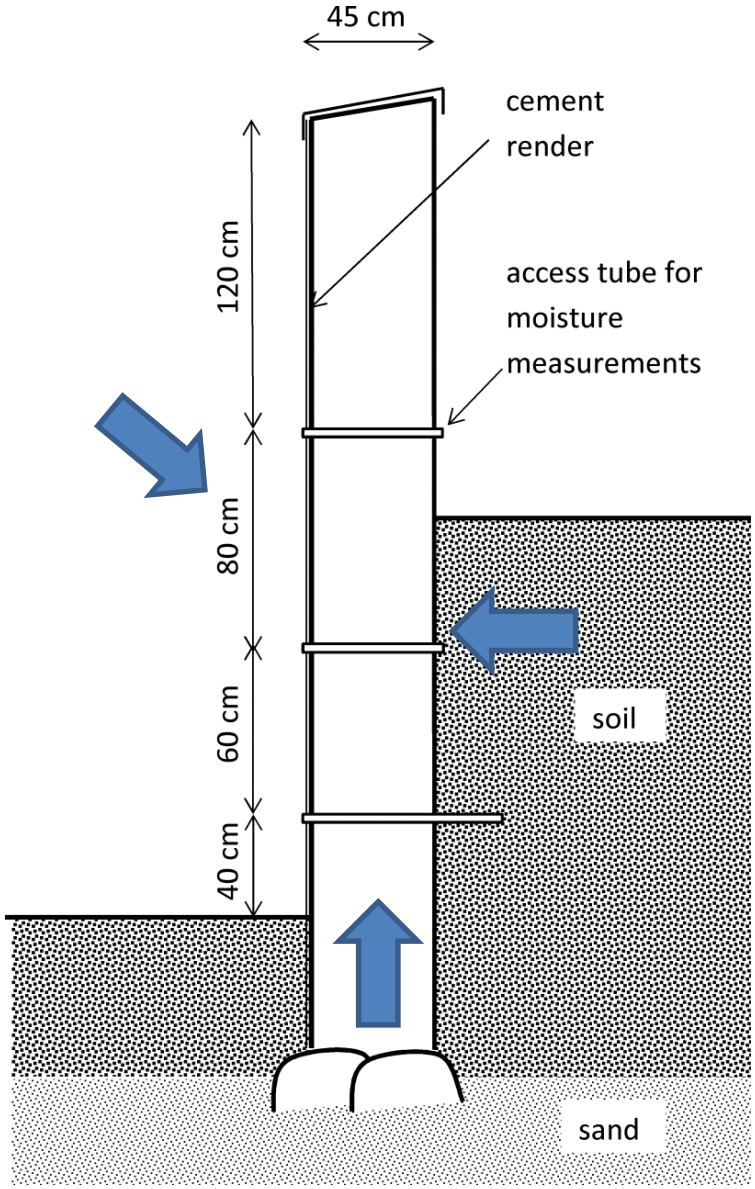
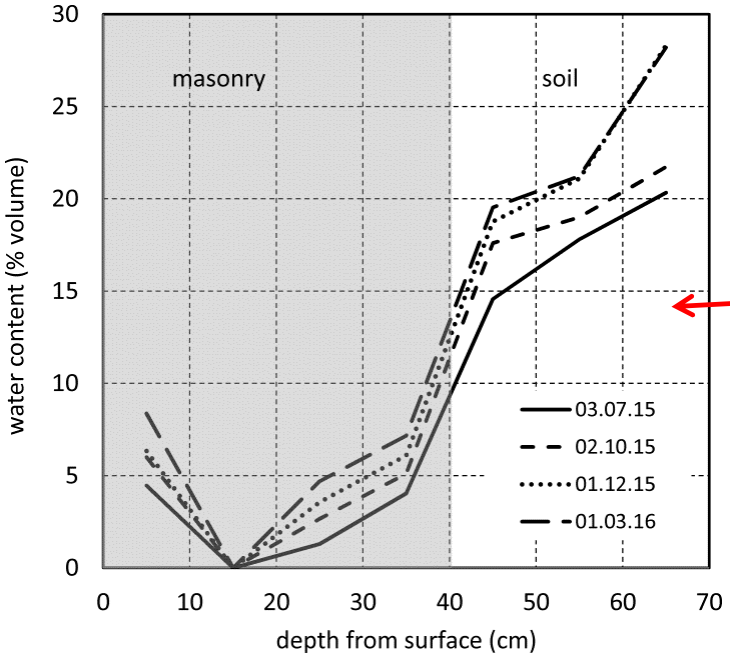
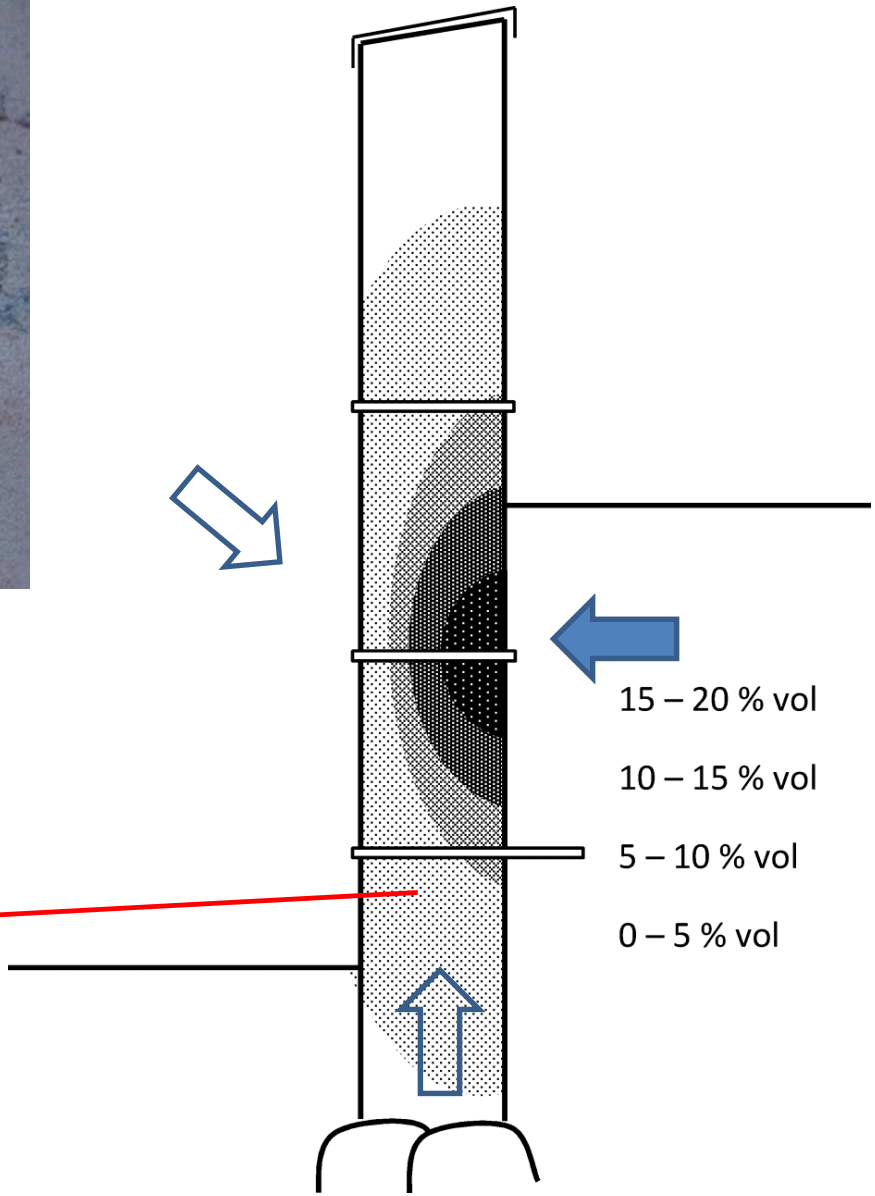
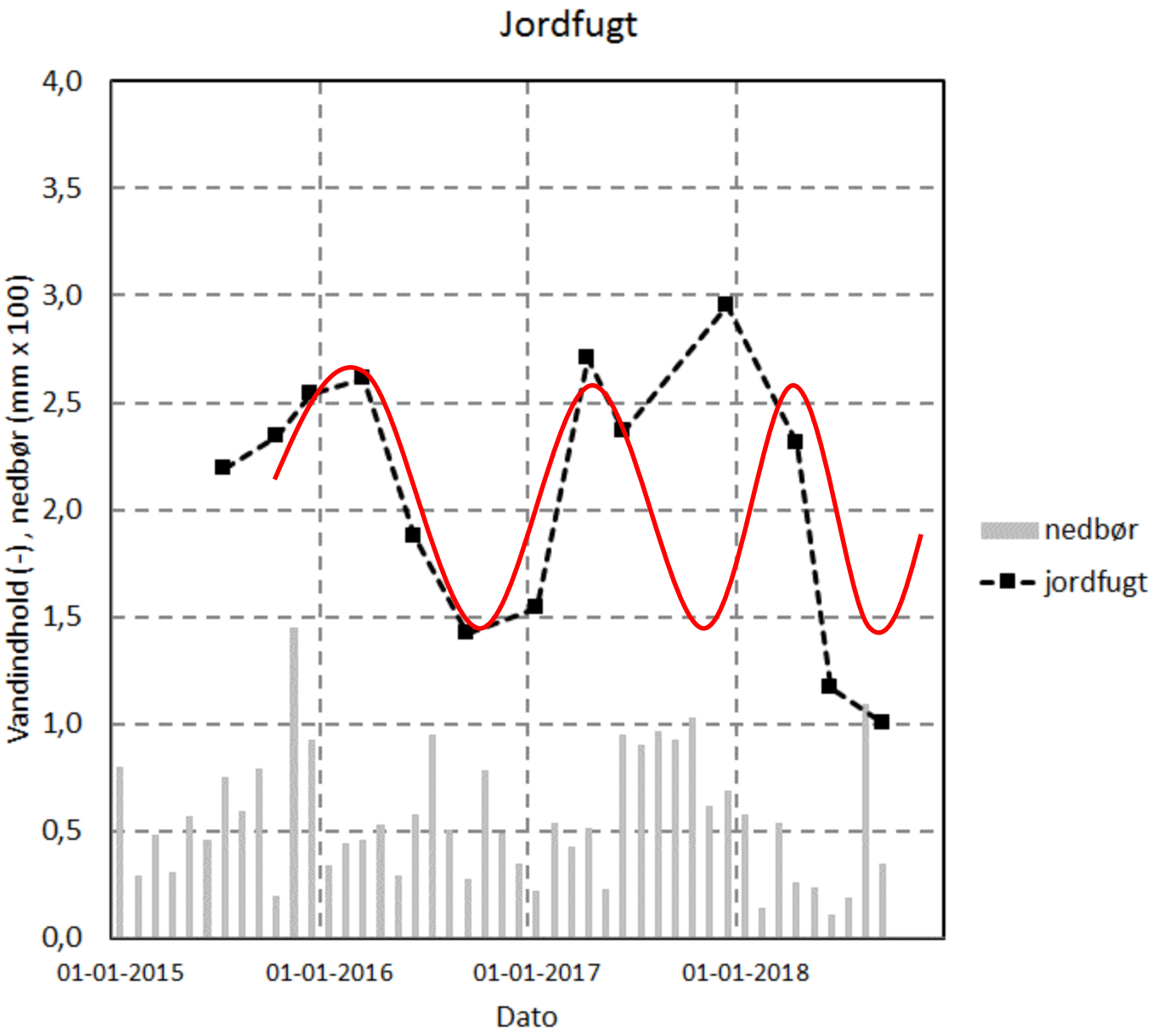
Havemuren ved Marielyst Slot, Helsingør

