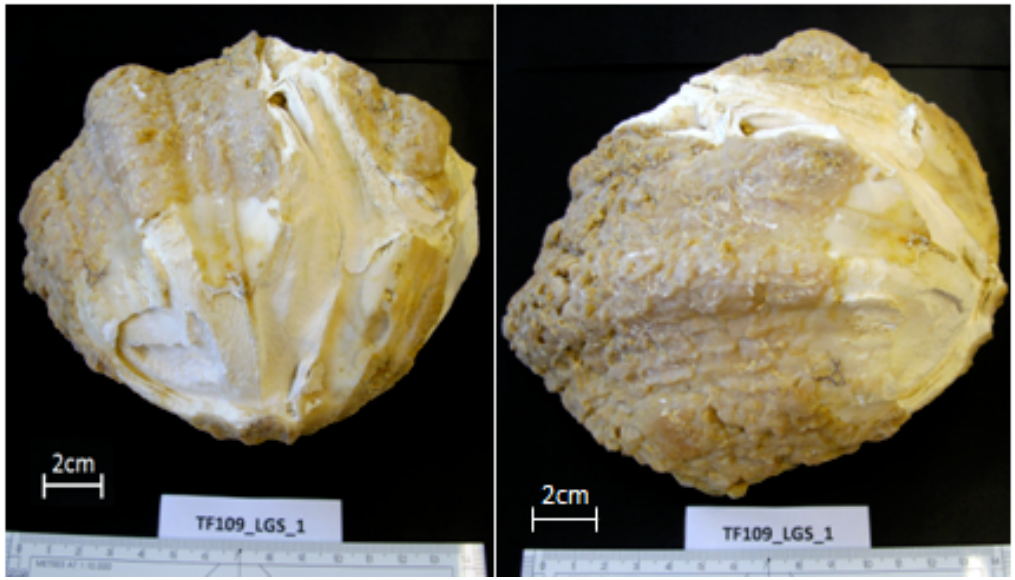
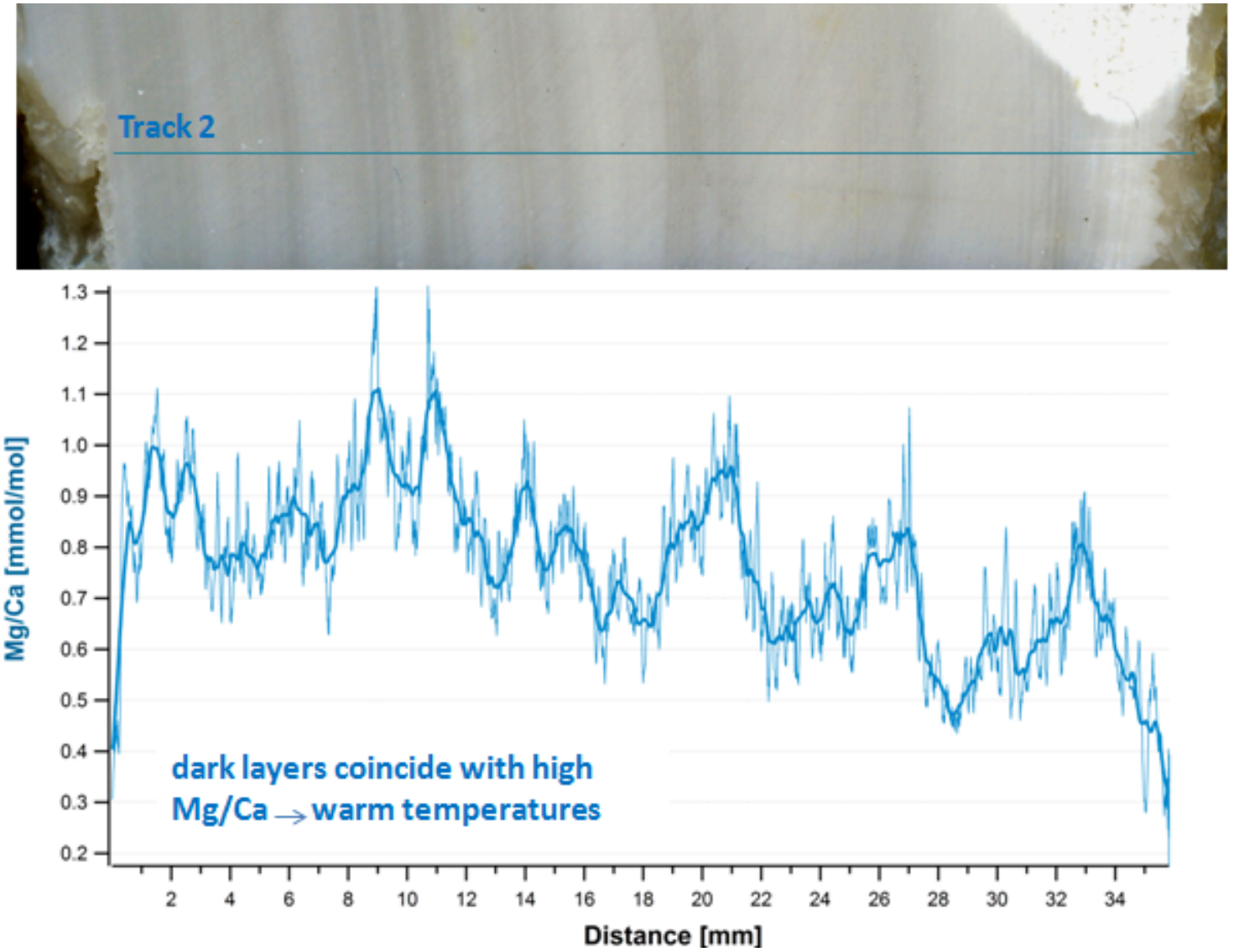
