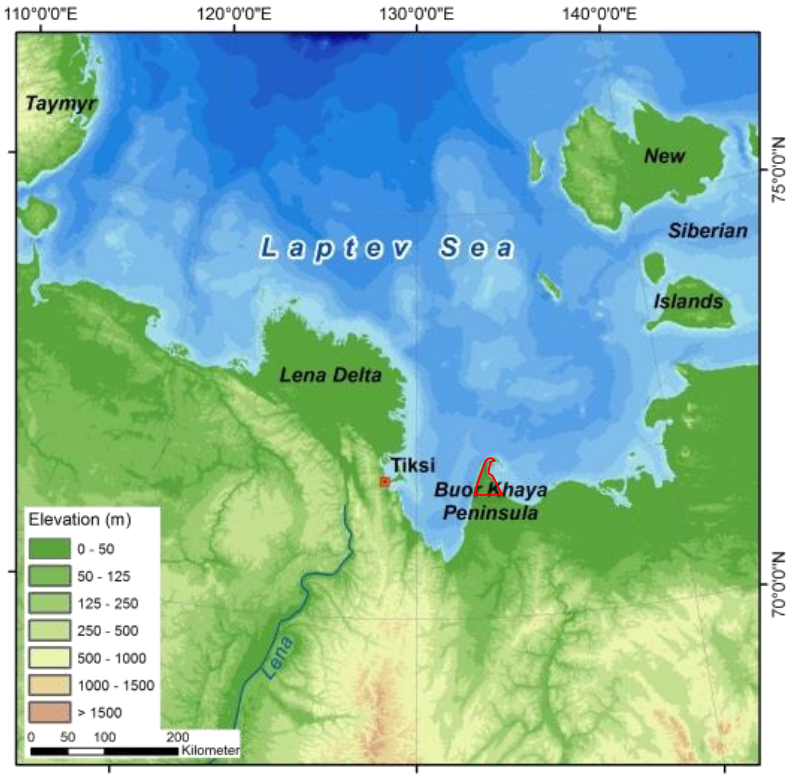
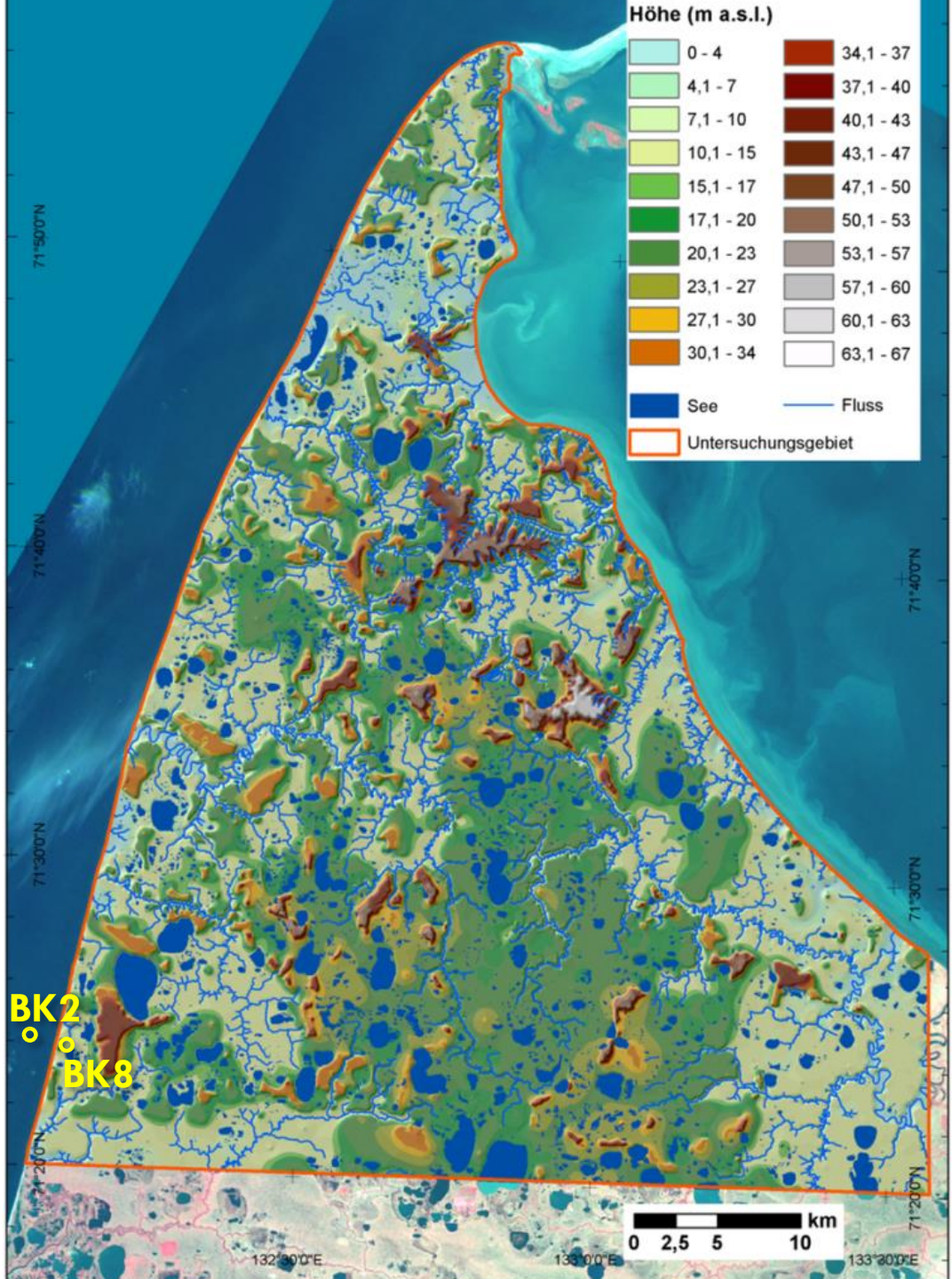
Buor Khaya drilling campaign