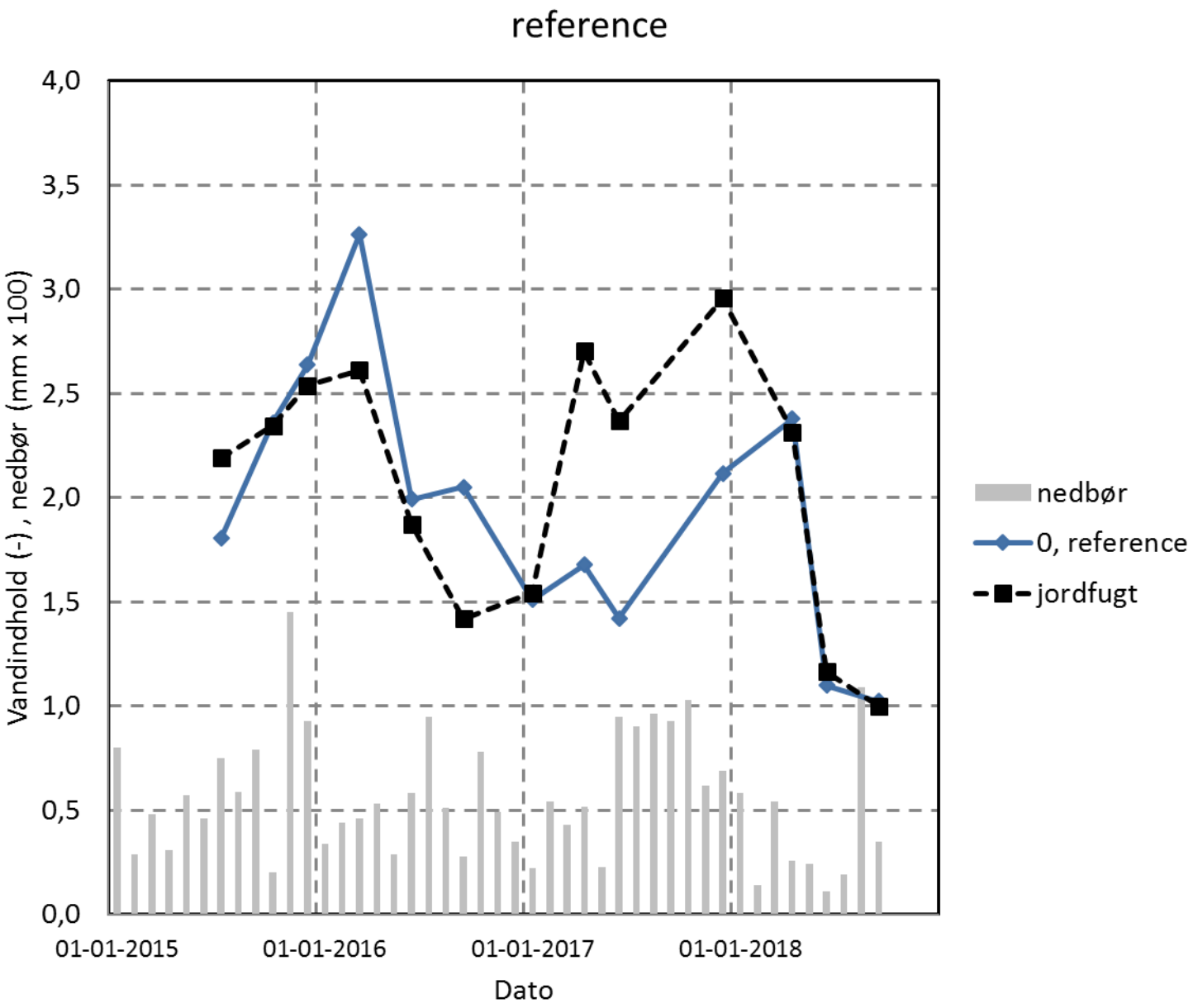



masonry
soil
water content (% volume)
depth from surface (cm)
0
5
10
15
20
25
30
0
10
20
30
40
50
60
70
03.07.15
02.10.15
01.12.15
01.03.16


15 – 20 % vol
10 – 15 % vol
5 – 10 % vol
0 – 5 % vol

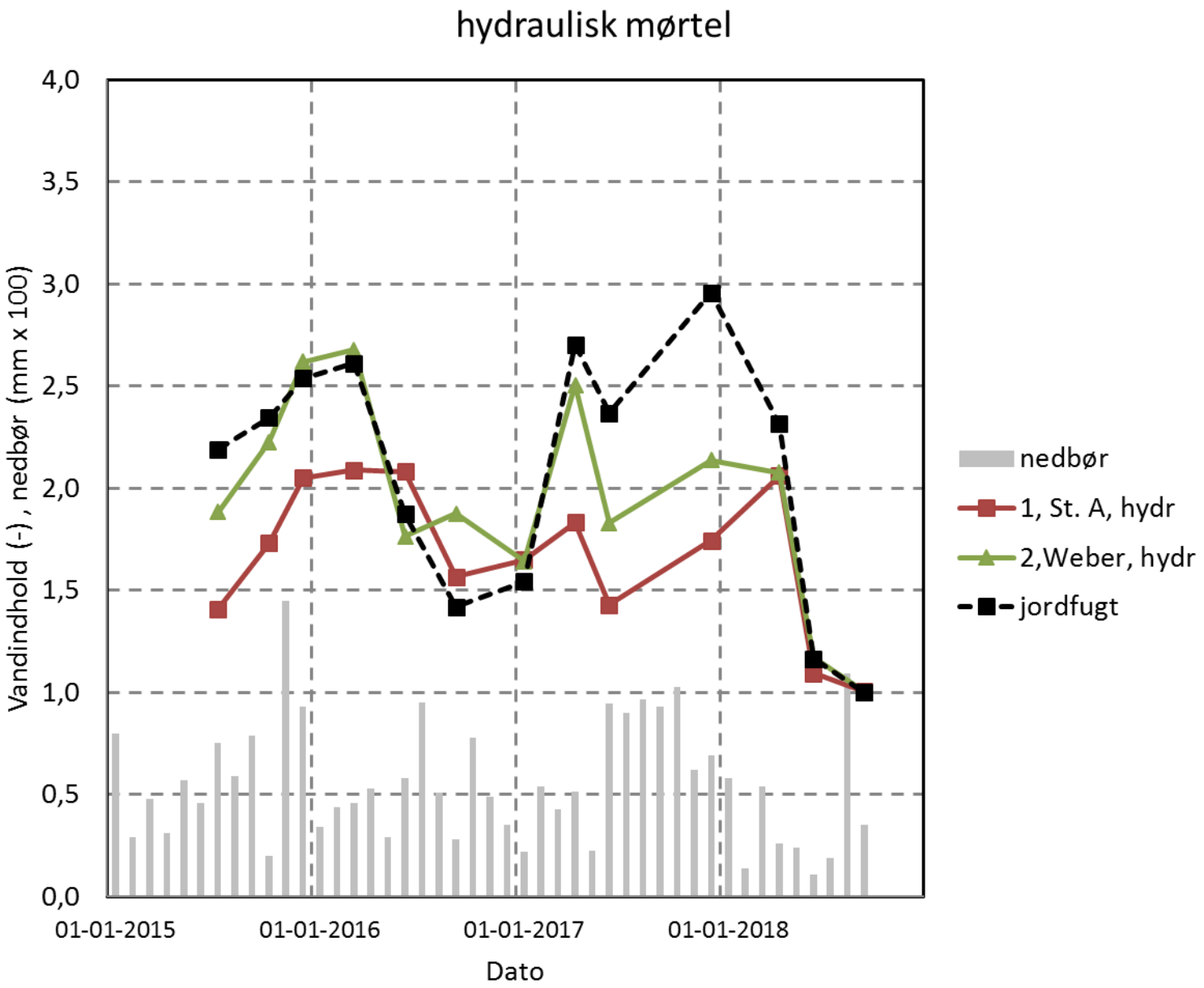

Jordfugt
4,0
3,5
3,0
2,5
2,0
1,5
1,0
0,5
0,0
Vandindhold (-), nedbør (mm x 100)
01-01-2015
01-01-2016
01-01-2017
01-01-2018
Dato
nedbør
jordfugt

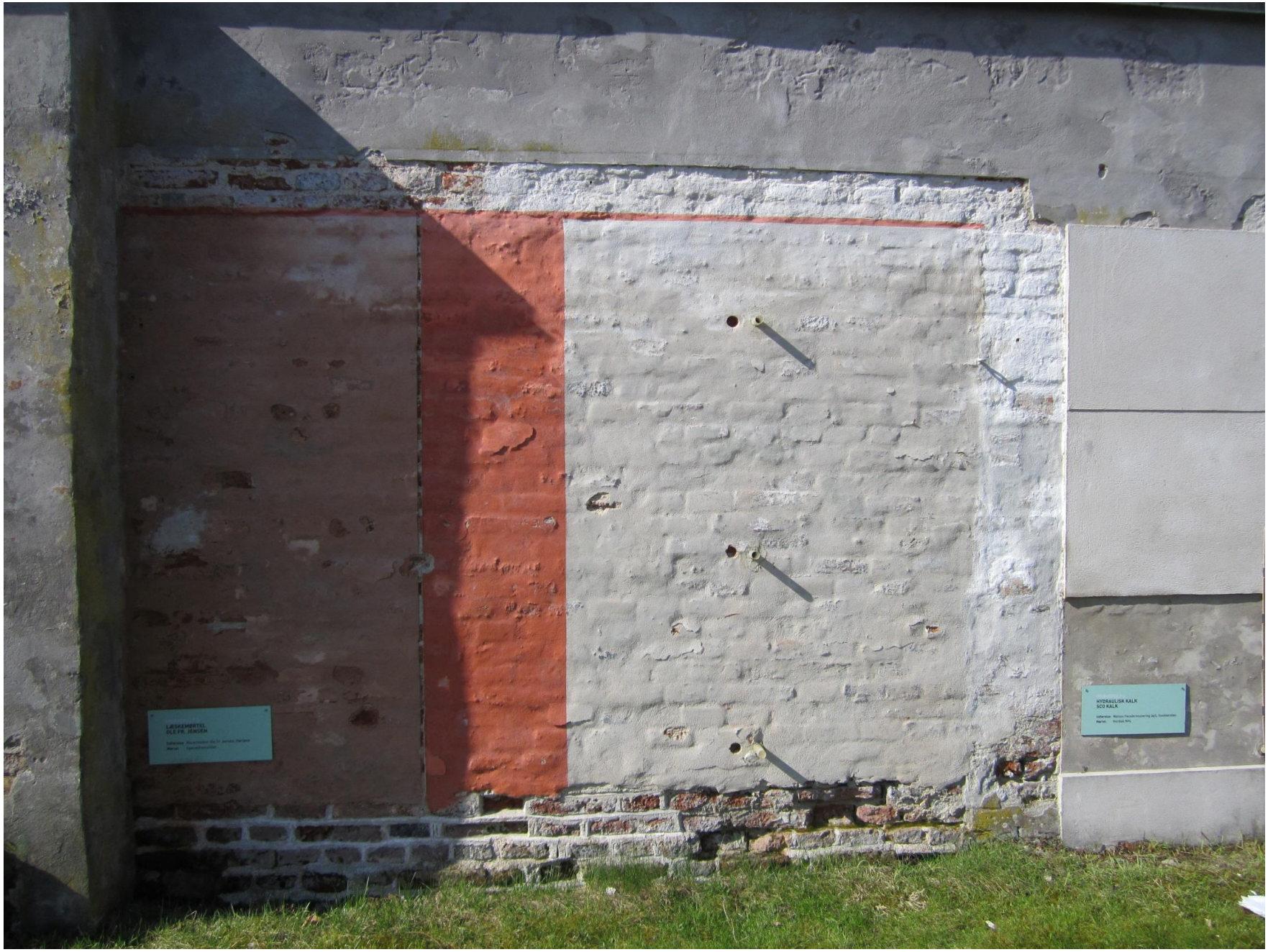
DEMONSTRATIONSPROJEKT
MARIENLYST SLOTSMUR
UDBEDRING AF SKADET
MUR OG MØRTEL
I KULTURMILJØER
HYDRAULISK KALK - ST. ASTIER
HYDRAULISK KALK - WEBER SAINT GOBAIN
LÆSKEMØRTEL - OLD FR. JENSEN
HYDRAULISK KALK - SCO KALK
HYDRAULISK KALK OG LÆSKEMØRTEL - KALK A/S
HYDRAULISK KALK - KALK A/S
WWW. KALKFORUM.DK