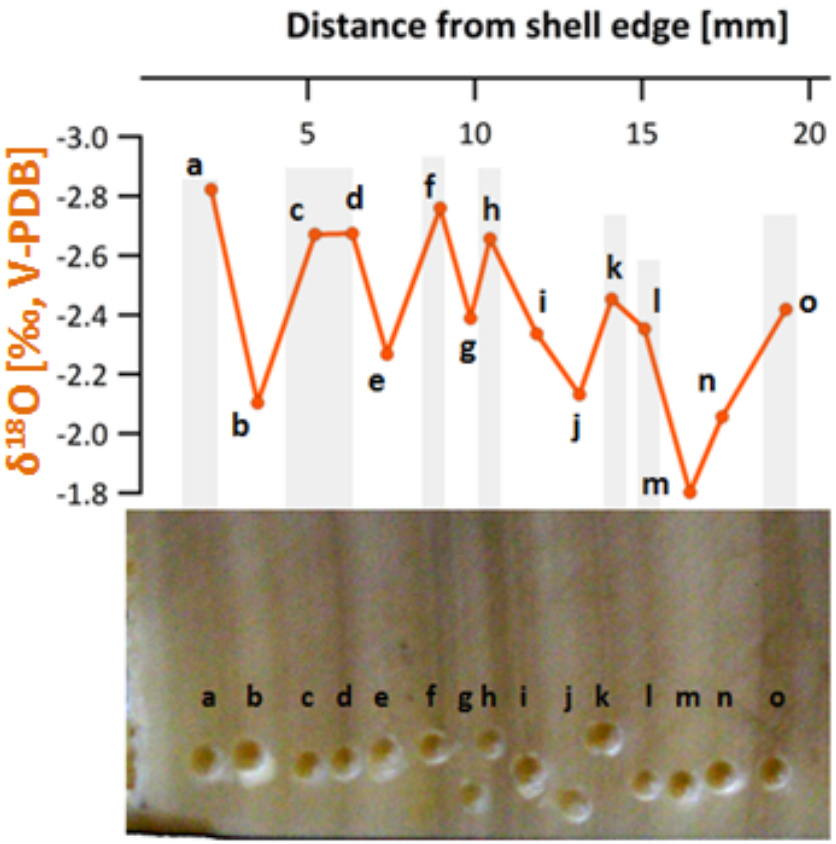
Review presentation NTA 5, Kiel
TF 109_LGS_1

