Multi-disciplinary research on long-term Middle to Upper Devonian fore-reef succession from Germany and Austria

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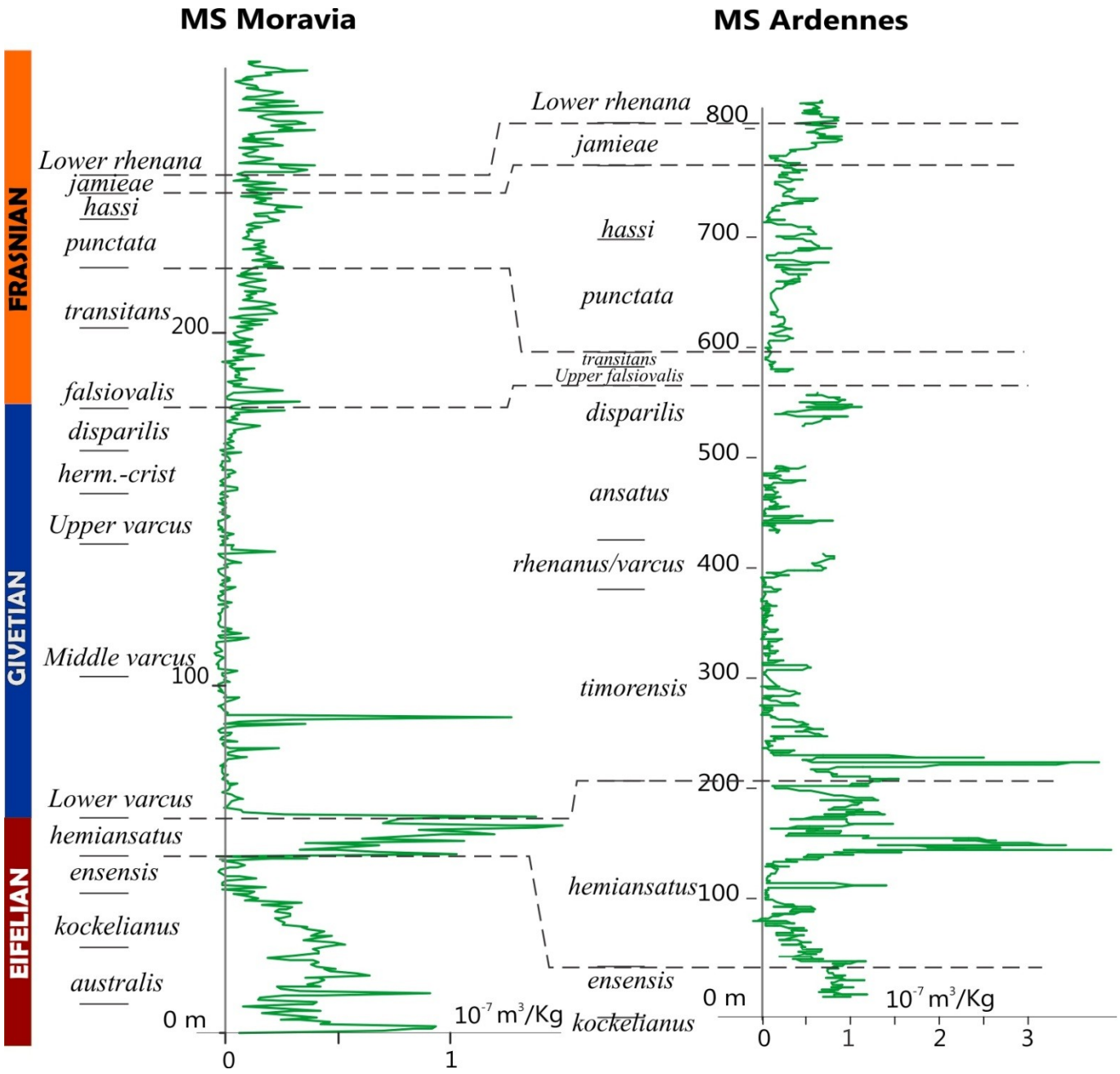
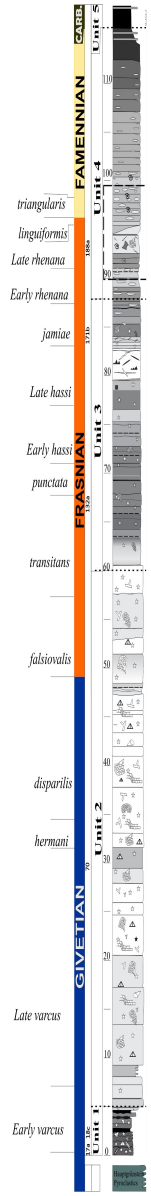


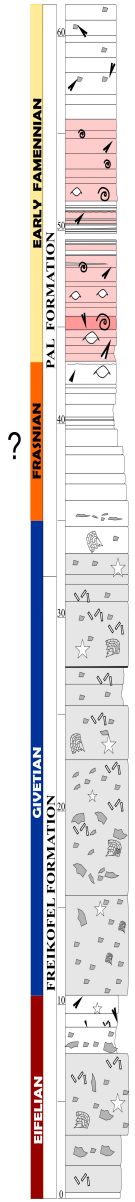
modified from Hladil et al. 1994, 2006

modified from Boulvain et al. 2010

✓ Burgberg (Germany)

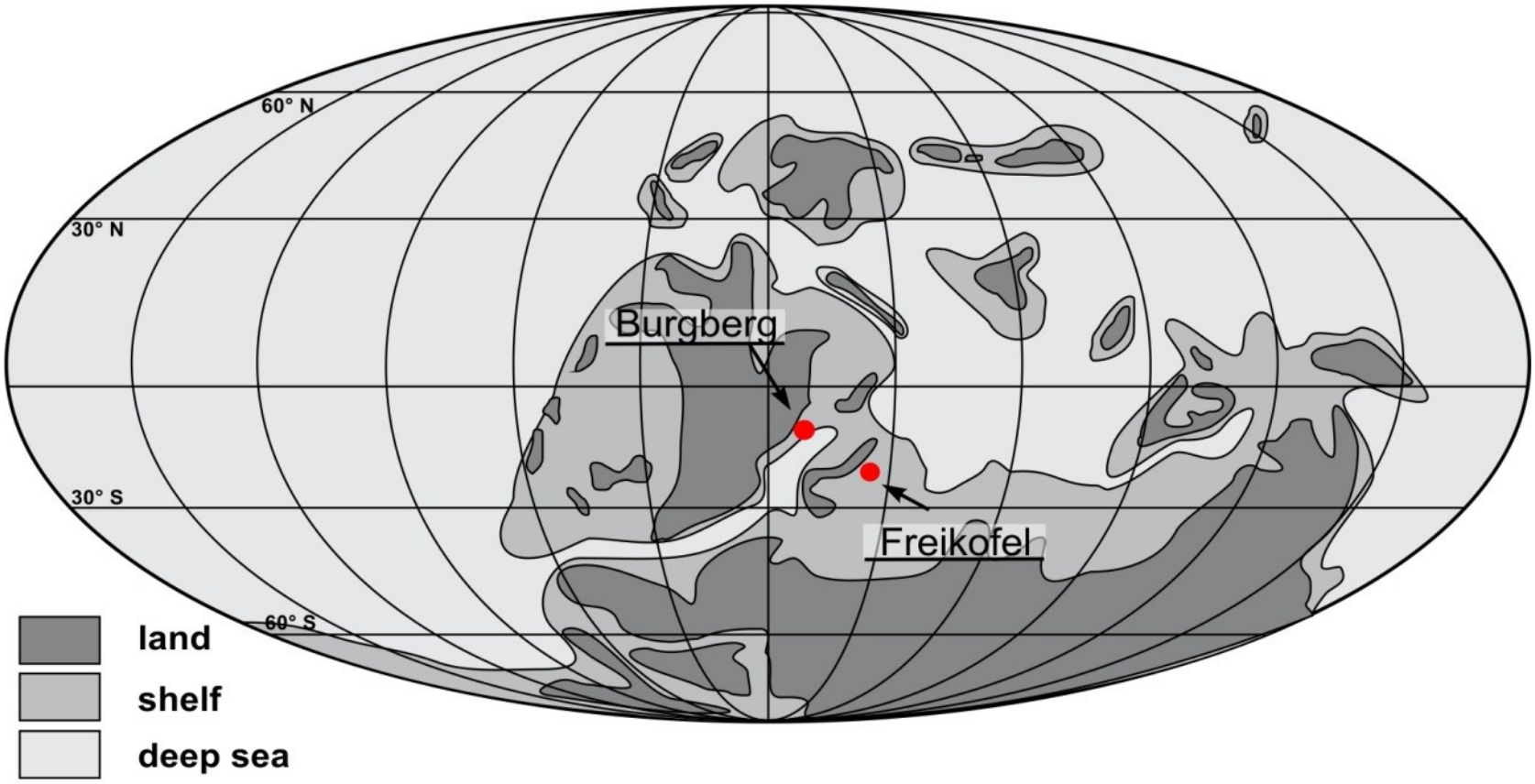


✓ Freikofel (Austria)



