

# Effective and sustainable use of dolomitic material in the Mbuji-Mayi region.



■ Raphael Matamba  
Prof. E Pirard  
Stijn Dewaele

Brussels, Sep 12.2012

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?



is it  
useful...?

?



Yes  
Fight...!

?

Police

Stone



weapon

?

Police

Stone



Stone



?

stones





?

Stone



Precious stones



Stone



Precious stones



Stone



Precious stone



?



is it  
useful...?

?



Construction  
Masonry





Are all facies destined to crushing work for aggregates ?





# What should be done to properly manage these raw materials



# Summary



- 1 Dolomitic rocks  
*Geology and uses*
- 2 Characterization  
*Results / Discussion*
- 3 Sustainable use  
*actual and future*

# Summary

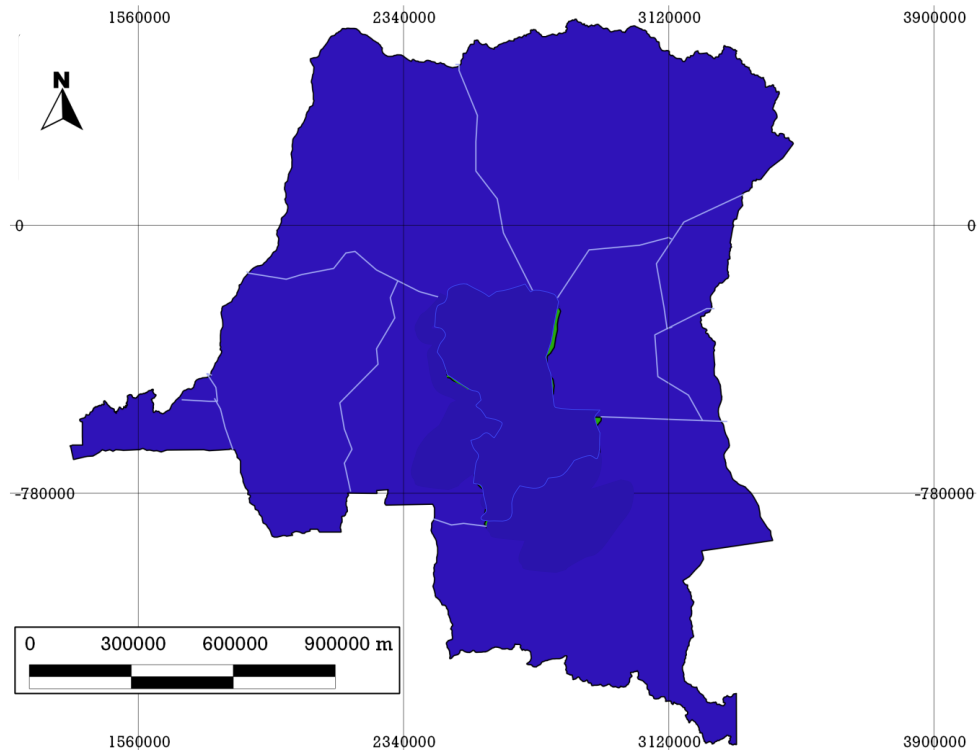


## 1 Dolomitic rocks *Geology and uses*

Characterization  
*Results / Discussion*

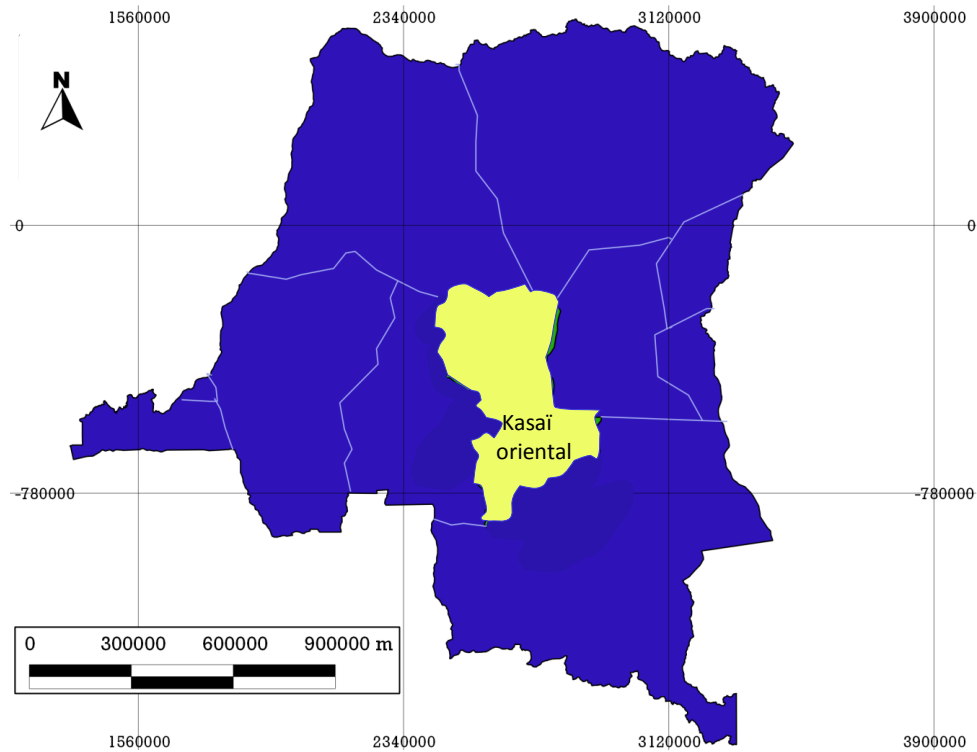
Sustainable use  
*actual and future*

This study was carried out in the DR Congo



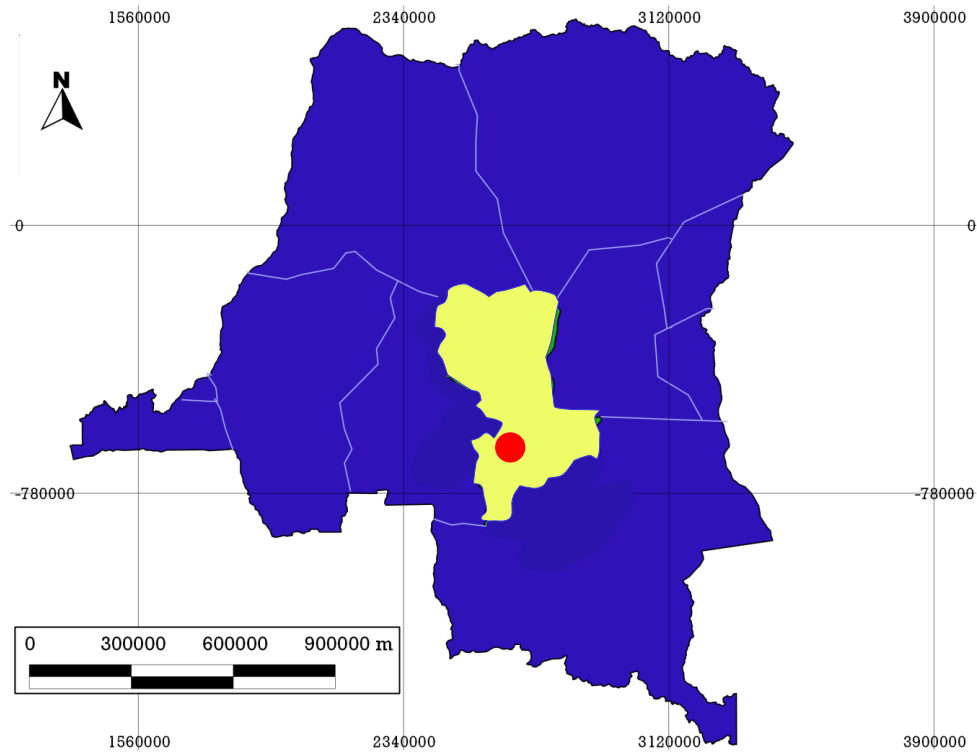
*DR CONGO*

This study was carried out in the DR Congo in Kasai Oriental province



*DR CONGO*

This study was carried out in the DR Congo in Kasai Oriental province around **Mbuji-Mayi** city



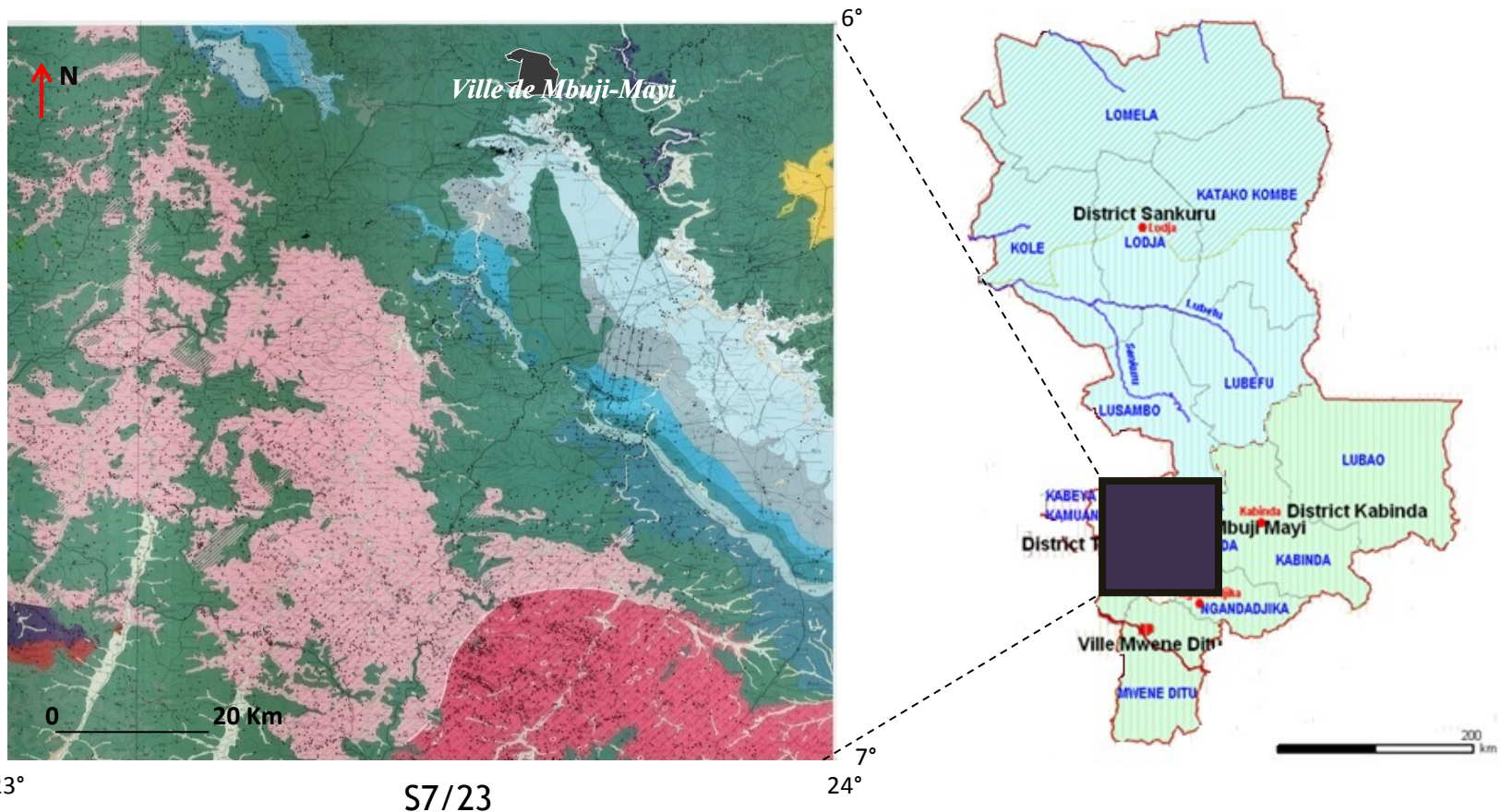
*DR CONGO*

Dolomitic materials are located in the Mbuji-Mayi **supergroup**

### Kasai Oriental



# Dolomitic materials are located in the Mbuji-Mayi supergroup



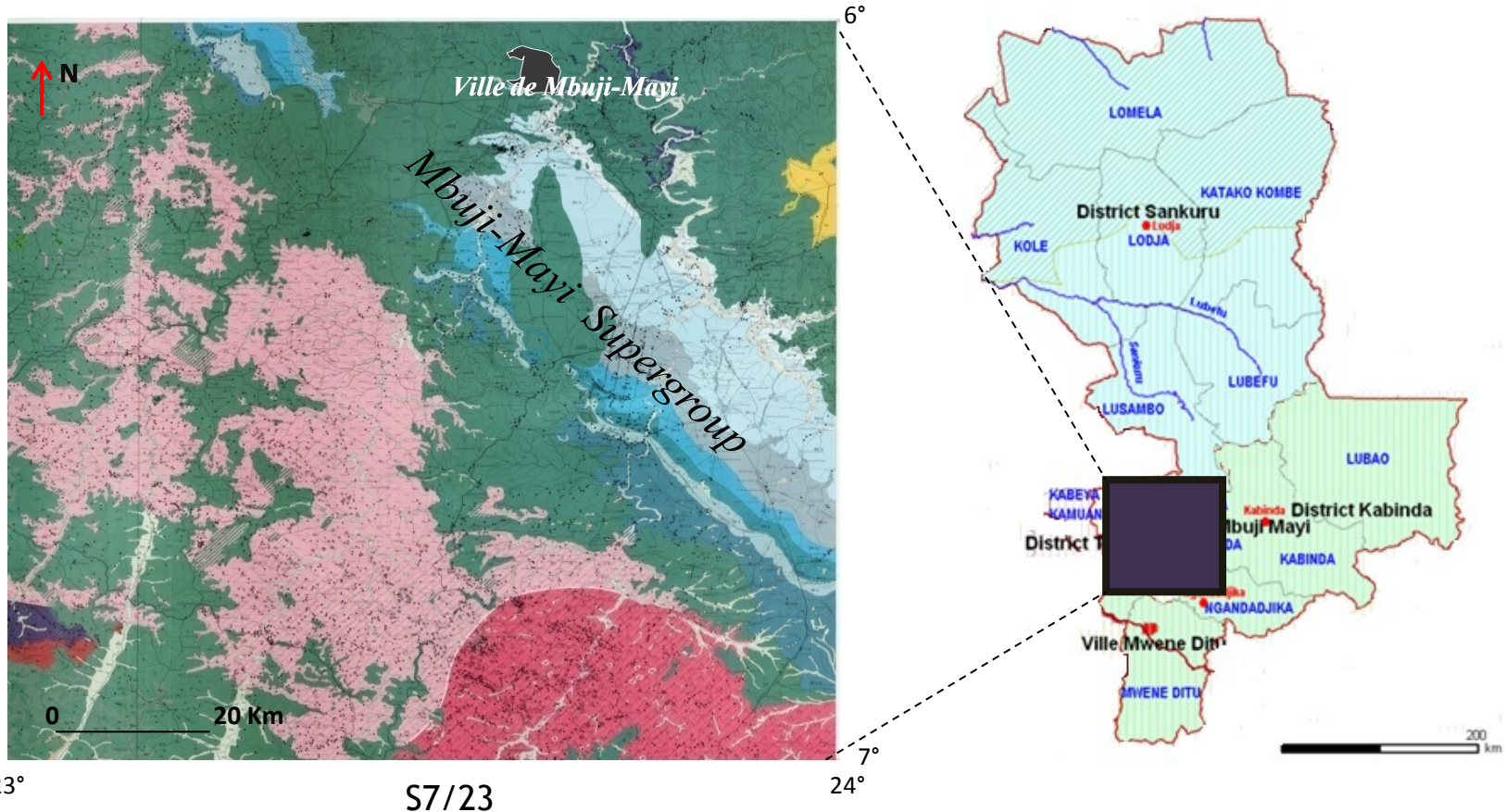
23°

S7/23

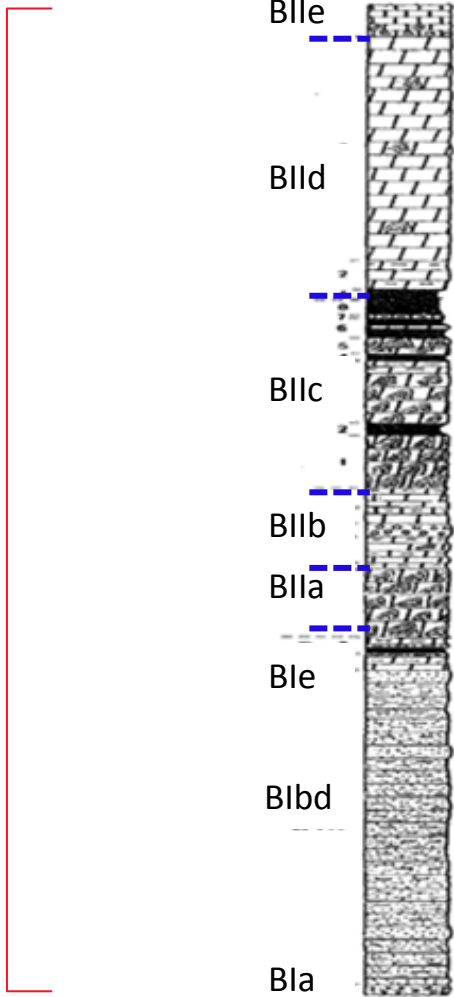
24°



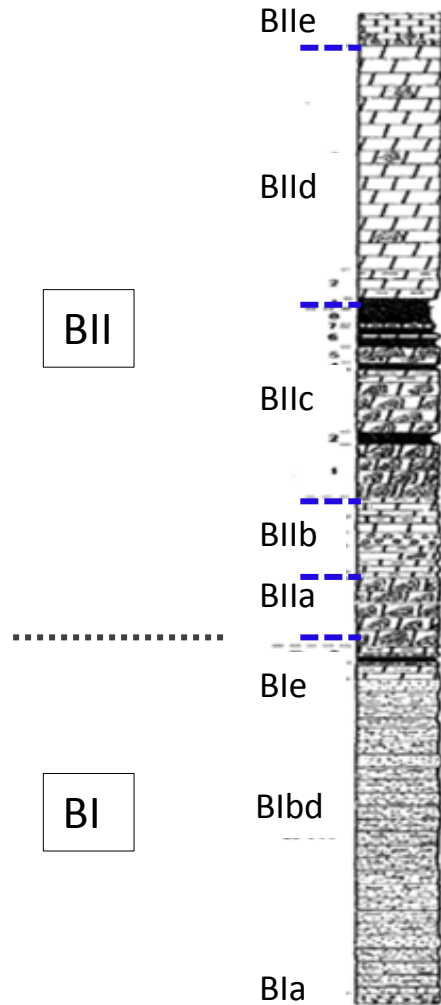
# Dolomitic materials are located in the Mbuji-Mayi supergroup