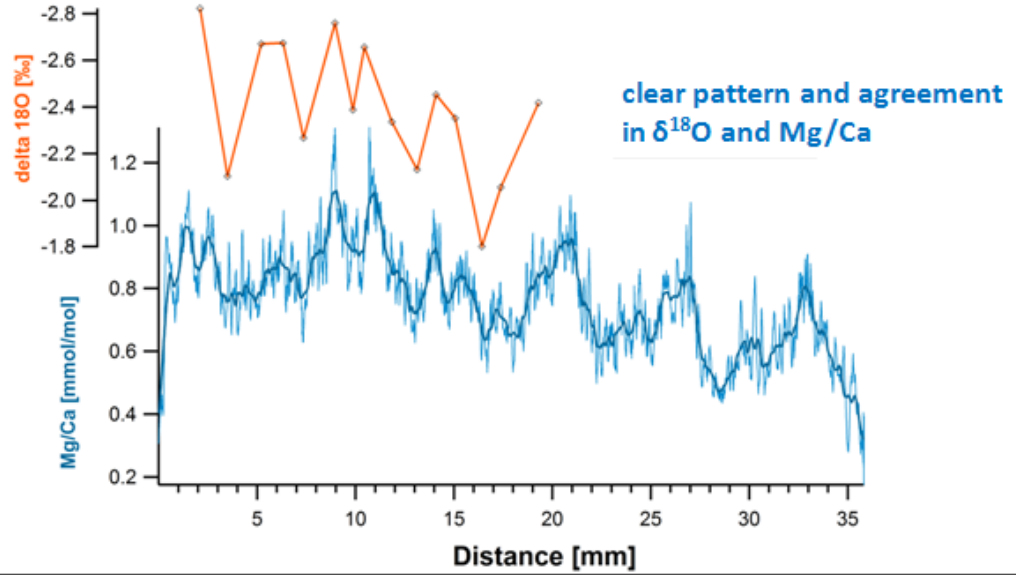


Excellent preserved internal structure

peaks of Mg/Ca align very well with darker layers of the shell

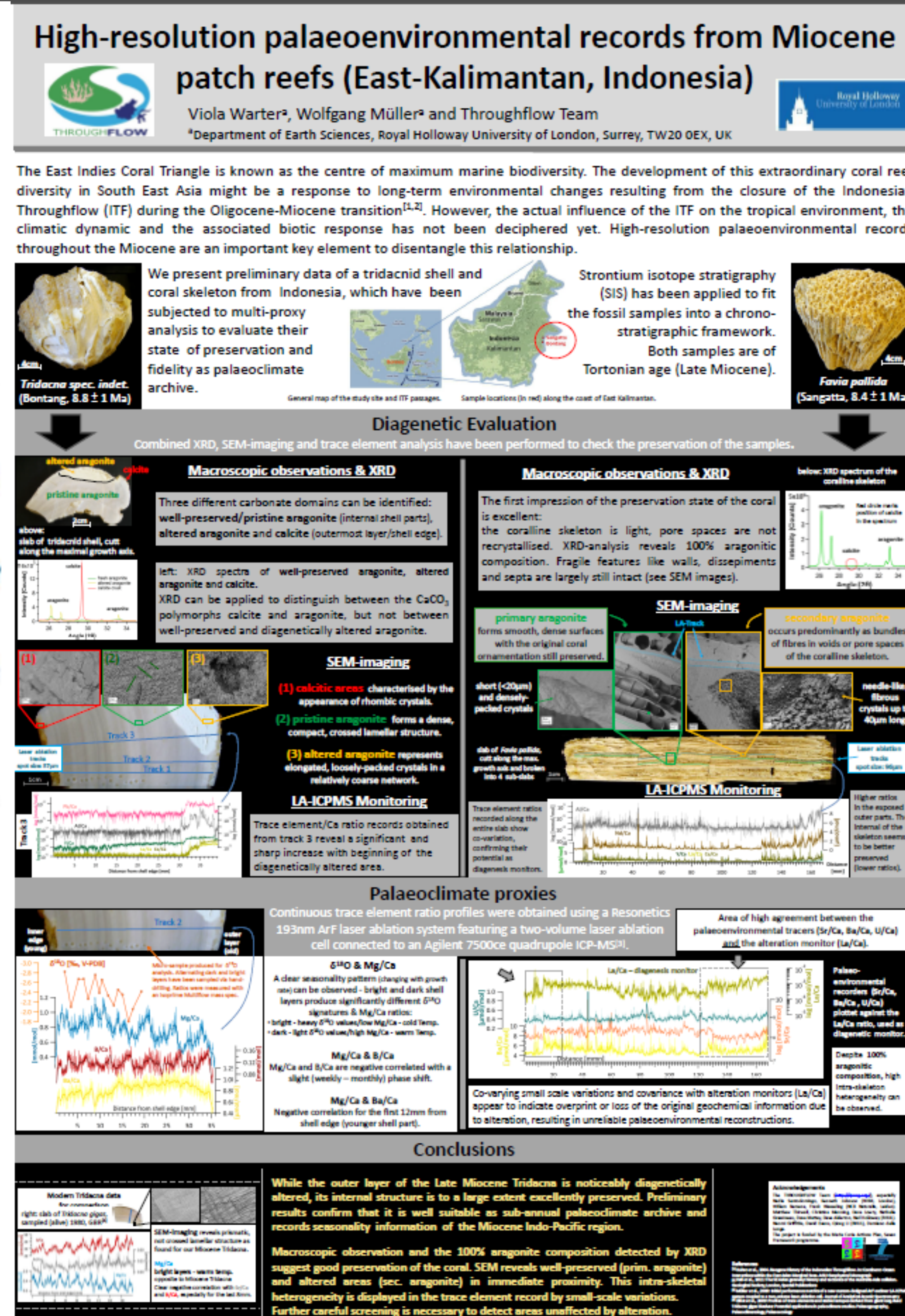



Distance from shell edge [mm]
5
10
15
20
δ18O [‰, V-PDB]
-3.0
-2.8
-2.6
-2.4
-2.2
-2.0