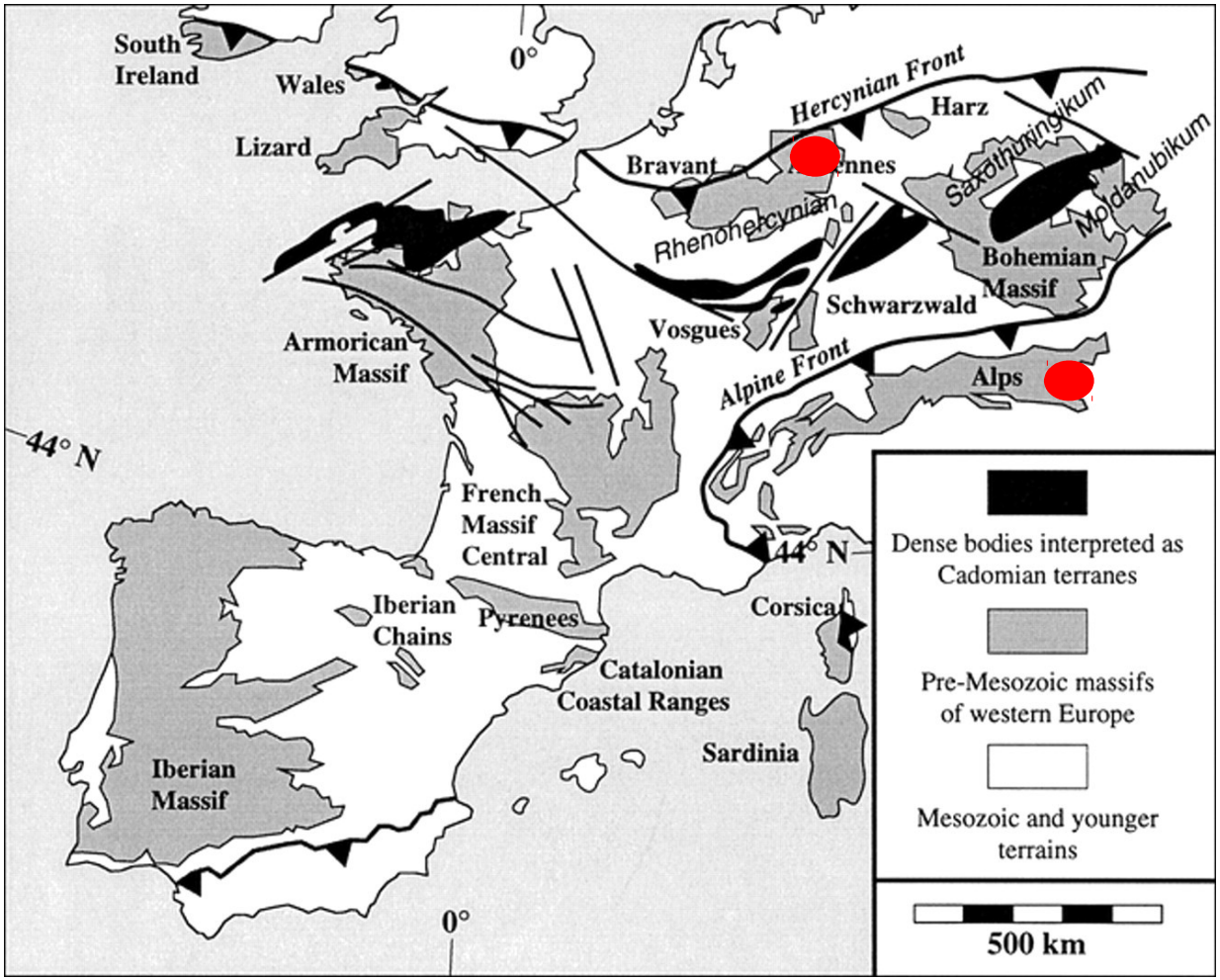
Two differents palaeogeographic location

- ✓ Burgberg (Germany) = Rheic Ocean
- ✓ Freikofel (Austria) = Palaeo-Thethyan Ocean



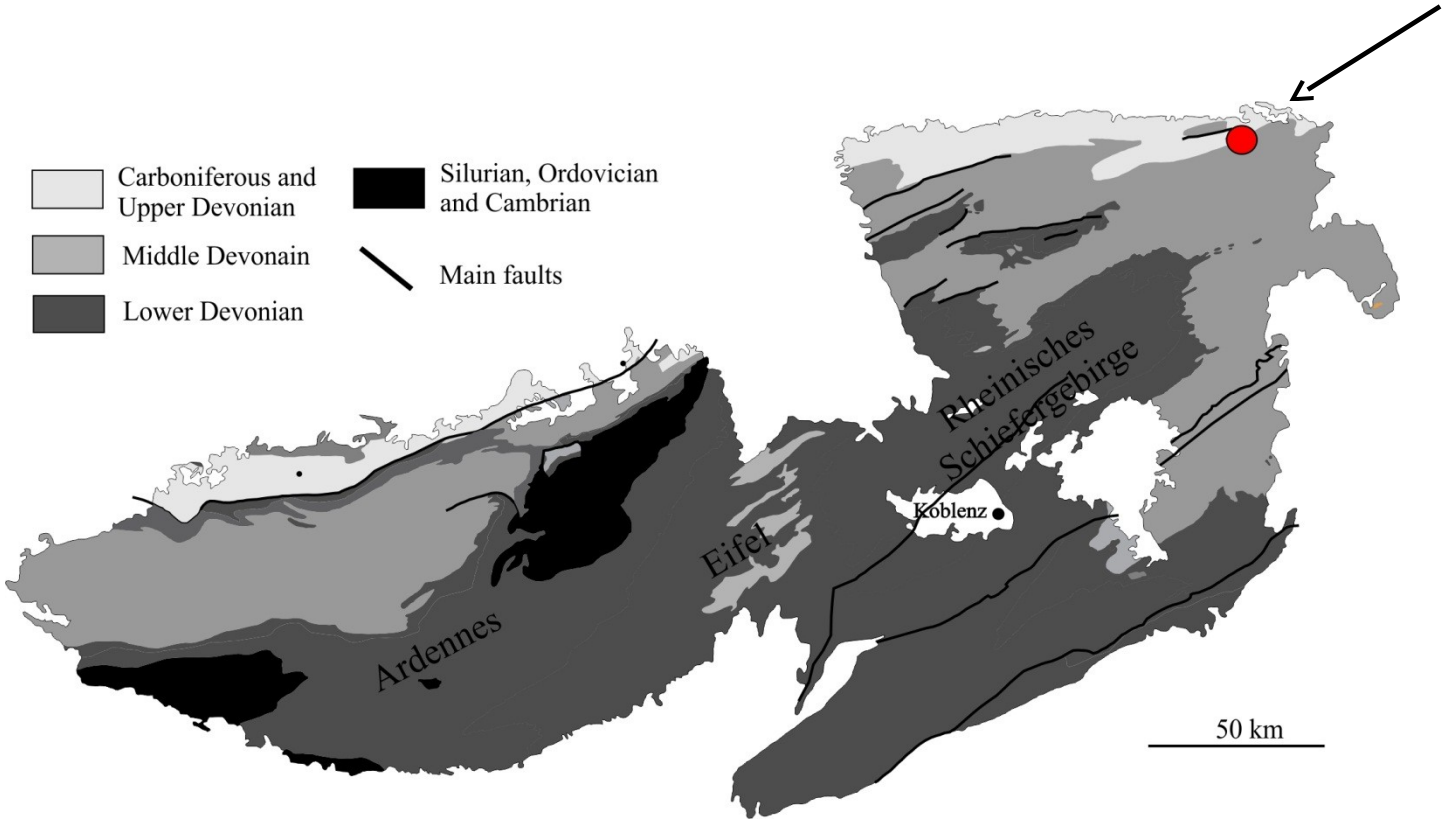
Two different Massifs

- ✓ Burgberg (Germany) = Rheno-herynian Massif
- ✓ Freikofel (Austria) = Alps Massif (Carnic Alps)