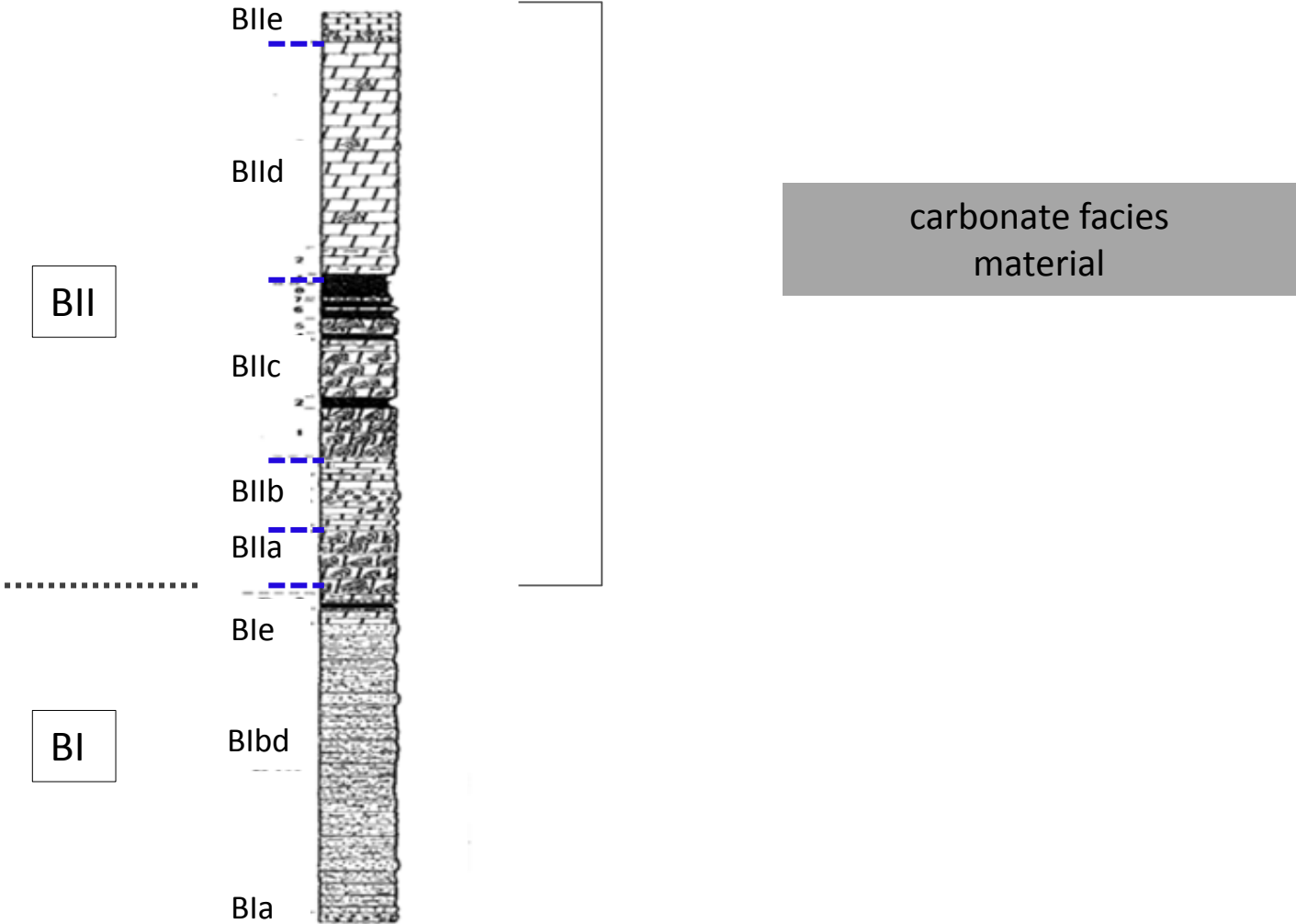
B



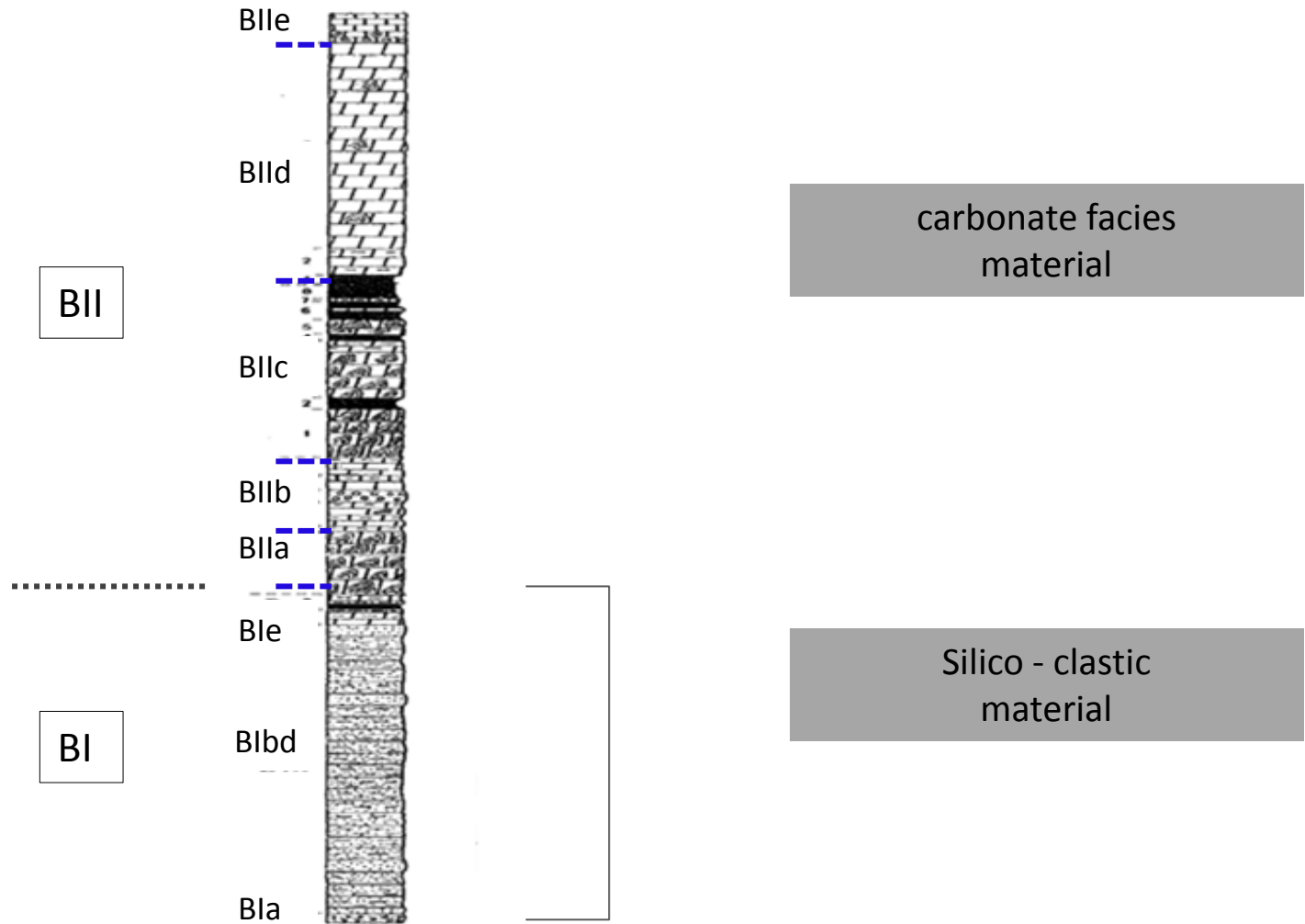
The **supergroup** comprises two groups



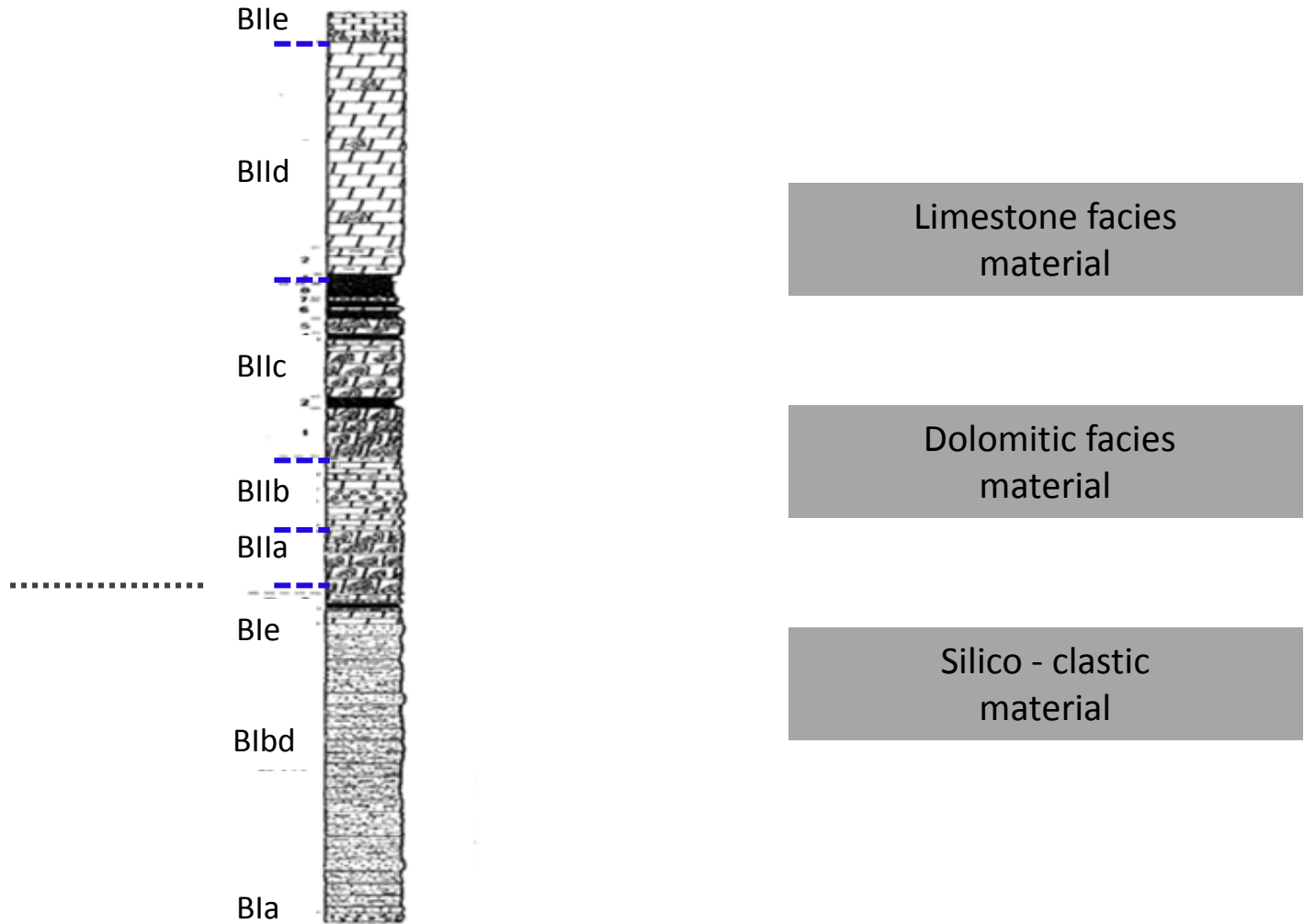
# The **supergroup** comprises two groups



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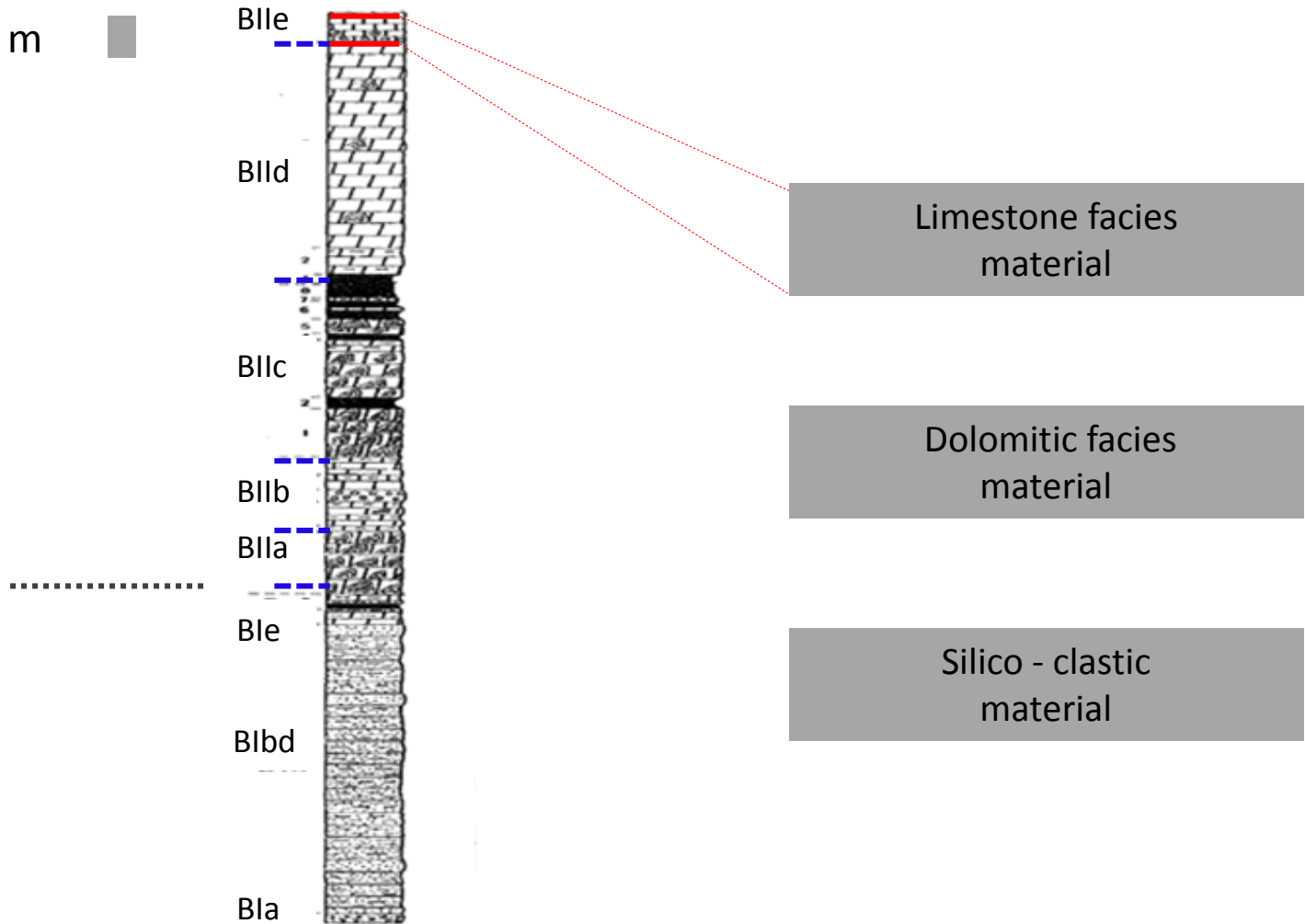


