

# VectOre - Exploration criteria for polymetallic sulphide deposits and industrial carbonates

Nils Jansson (project leader), Luleå University of Technology

Rodney Allen, Volcanic Resources AB

Göran Skogsmo, Björka Mineral AB

Mattias Bäckström, Björka Mineral AB

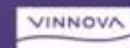
Nils Vorbrod, Björka Mineral AB

**NIM**  
**BOLIDEN**

**Björka Mineral AB**

**SIP | STRIM**

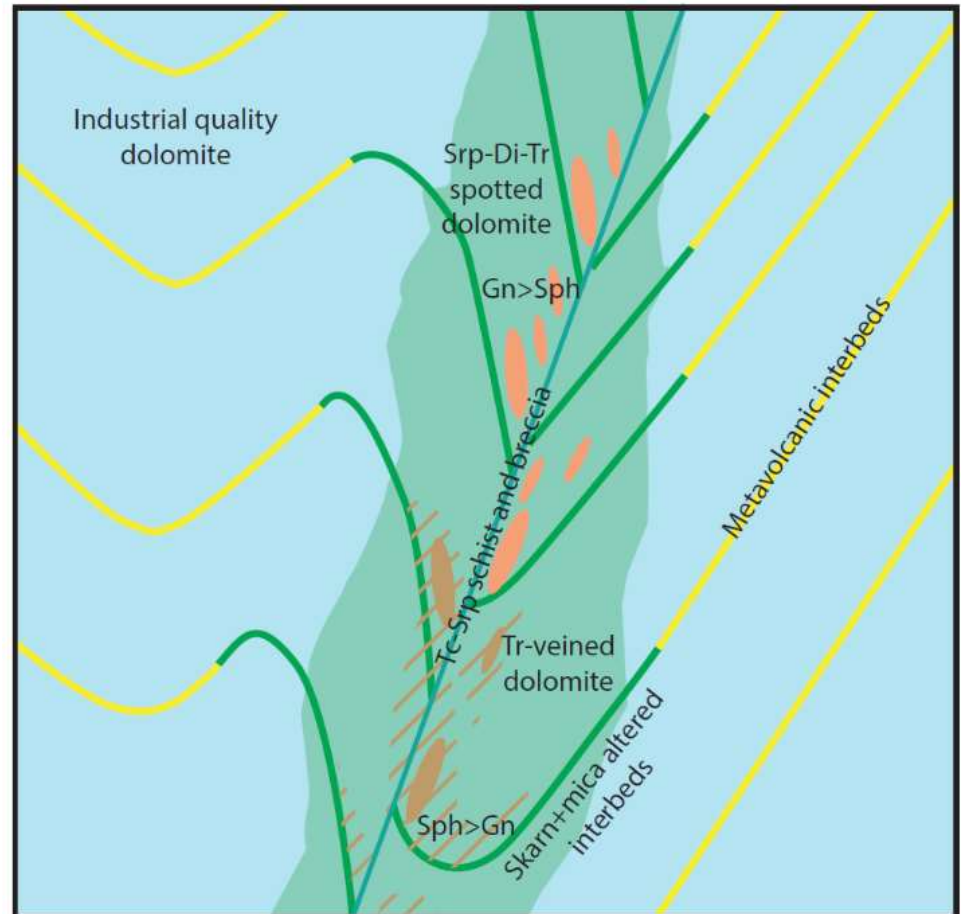
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STRATEGISKA  
INNOVATIONS-  
PROGRAM

# Purpose and goal of the project

- Modelling alteration haloes around carbonate-hosted sulphide deposits.
- Improved vectors to
  - Zn-Pb-Ag sulphides
  - Light dolomite
- Stimulate diversification at existing mines (waste to product)
- Revised geological model of the Sala inlier in Bergslagen