Overduin, P. P., Schirrmeister, L. Wetterich, S. , Grigoriev, M. N.

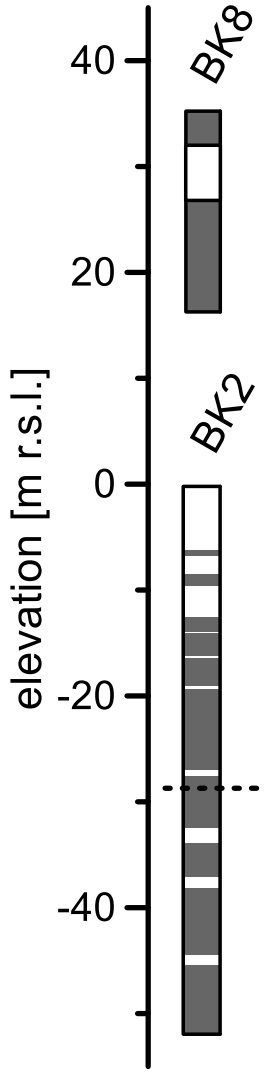


Location of boreholes off west coast of Buor Khaya Peninsula

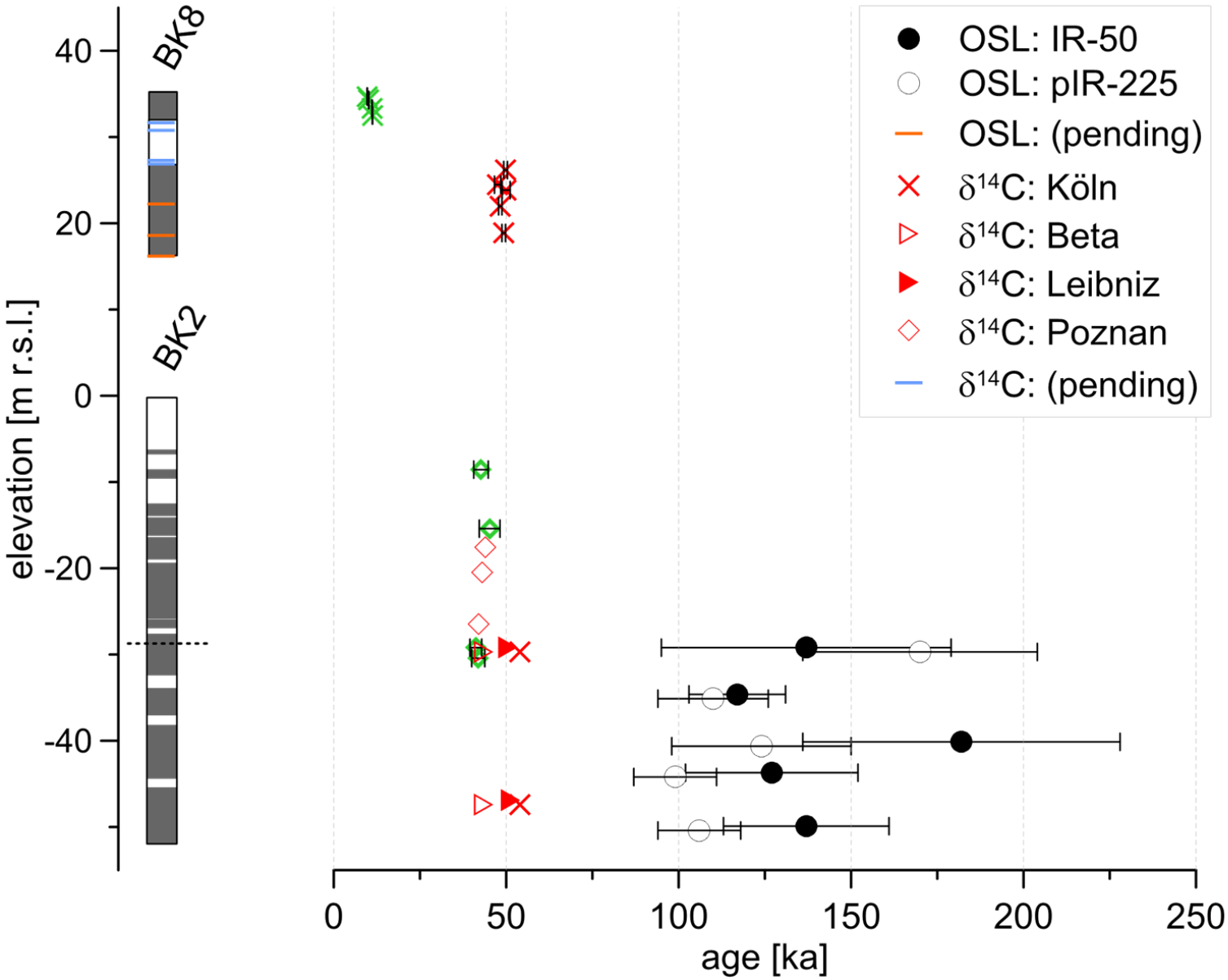


borehole profile

Dating



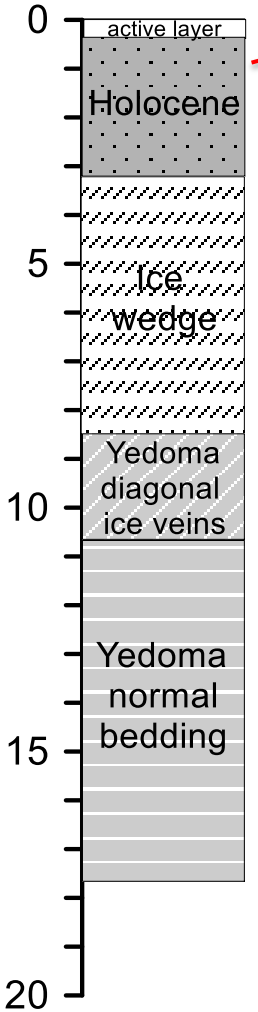
Dating


BK8
BK2
40
20
0
-20
-40
elevation [m r.s.l.]
OSL: IR-50
OSL: pIR-225
OSL: (pending)
δ14C: Köln
δ14C: Beta
δ14C: Leibniz
δ14C: Poznan
δ14C: (pending)
0
50
100
150
200
250
age [ka]