# Three main rocks group are found

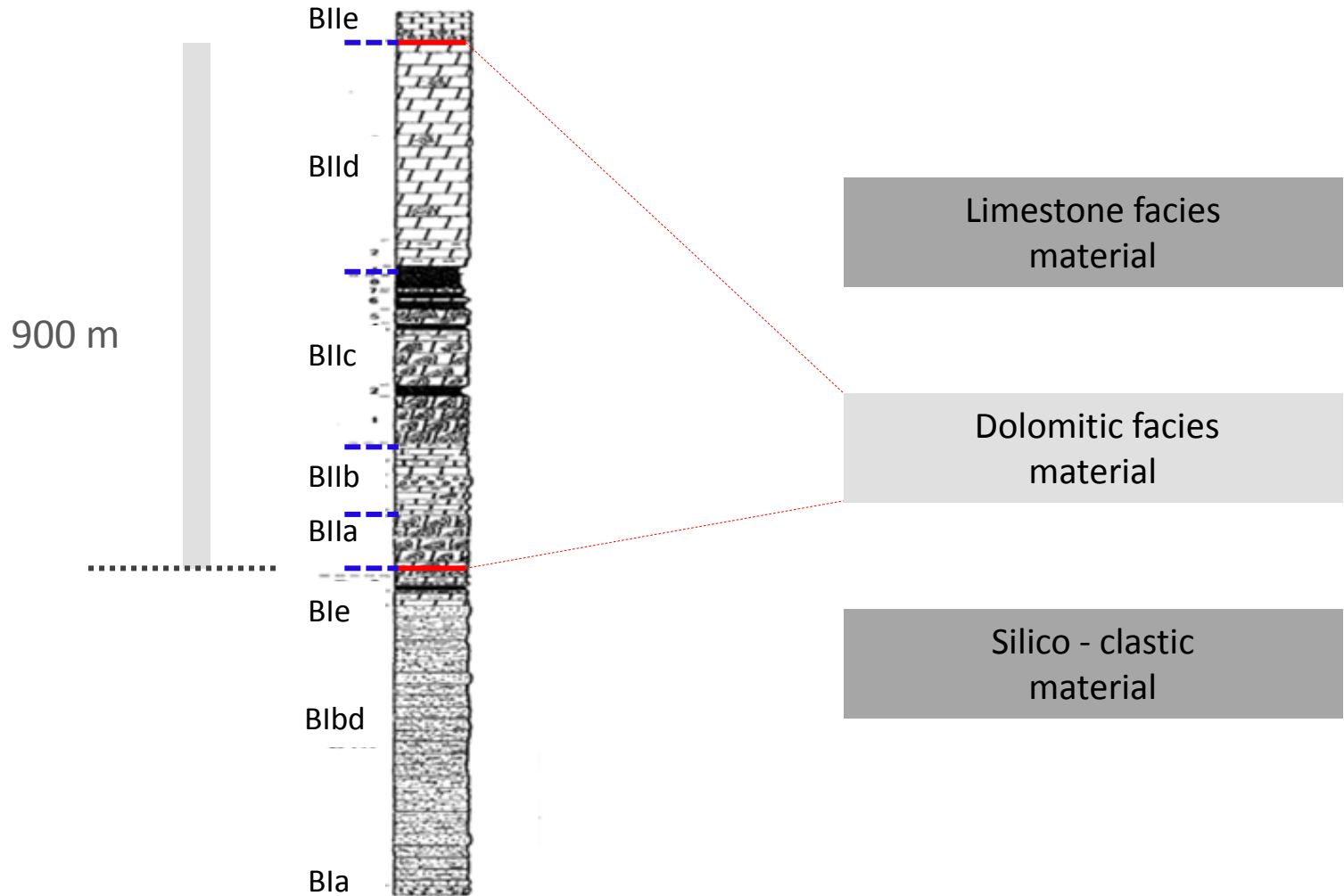


# Three main rocks group are found

100 m

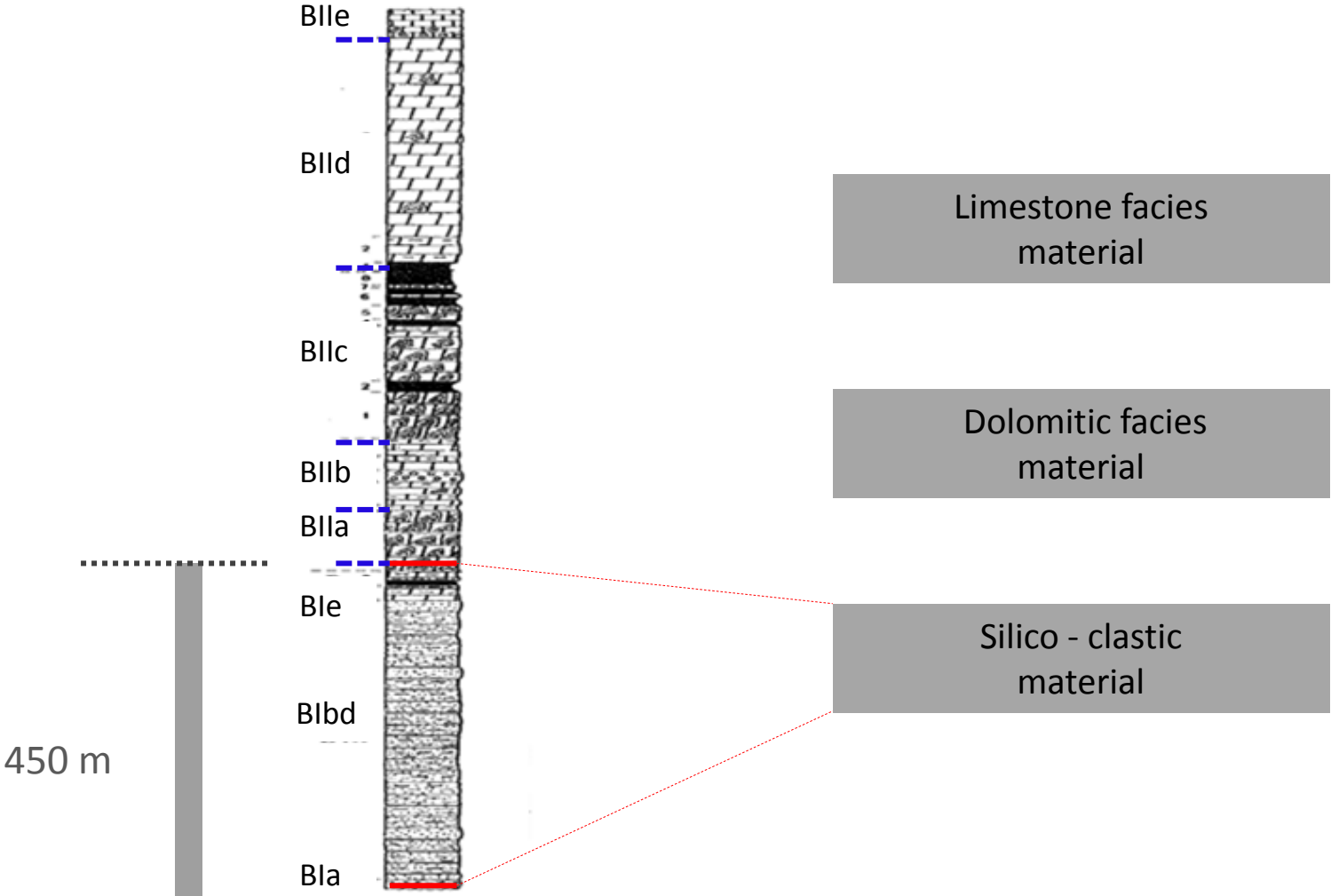


# Three main rocks group are found

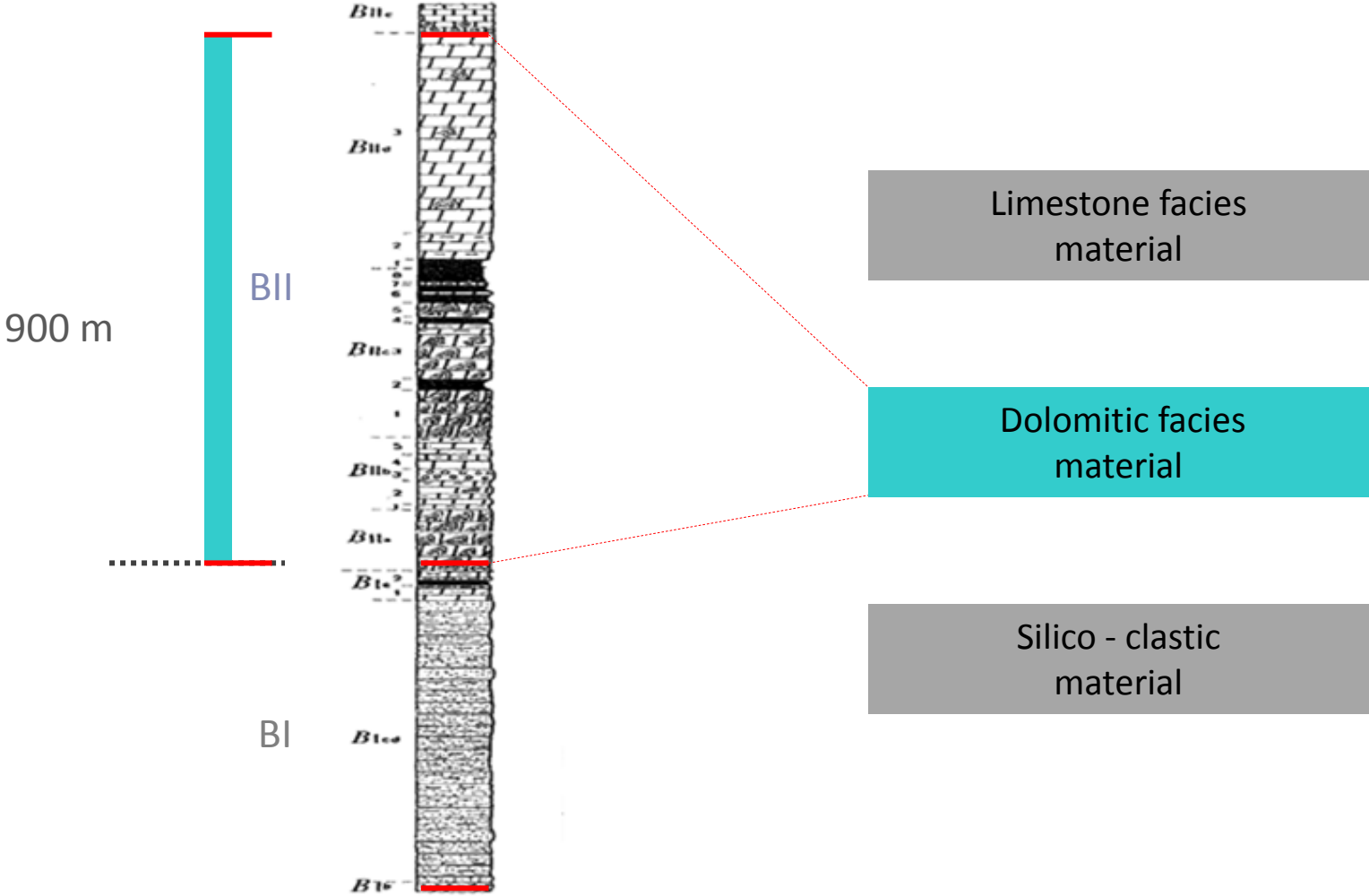




# Three main rocks group are found



# This study focused on dolomitic rocks

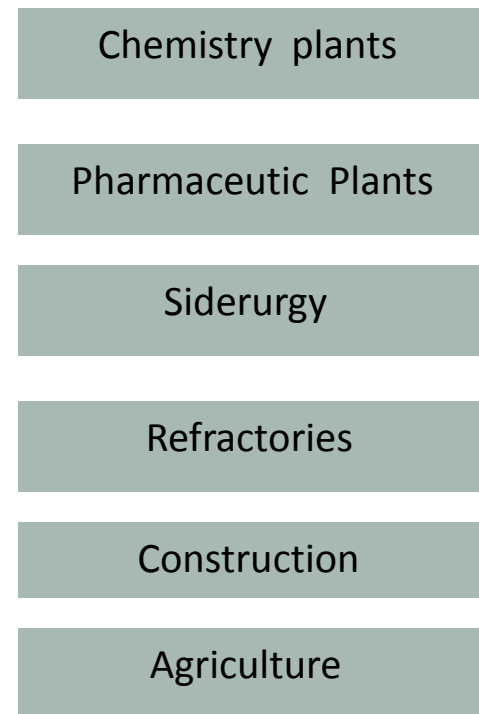


# Dolomitic material form part of carbonate rocks with many industrial **applications**

## Carbonate rocks (uses)



## Industrial Applications

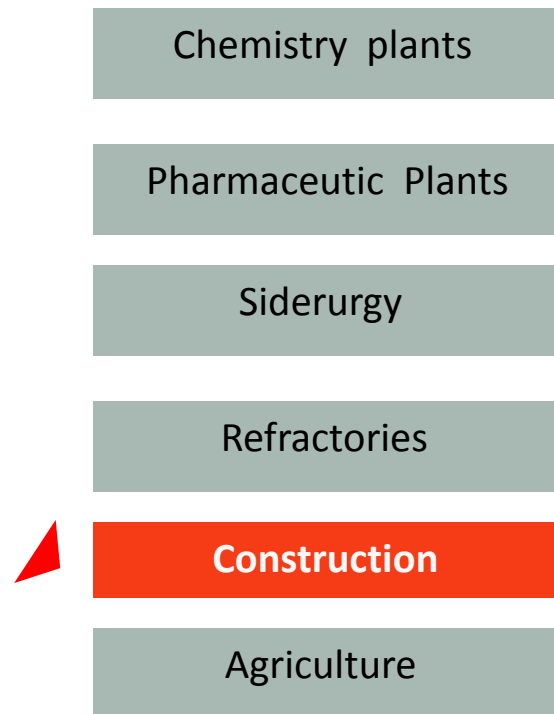


# Dolomitic material form part of carbonate rocks with many industrial **applications**

## Carbonate rocks (uses)



## Industrial Applications



# Summary



Dolomitic rocks  
*Geology and uses*

Characterization  
*Results / Discussion*

Sustainable use  
*actual and future*

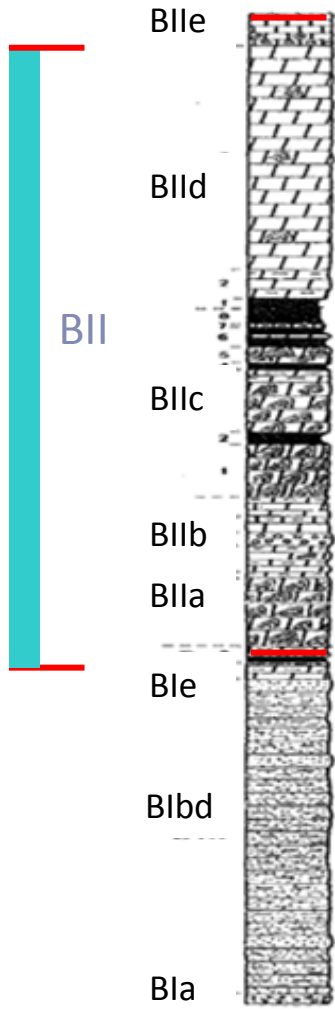
# Summary



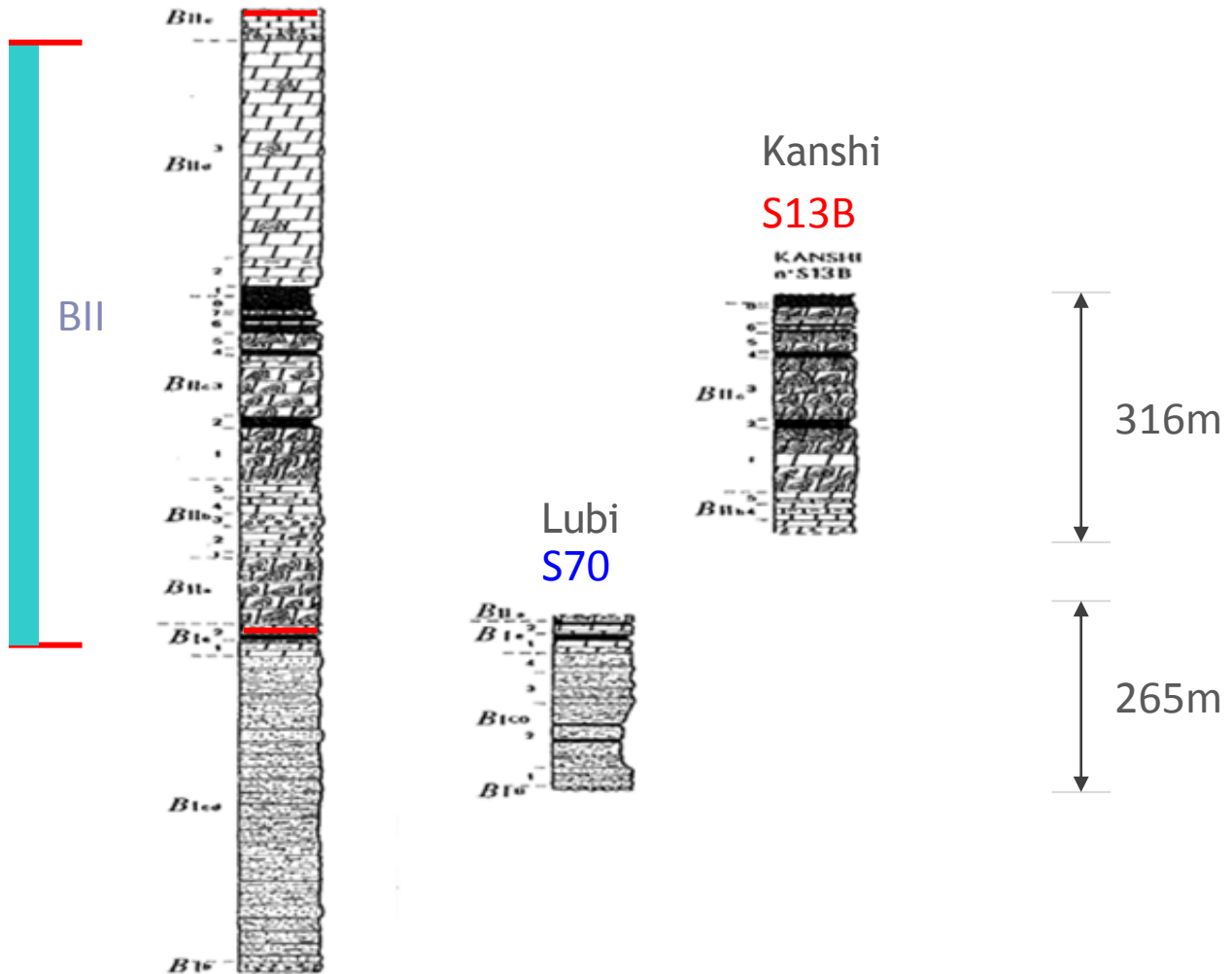
Dolomitic rocks  
*Geology and uses*

**2** **Characterization**  
*Results / Discussion*

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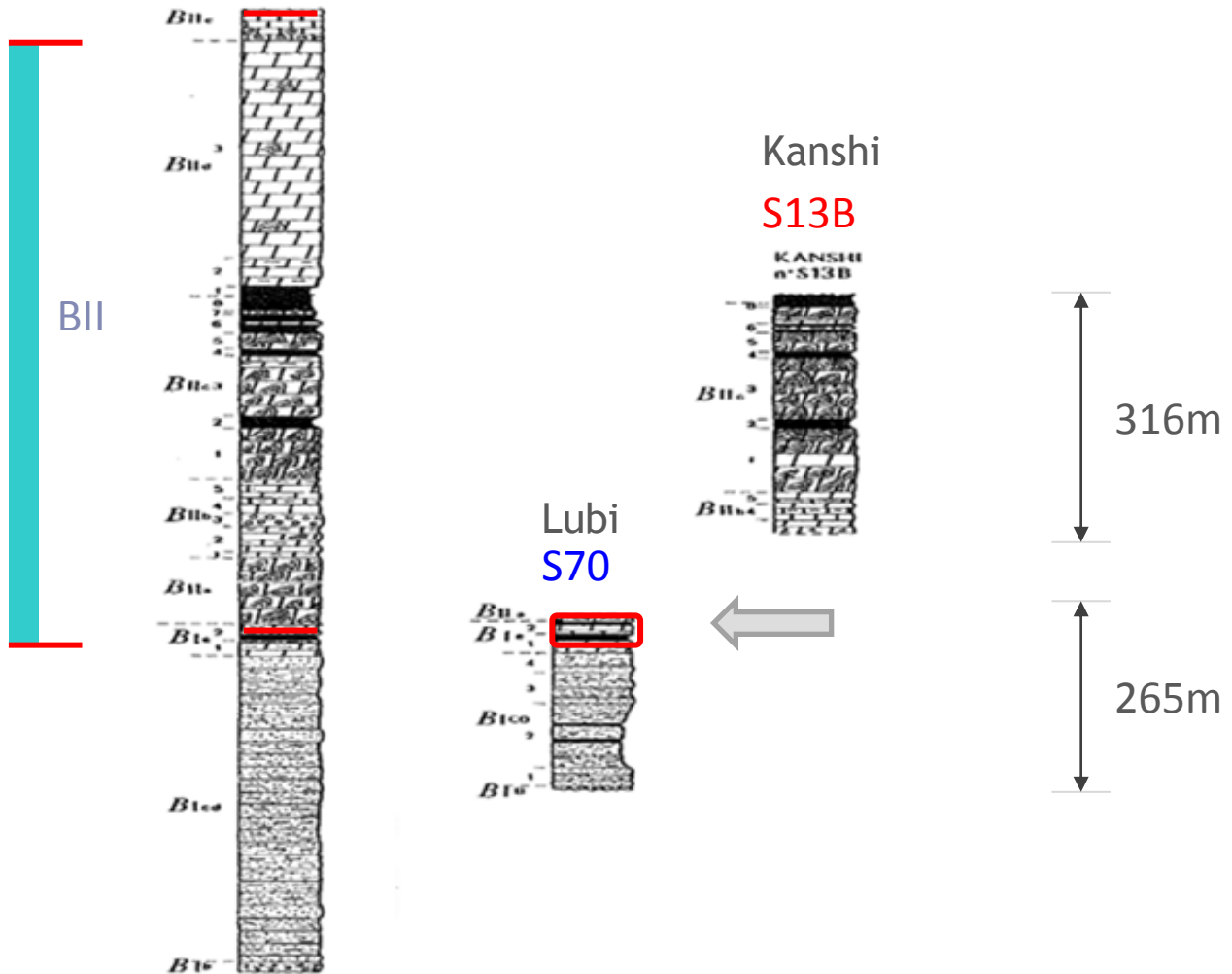