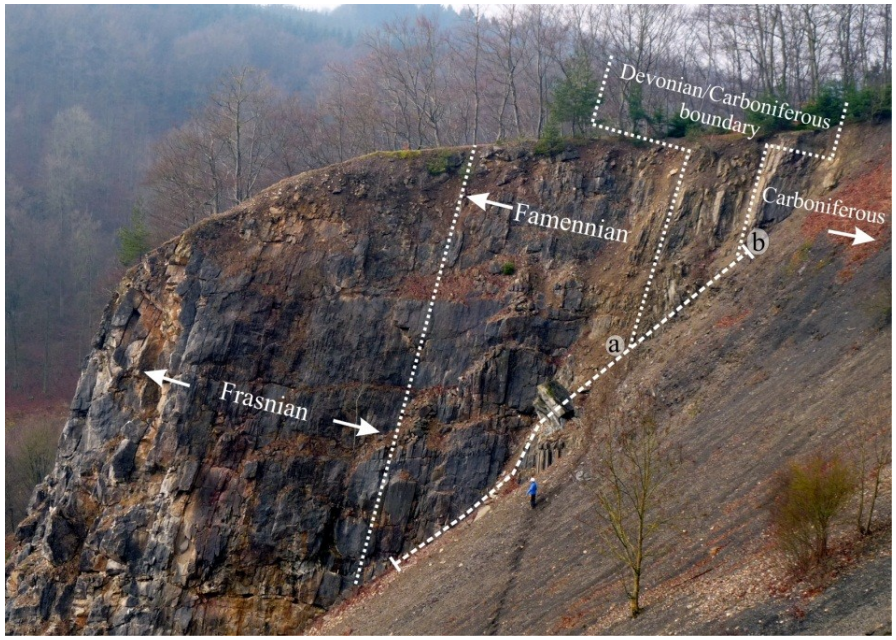
Eguiluz et al. 2000

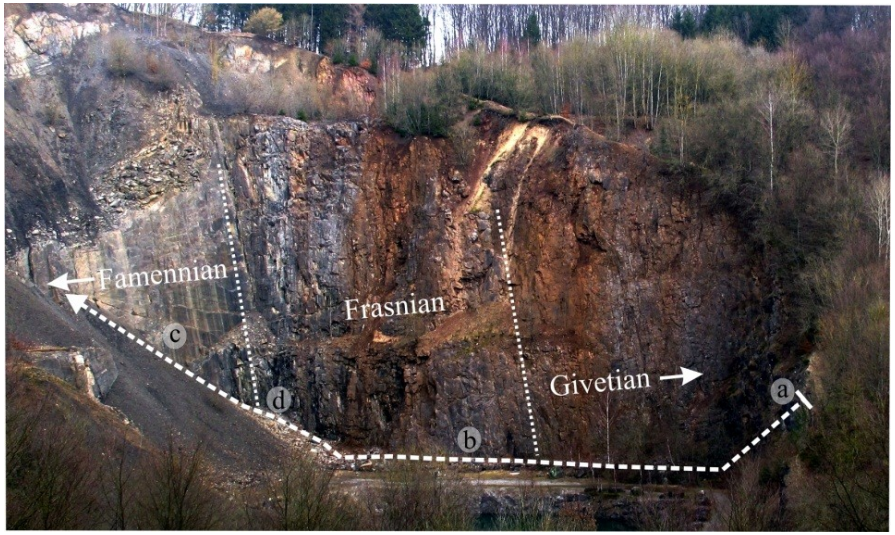
The Burgberg section is located in the eastern Rheno-hercynian Massif