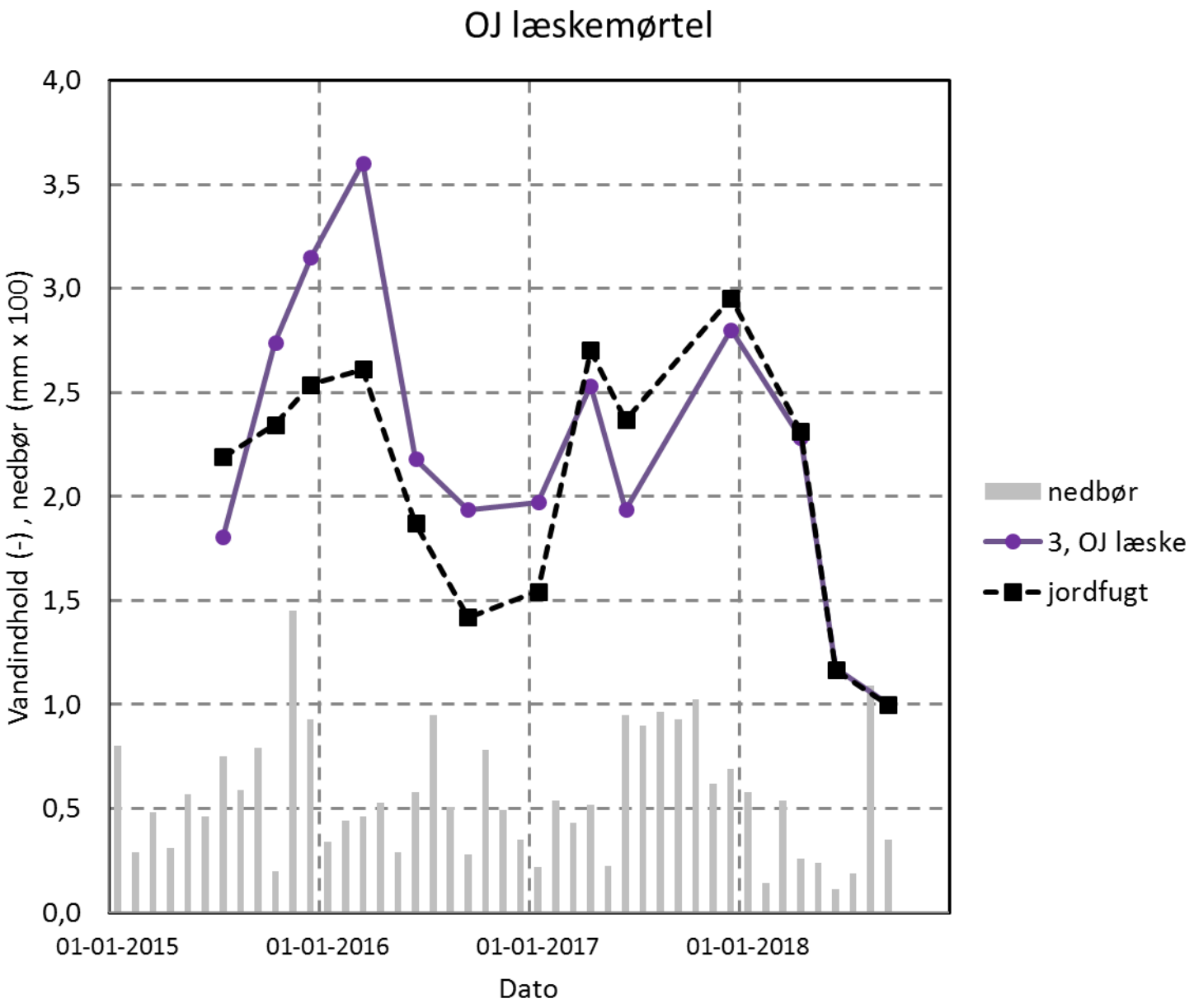

reference
4,0
3,5
3,0
2,5
2,0
1,5
1,0
0,5
0,0
Vandindhold (-) , nedbør (mm x 100)
01-01-2015
01-01-2016
01-01-2017
01-01-2018
Dato
nedbør
0, reference
jordfugt

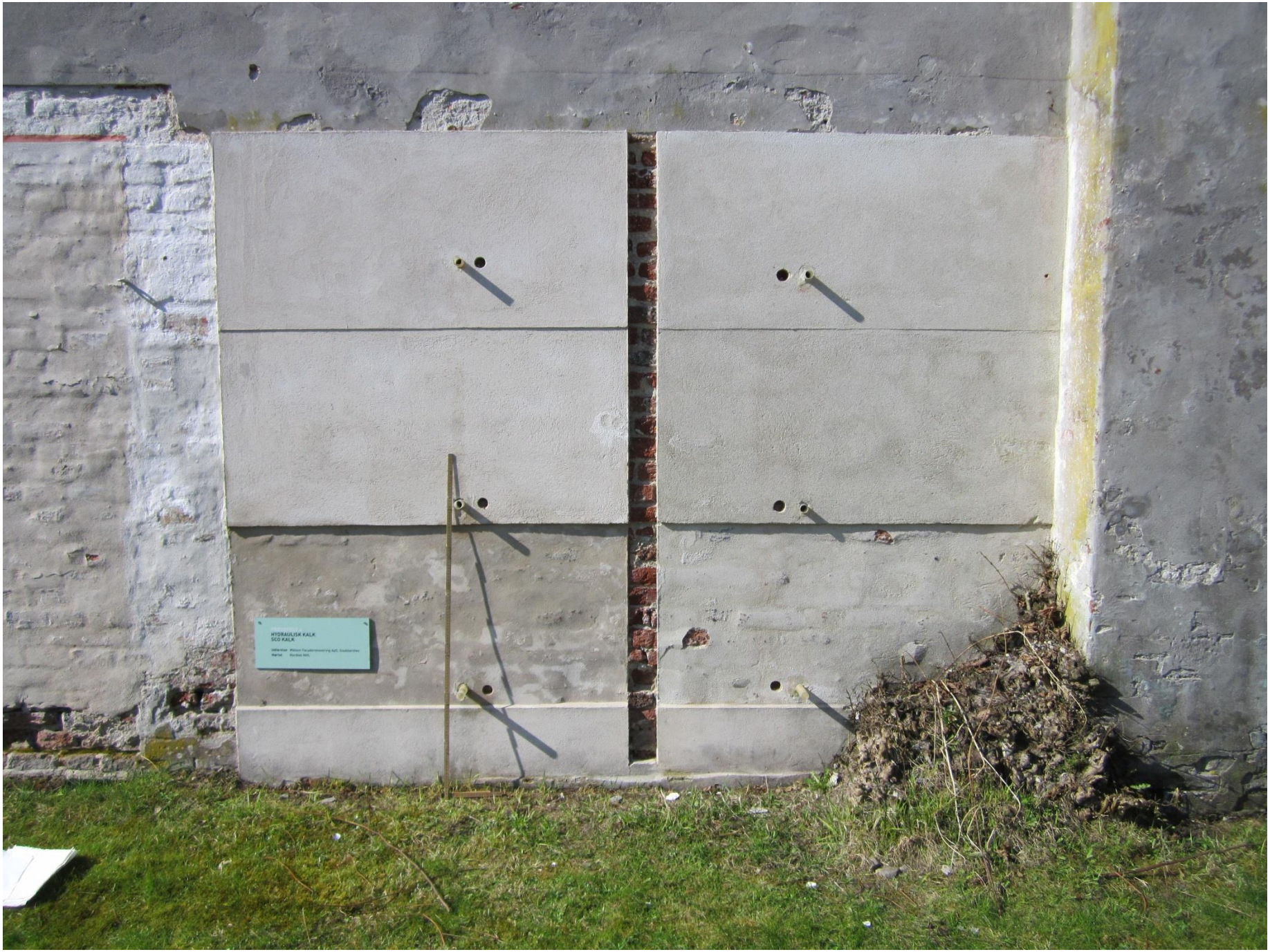
HYDRAULISCH KALK
DE ASTEEN

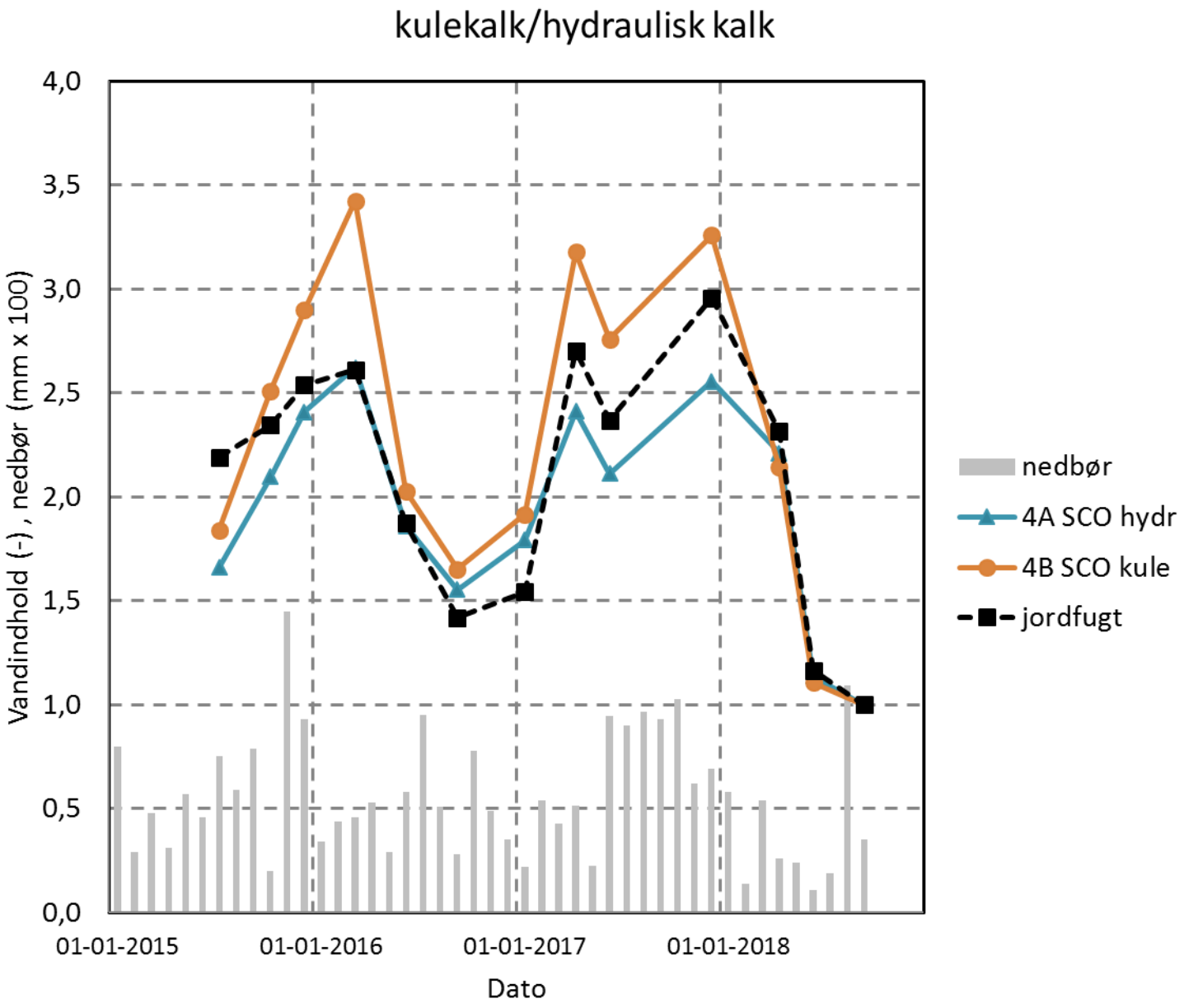
HYDRAULISK KALK
WEBER SAINT-GOBAIN
Udførelse Murerfirmaet Lars M. Nilsson ApS. Helsingør
Materiale Weber Saint-Gobain


hydraulisk mørtel
4,0
3,5
3,0
2,5
2,0
1,5
1,0
0,5
0,0
Vandindhold (-) , nedbør (mm x 100)
01-01-2015
01-01-2016
01-01-2017
01-01-2018
Dato
nedbør
1, St. A, hydr
2,Weber, hydr
jordfugt