142 samples were taken from Kanshi **S13B** and Lubi **S70** boreholes





142 samples were taken from Kanshi **S13B** and Lubi **S70** boreholes

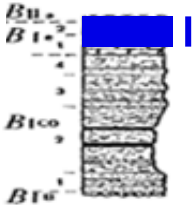


Samples were taken on drill cores for both S13B and S70 boreholes

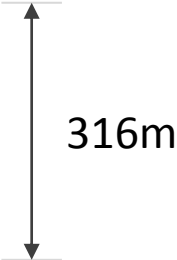
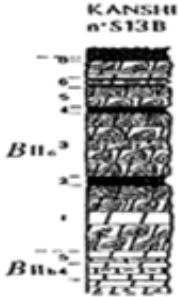


Drill Cores

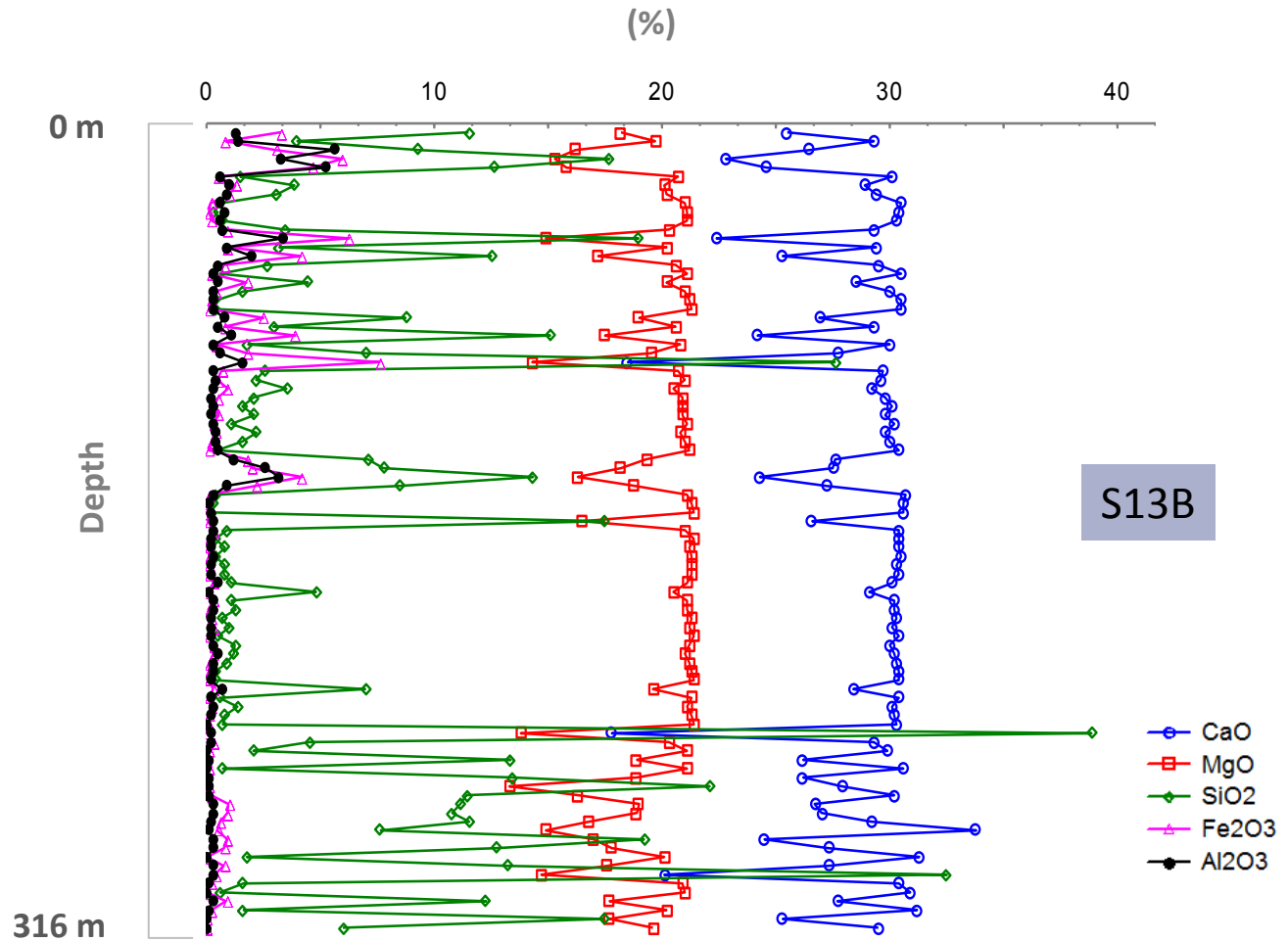
Lubi  
**S70**



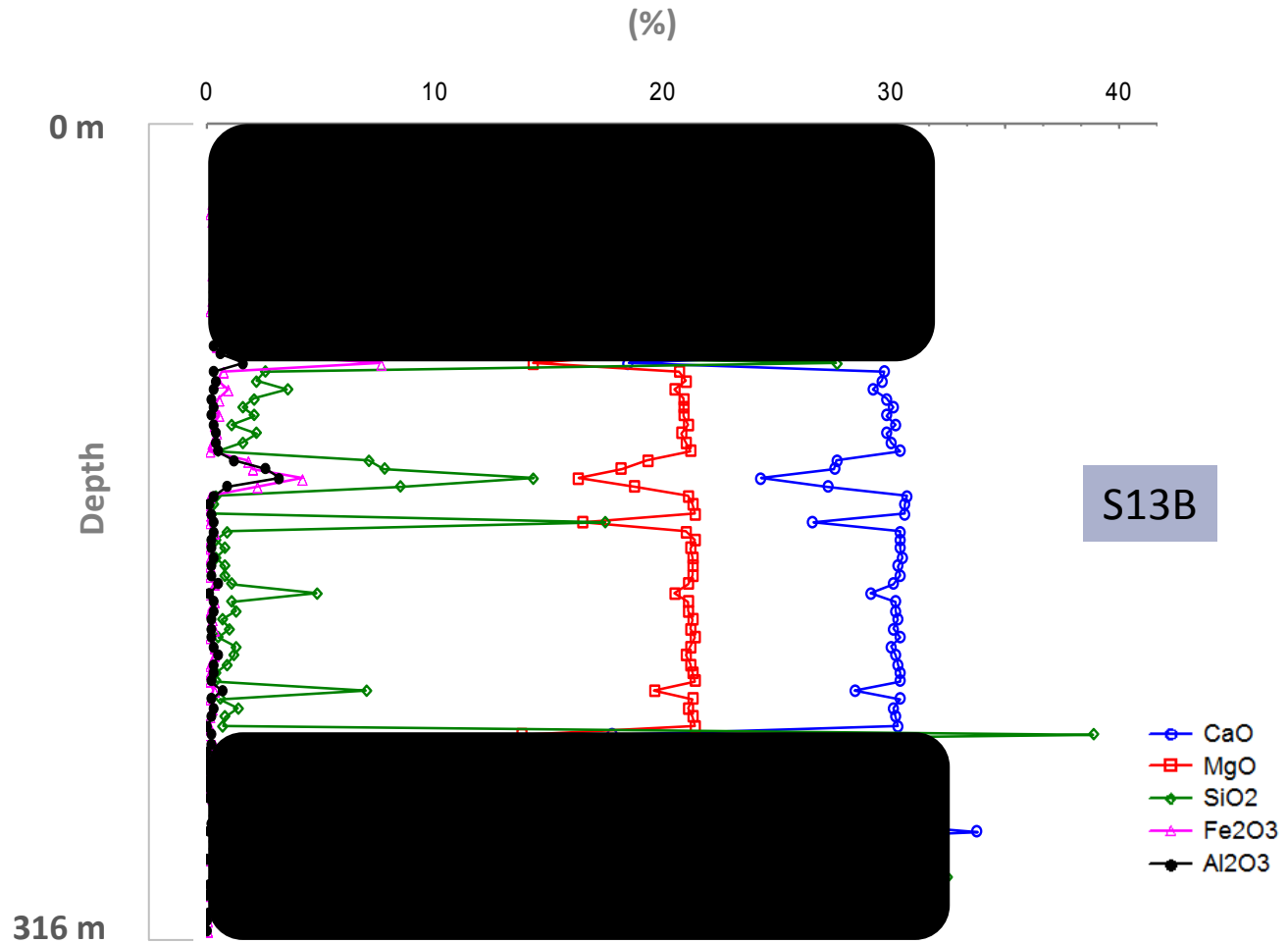
Kanshi  
**S13B**



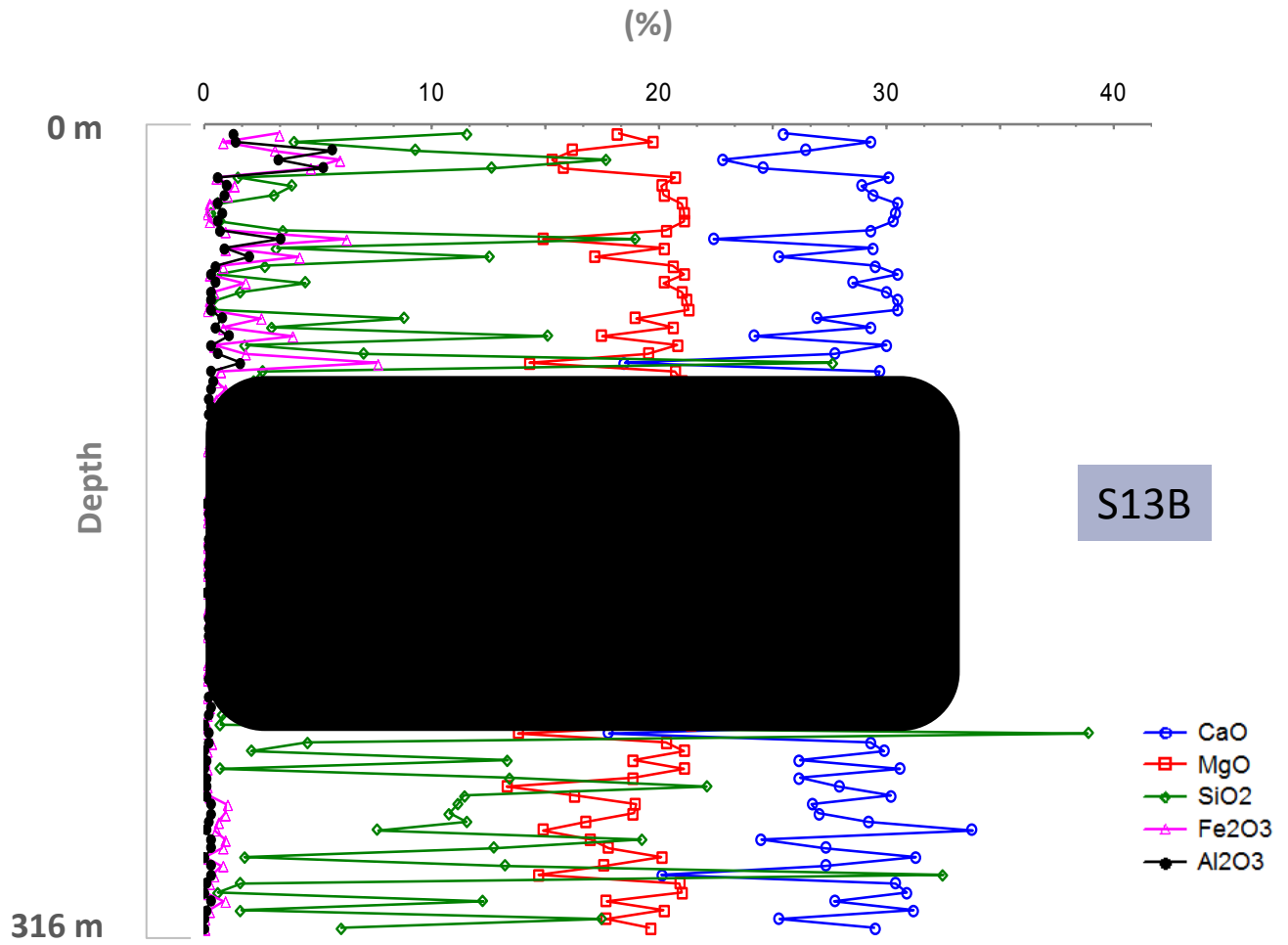
# XRF Results ( S13B)



CaO , MgO, SiO<sub>2</sub> and Fe<sub>2</sub>O<sub>3</sub> components vary in the upper and lower parts

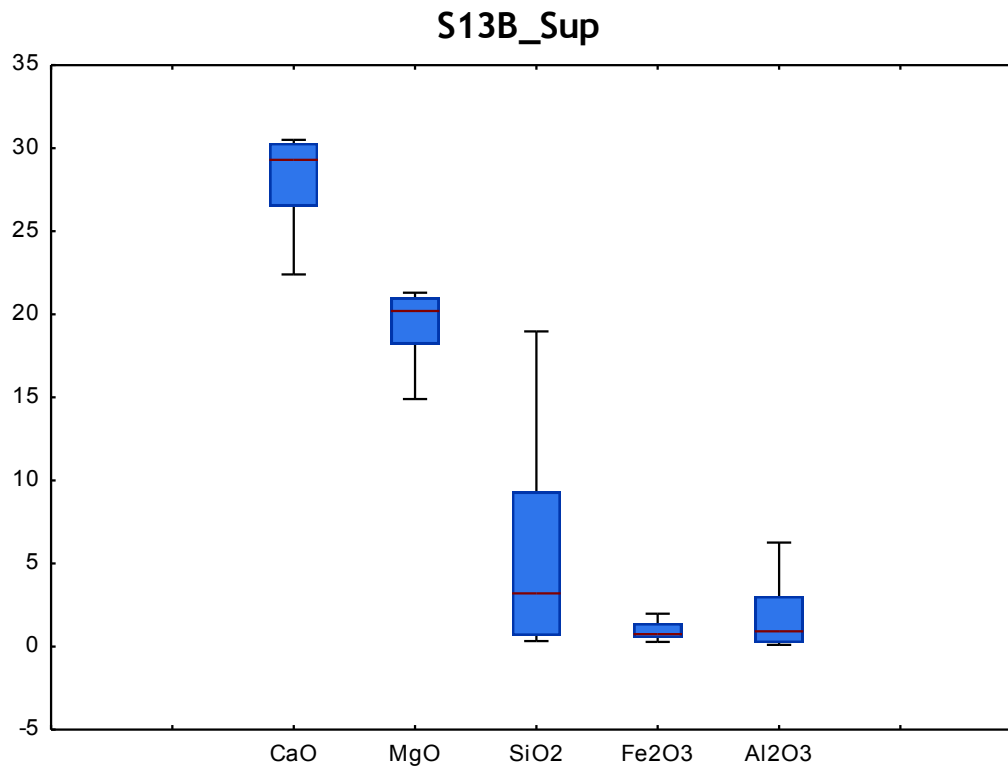


CaO , MgO, SiO<sub>2</sub> and Fe<sub>2</sub>O<sub>3</sub> components look like constant in middle - layers

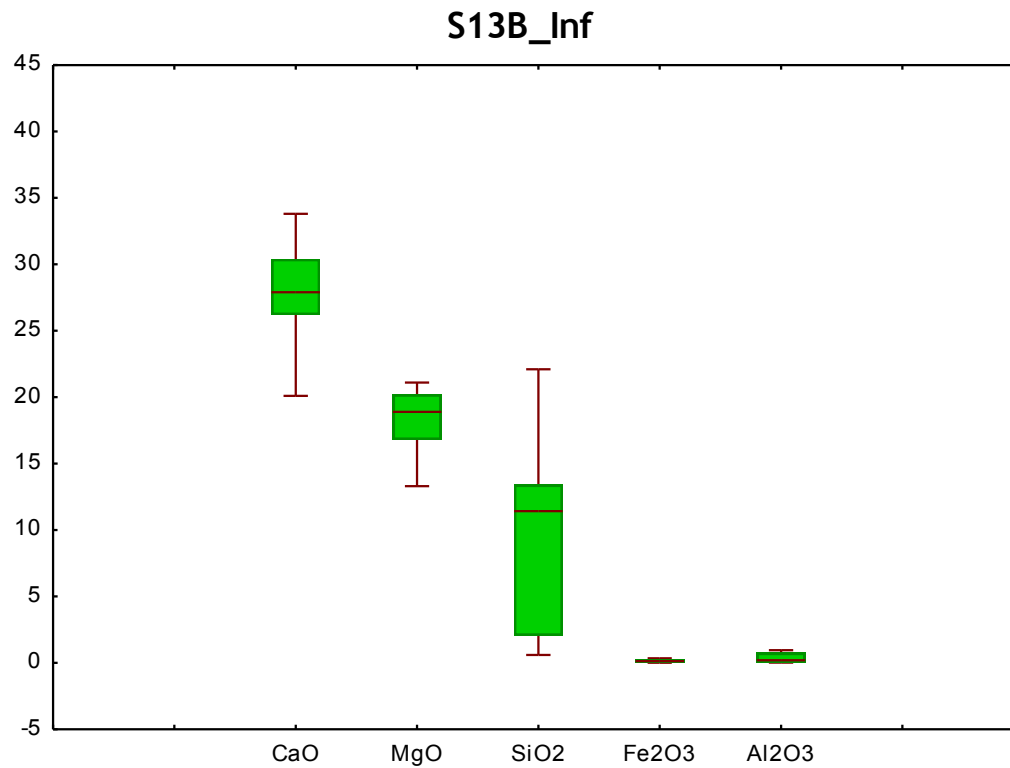


S13B

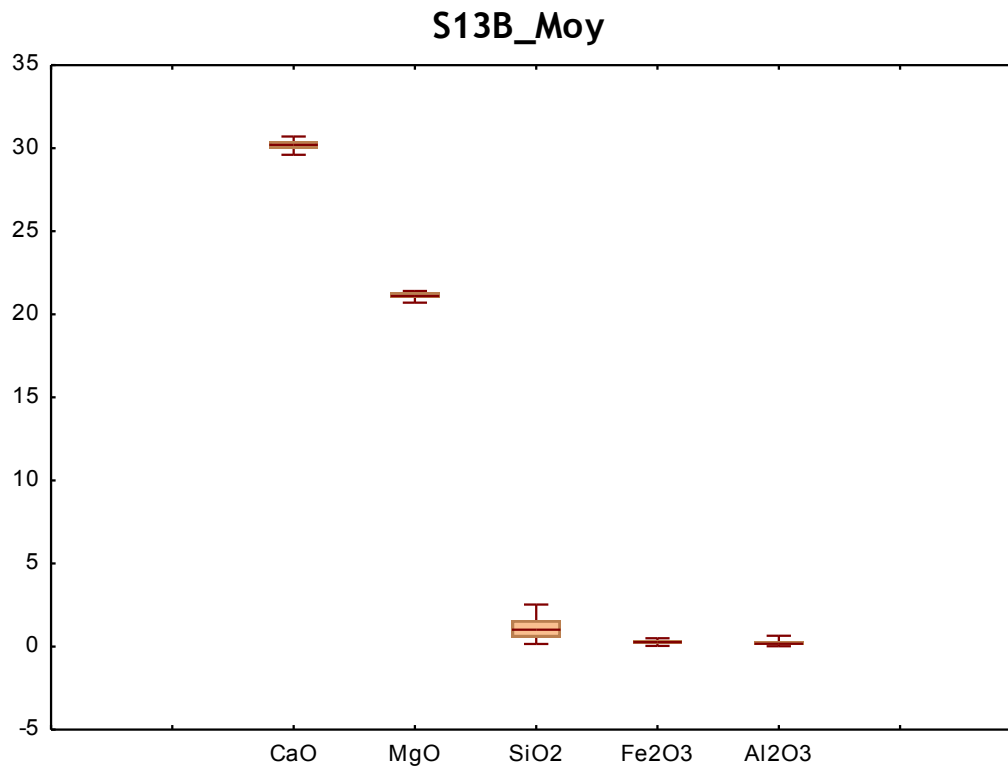
CaO , MgO, SiO<sub>2</sub> and Fe<sub>2</sub>O<sub>3</sub> components vary in the upper and lower parts