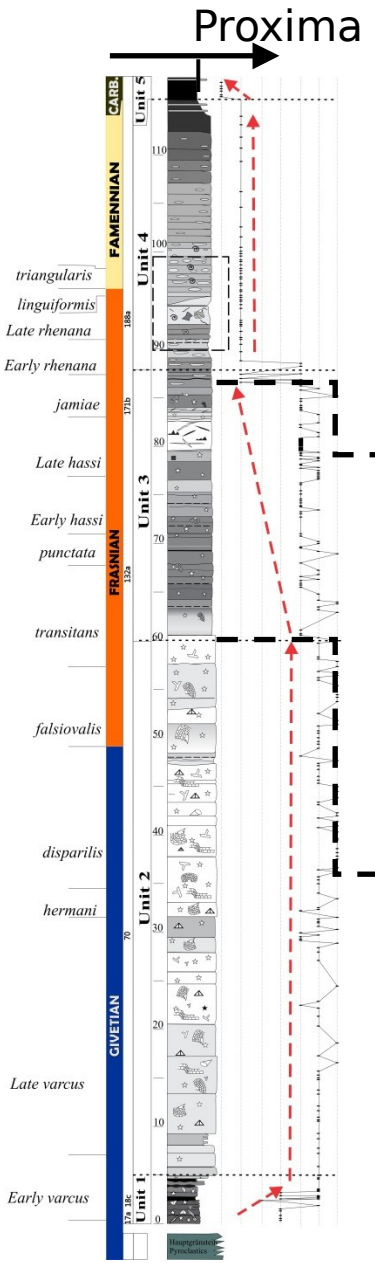
modified from Wehrmann et al. 2005

Stratigraphic interval extending from the Middle-Givetian to the Carboniferous

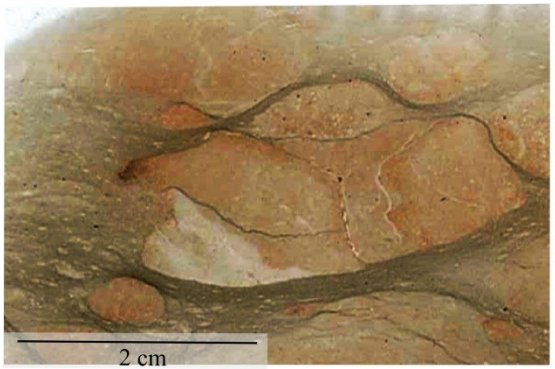


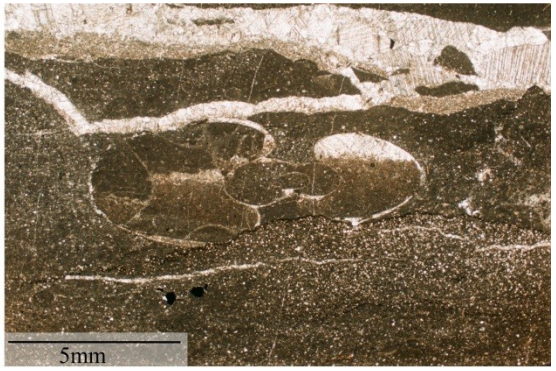


Three major sedimentary settings are recognized in Burgberg

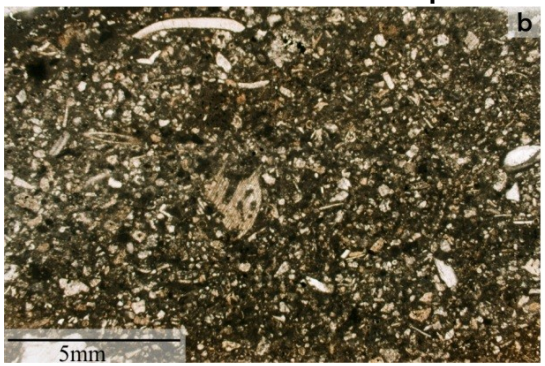


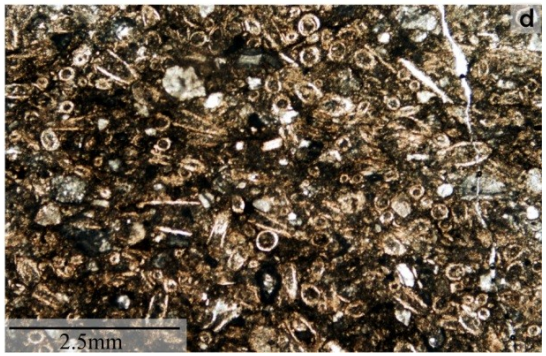
✓ Distal slope setting



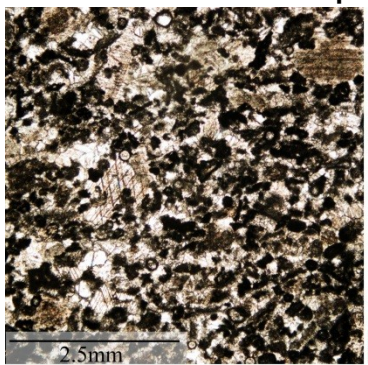


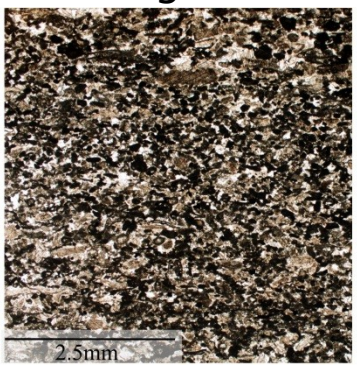
✓ Intermediate slope setting

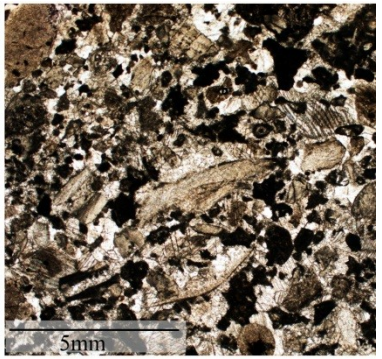




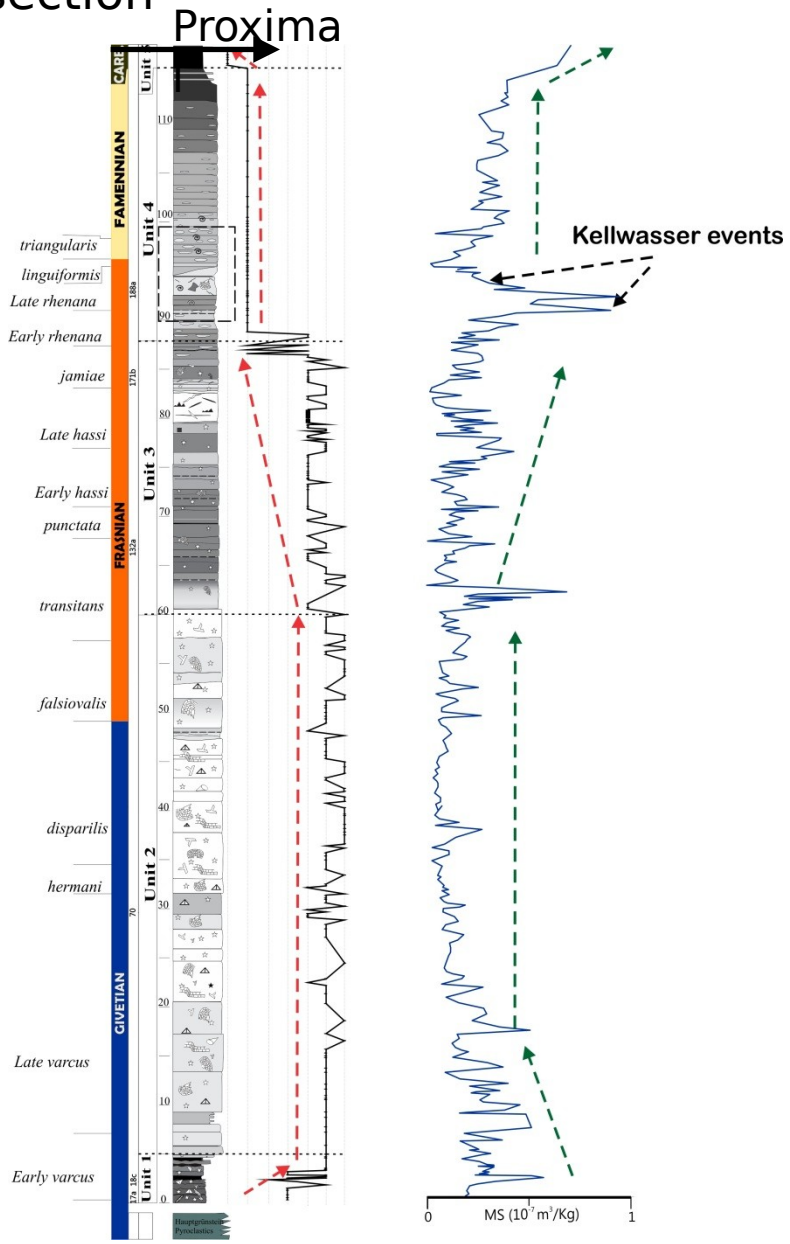
