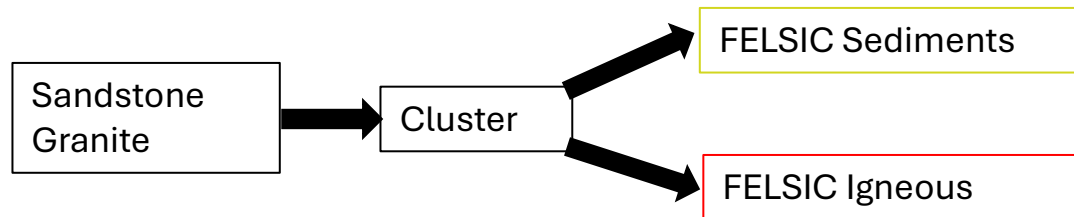
## Classification



# Simple Analysis workflow

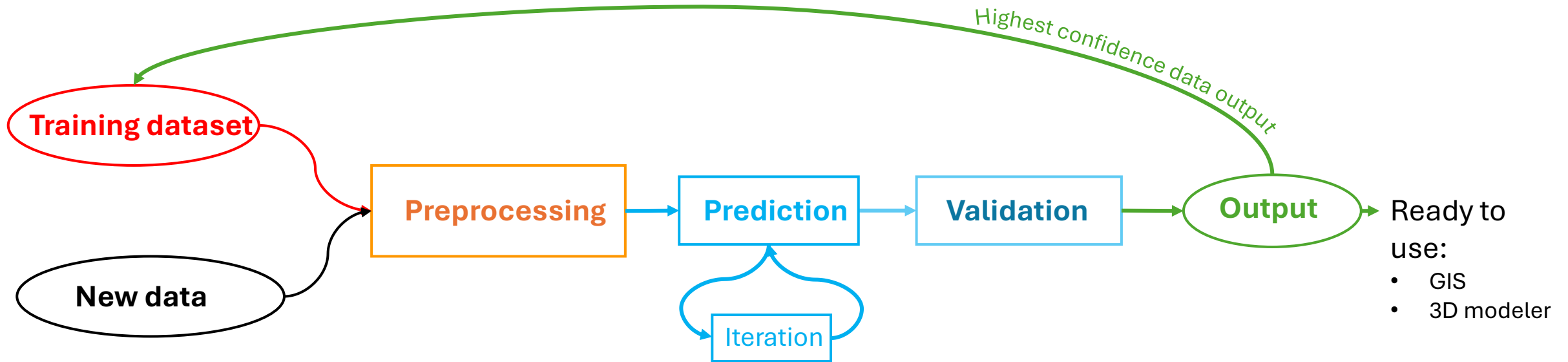
## Clustering of known rock types

### Logged Lithology





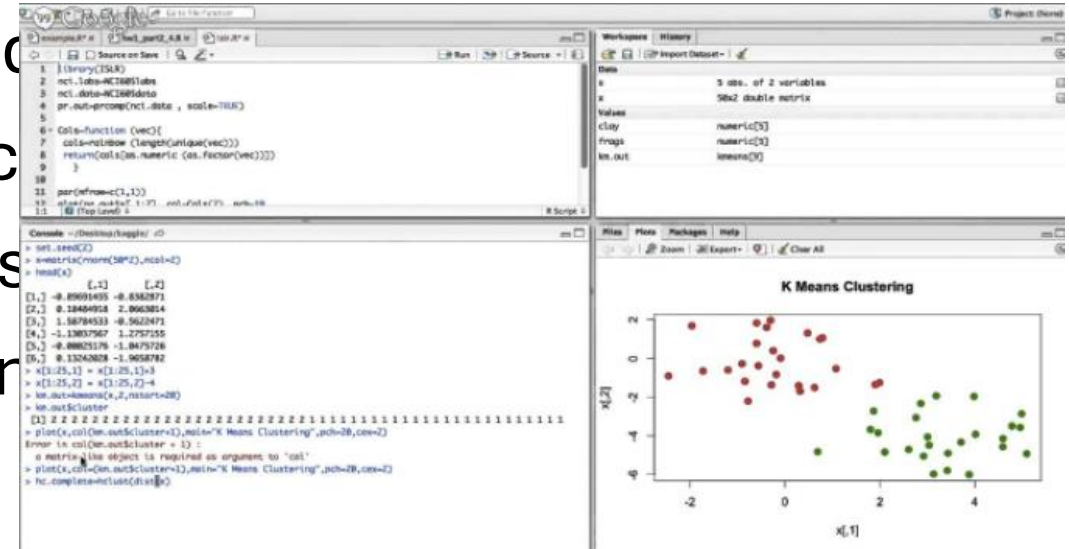
# Prediction



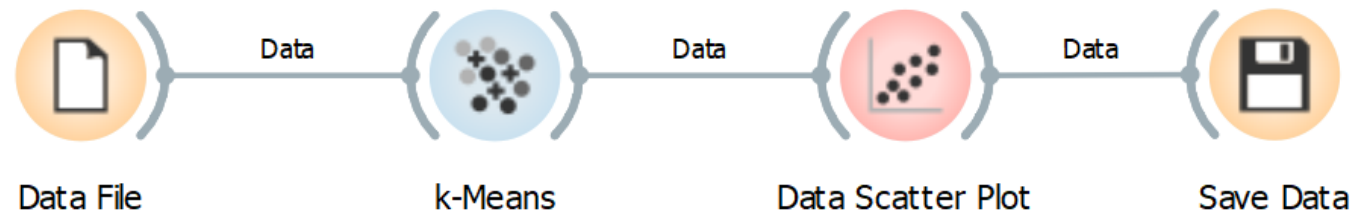