BK8

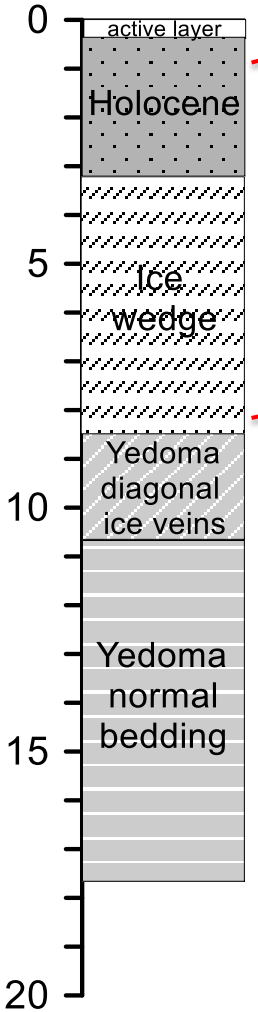
profile


0.85 m
0.0 m

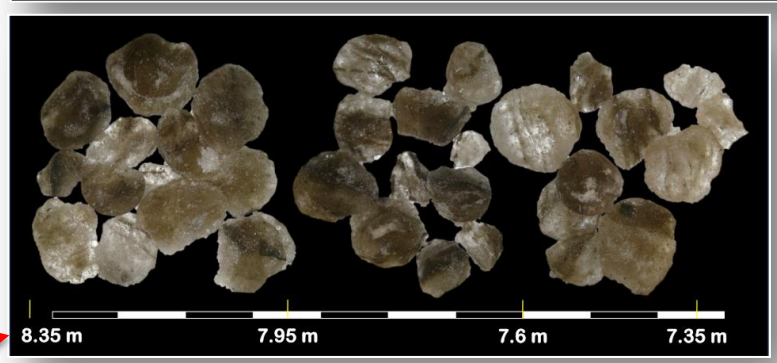

0
5
10
15
20
active layer
Holocene
Ice wedge
Yedoma diagonal ice veins
Yedoma normal bedding

BK8

profile

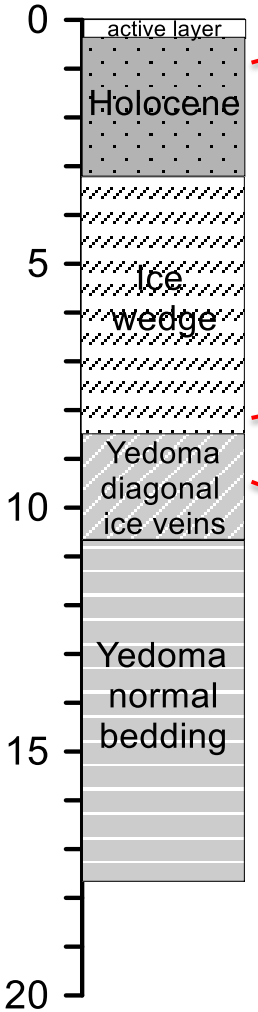

0
active layer
Holocene
5
Ice wedge
10
Yedoma diagonal ice veins
Yedoma normal bedding
15
20