-1.8
a
b
c
d
e
f
g
h
i
j
k
l
m
n
o
a b c d e f g h i j k l m n o

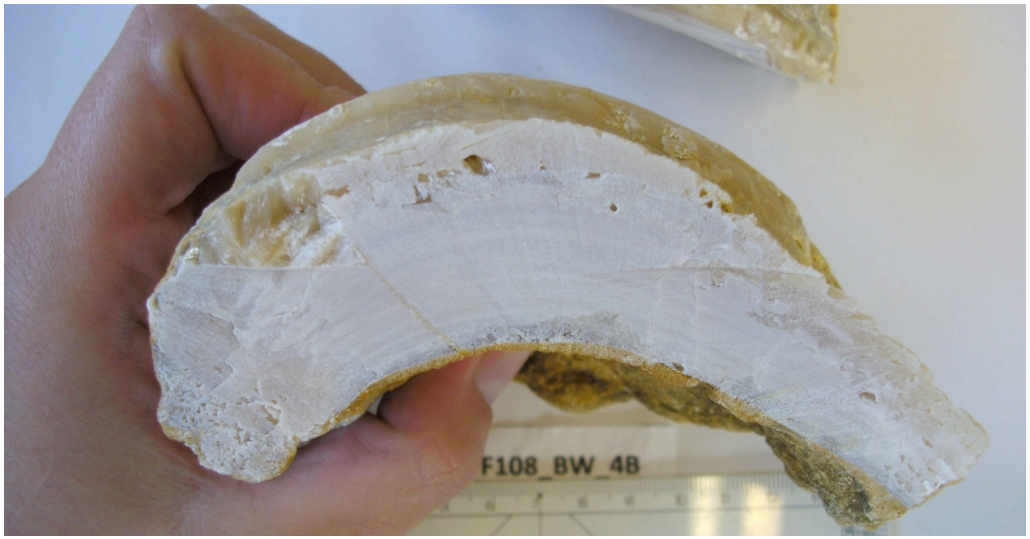

delta 18O [‰]
-2.8
-2.6
-2.4
-2.2
-2.0
-1.8
Mg/Ca [mmol/mol]
1.2
1.0
0.8
0.6
0.4
0.2
5
10
15
20
25
30
35
Distance [mm]
clear pattern and agreement in δ18O and Mg/Ca