# Tools are now accessible

Before

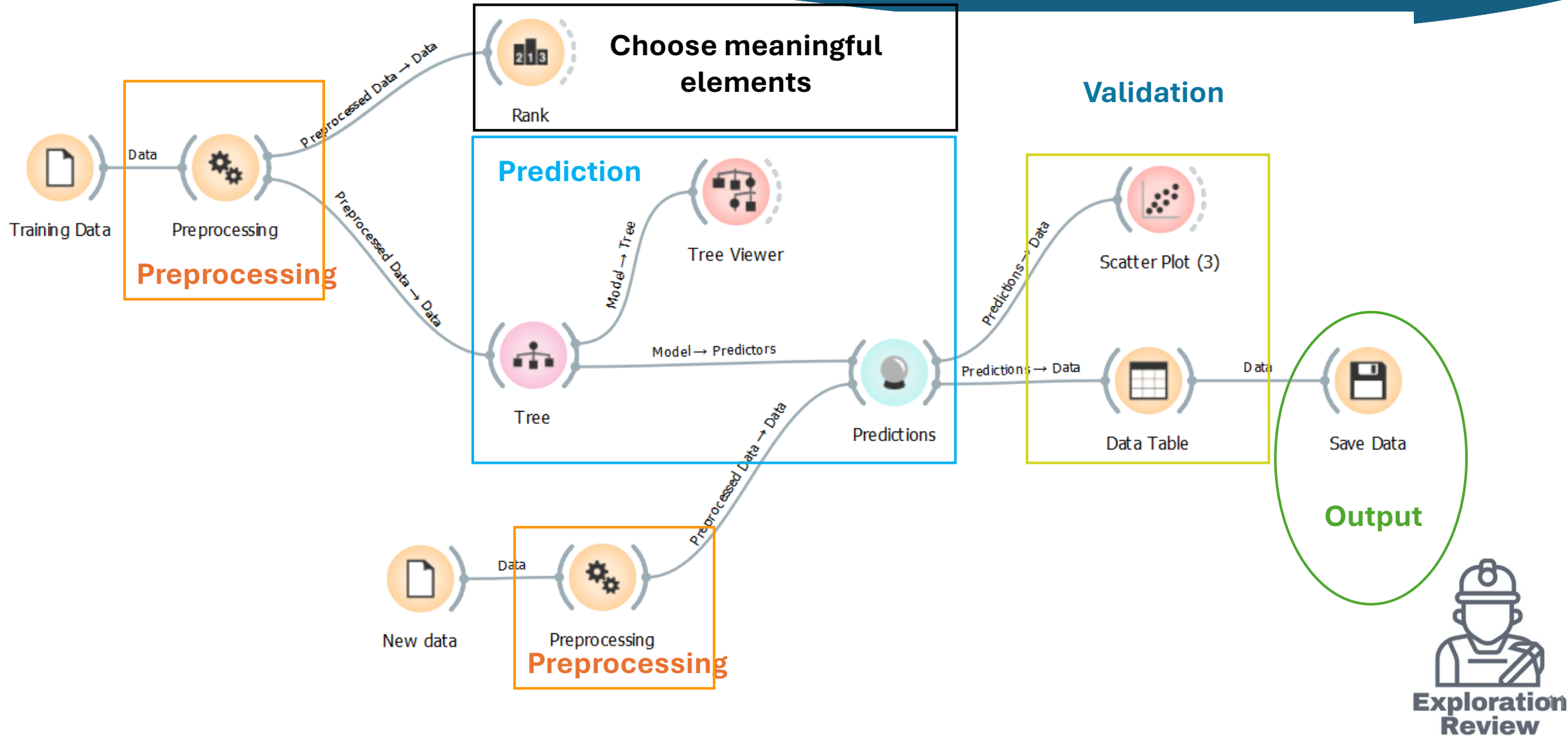
- User-friendly data analysis and prediction
- No longer required to do scripting/coding
- Visual coding for automated processes
- Can operate in desktop environment