0.85 m
0.0 m

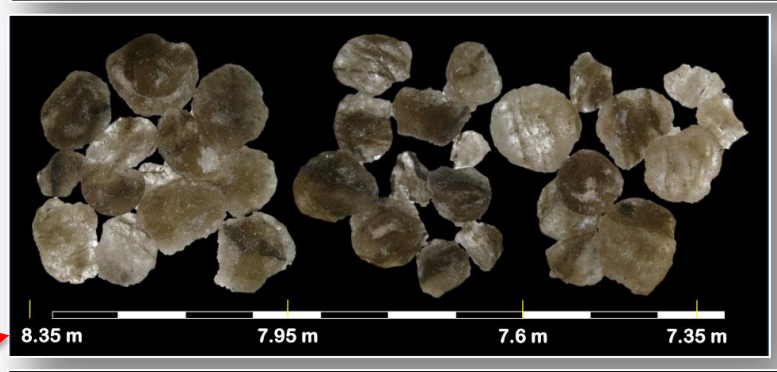

8.35 m
7.95 m
7.6 m
7.35 m

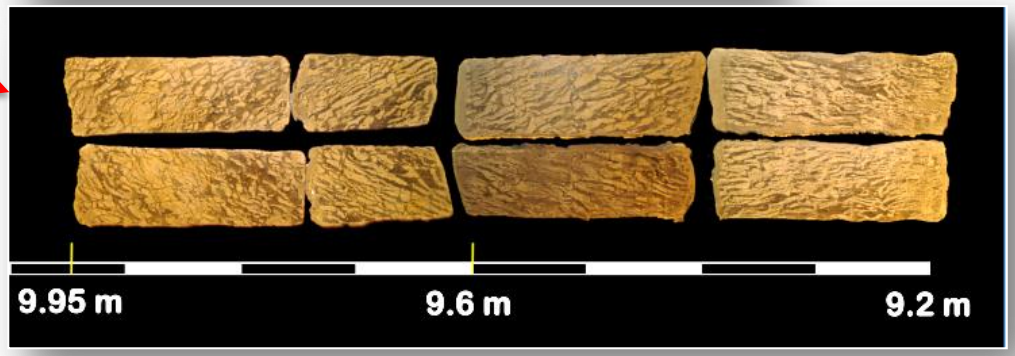
BK8

profile


0
active layer
Holocene
5
Ice wedge
Yedoma diagonal ice veins
10
Yedoma normal bedding
15
20