What happened since then…

12th International
Coral Reef Symposium
9-13 July 2012 • Cairns • Queensland • Australia

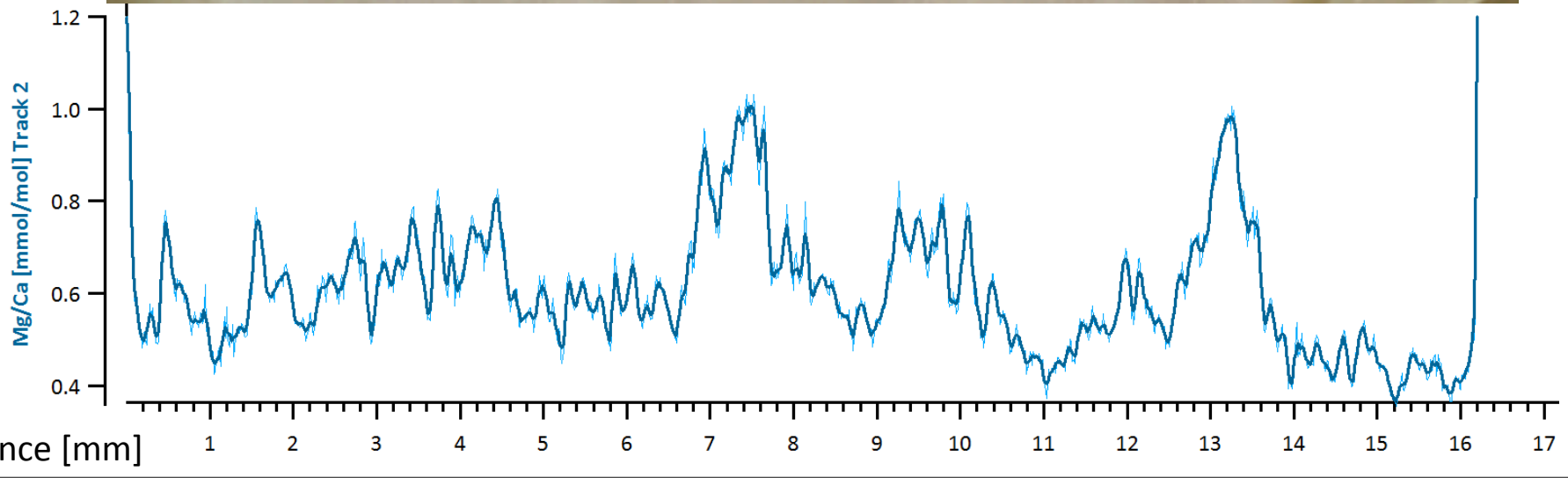


Back at Royal Holloway…

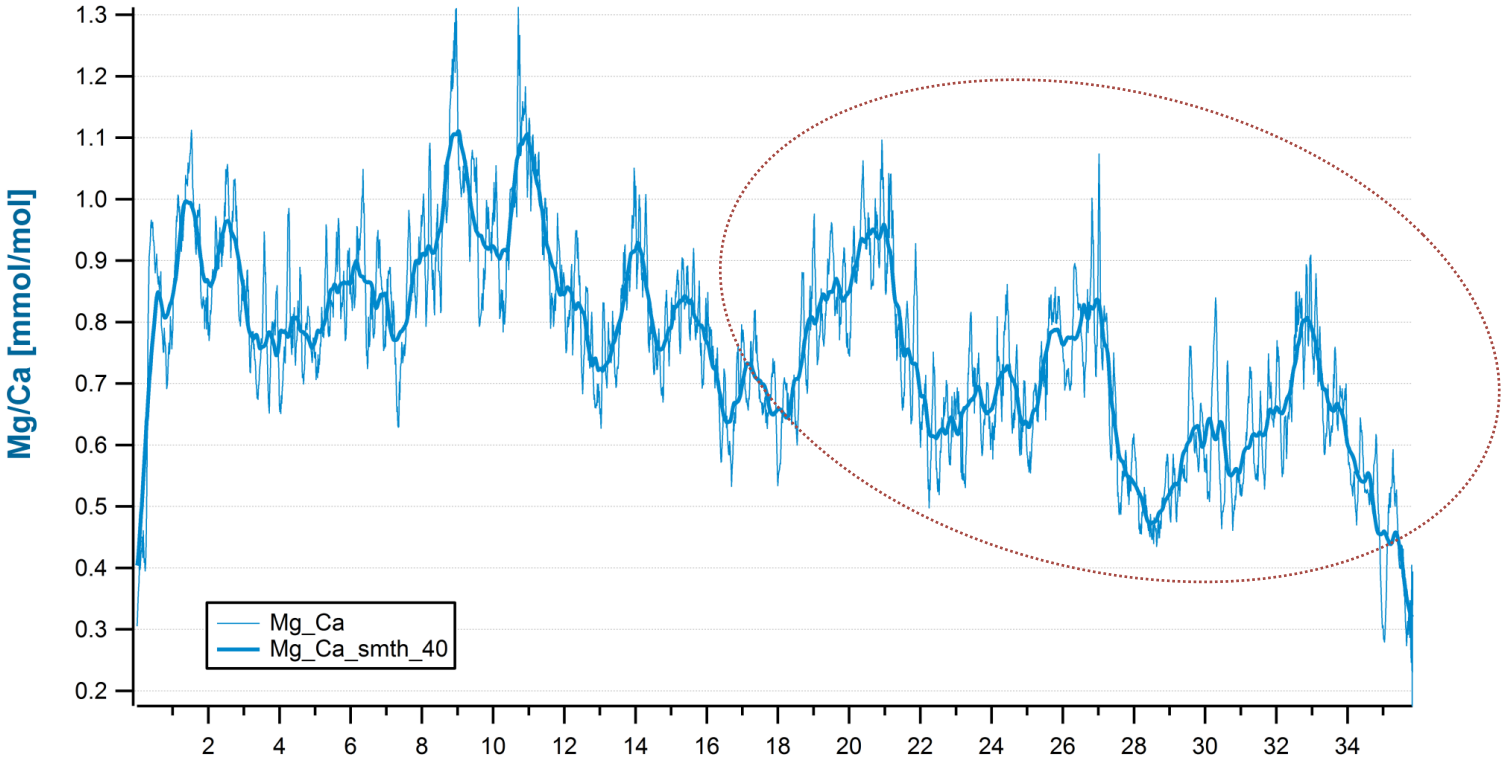


Internal shell surprisingly well-preserved, with distinct bright/dark banding pattern