✓ Proximal slope setting

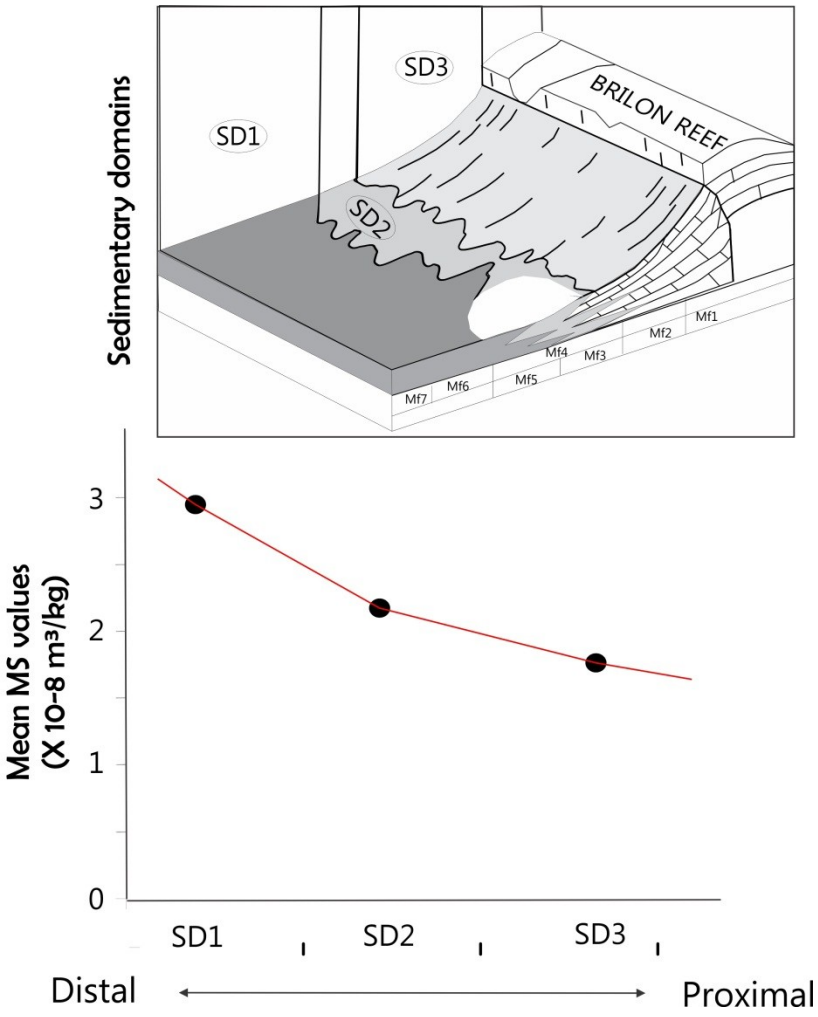




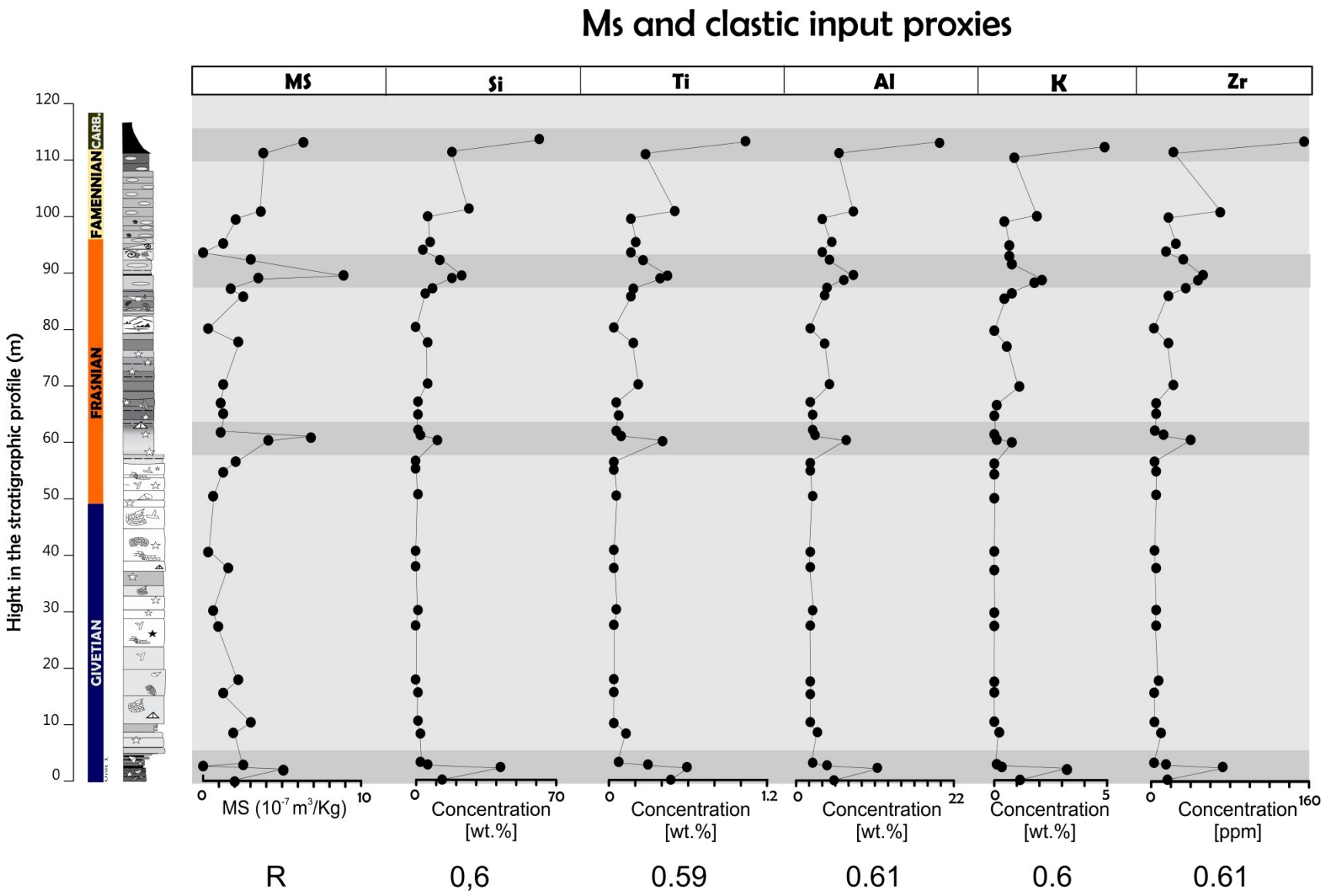


MS and MF curves show an opposition for the Burgberg section

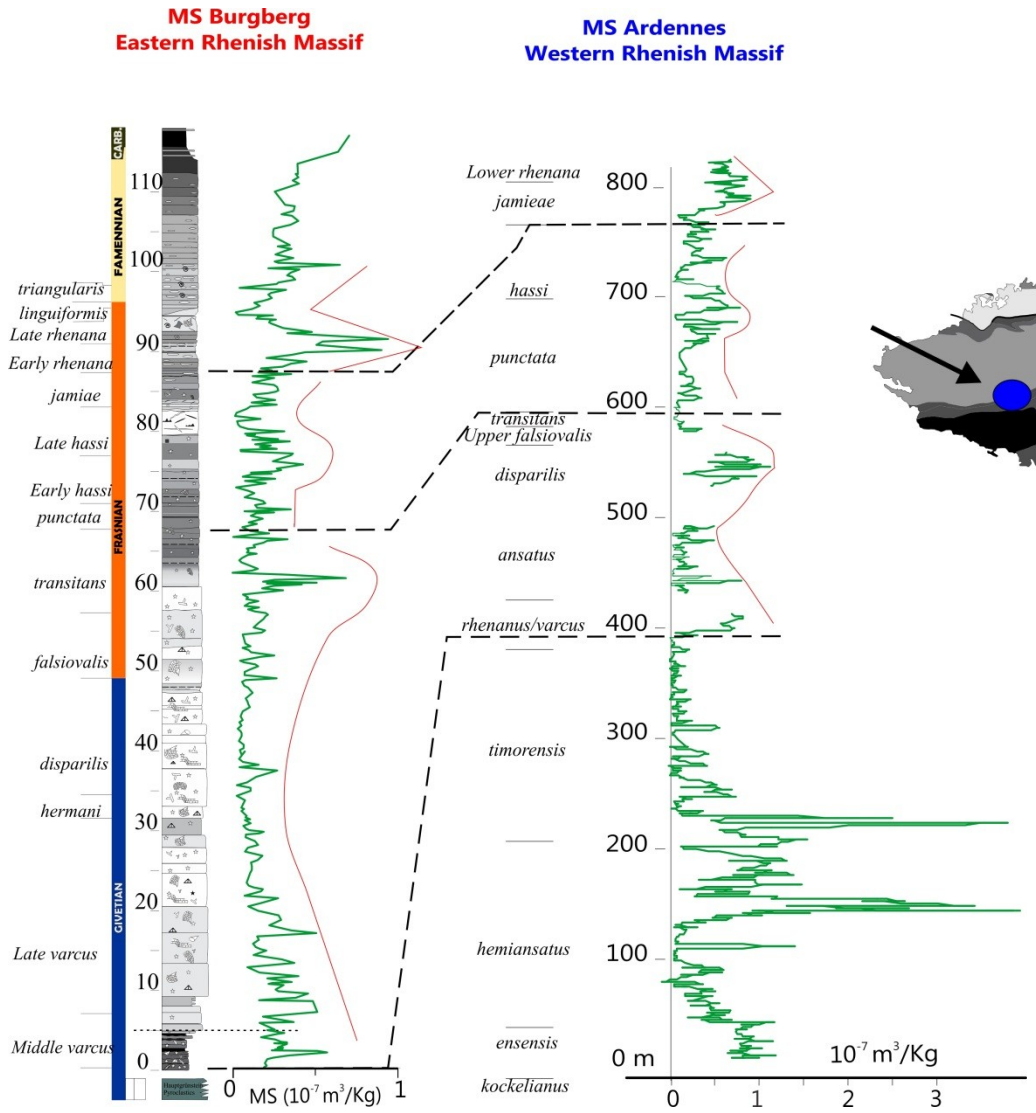




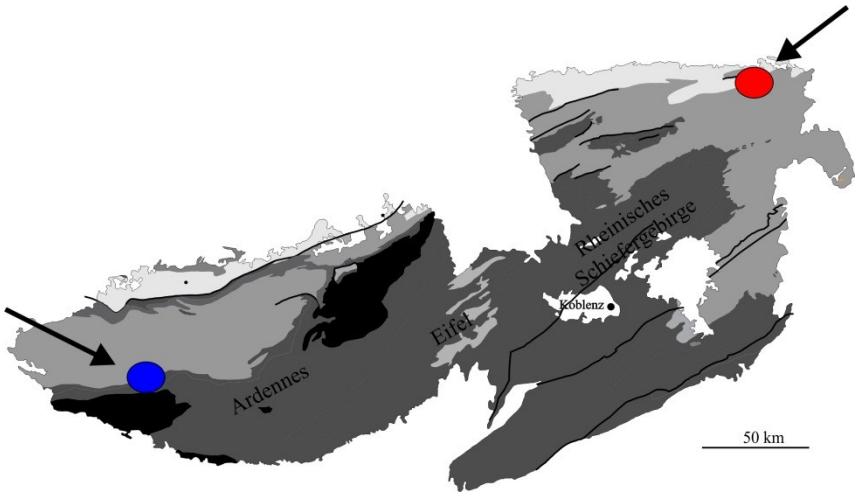
MS and clastic input proxy curves show similar trends for the Burgberg section



Good correlation between MS variations from Burgberg and Ardennes



modified from Boulvain et al. 2010

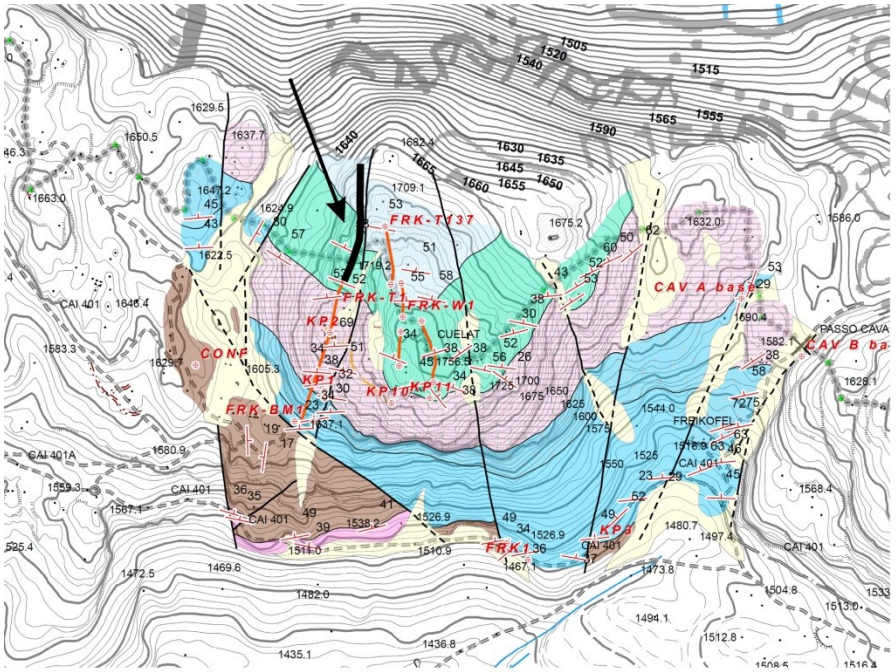


modified from Wehrmann et al. 2005

The Freikofel section is located in Carnic Alps (Cellon-Kellerwand nappe)