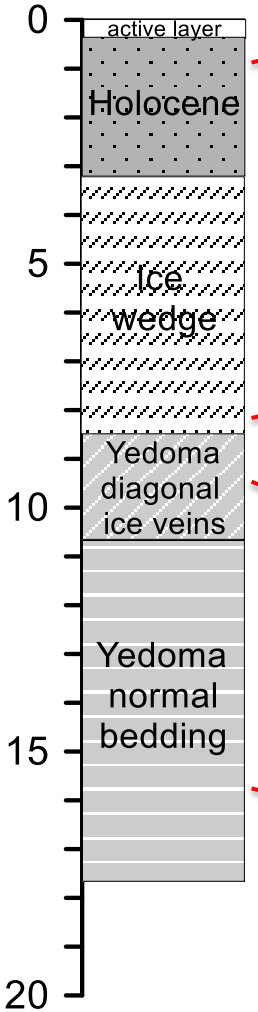

0.85 m
0.0 m


8.35 m
7.95 m
7.6 m
7.35 m

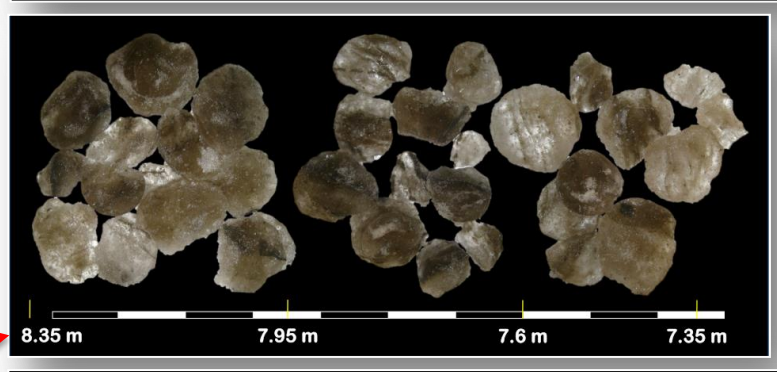

9.95 m
9.6 m
9.2 m

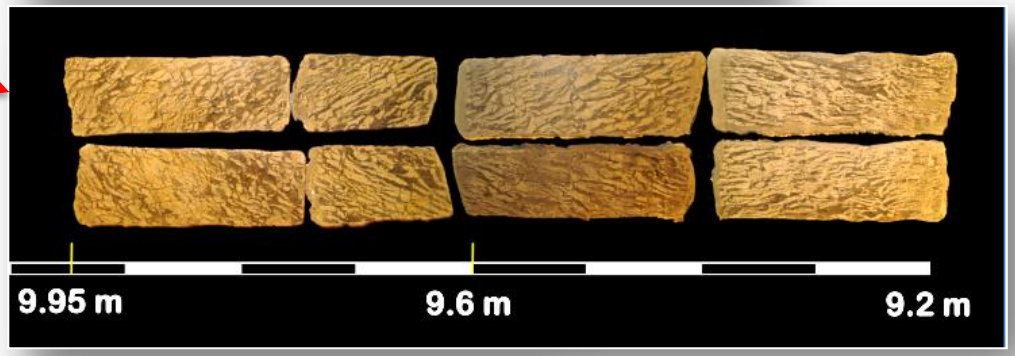
BK8

profile


0
active layer
Holocene
5
Ice wedge
10
Yedoma diagonal ice veins