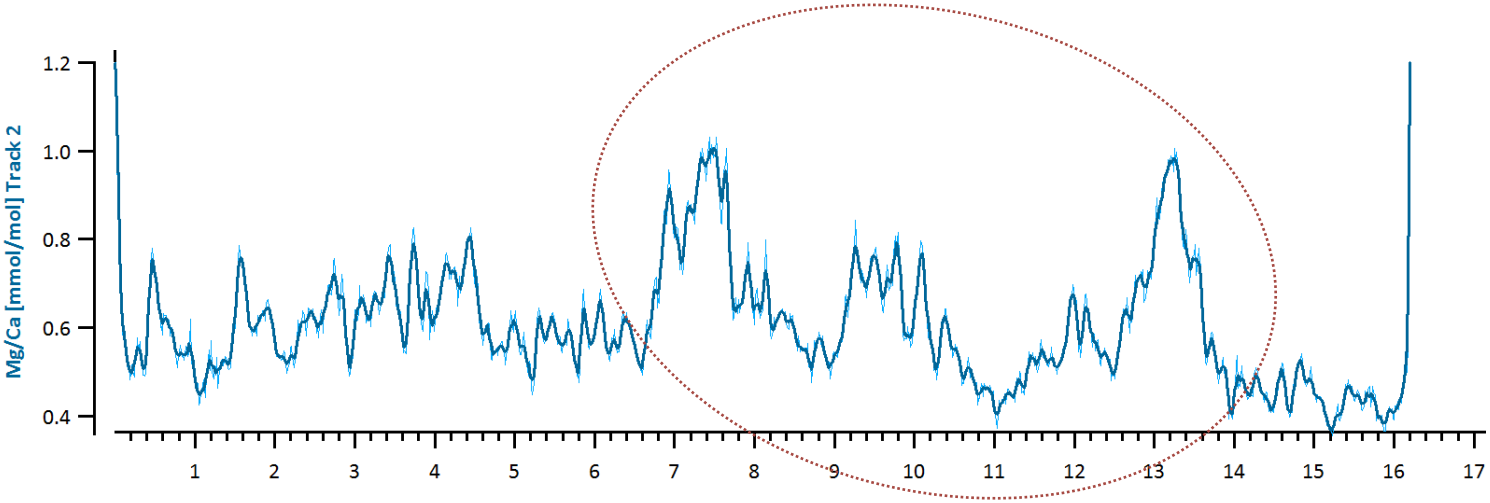
TF108
BW 4B
track 2



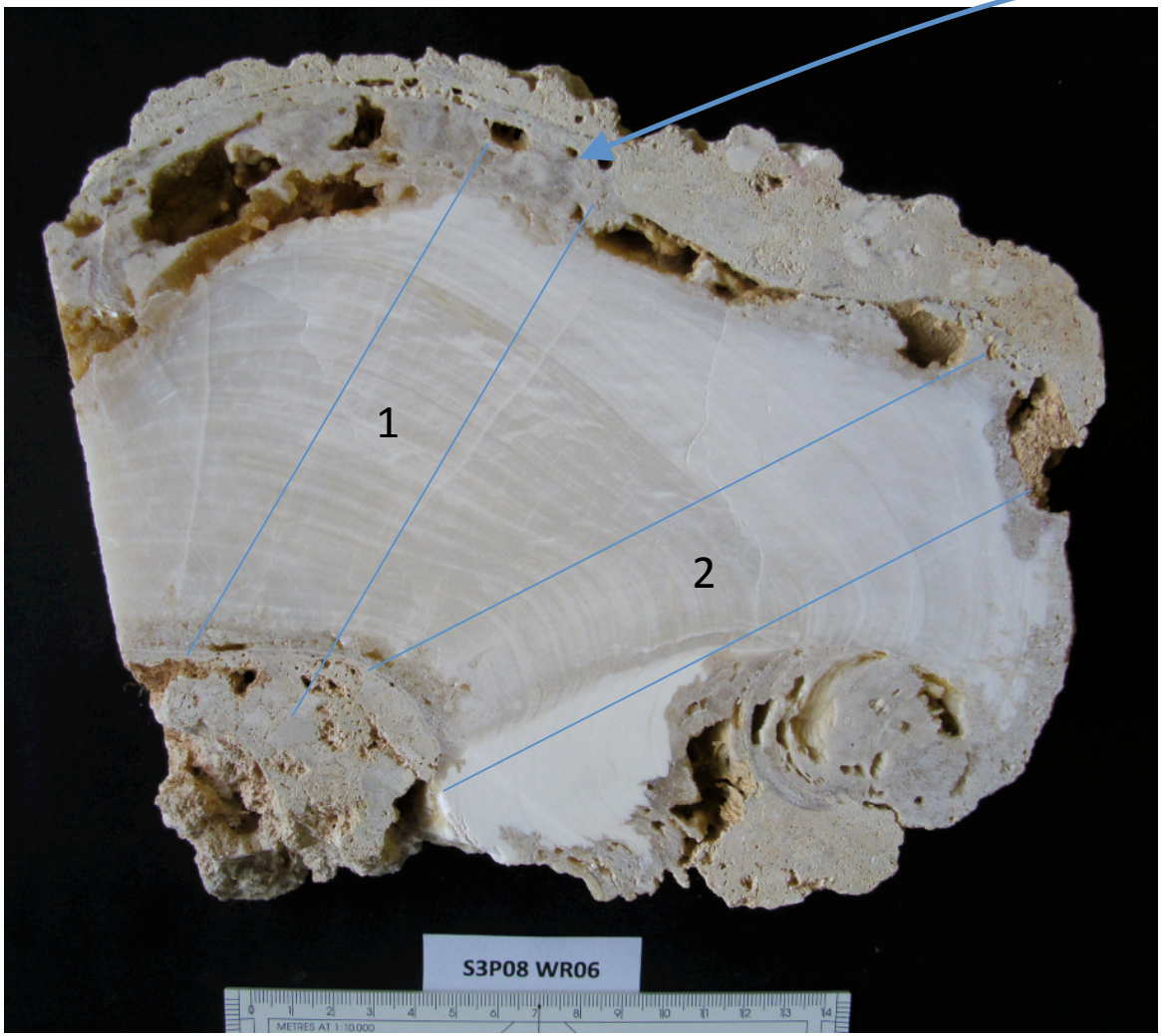
TF109
LGS 1
track 2



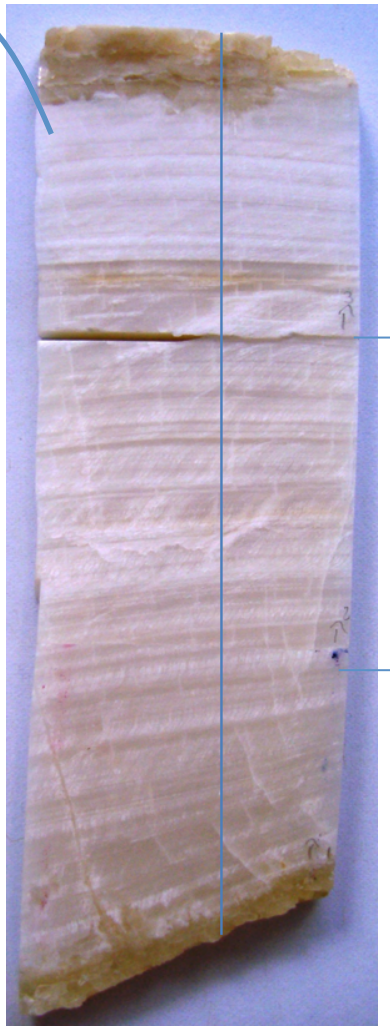
TF108
BW 4B
track 2



Malaysian Tridacna (Sabbah) – estimated age late Pliocene (3.6 – 2.6 Ma)