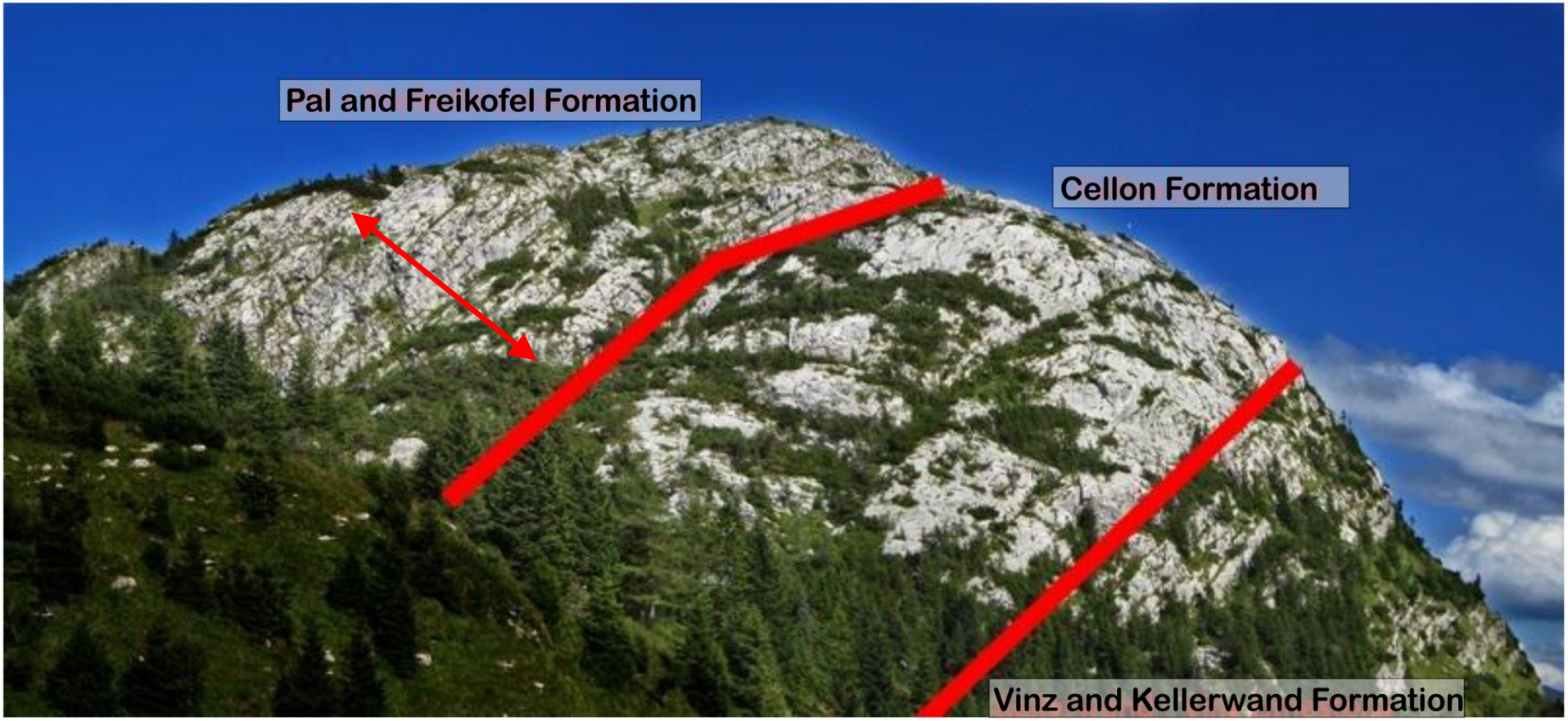
✓ The Carnic Alps

✓ The Freikofel section



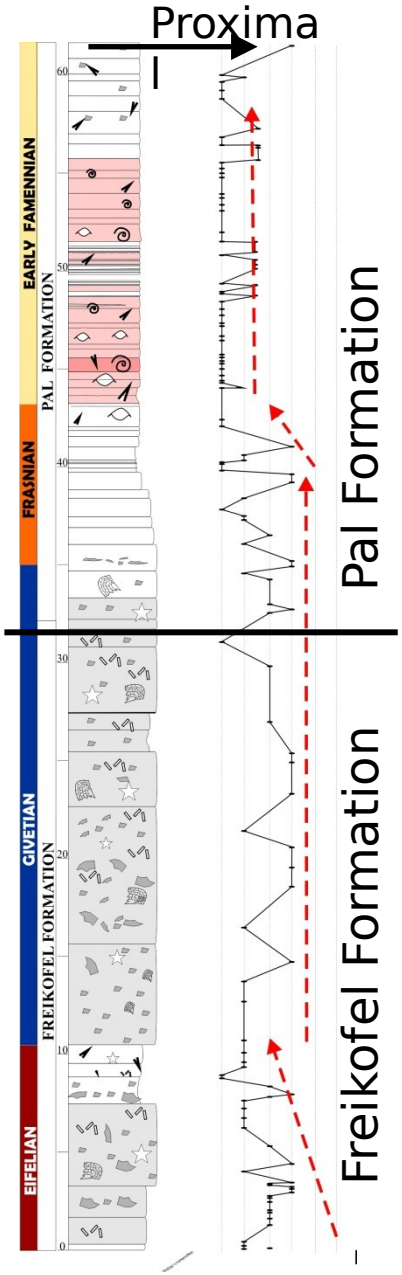
Monica Pondrelli, unpublished

The interval investigated in Freikofel include the upper portion of the Freikofel Formation and the Lower-Middle portion of the Pal Formation: (Upper Eifelian to the Lower Famennian)

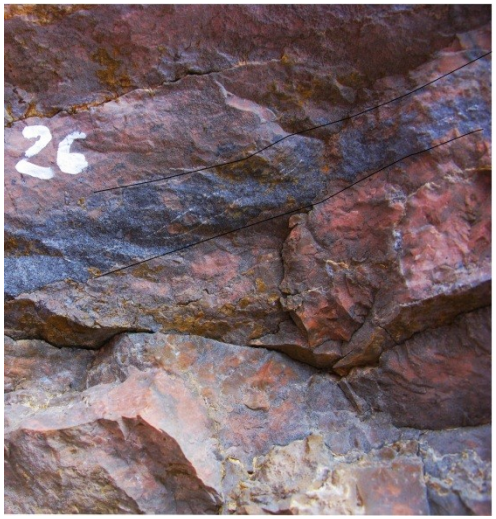


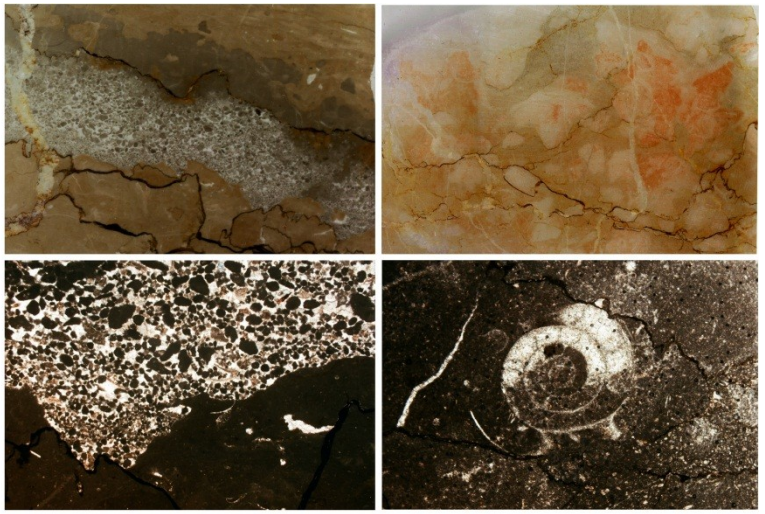
Schnellbächer, P., 2010

Two major sedimentary settings are recognized in this study

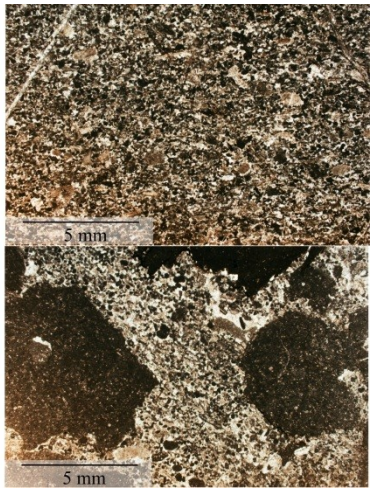


✓ Pal Formation (distal slope setting)