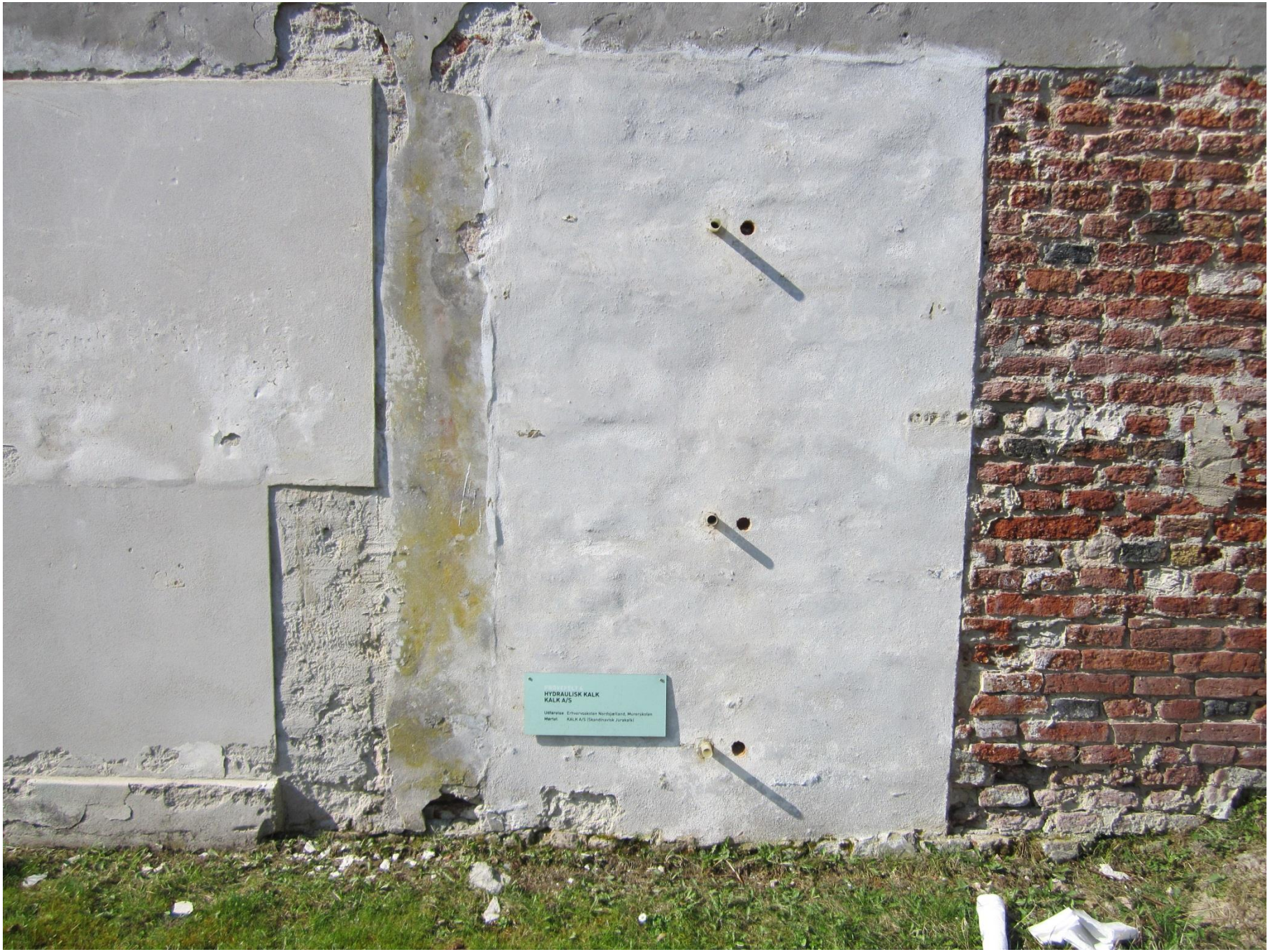

LÆSKEMØRTEL
OLE FR. JENSEN
HYDRAULISK KALK
SCO KALK

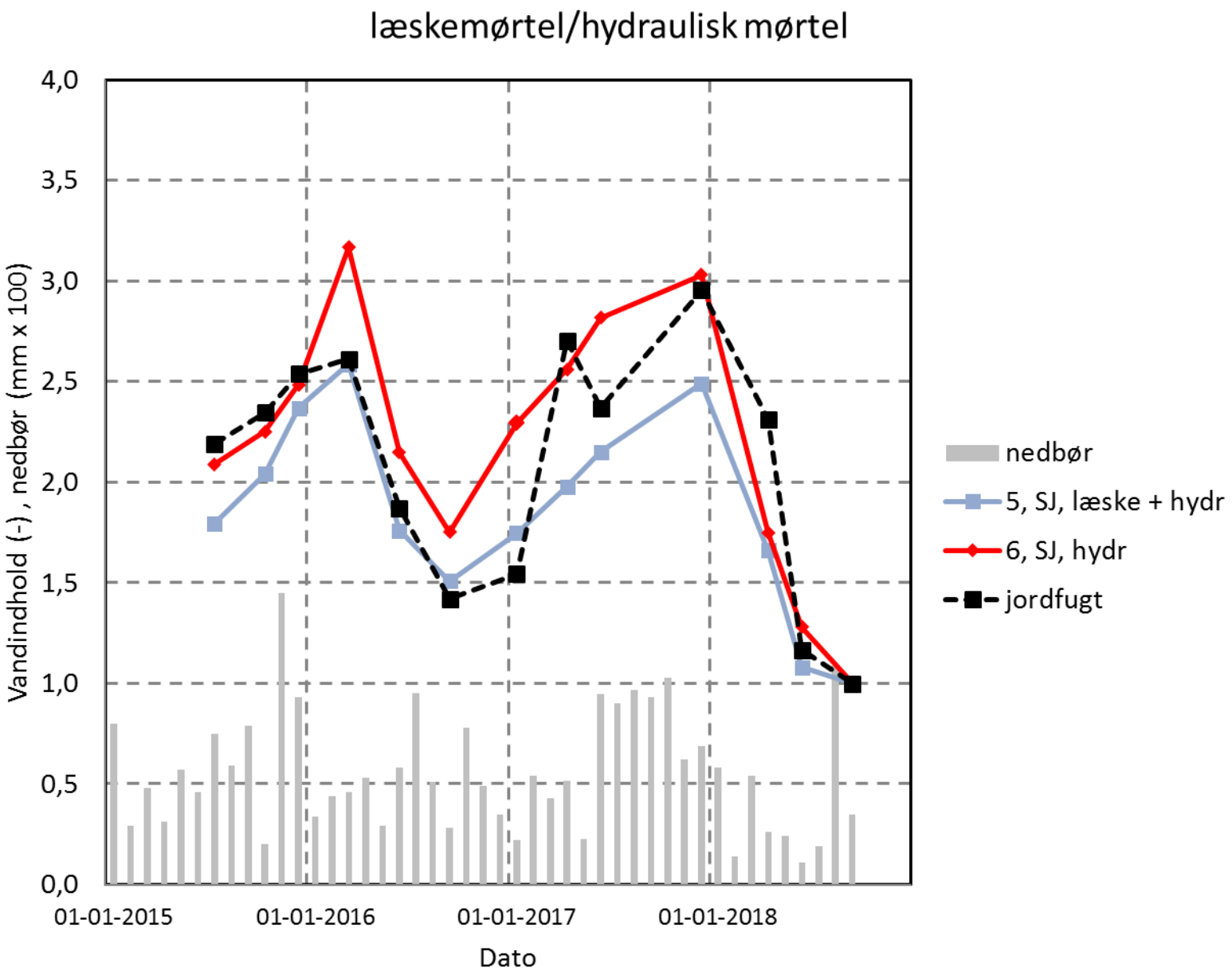

OJ læskemørtel
4,0
3,5
3,0
2,5
2,0
1,5
1,0
0,5
0,0
Vandindhold (-) , nedbør (mm x 100)
01-01-2015
01-01-2016
01-01-2017
01-01-2018
Dato
nedbør
3, OJ læske
jordfugt