Now



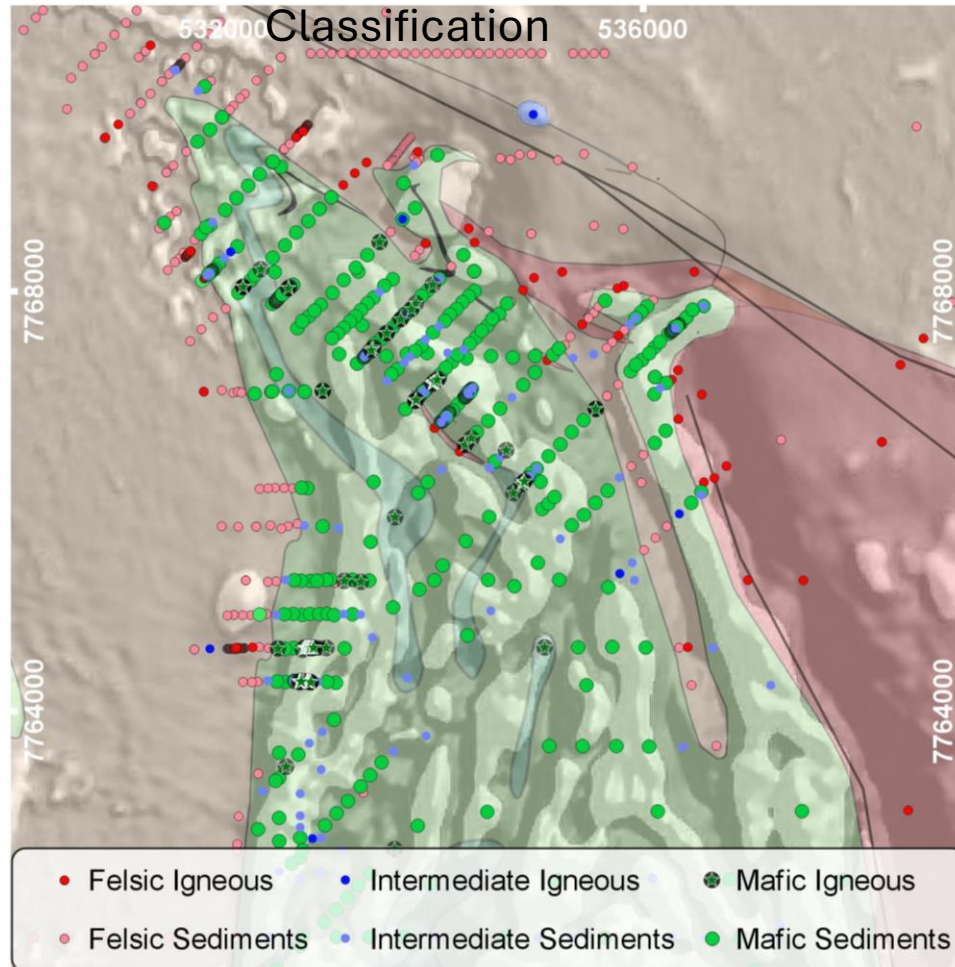
# Orange Simplified Generic workflow



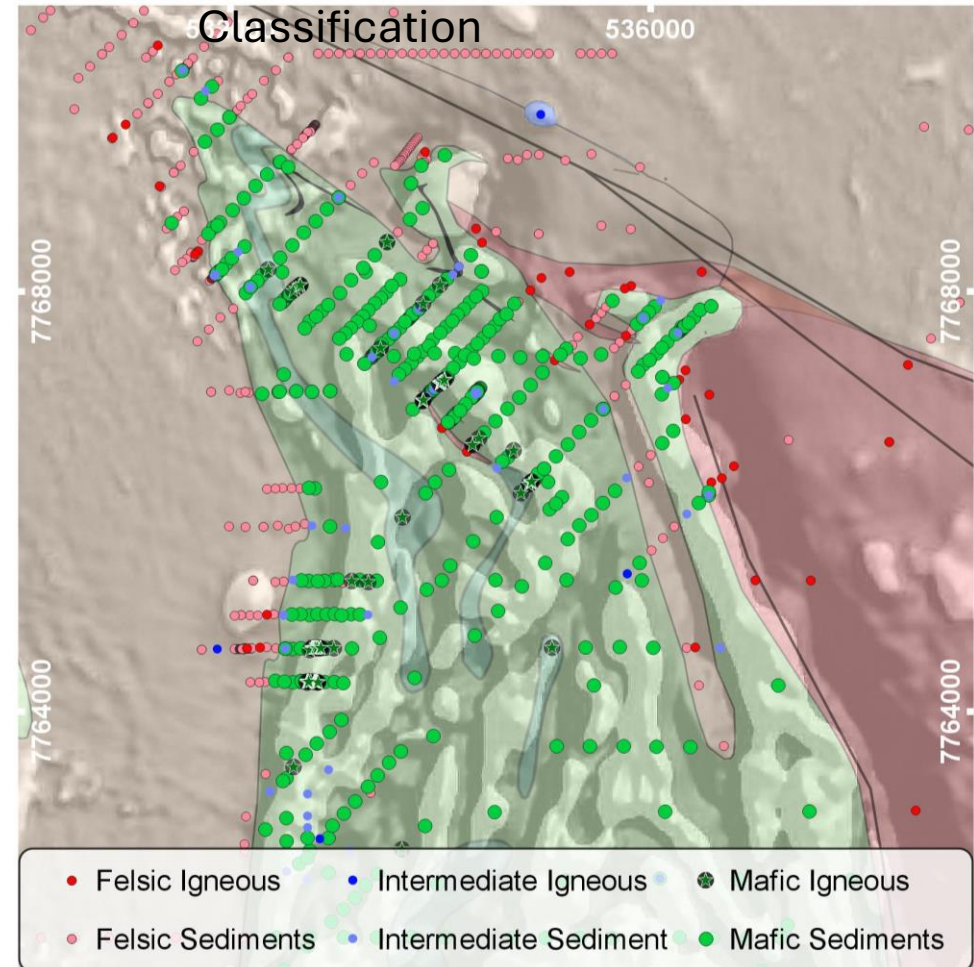


# Results at Capstan

Manual  
Classification



Semi-automated  
Classification



# Orange is a tool to do this

## What it is:

- Data analytics
- Machine Learning
- Open source
- Widget-based
- User friendly
- Powerful tool for beginners

## What you can do:

- Pre-process data
- Analyse data
- Clustering and classification
- Make predictions
- Test and score

Widely available simple and free training material online

- Orange website
- Orange YouTube channel and other youtubers
- Online courses
- Research papers