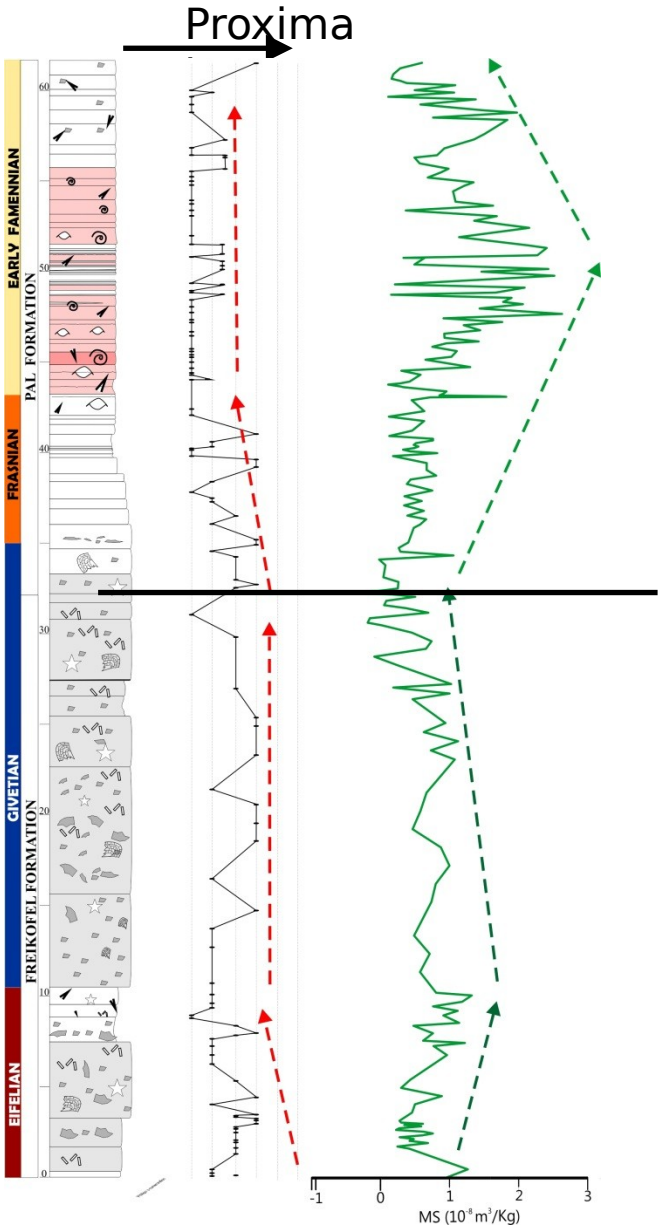


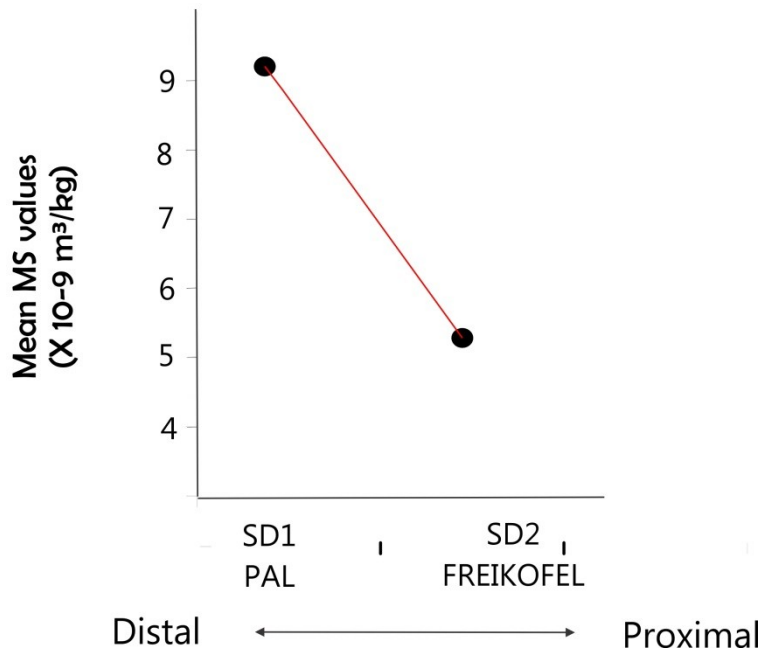


✓ Freikofel Formation (intermediate slope setting)

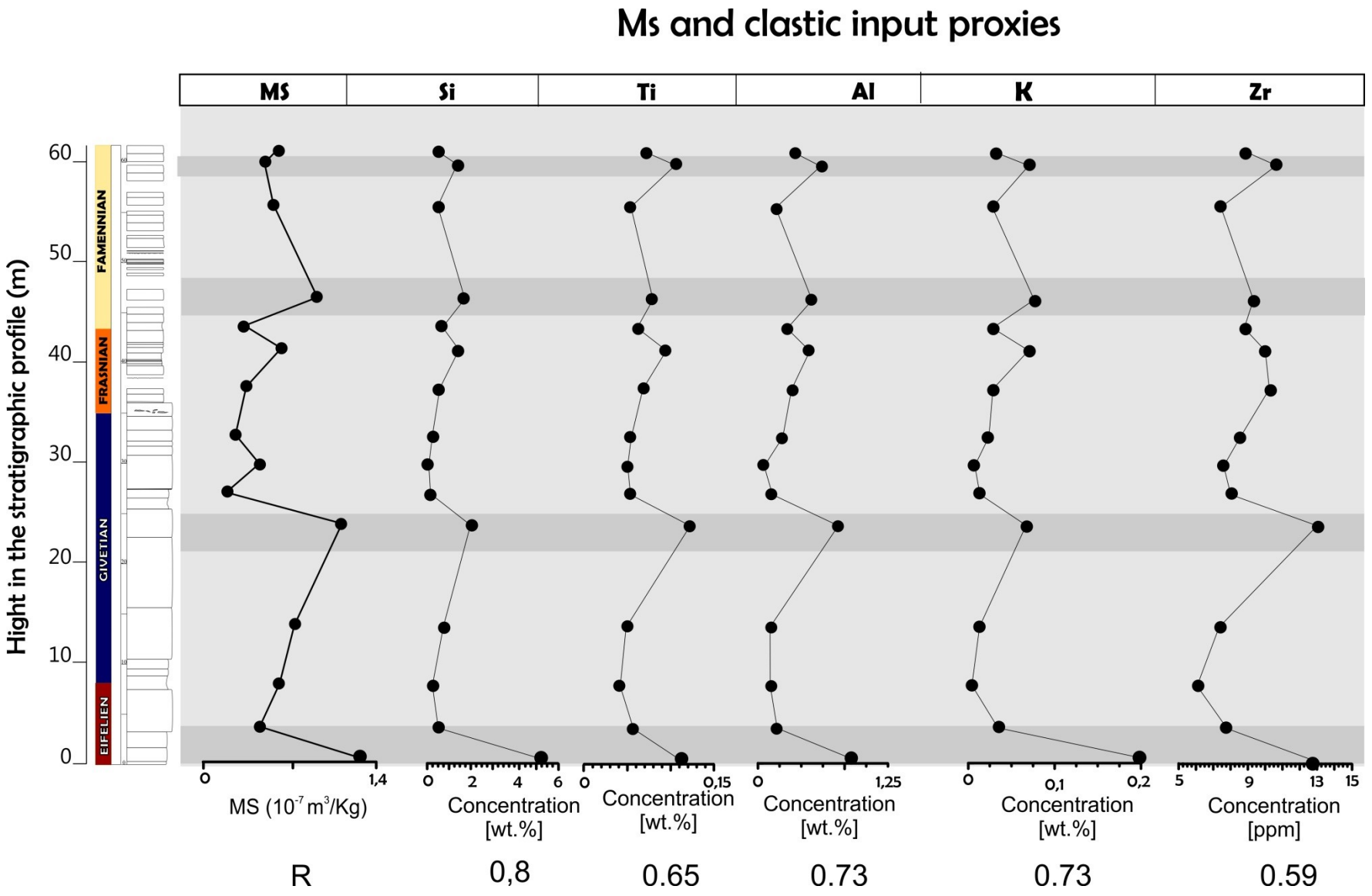


In the Freikofel section, the link between MF and MS curves is not as clear as in the Burberg section