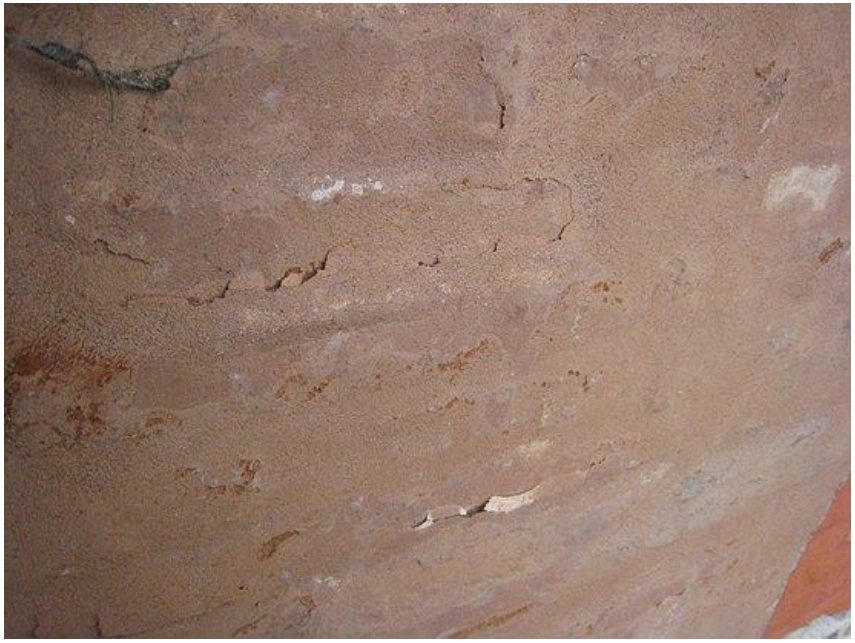

HYDRAULISK KALK
SGU KALK

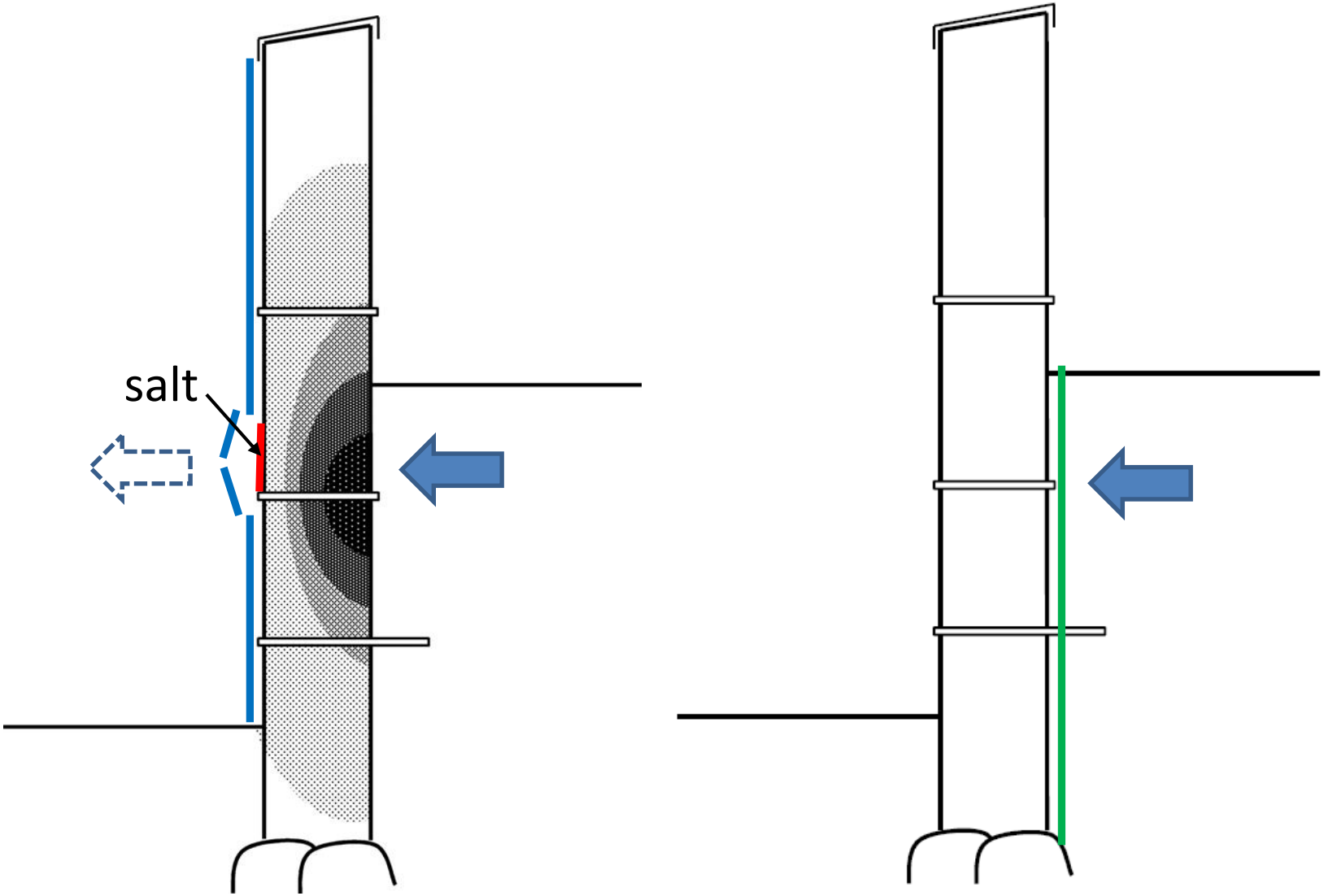

kulekalk/hydraulisk kalk
4,0
3,5
3,0
2,5
2,0
1,5
1,0
0,5
0,0
Vandindhold (-) , nedbør (mm x 100)
01-01-2015
01-01-2016
01-01-2017
01-01-2018
Dato
nedbør
4A SCO hydr
4B SCO kule
jordfugt

HYDRAULISK KALK OG LÆSKEMØRTEL
KALK A/S
HYDRAULISK KALK
KALK A/S


HYDRAULISK KALK
KALK A/S
Udførelse Erhvervsskolen Nordsjælland, Murerskolen
Mørtel KALK A/S (Skandinavisk Jurakalk)


læskemørtel/hydraulisk mørtel
4,0
3,5
3,0
2,5
2,0
1,5
1,0
0,5
0,0
Vandindhold (-) , nedbør (mm x 100)
01-01-2015
01-01-2016
01-01-2017
01-01-2018
Dato
nedbør
5, SJ, læske + hydr
6, SJ, hydr
jordfugt