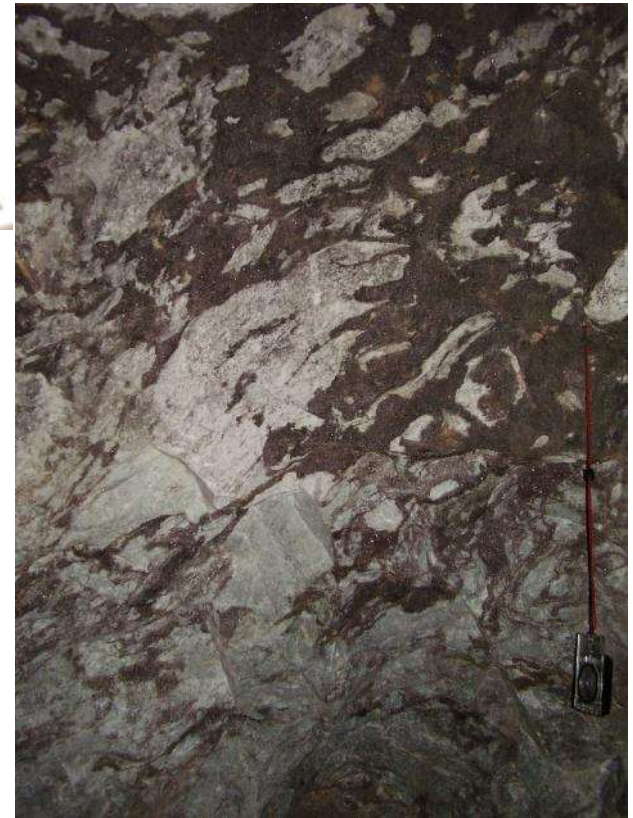
Jansson 2017

# Carbonate mining perspective

A-class commodity

B-class commodity, or waste

Deleterious waste material



Waste rock ('gråberg'); altered carbonates, prospective?

Mineralization, potentially ore

# Metal mining perspective

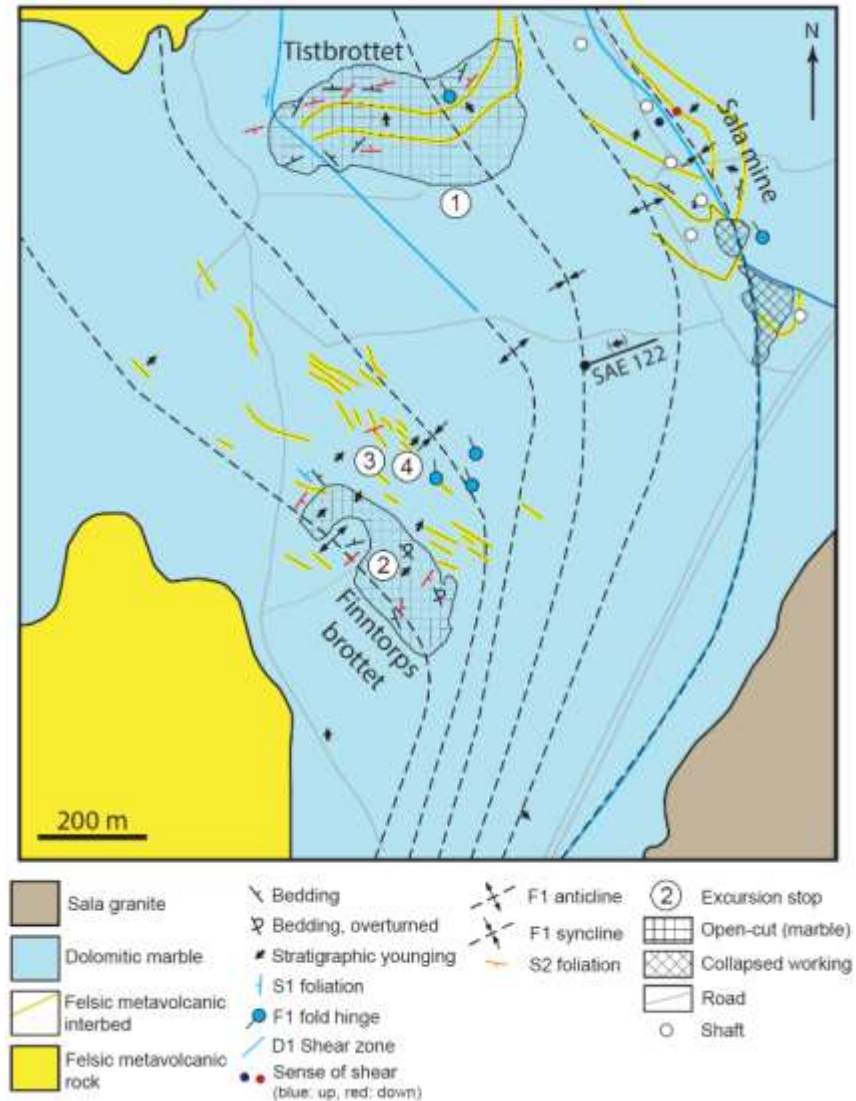
# The Sala area

Key area, natural laboratory

Grey-green, semi-regional dolomitic marble hosting:

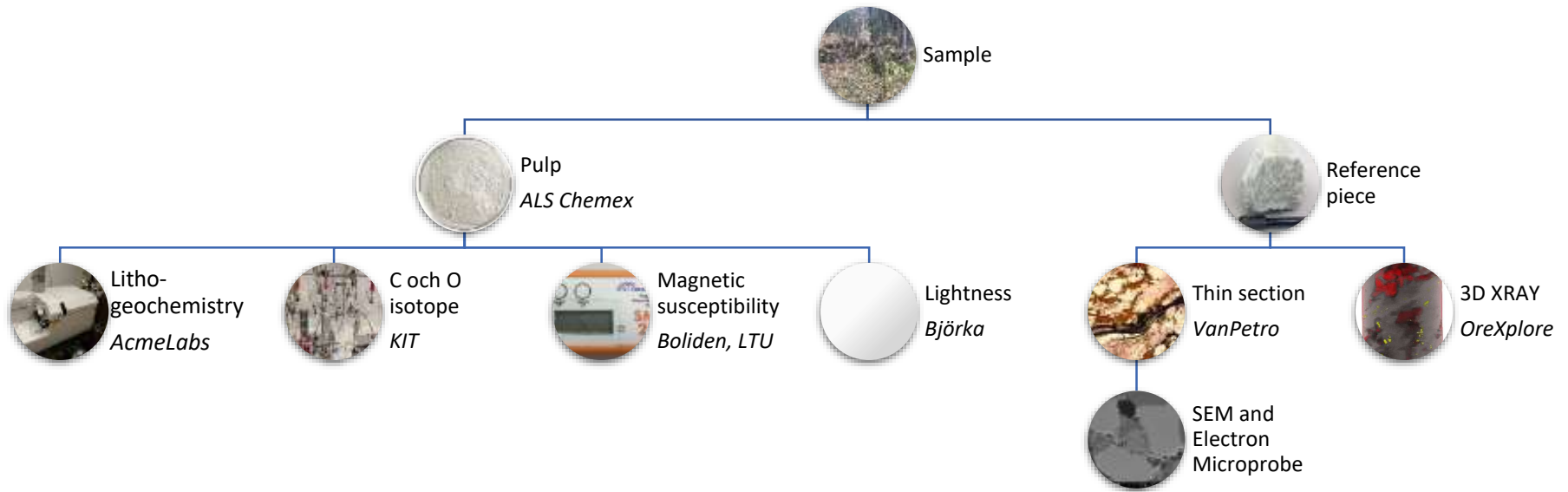
- Dolomite-hosted, stratabound Zn-Pb-Ag sulphide mineralization
- High-quality, light dolomite deposits