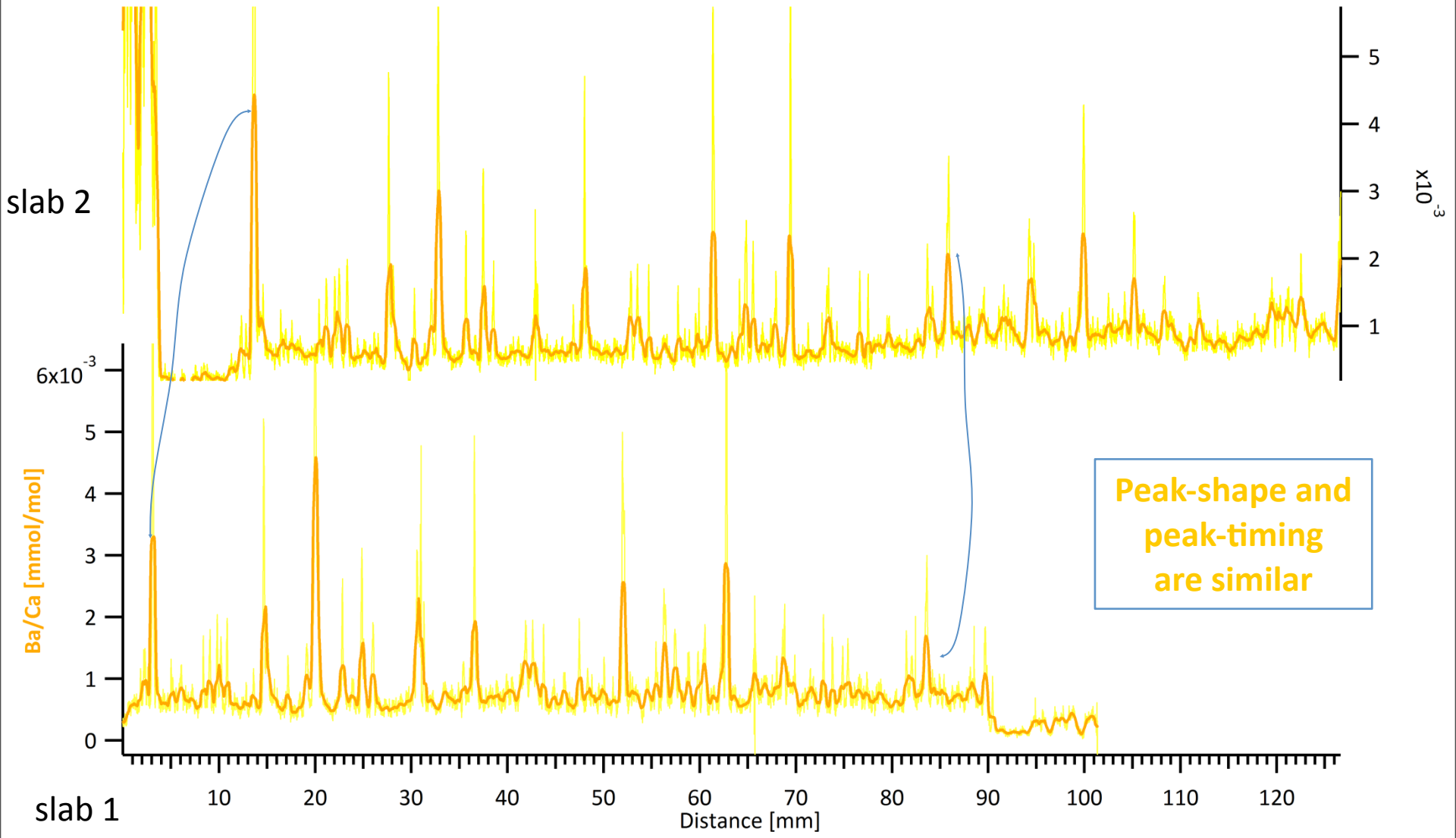


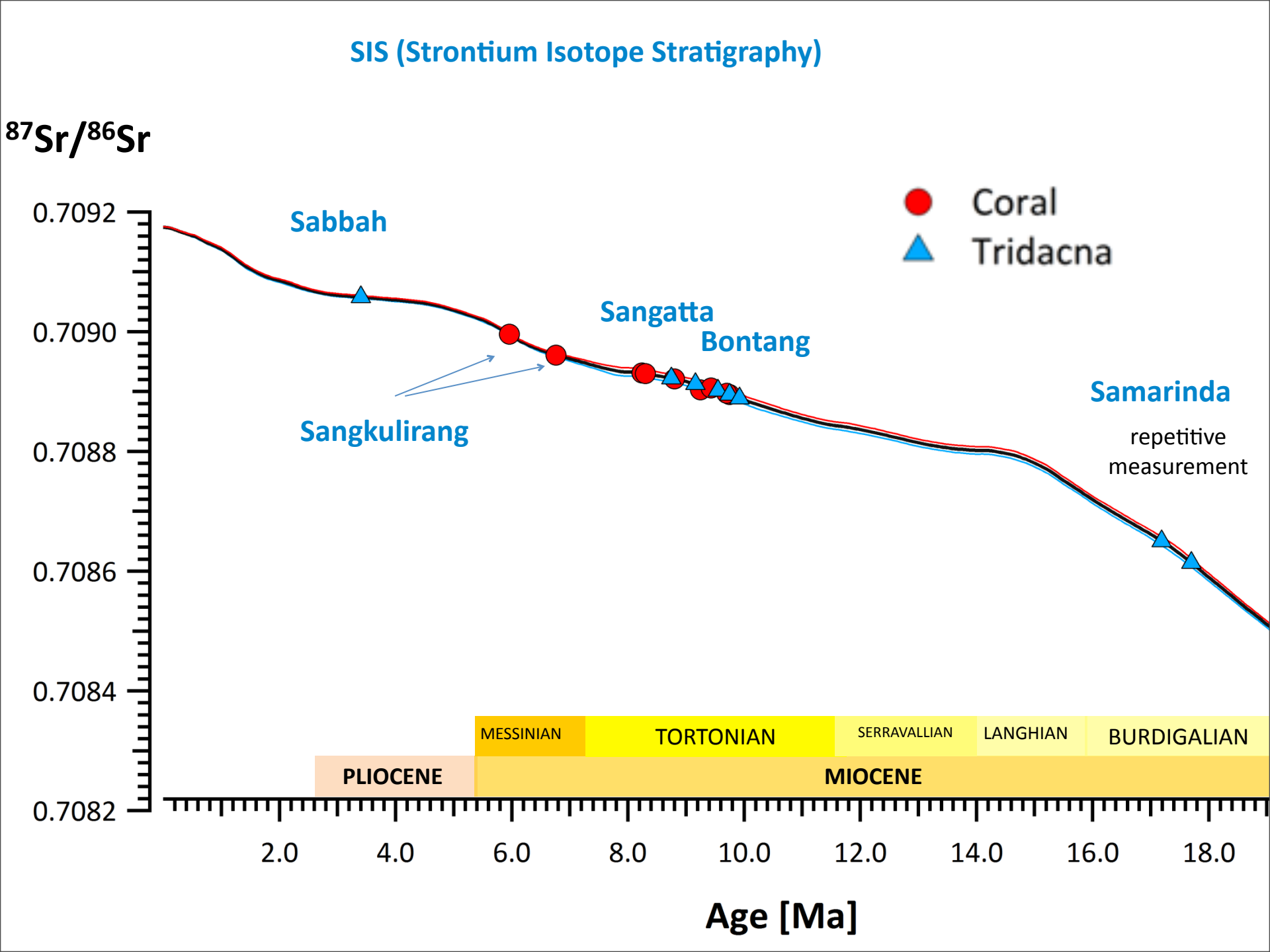
slab 1

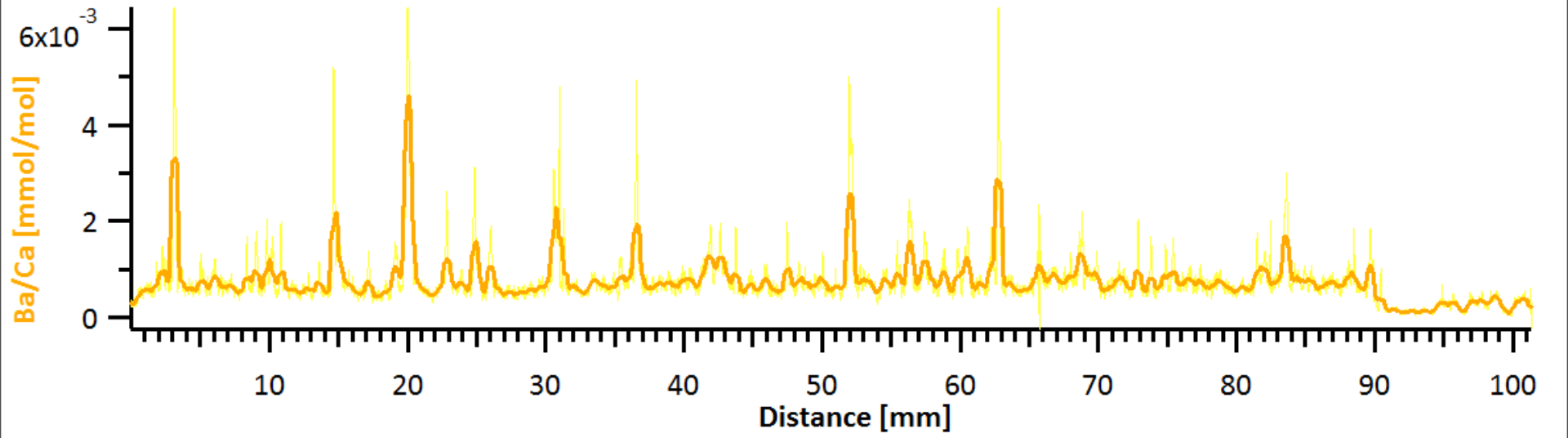


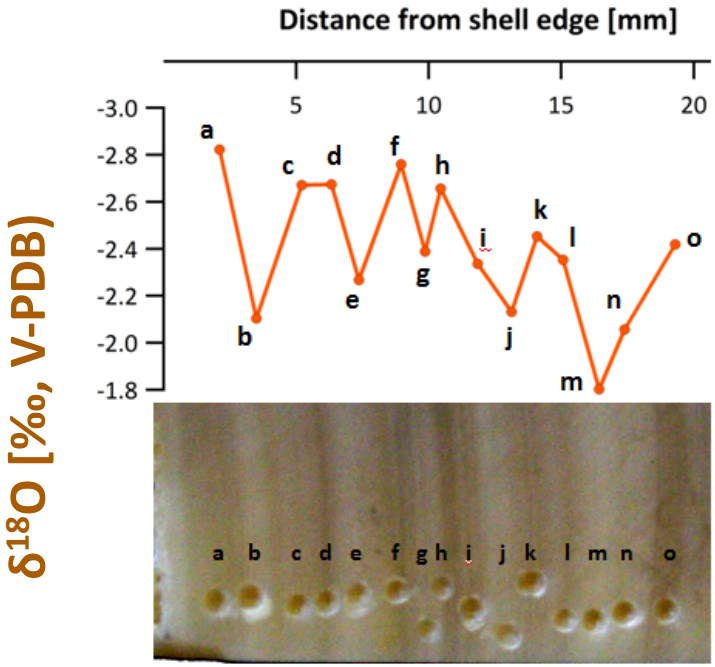
Malaysian Tridacna

Ba/Ca ratio - Comparison between slab 1 and slab 2




SIS (Strontium Isotope Stratigraphy)
87Sr/86Sr
0.7092
0.7090
0.7088
0.7086
0.7084
0.7082
Coral
Tridacna
Sabbah
Sangatta
Bontang
Samarinda
repetitive measurement
Sangkulirang
MESSINIAN
TORTONIAN
SERRAVALLIAN
LANGHIAN
BURDIGALIAN
PLIOCENE
MIOCENE
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
Age [Ma]


6x10 -3
4
2
0
Ba/Ca [mmol/mol]
10
20
30
40
50
60
70
80
90
100
Distance [mm]



In reference to **Batenburg et al., 2011** same temperature equations and assumed $\delta^{18}O_{sw}$ of -0.88‰ are used to transfer stable isotope data to SSTs.

Aharon (1983)

$T°C = 21.3 - 4.42 (\delta^{18}O_{aragonite} - \delta^{18}O_{sw})$

Max SST: 29.88°C; Min SST: 25.38°C

Average SST: 27.99°C

Max. fluctuations: 4.51°C

Fluctuations between individual summer/winter couplets: 1.6°C to 3.2°C

Grossmann & Ku (1986)

$T°C = 21.8-4.69 (\delta^{18}O_{aragonite} - \delta^{18}O_{sw})$

Max SST: 30.91°C; Min SST: 26.13°C

Average SST: 28.39 °C

Max. fluctuations: 4.78°C

Fluctuations between individual summer/winter couplets: 1.7°C to 3.4°C