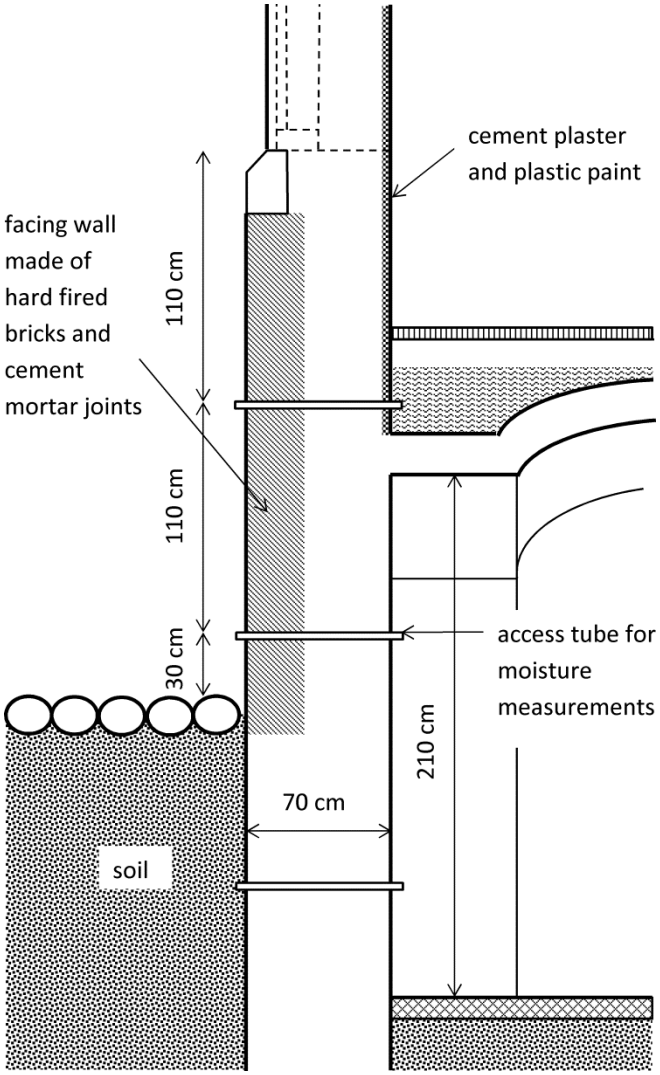


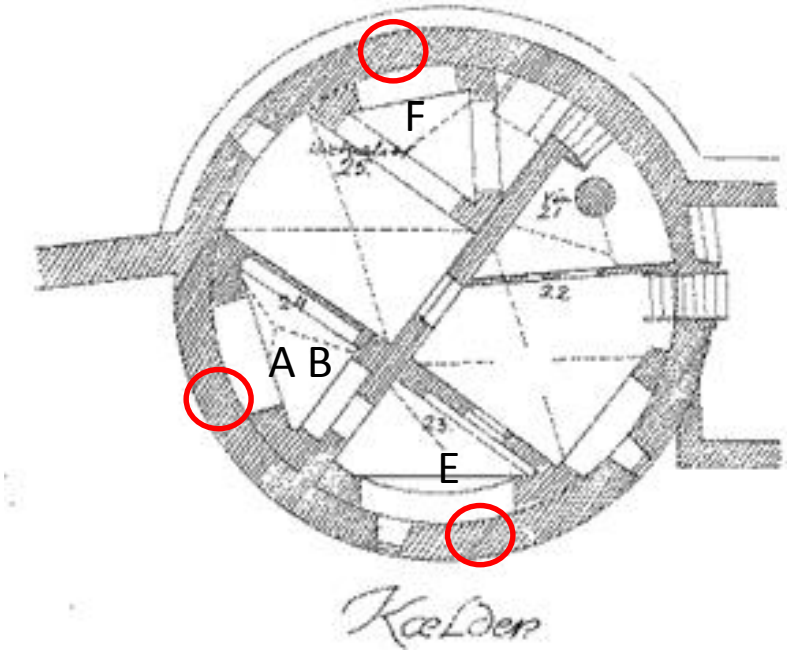

salt

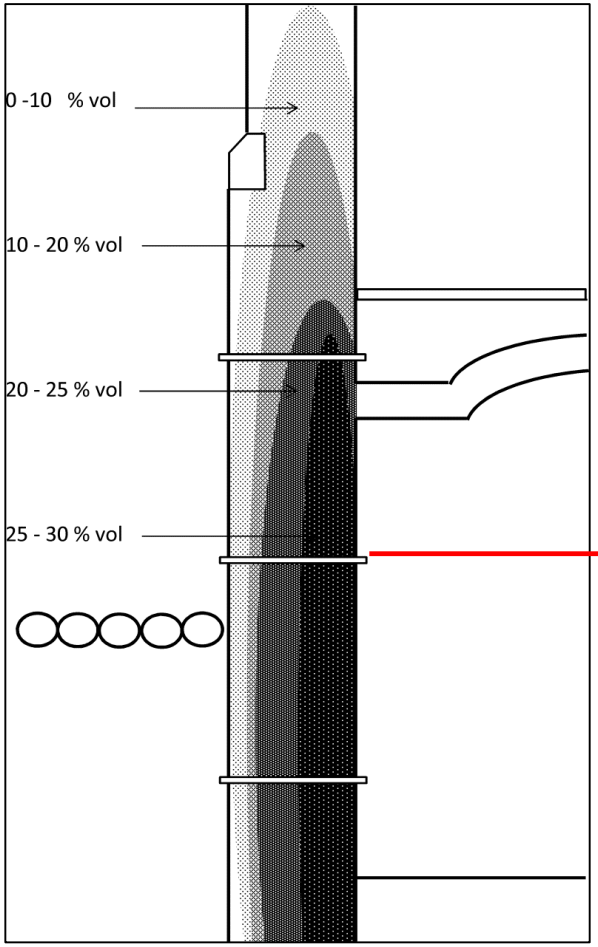
Sammenfatning

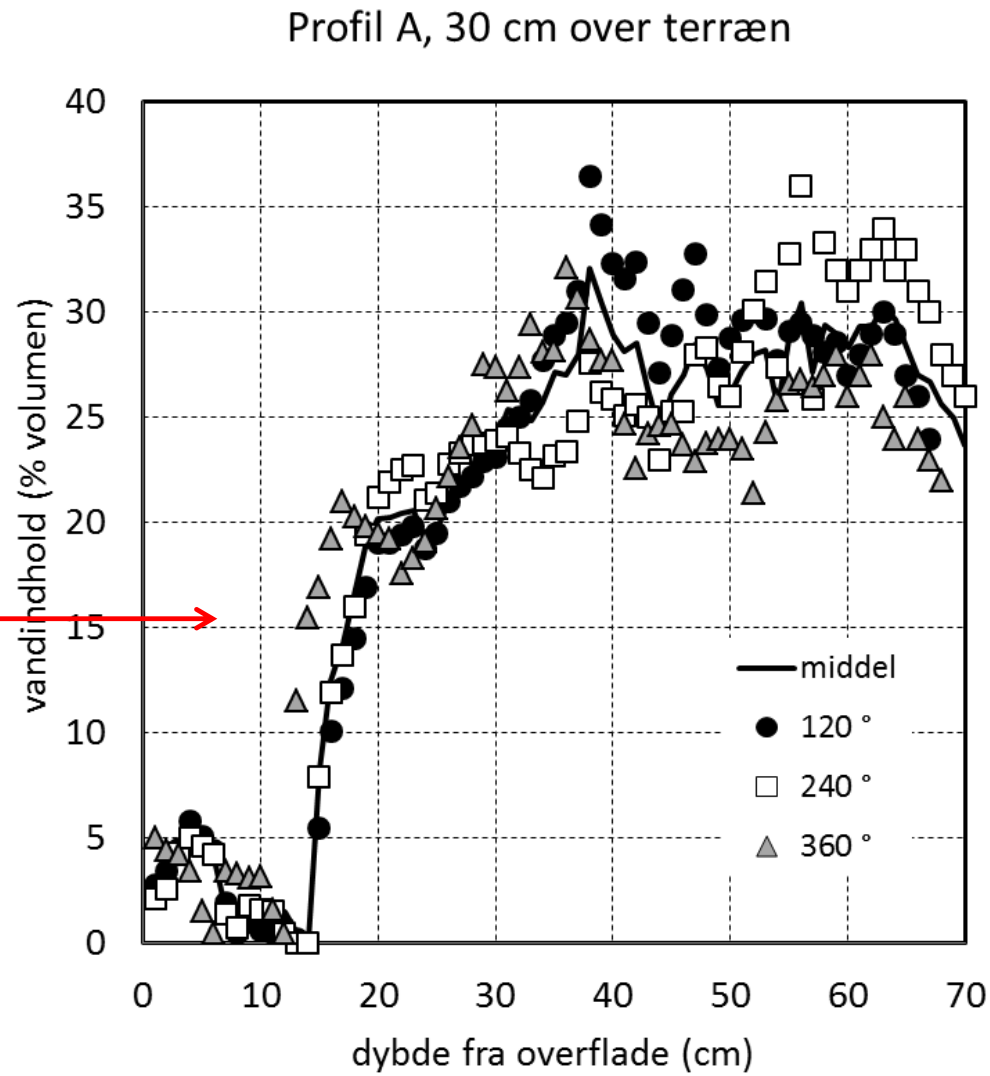
- Fugtindhold i muren kontrolleres af fugtindhold i jorden
- Nedbrydning af pudslag skyldes primært udfældning af salte
- Holdbarhed bestemmes af pudslagets opbygning og materialernes styrke
- Fugtspærre på bagsiden vil standse fugt og salte og forlænge levetiden