Less than 300 m apart



Allen et al., 2013

# Innovative carbonate dataset

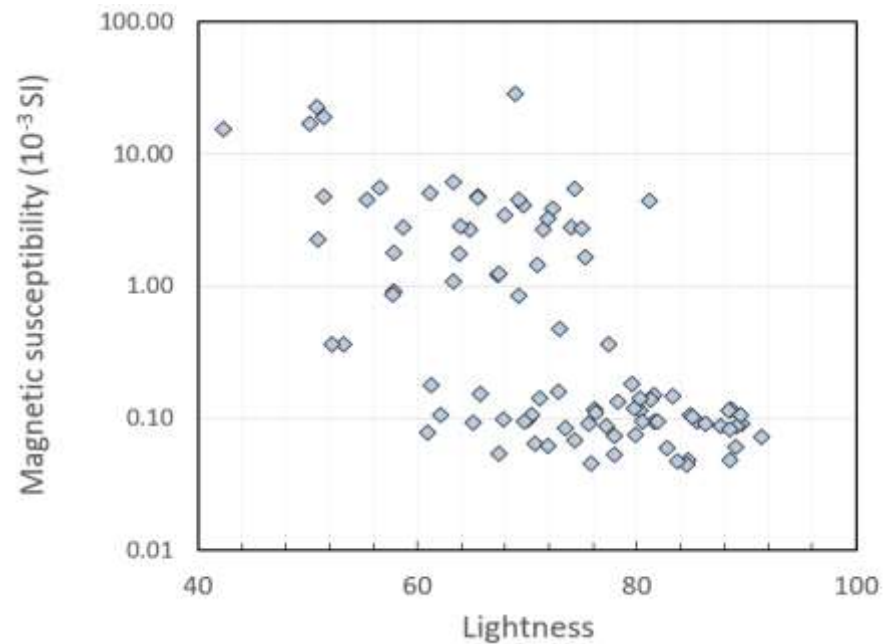
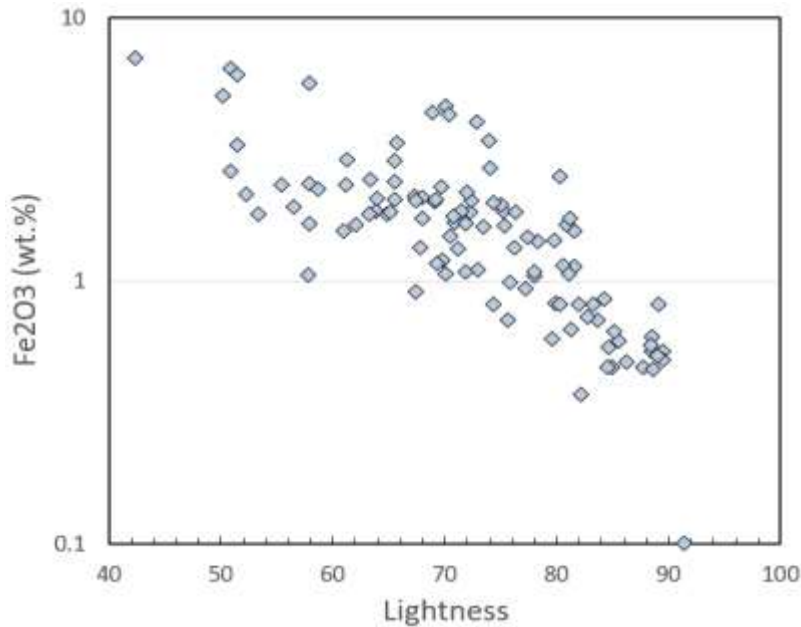


**Improved halo characterization**

**Identification and evaluation of geochemical and geophysical proxies**

**Improved exploration models**

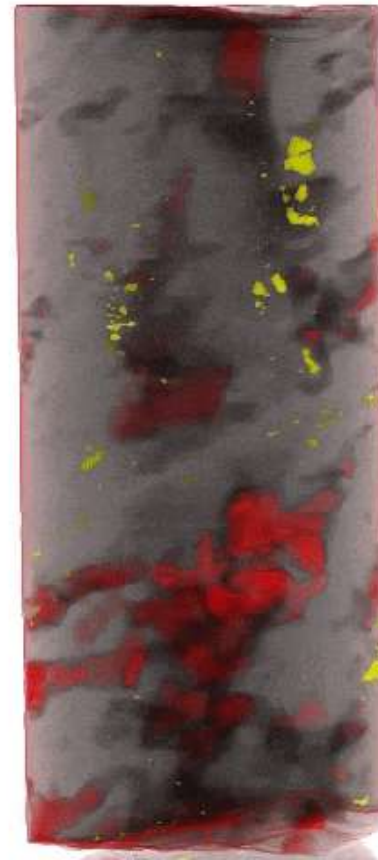
# Example of preliminary results – light marble vectors



- **Negative correlation between marble lightness and iron content**
- **Mainly reflects accessory pyrite, magnetite and pyrrhotite**
  - **Abundance increases near Zn-Pb-Ag mineralization**
- **Magnetic susceptibility threshold values for light marble can be defined**

# Way forward – Zooming in

## Understanding the distribution of impurities



Grey: Carbonate

Red: Serpentine

Yellow: Pyrite,  
pyrrhotite,  
magnetit,  
(galena)