CaO , MgO, SiO<sub>2</sub> and Fe<sub>2</sub>O<sub>3</sub> components vary in the upper and lower parts

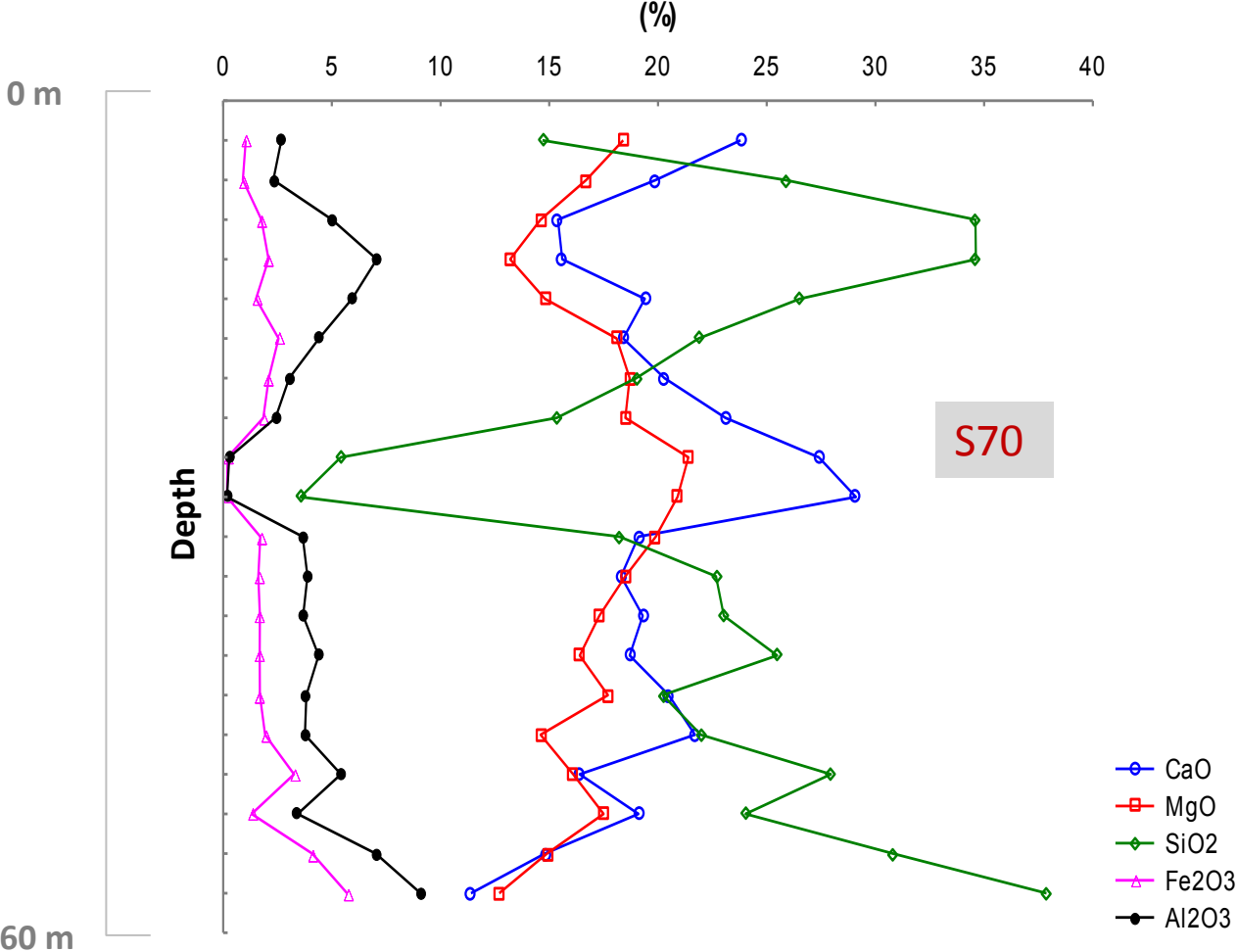


There is low variability in the  
**middle** part

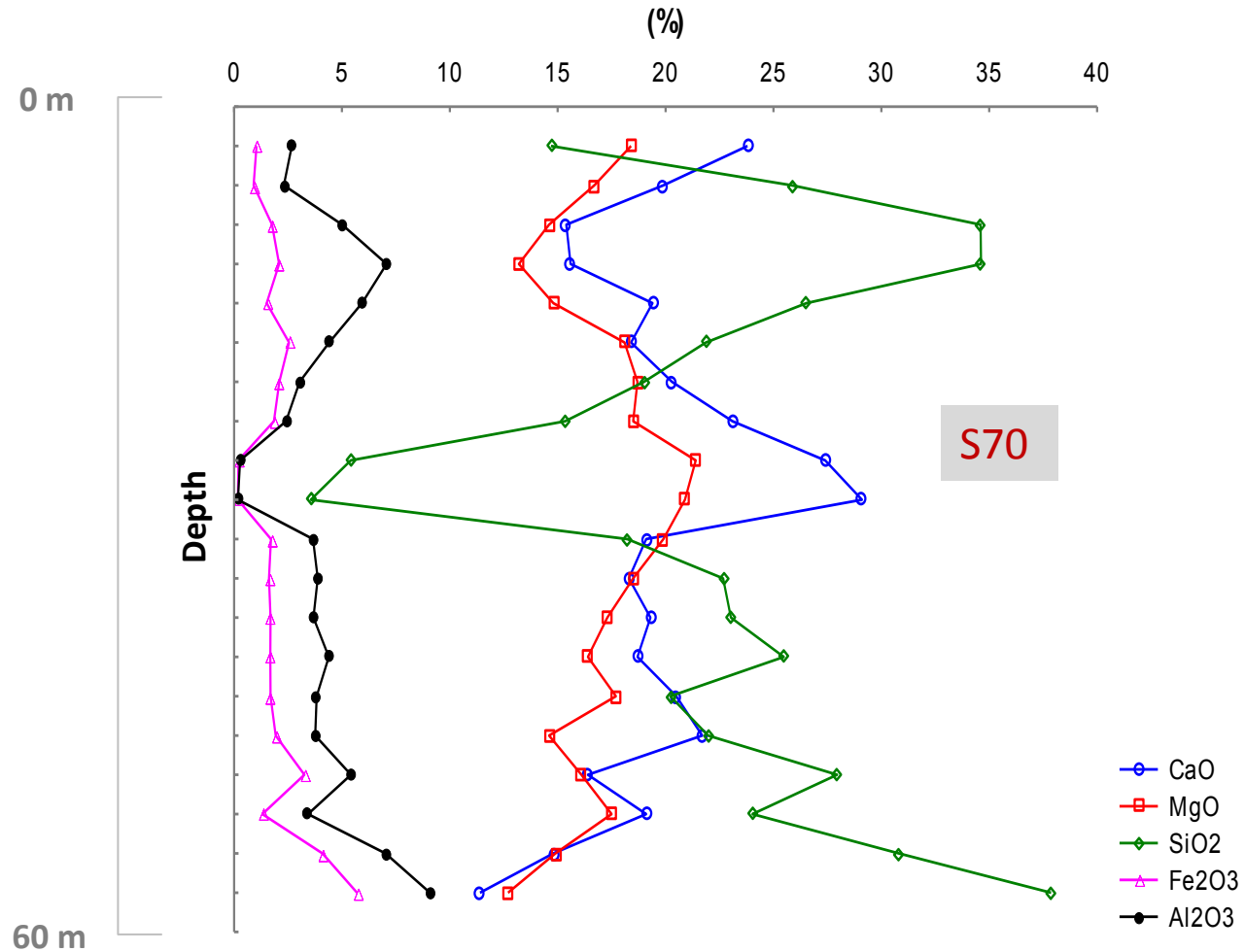




# XRF results ( S70)

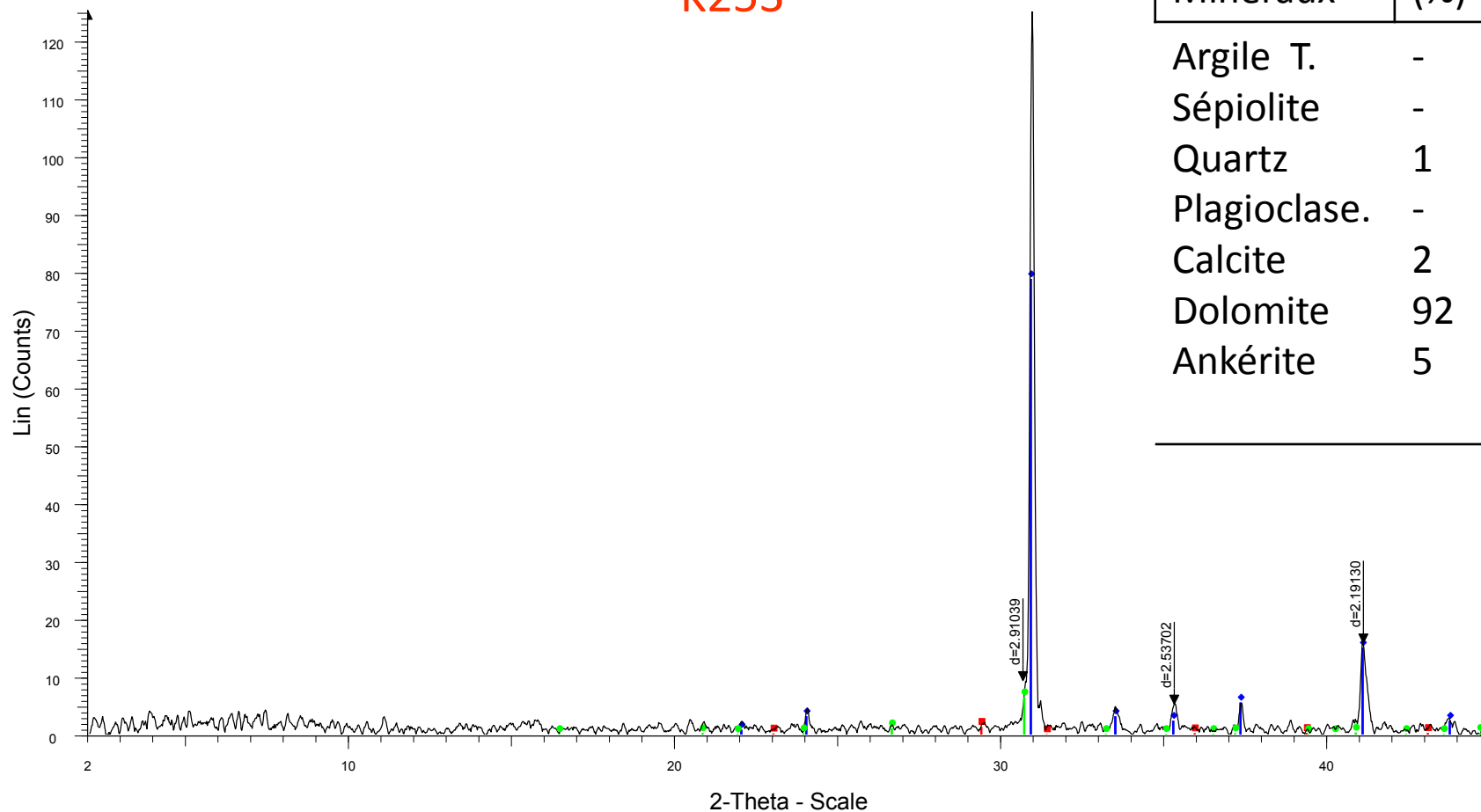


Results show low **lime** and **magnesia** content



# XRD results: D8-Advance Bruker

K253

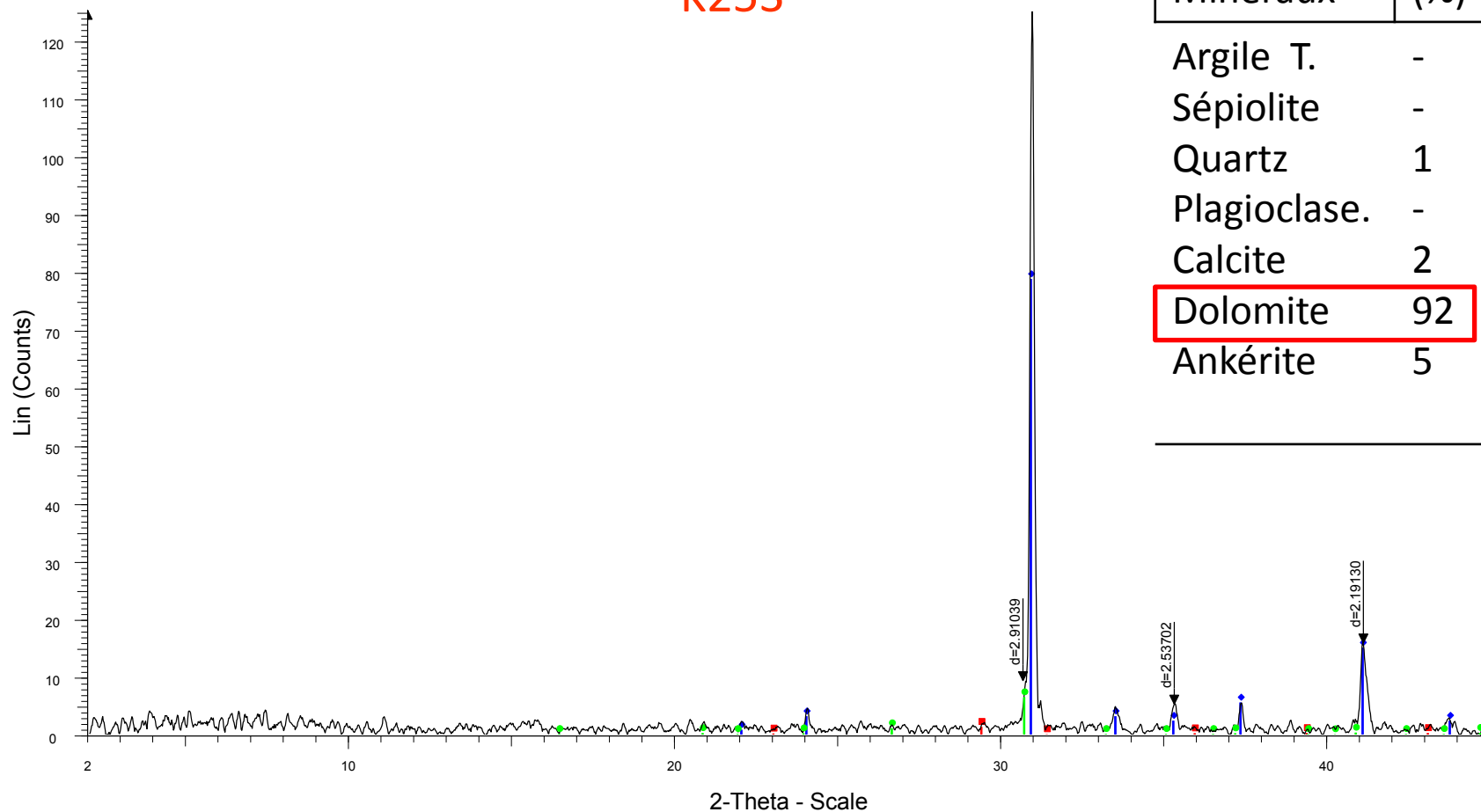


Minéraux	(%)
----------	-----

Argile T.	-
Sépiolite	-
Quartz	1
Plagioclase.	-
Calcite	2
Dolomite	92
Ankérite	5

# XRD results: D8-Advance Bruker

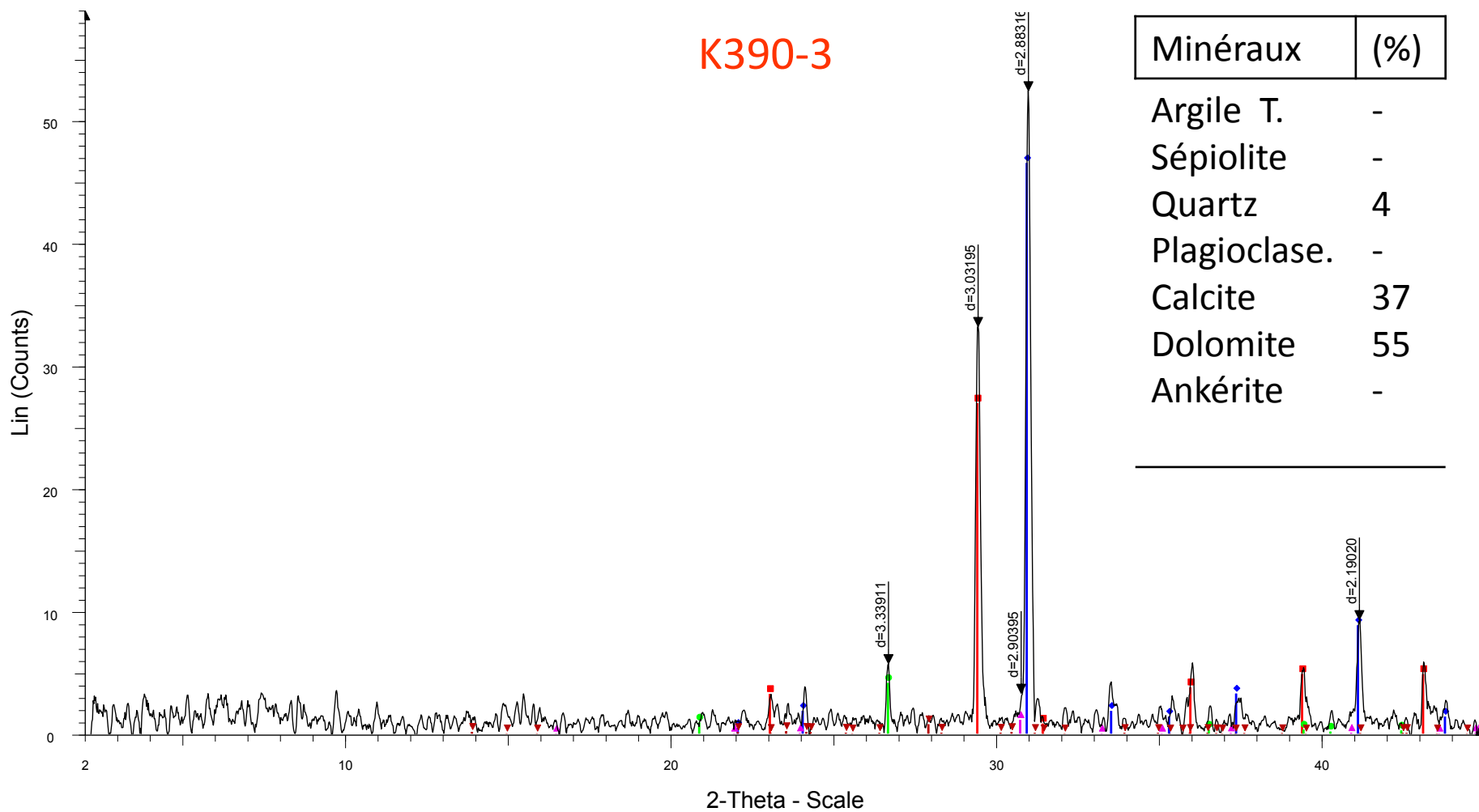
K253



Minéraux	(%)
Argile T.	-
Sépiolite	-
Quartz	1
Plagioclase.	-
Calcite	2
<b>Dolomite</b>	<b>92</b>
Ankérite	5