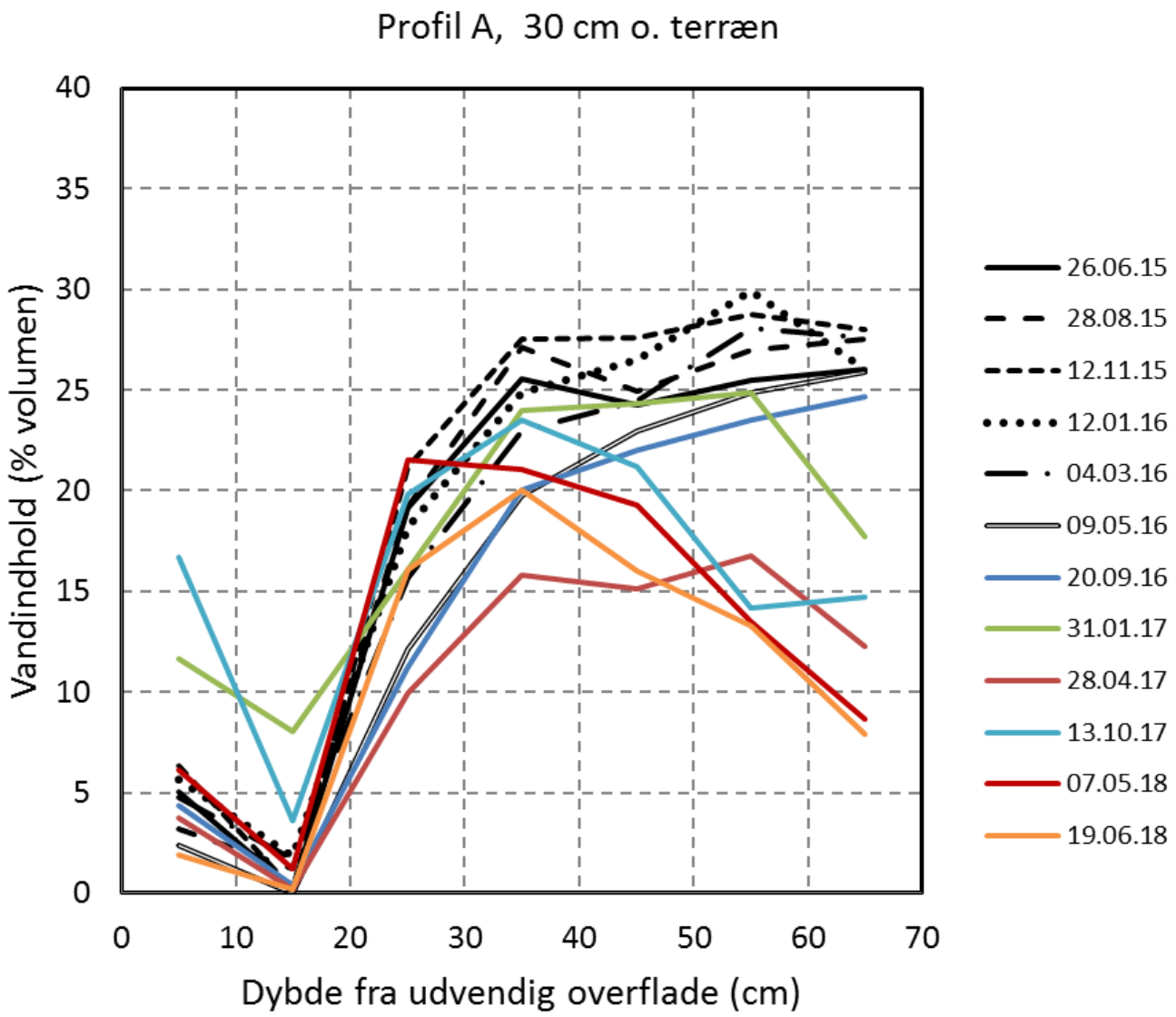
Frederiksborg slot, Vestre rondel

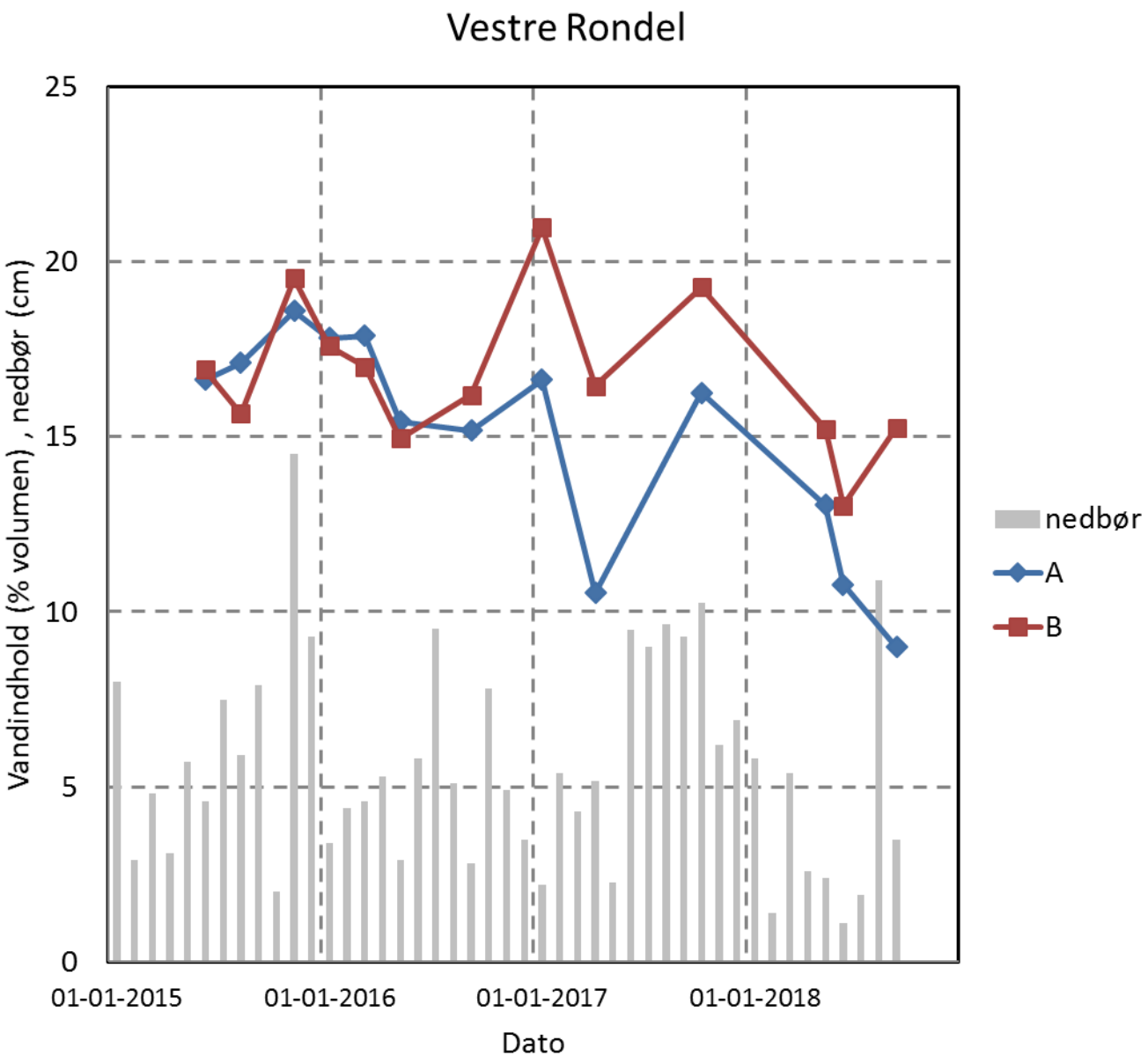


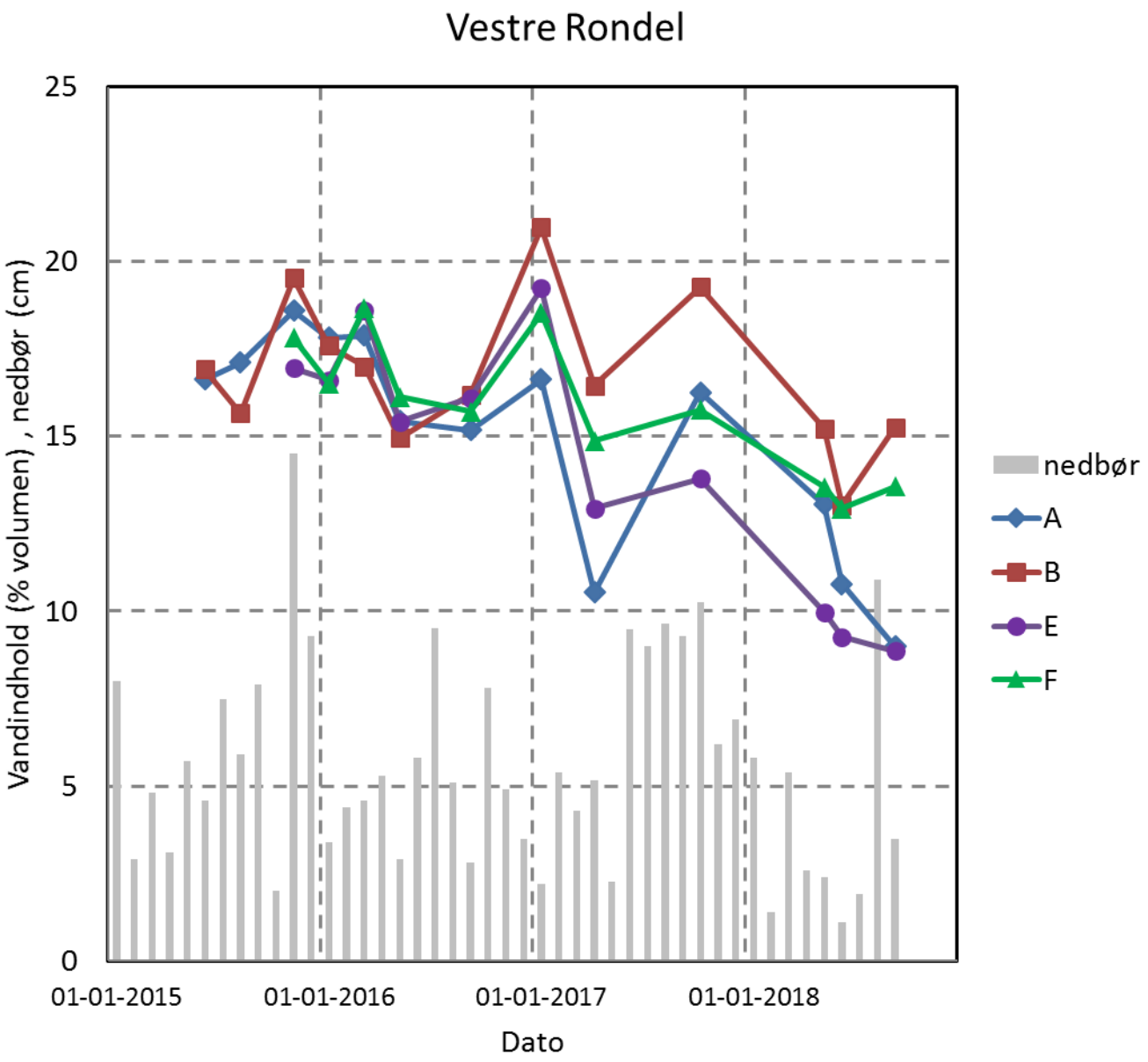

F
A B
E
Kælder


0 -10 % vol
10 - 20 % vol
20 - 25 % vol
25 - 30 % vol


Profil A, 30 cm over terræn
vandindhold (% volumen)
dybde fra overflade (cm)
0
5
10
15
20
25
30
35
40
0
10
20
30
40
50
60
70
middel
120 °
240 °
360 °

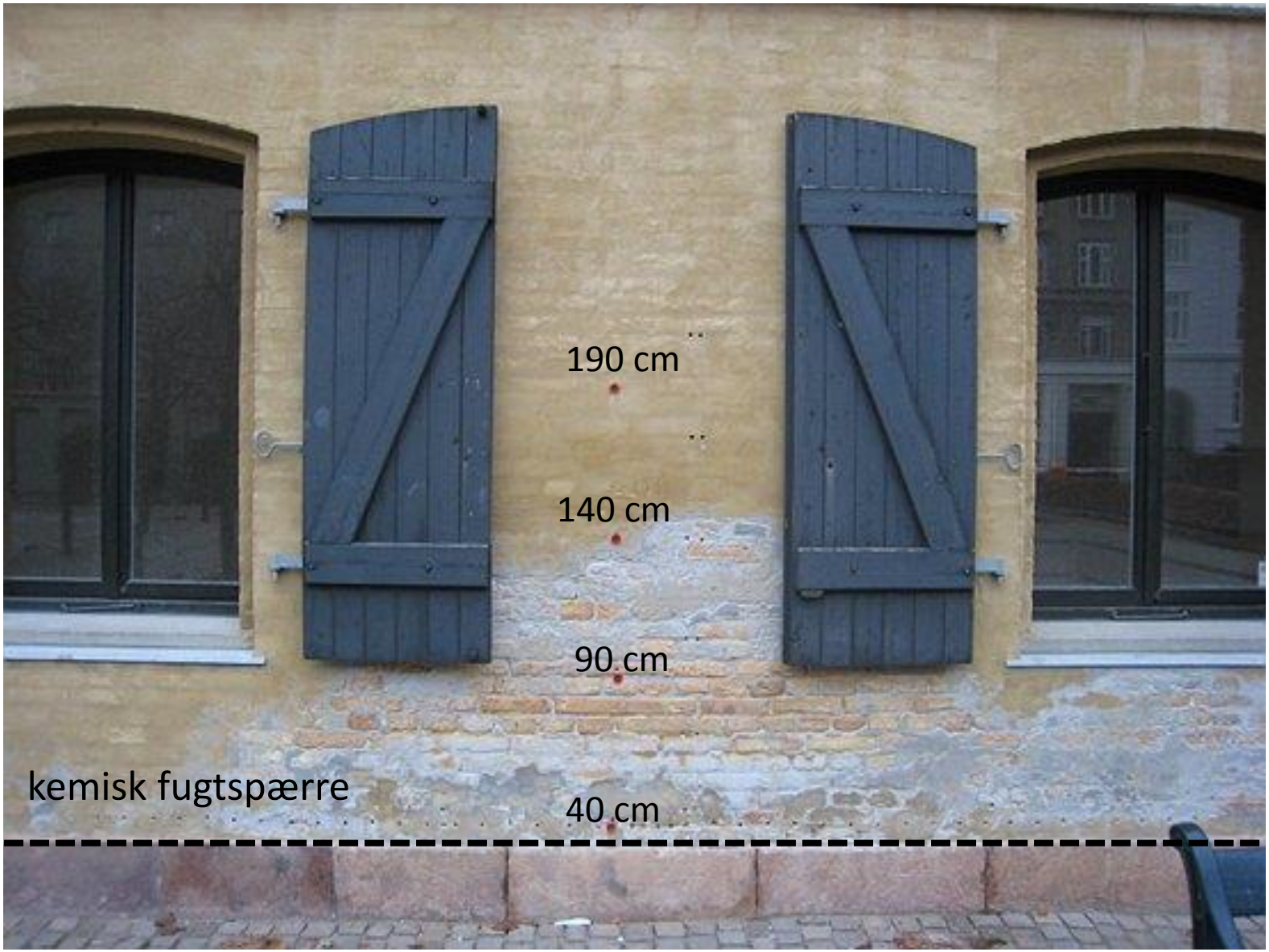

Profil A, 30 cm o. terræn
Vandindhold (% volumen)
Dybde fra udvendig overflade (cm)
0
5
10
15
20
25
30
35
40
0
10
20
30
40
50
60
70
26.06.15
28.08.15
12.11.15
12.01.16
04.03.16
09.05.16
20.09.16
31.01.17
28.04.17
13.10.17
07.05.18
19.06.18

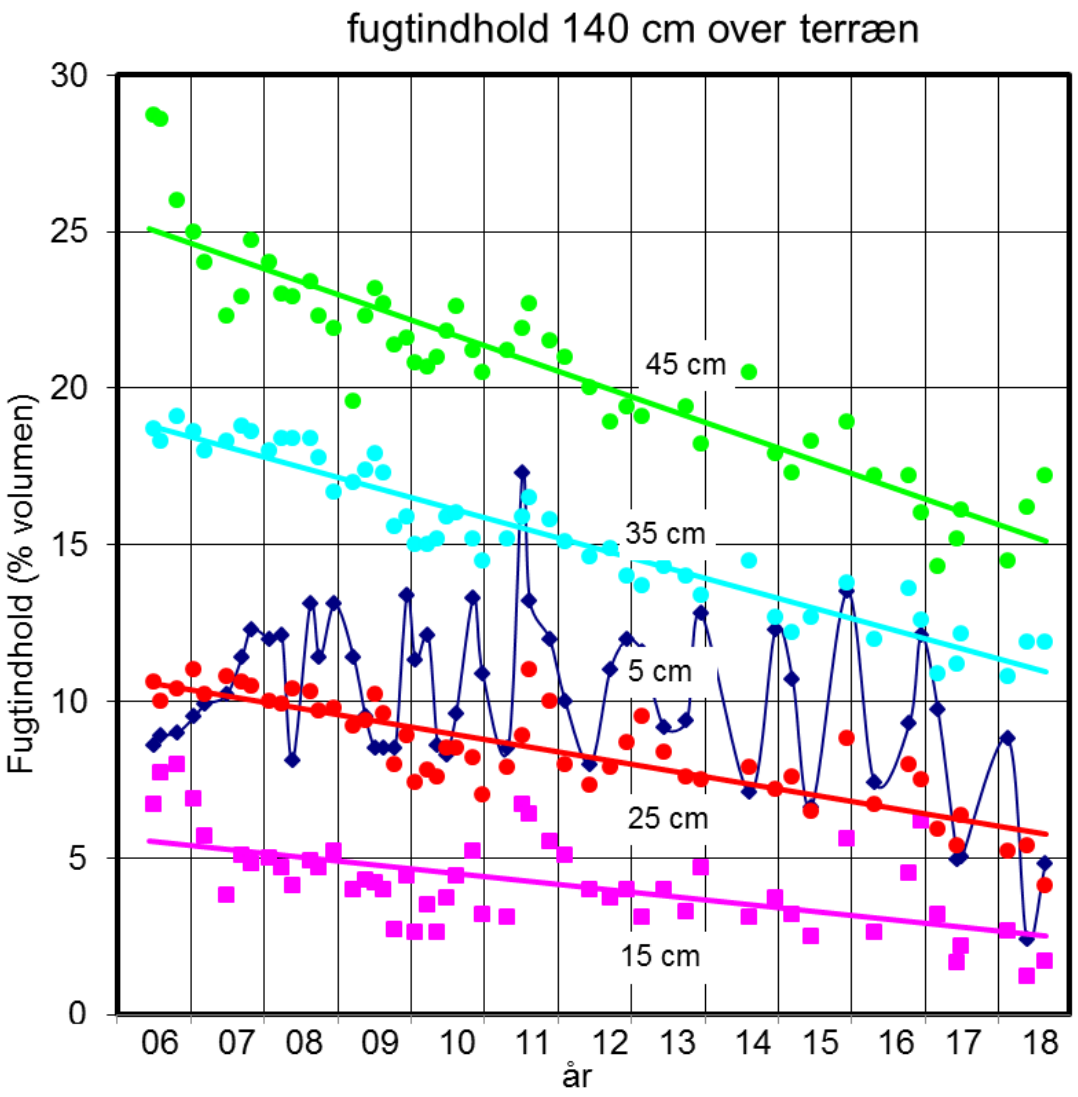

Vestre Rondel
25
20
15
10
5
0
Vandindhold (% volumen) , nedbør (cm)
01-01-2015
01-01-2016
01-01-2017
01-01-2018
Dato
nedbør
A
B


Vestre Rondel
25
20
15
10
5
0
Vandindhold (% volumen) , nedbør (cm)
01-01-2015
01-01-2016
01-01-2017
01-01-2018
Dato
nedbør
A
B
E
F