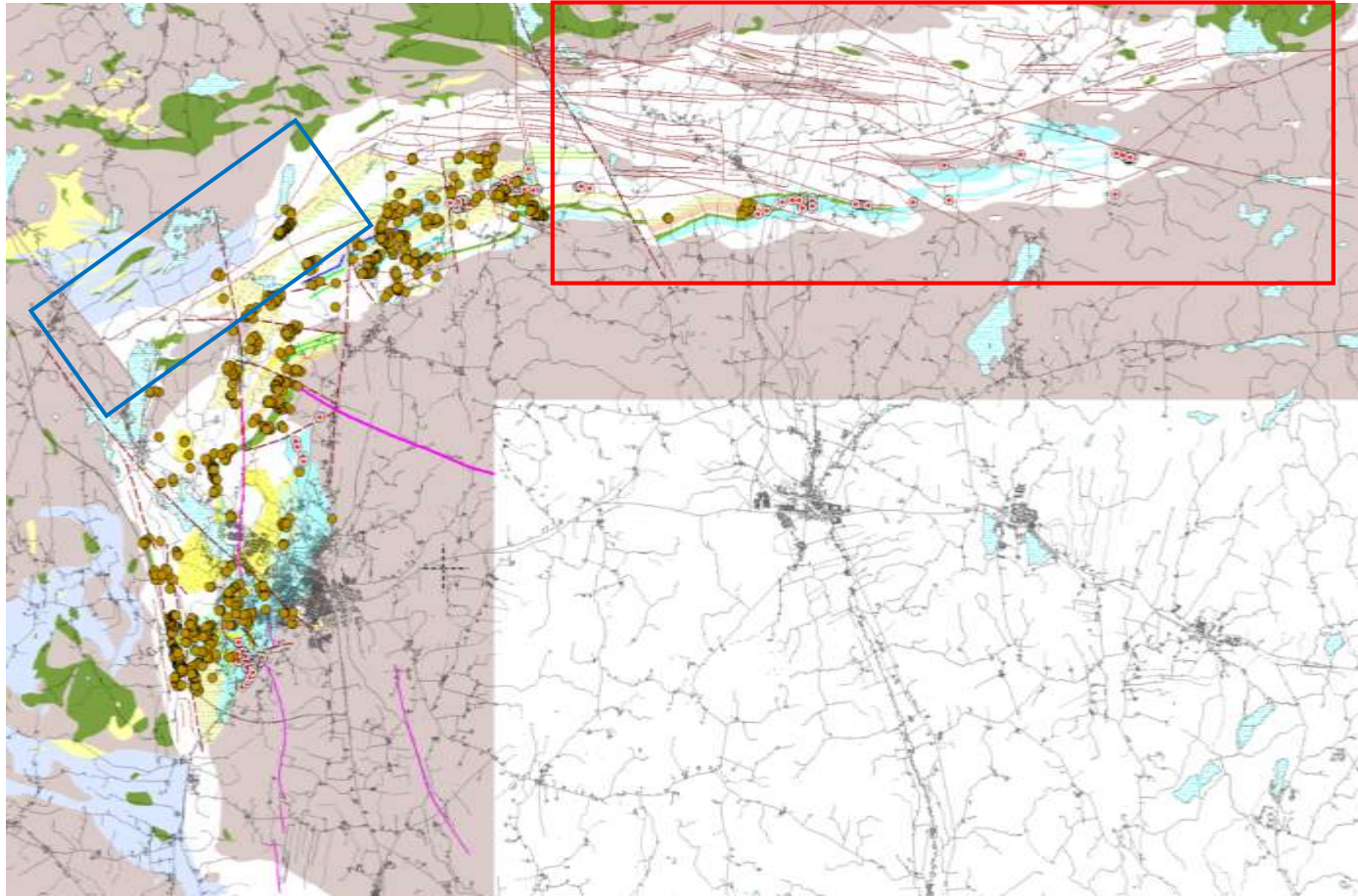
XRAY 3D imaging by



OREXPLORE

# Way forwards – Zooming out

## Revision of regional bedrock map



Pre-requisite for spatial alteration model

924 outcrop observations so far

**Red:** Focus are for 2018 field campaign

**Blue:** Collaborative mapping campaign with SGU August 2018