# XRD results: D8-Advance Bruker

K390-3

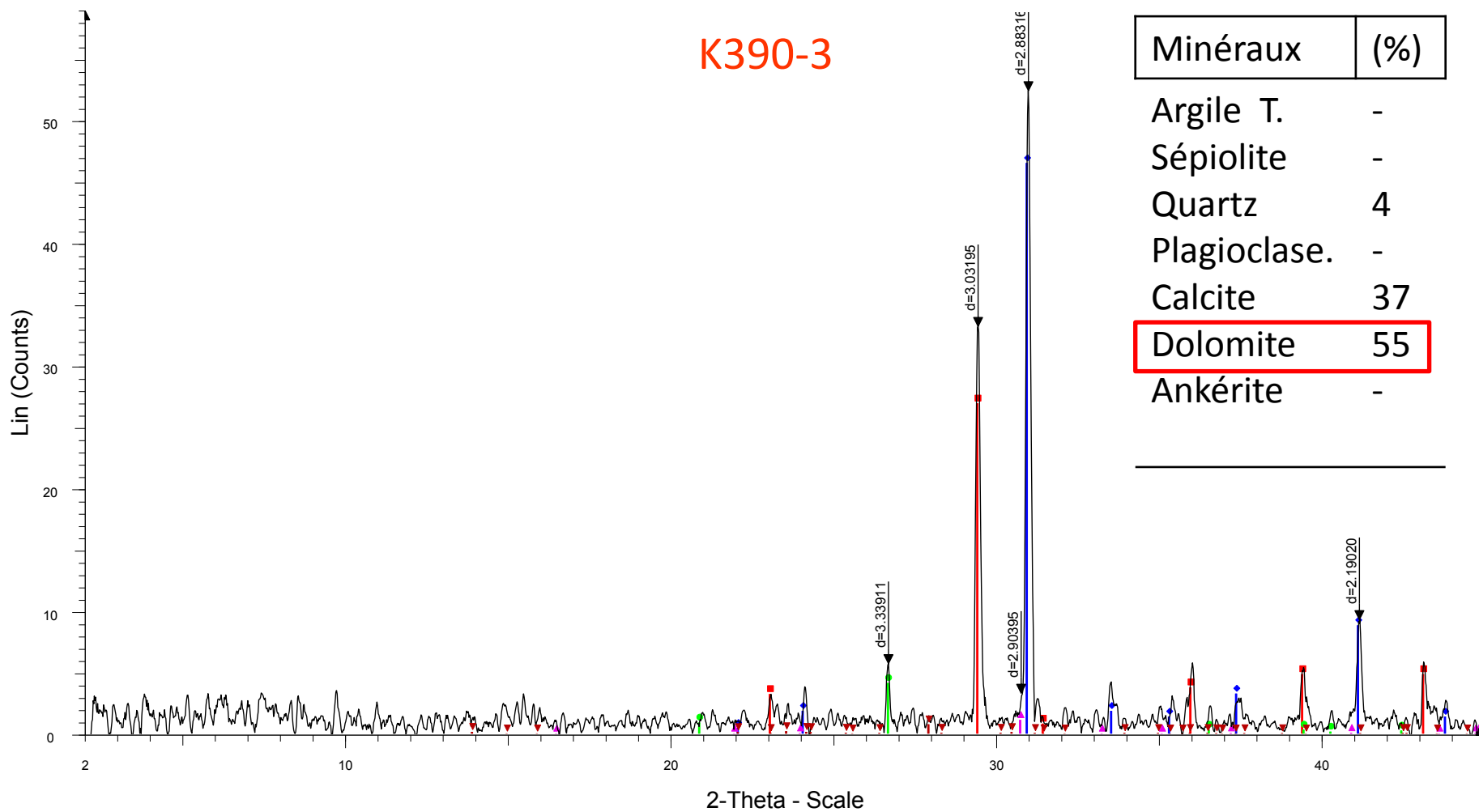


Minéraux	(%)
----------	-----

Argile T.	-
Sépiolite	-
Quartz	4
Plagioclase.	-
Calcite	37
Dolomite	55
Ankérite	-

# XRD results: D8-Advance Bruker

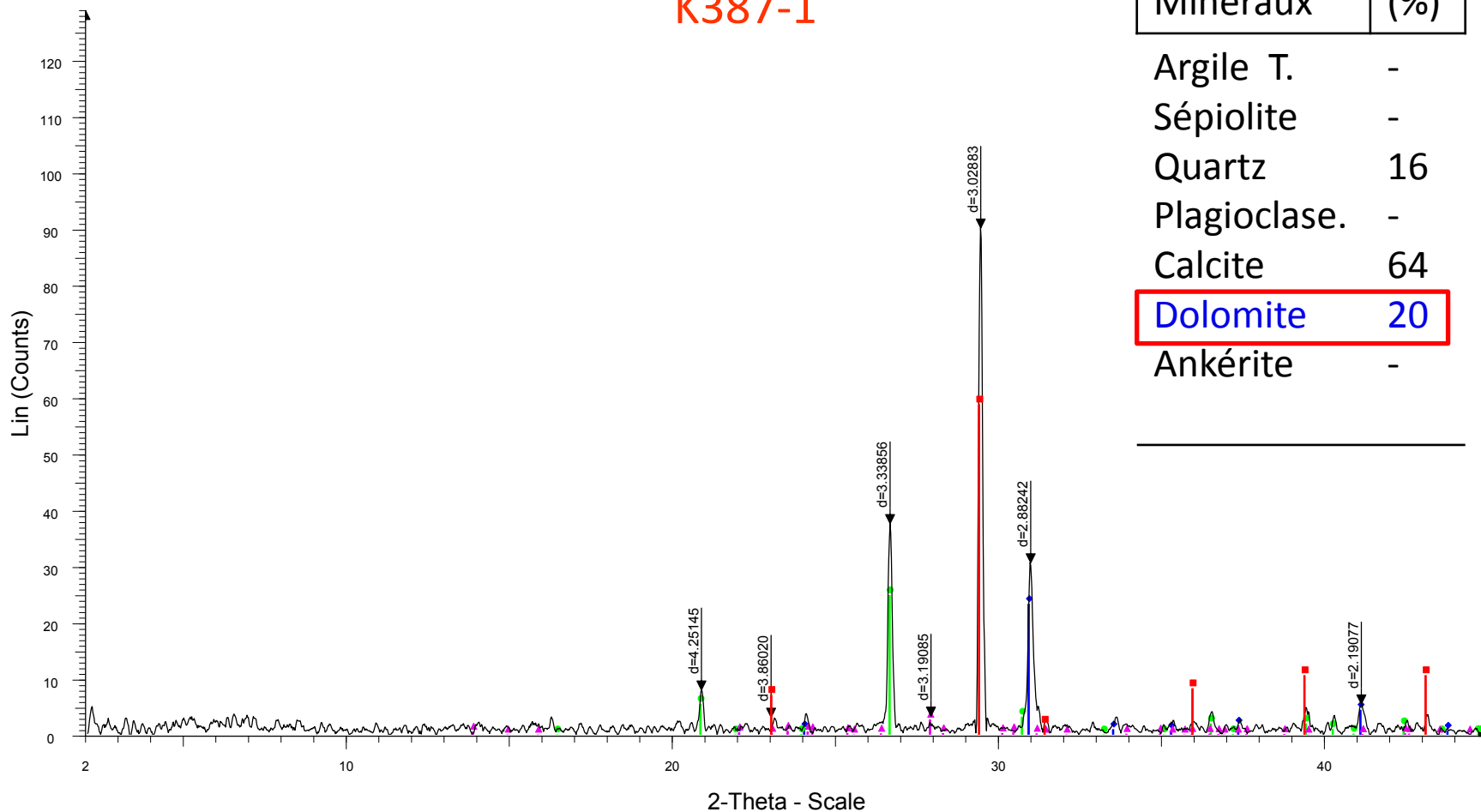
K390-3



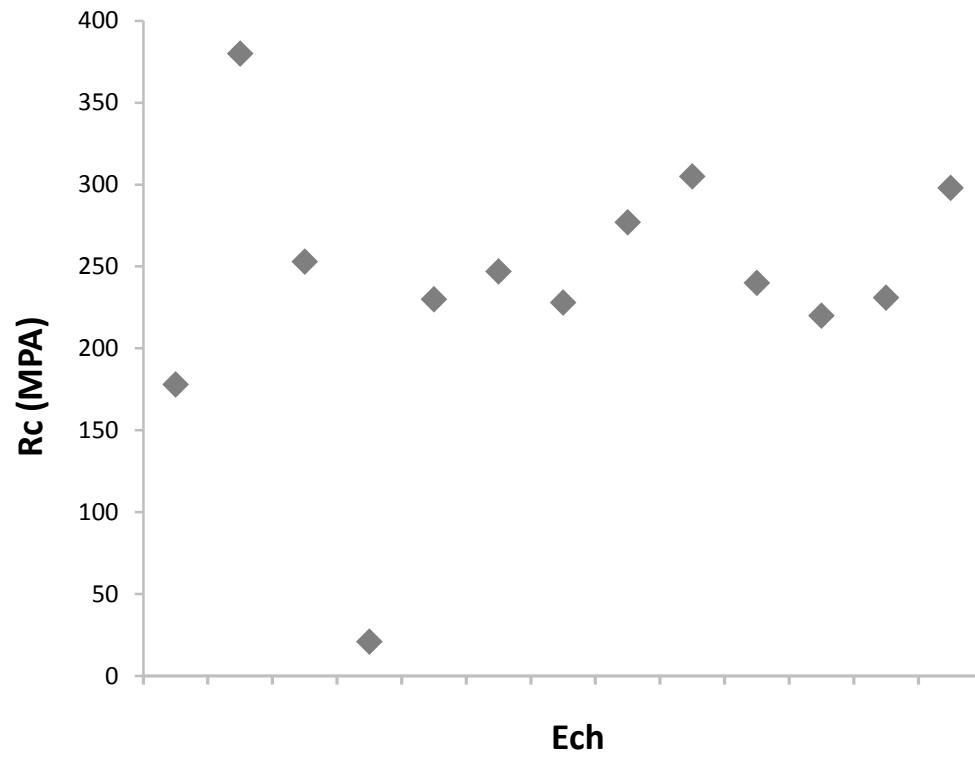
Minéraux	(%)
Argile T.	-
Sépiolite	-
Quartz	4
Plagioclase.	-
Calcite	37
<b>Dolomite</b>	<b>55</b>
Ankérite	-

# XRD results: D8-Advance Bruker

K387-1

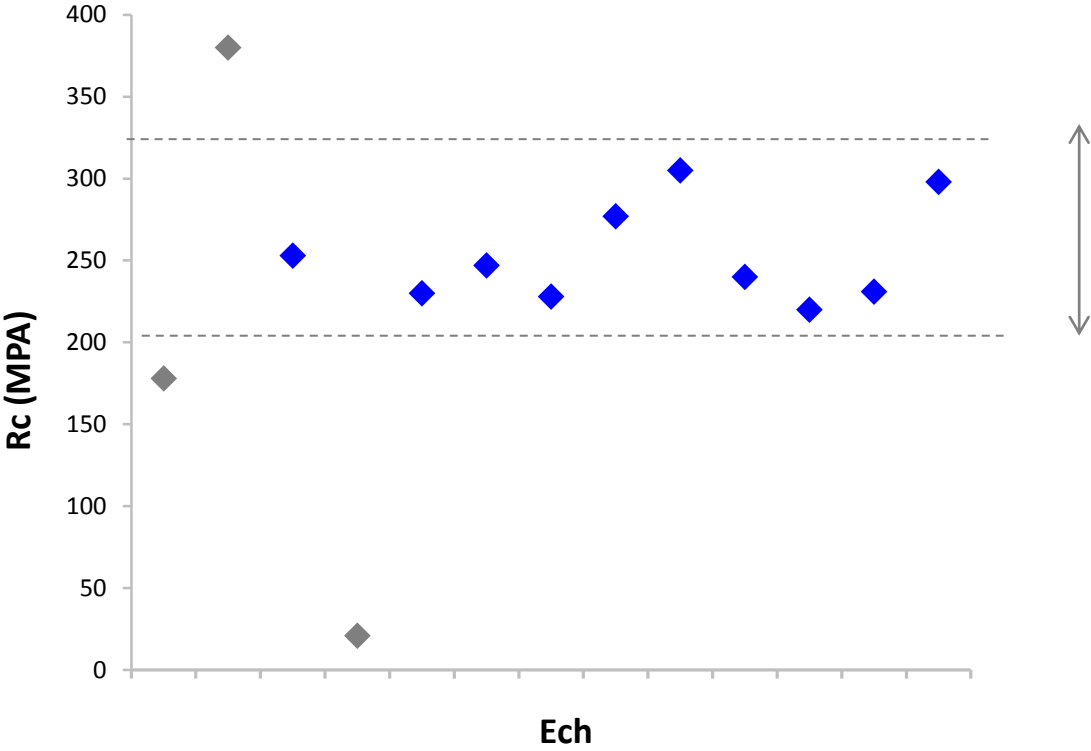


Minéraux	(%)
Argile T.	-
Sépiolite	-
Quartz	16
Plagioclase.	-
Calcite	64
<b>Dolomite</b>	<b>20</b>
Ankérite	-

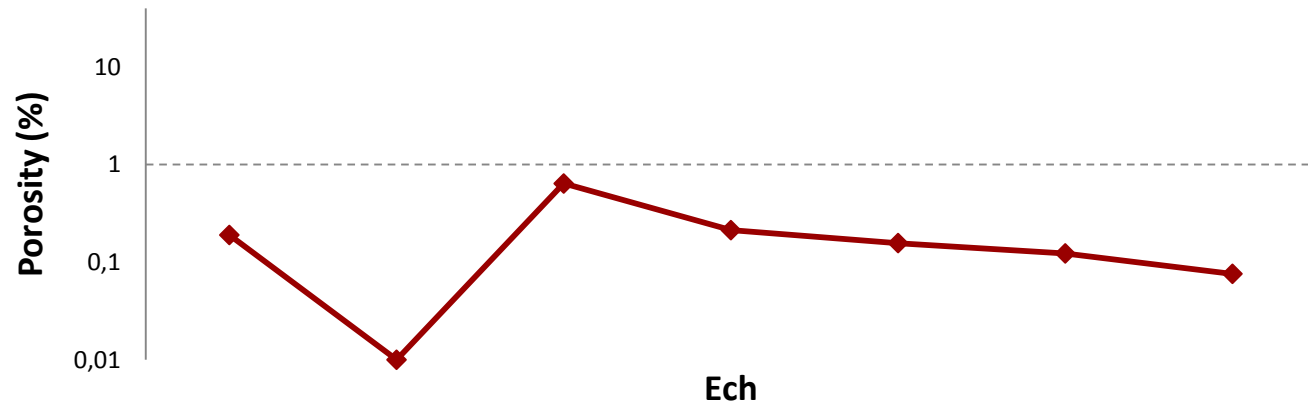




Acceptable mechanical strength values range between 200 and 380 Mpa



Very low porosity (less than 0,5 %)



# Summary



Dolomitic rocks  
*Geology and uses*

Caractérisations  
*Results / Discussion*

Sustainable use  
*actual and future*

# Summary



Dolomitic rocks  
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**3**

**Sustainable use**  
*actual and future*

# All faciès show good mechanical and physical **properties**

S70

BIIa

Ble

Impurities (%)

Si,  
Al,  
Fe,  
Mn ...

Applications

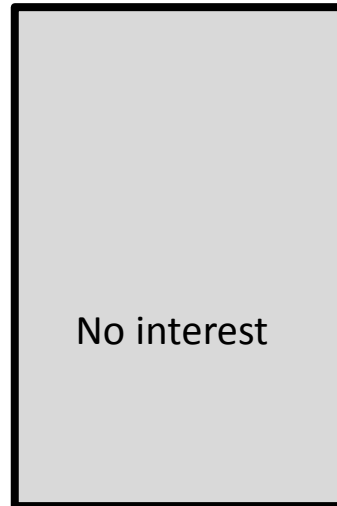
?