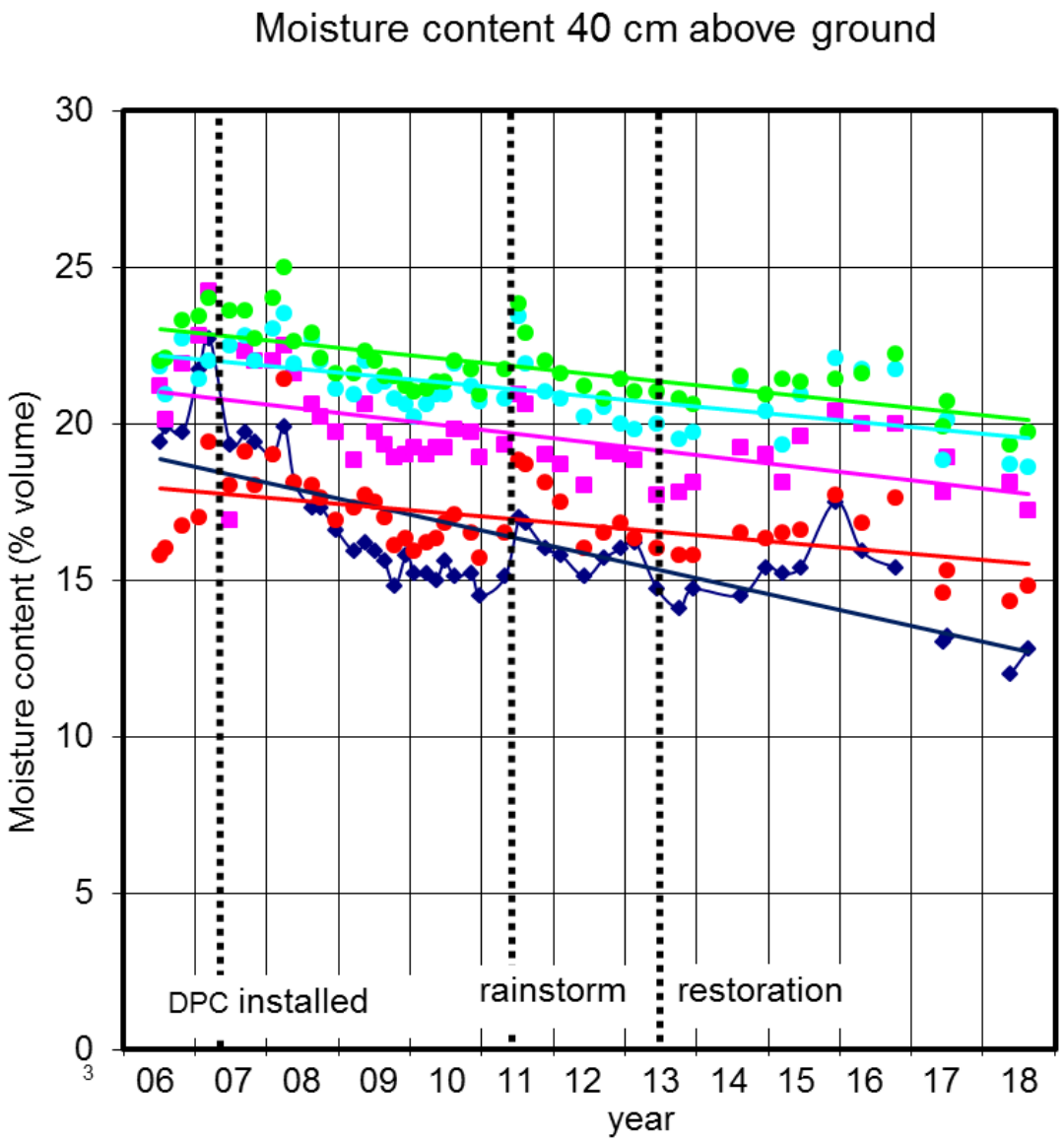
Gule Pakhus, Toldbodgade

Kemisk fugtspærre ?

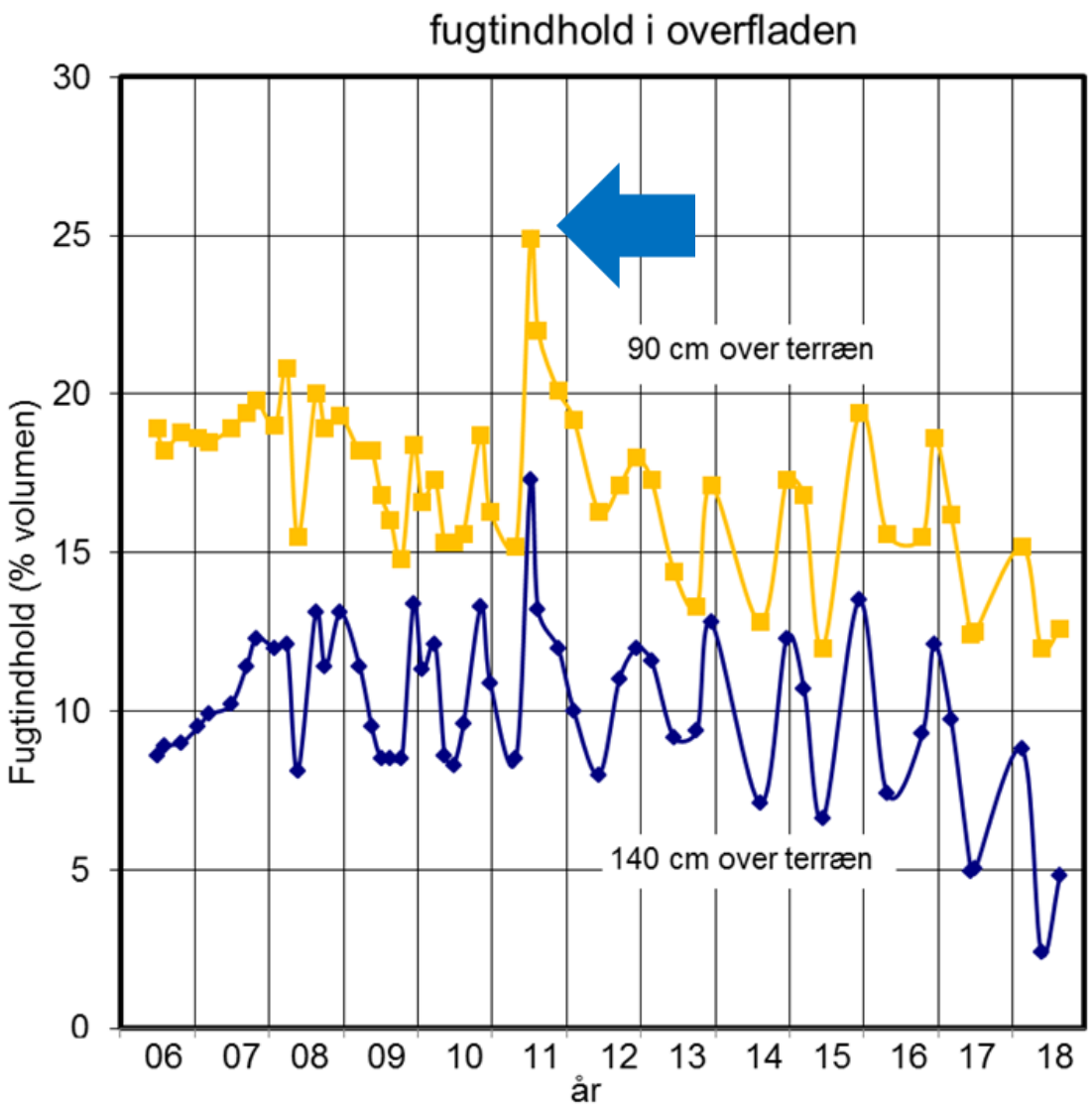
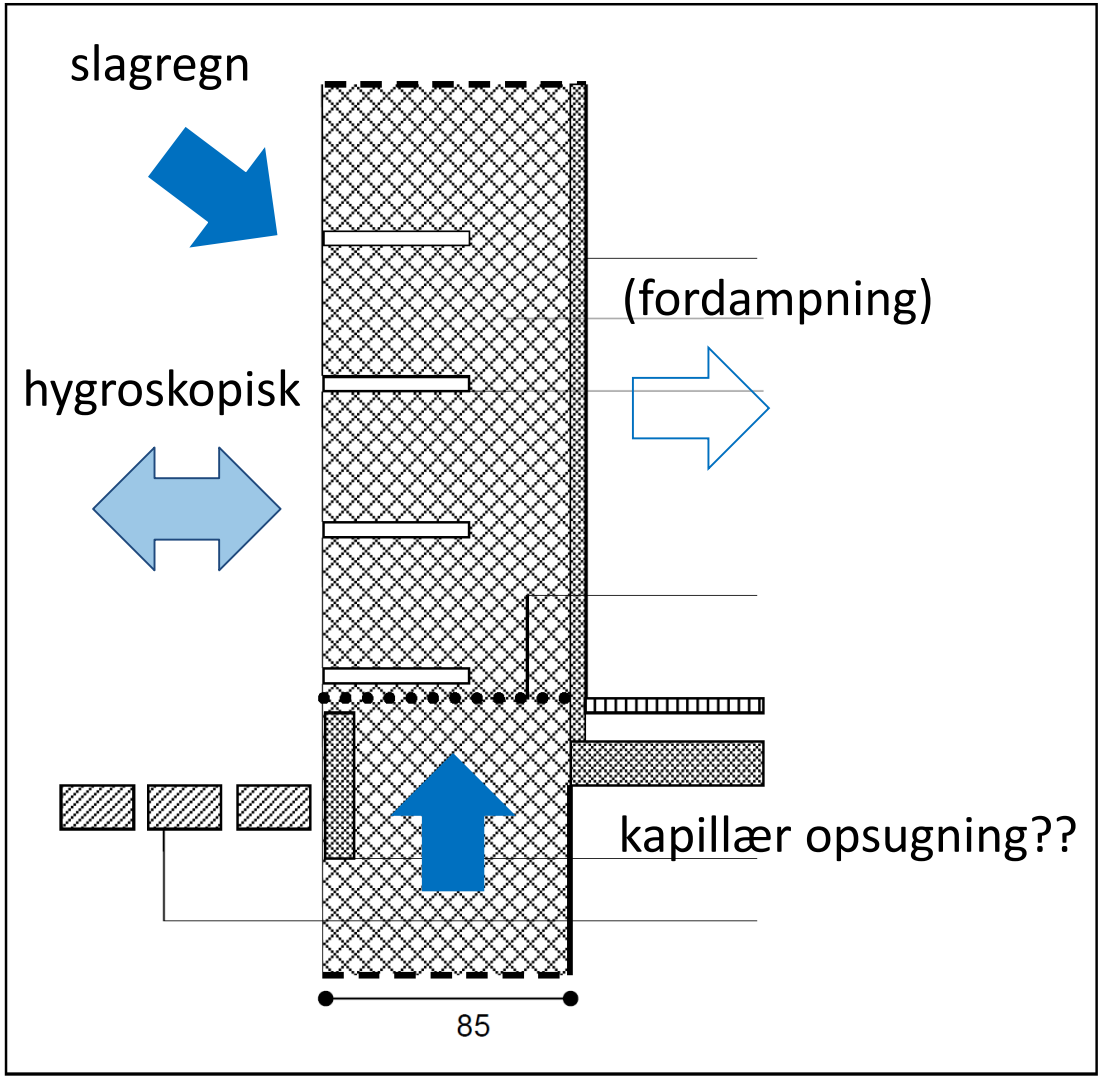

190 cm
140 cm
90 cm
kemisk fugtspærre
40 cm


fugtindhold 140 cm over terræn
Fugtindhold (% volumen)
30
25
20
15
10
5
0
45 cm
35 cm
5 cm
25 cm
15 cm
06
07
08
09
10
11
12
13
14
15
16
17
18
år

renovering maj 2013


Moisture content 40 cm above ground
Moisture content (% volume)
30
25
20
15
10
5
0
DPC installed
rainstorm
restoration
06
07
08
09
10
11
12
13
14
15
16
17
18
year

skybrud 3. juli 2011


fugtindhold i overfladen
Fugtindhold (% volumen)
30
25
20
15
10
5
0
90 cm over terræn
140 cm over terræn
06
07
08
09
10
11
12
13
14
15
16
17
18
år

Efter 12 års studie…