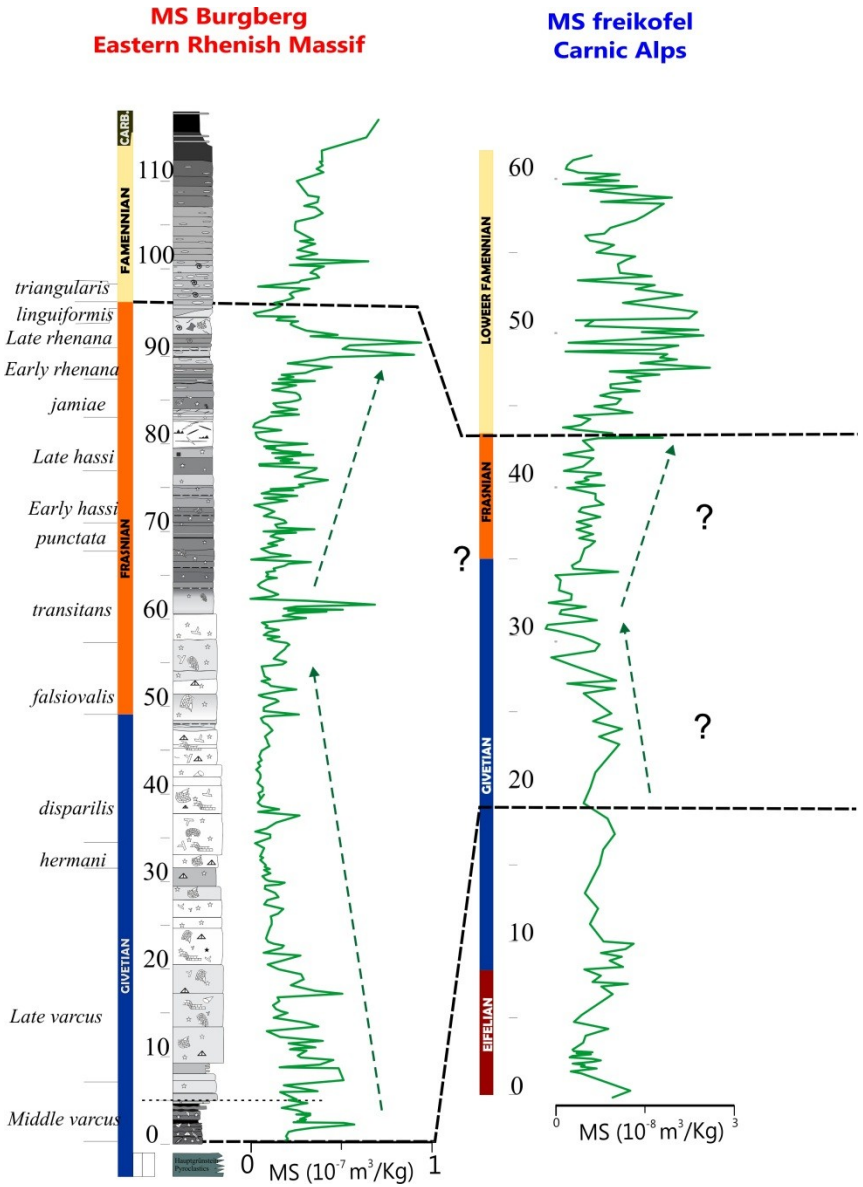




MS and clastic input proxies for the Freikofel section show similar trends



Comparison of MS curves from Burgberg and Freikofel is not clear

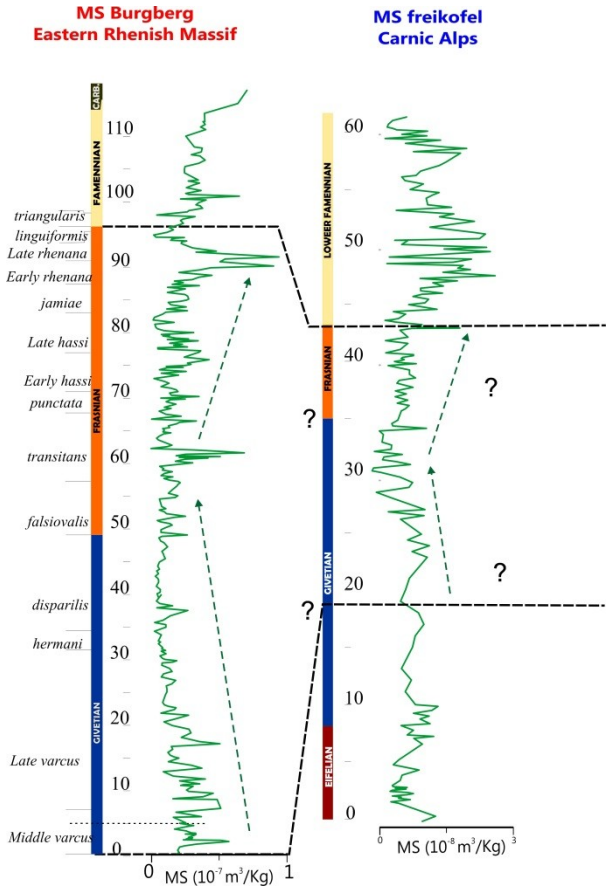


Causes

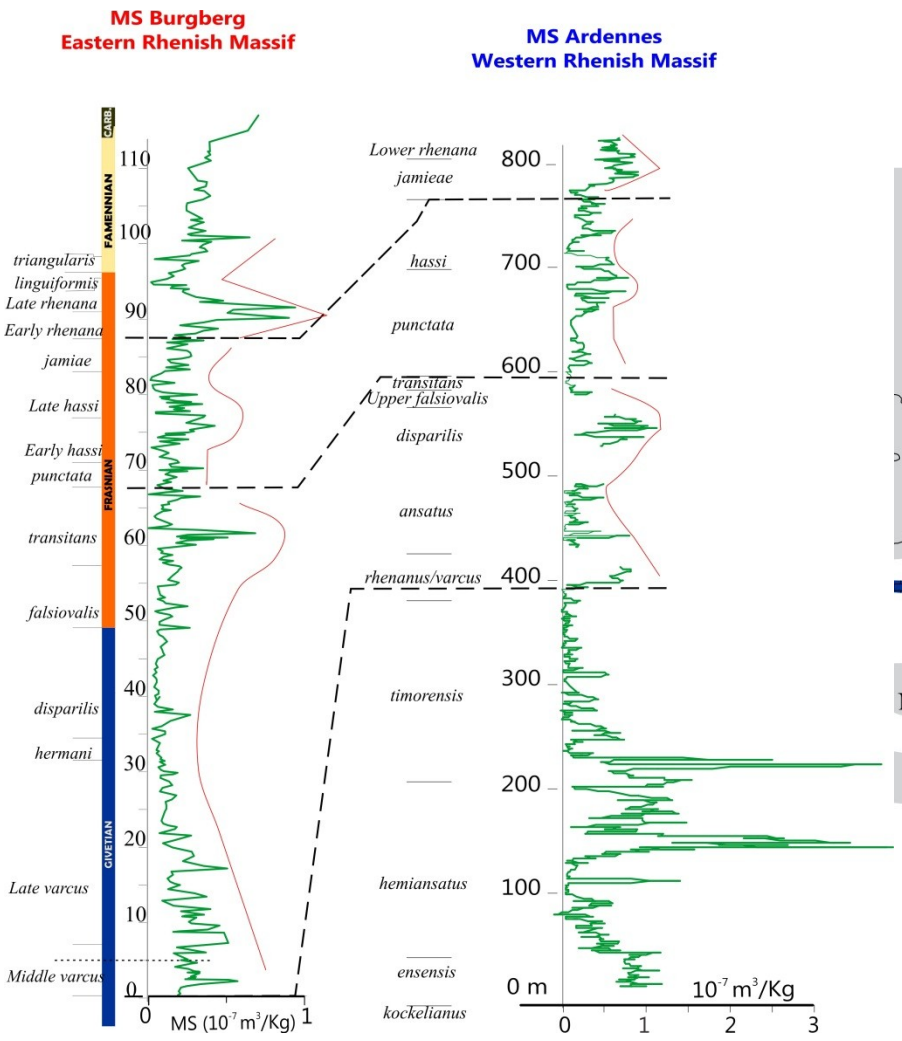
- ✓ High level of reworking in Freikofel
- ✓ Biostratigraphy not well-constraint for Freikofel
- ✓ Different palaeogeographic background
- ✓ Different sedimentary rate

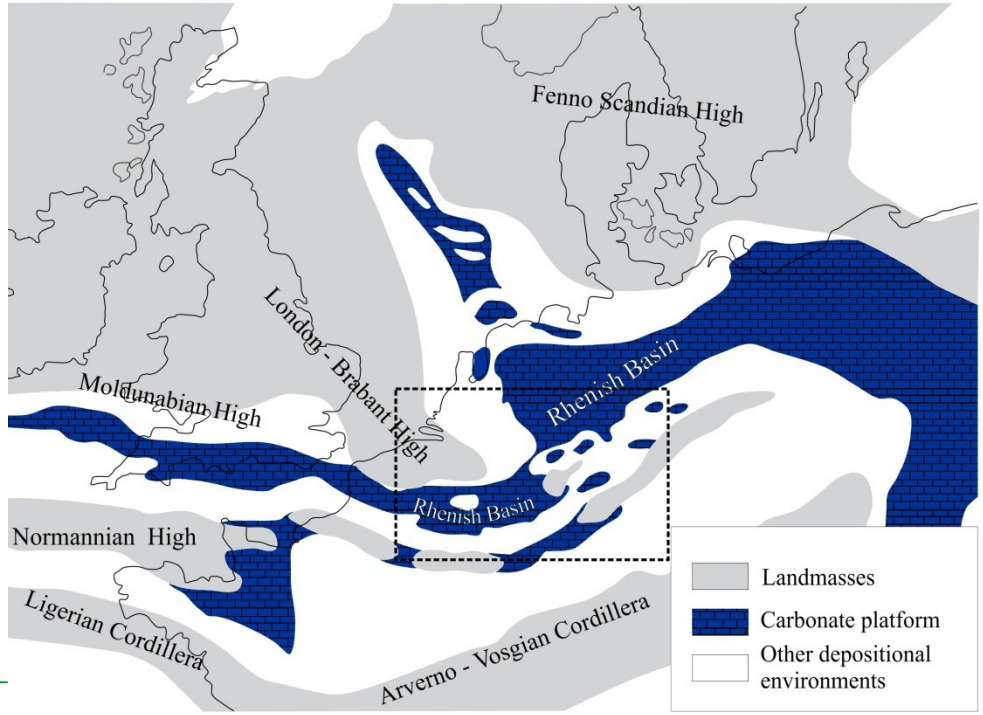
Summary

	Burgberg	Freikofel
Palaeogeography	Rheic-Ocean	Tethyan-Ocean
Covered interval	Middle Givetian to Carboniferous	Upper Eifelian to Mower Famennian
Sedimentary setting	Fore-reef	Fore-reef
Level of reworking	→ Intermediate	↗ High
Link between MF and MS	High	Intermediate to low
Mean MS value	1.88×10^{-8} m^3/Kg	7.72×10^{-9} m^3/Kg
Link between MS and clastic input proxies	R = 0.6	R= 0.7
Long-term MS trends with Ardennes	YES	NO



Conclusion


MS Burgberg
Eastern Rhenish Massif
MS Ardennes
Western Rhenish Massif
CARB.
FAMENNIAN
FRASNIAN
GIVETIAN
triangularis
linguiformis
Late rhenana
Early rhenana
jamiae
Late hassi
Early hassi
punctata
transitans
falsiovalis
disparilis
hermani
Late varcus
Middle varcus
Lower rhenana
jamieae
hassi
punctata
transitans
Upper falsiovalis
disparilis
ansatus
rhenanus/varcus
timorensis
hemiansatus
ensensis
kockelianus
MS (10⁻⁷ m³/Kg)
0 m
10⁻⁷ m³/Kg


Fenno Scandian High
London - Brabant High
Moldanubian High
Rhenish Basin
Rhenish Basin
Normannian High
Ligerian Cordillera
Arverno - Vosgian Cordillera
Landmasses
Carbonate platform
Other depositional environments

Many thanks

ÖAW
Austrian Academy
of Sciences

Edelweiss
2011.8.11. Carnic Alps, Italy
(Photo by Erika and Thomas)