All faciès show good mechanical and physical **properties**

S70



Impurities (%)

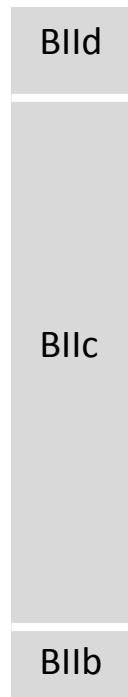


Applications

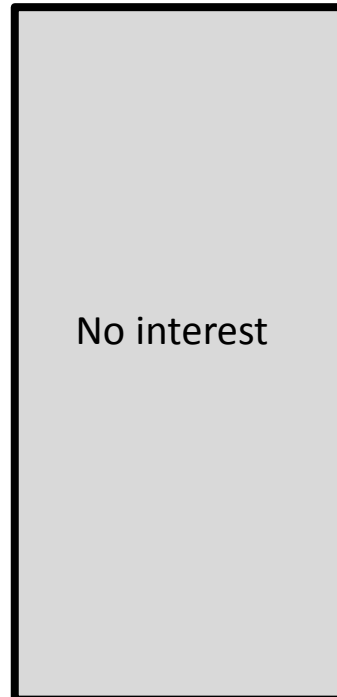


All faciès show good mechanical and physical **properties**

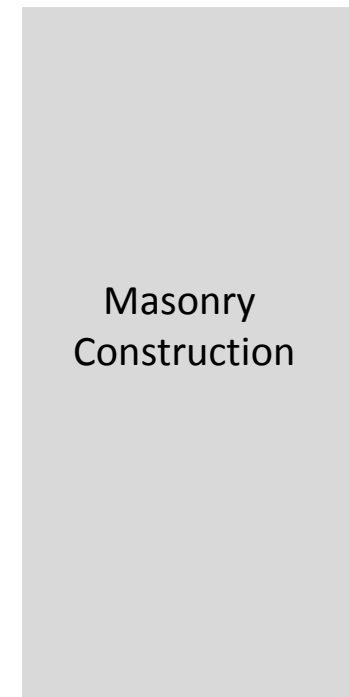
S13B



Impurities (%)

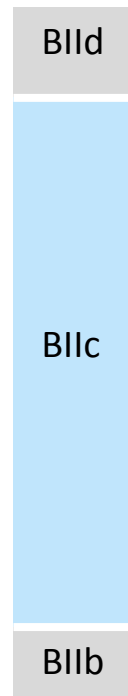


Applications

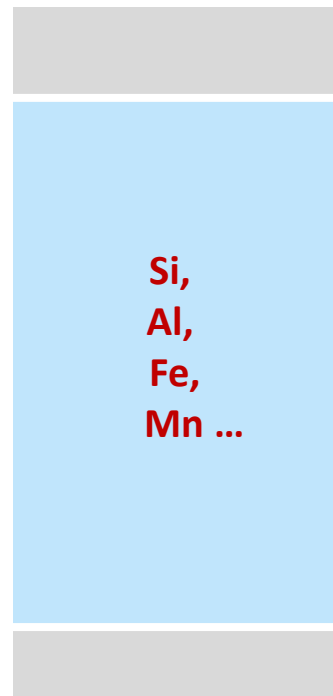


For sustainable use the **BIIC** must be managed for specific applications

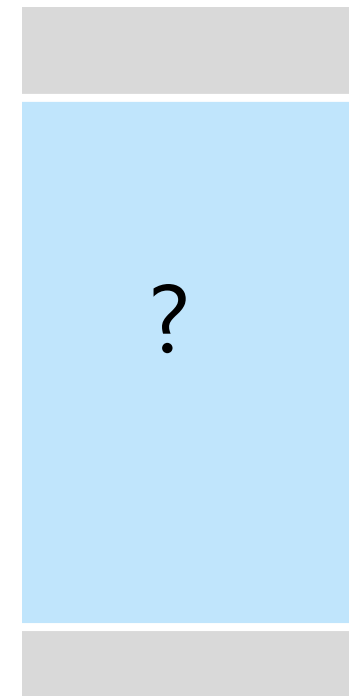
S13B



Impurities (%)



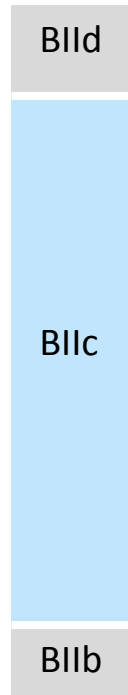
Applications



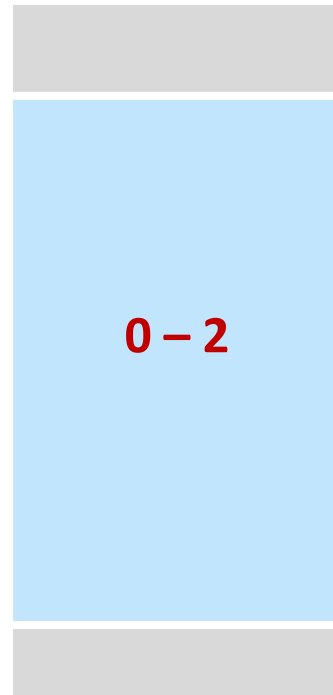


For sustainable use the **BIlc** must be managed for specific applications

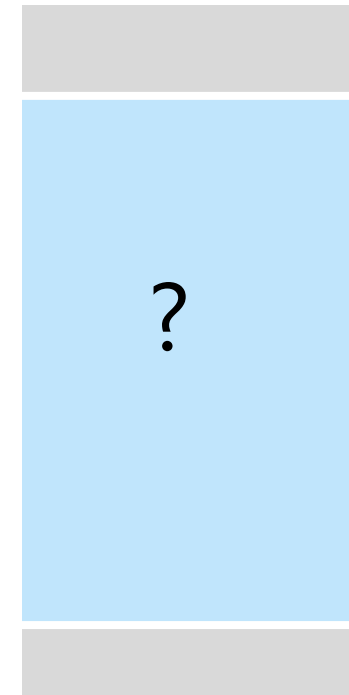
S13B



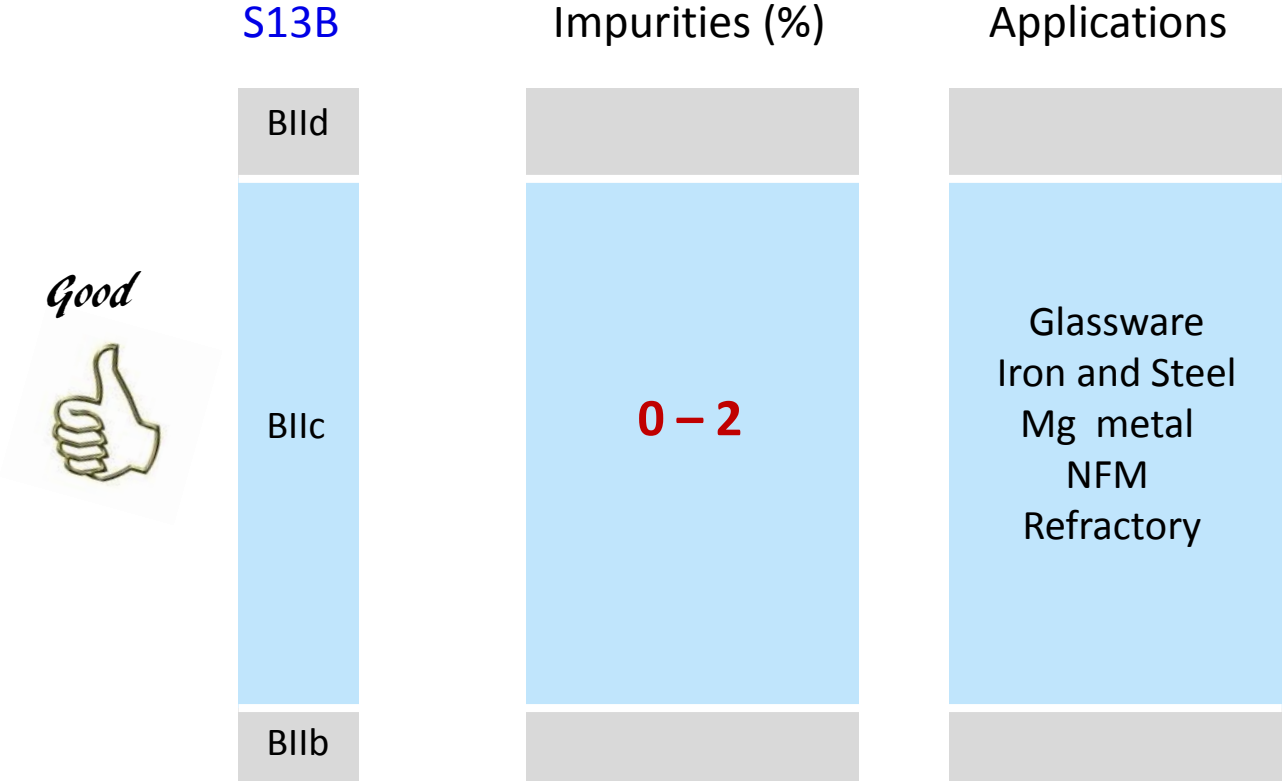
Impurities (%)



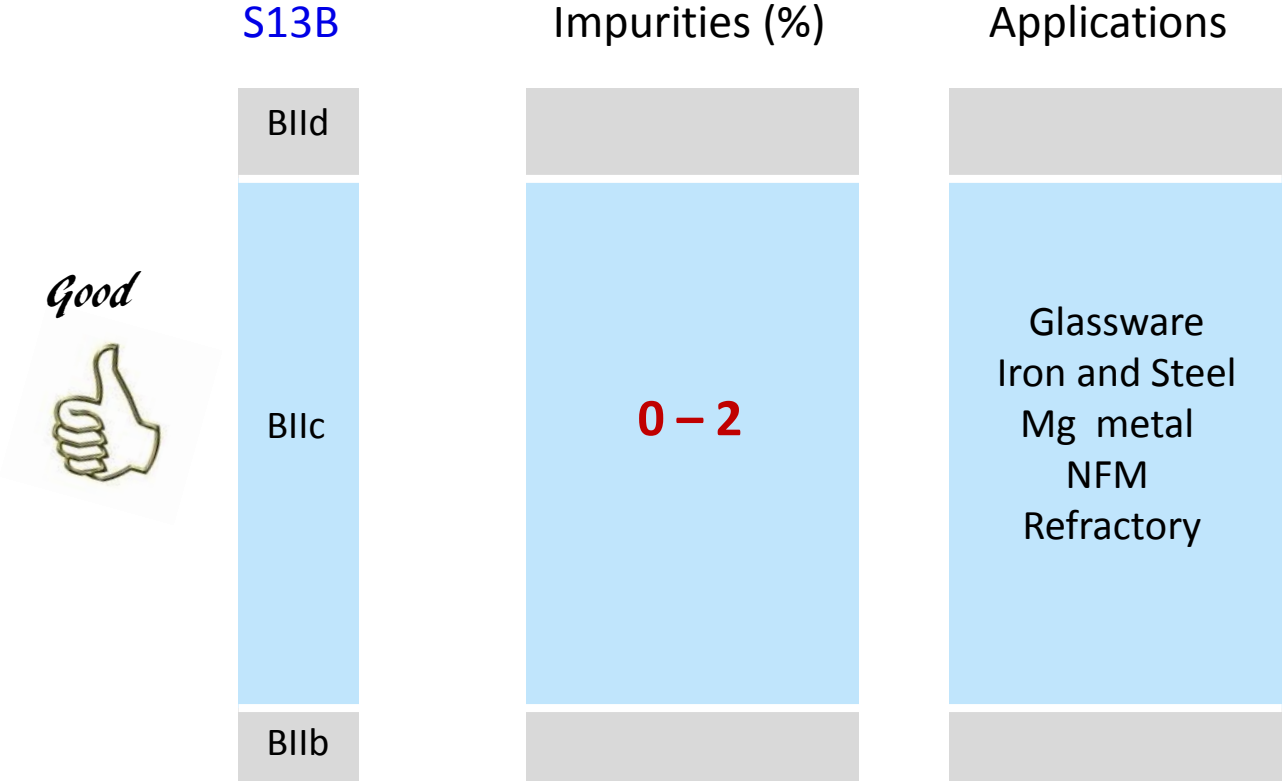
Applications




For sustainable use the **BIIC** must be managed for specific applications




For sustainable use the **BIlc** must be managed for specific applications



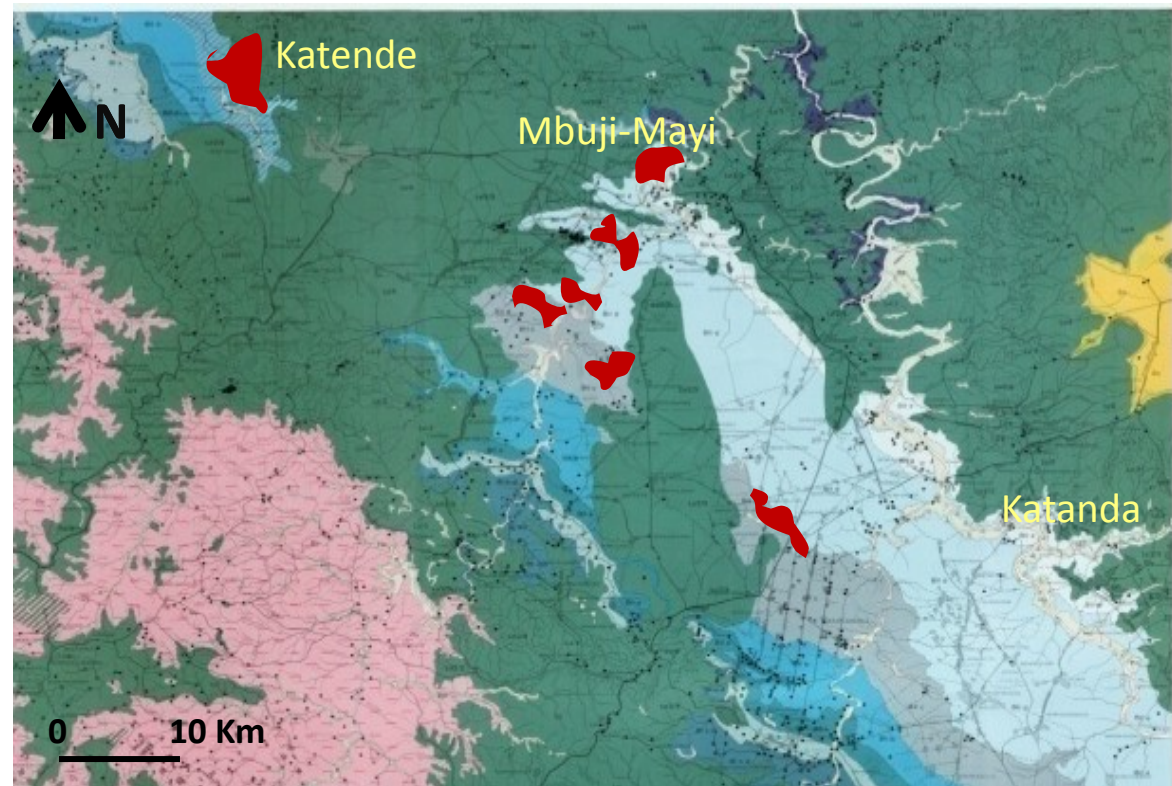
# For sustainable use the **BIIC** must be managed for specific applications

	S13B	Impurities (%)	Applications
	BIId		
<i>Good</i> 	BIIC	0 – 0.5	Glassware
	BIIC	0 – 0.5	Mg metal
	BIIC	0 – 0.5	Filler ; Mg metal
	BIIf		

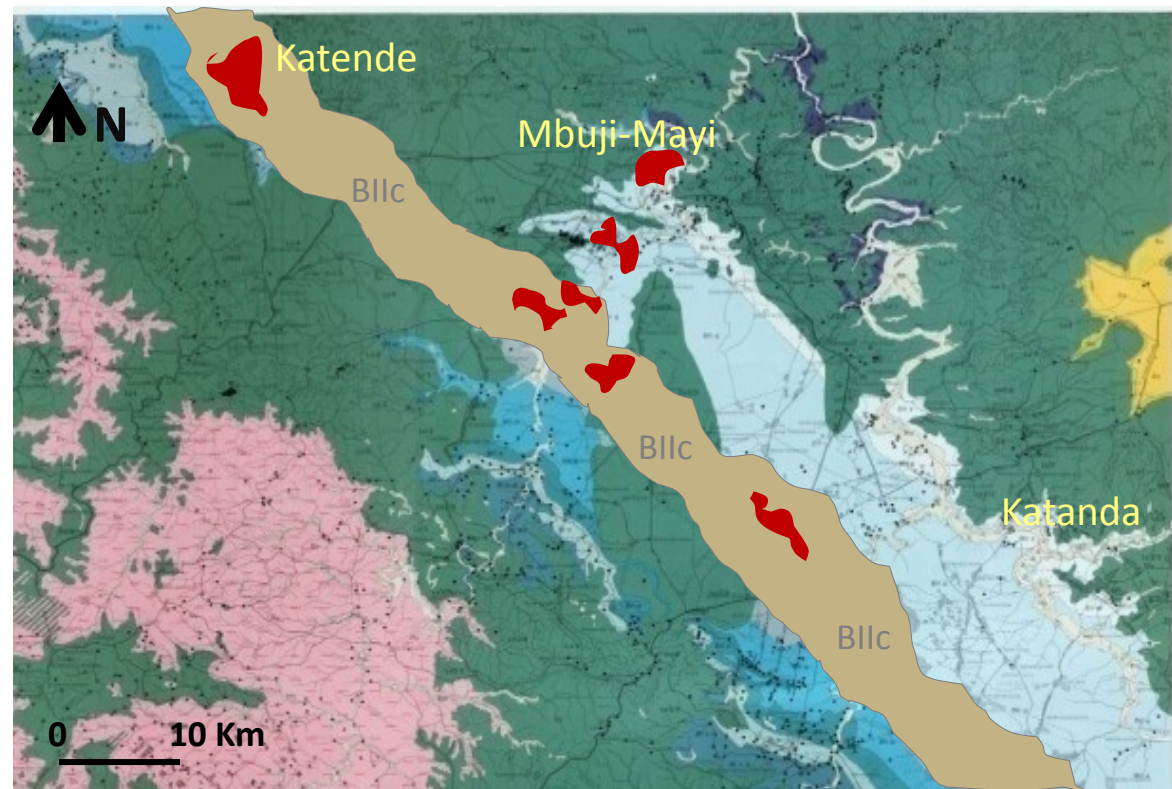
# For sustainable use the **BIIC** must be managed for specific applications

S13B	Impurities (%)	Applications
BIId		
	0 – 0.5	Glassware
	0 – 0.5	Mg metal
	0 – 0.5	Filler ; Mg metal
BIIf		

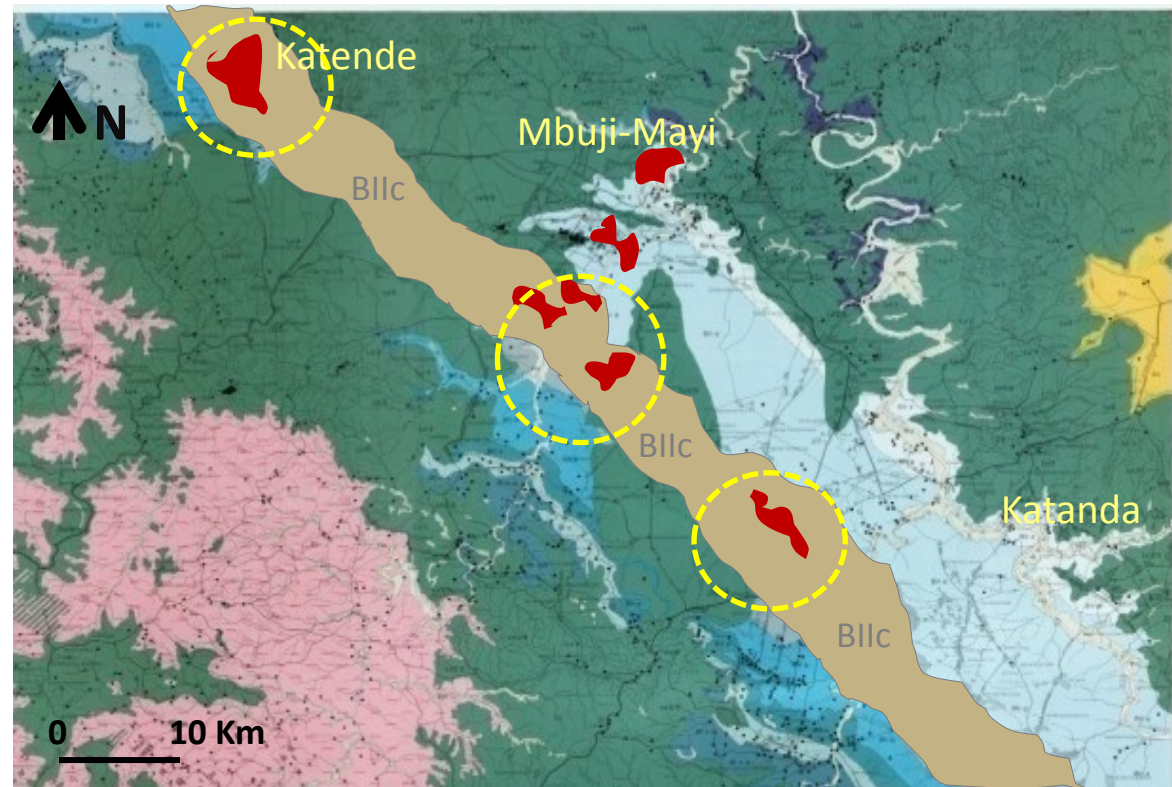
For sustainable use the **BIIC** must be managed for specific applications



For sustainable use the **Bllc** must be managed for specific applications

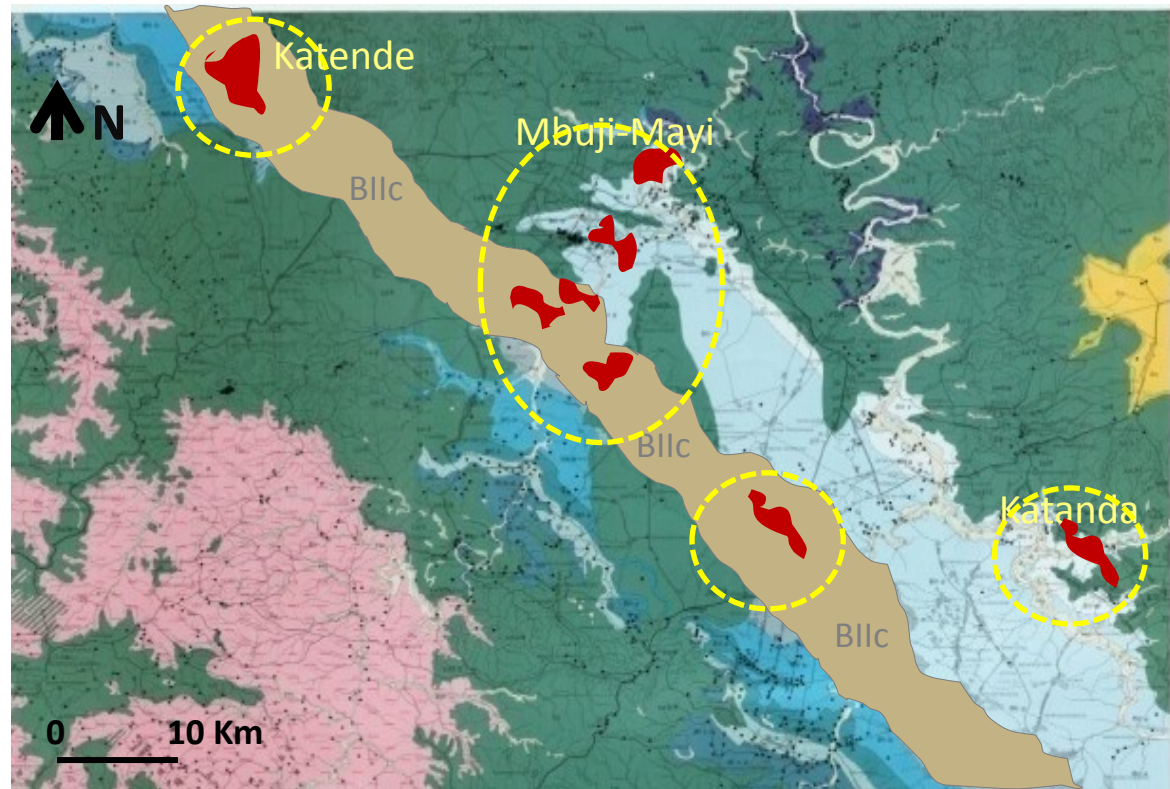


For sustainable use the **BIIC** must be managed for specific applications

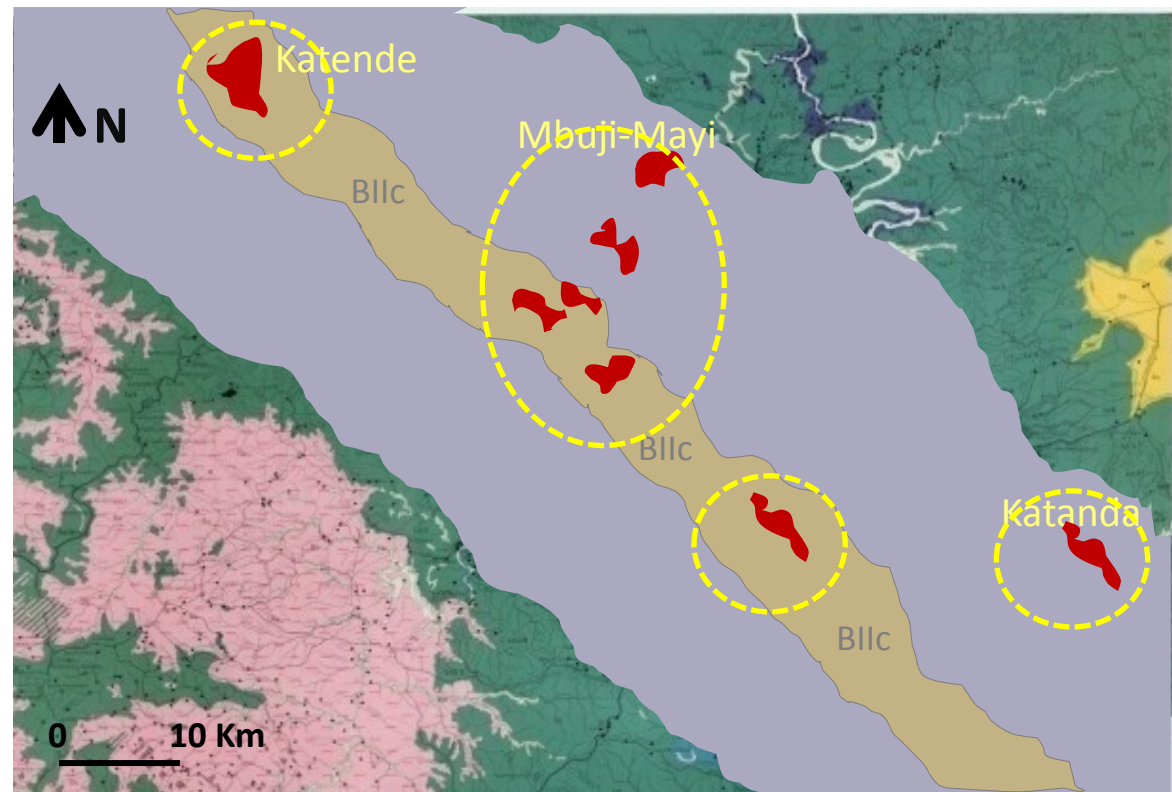




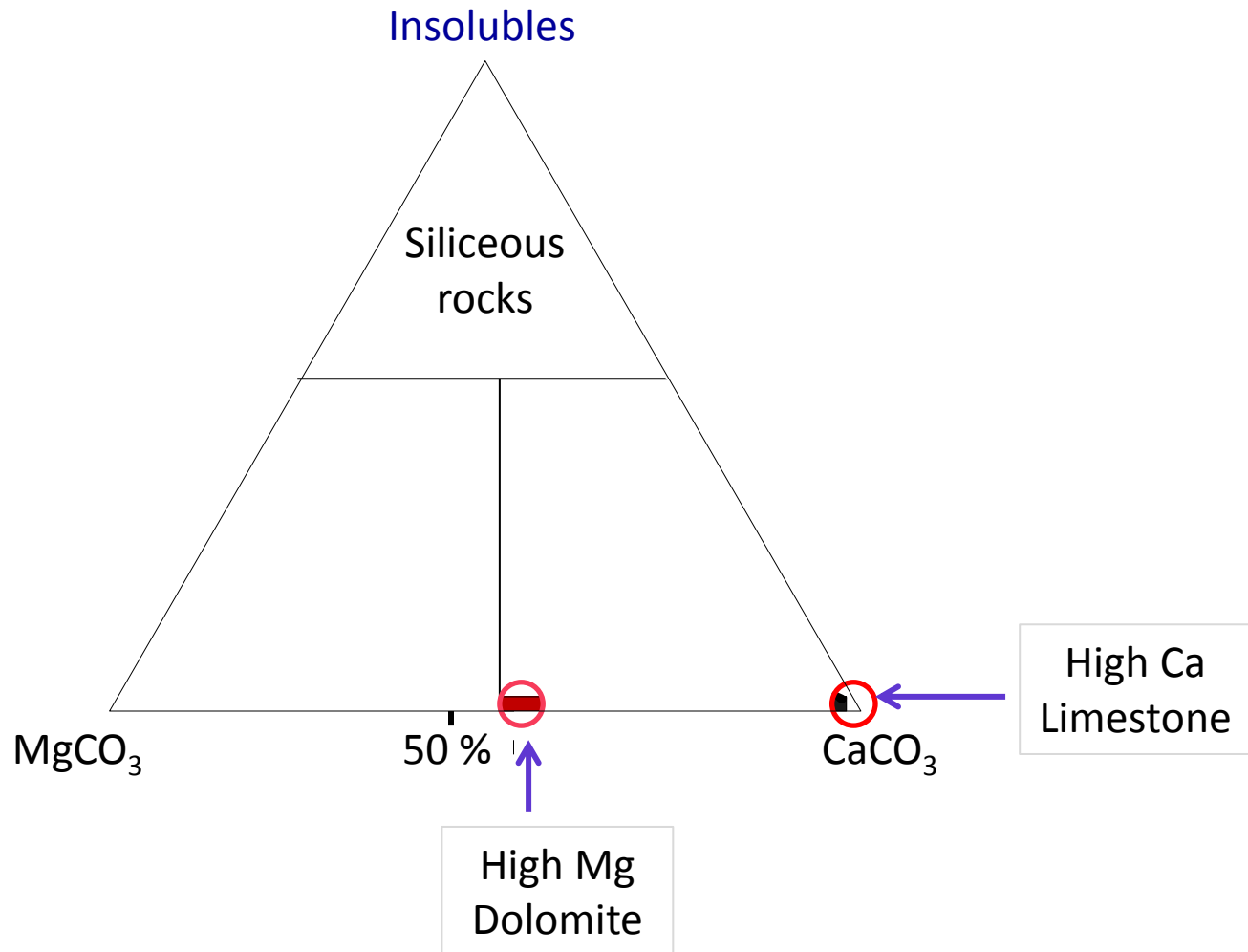
It is important to extend this study to other subgroups of Mbuji-Mayi supergroup



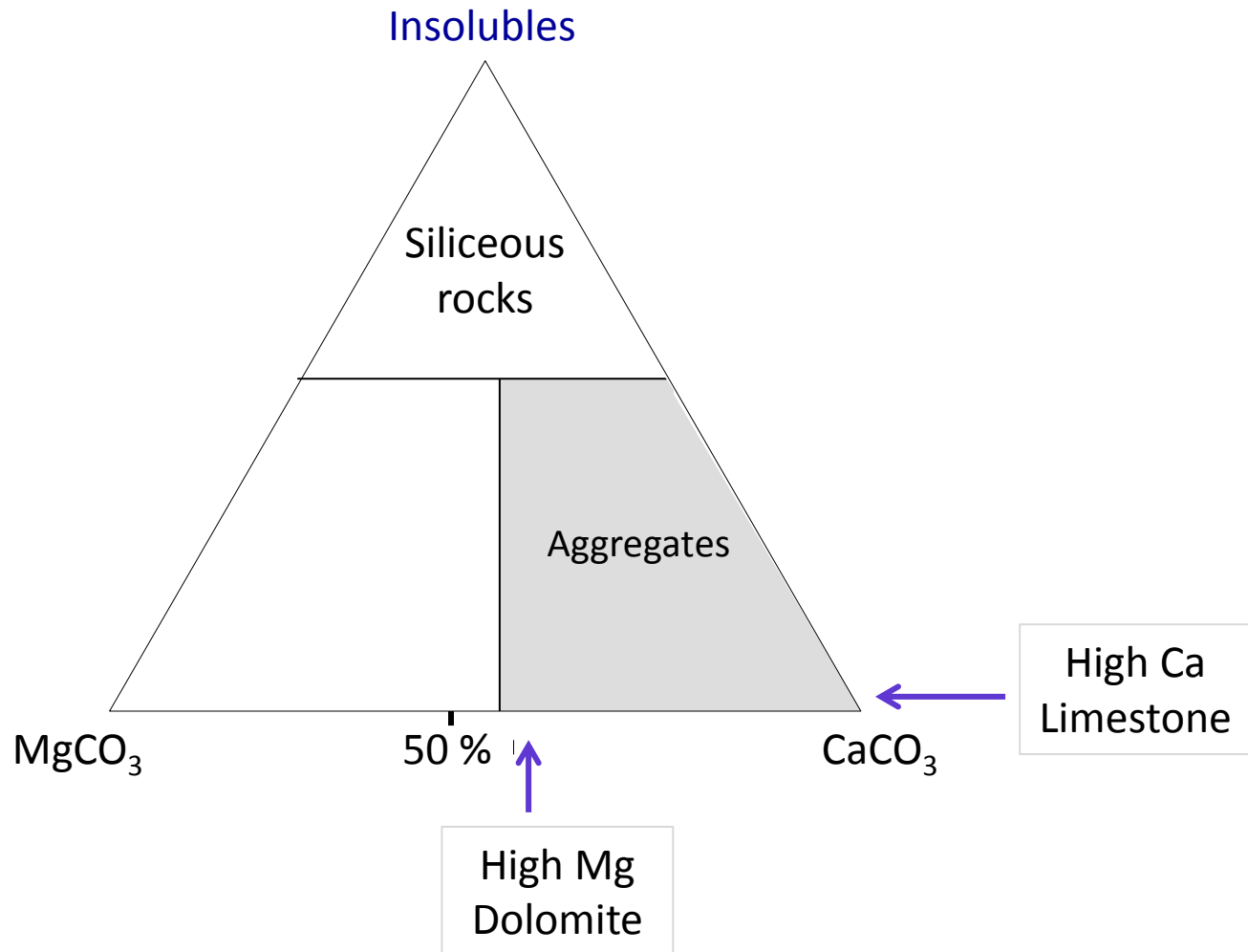
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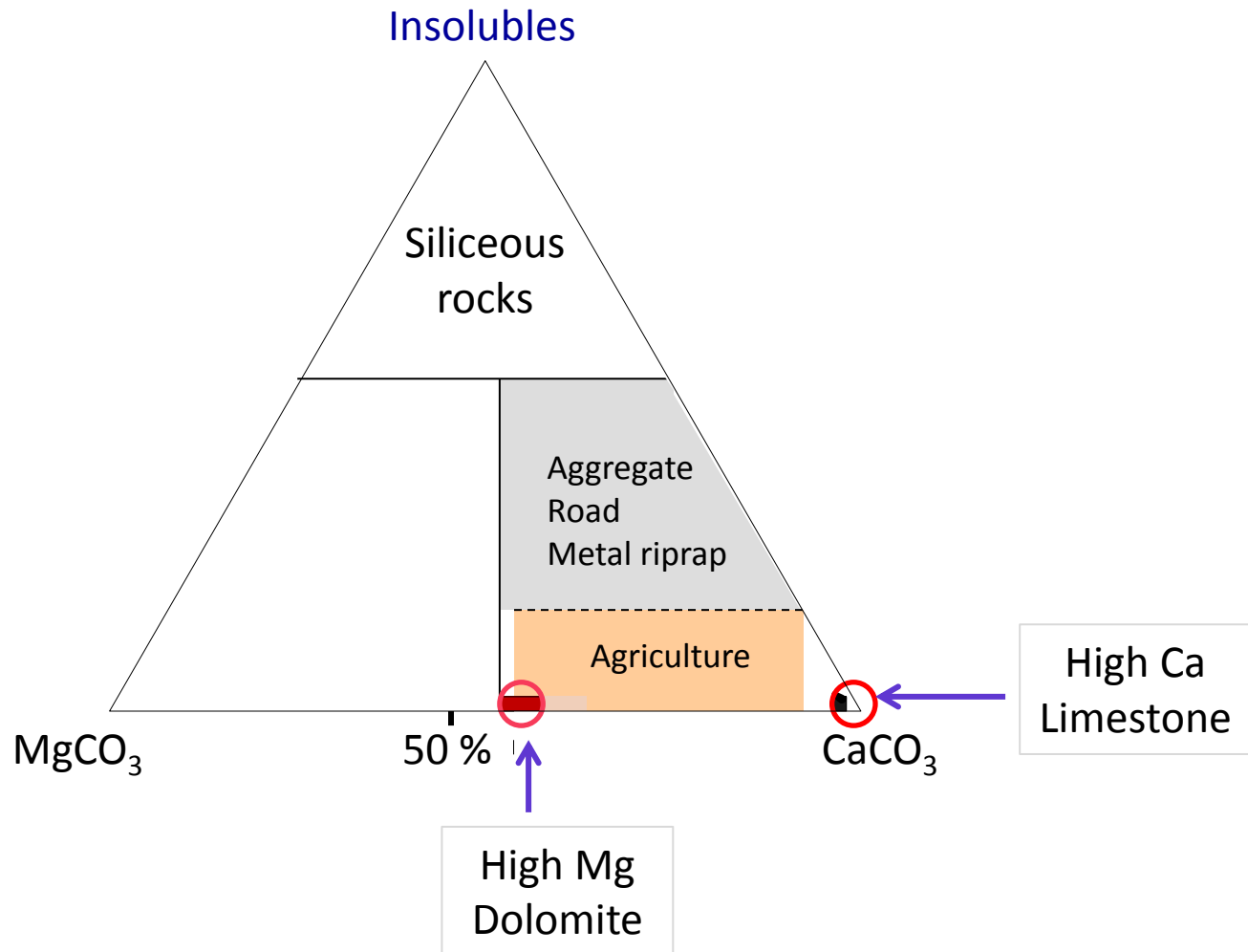
# Dolomitic material form part of carbonate rocks



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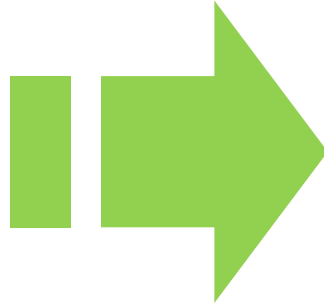
# Dolomitic material form part of carbonate rocks





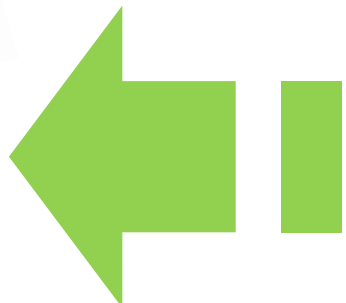


1





2







Thanks  
Any question ?



# Thanks

Any question ?