Yedoma normal bedding
15
20


0.85 m
0.0 m

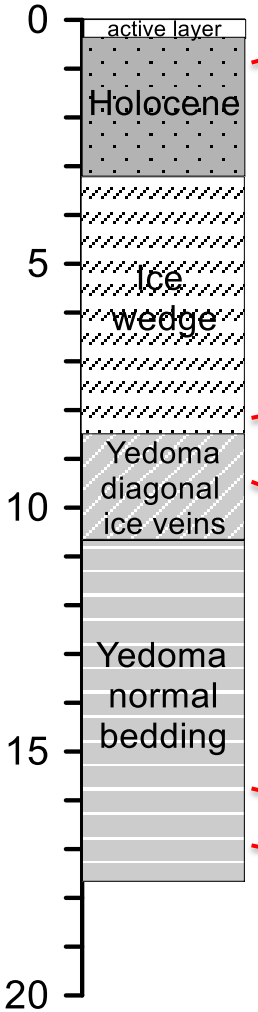

8.35 m
7.95 m
7.6 m
7.35 m


9.95 m
9.6 m
9.2 m

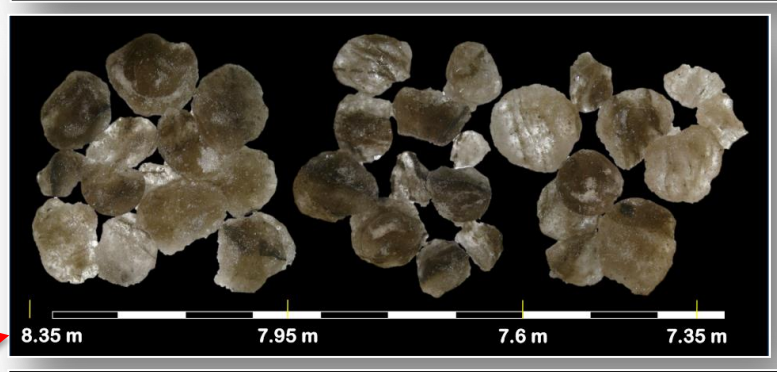

15.35 m

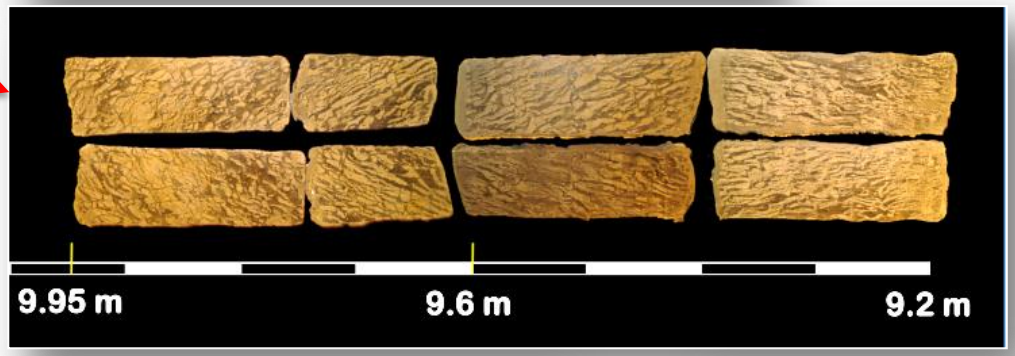
BK8

profile


0
active layer
Holocene
5
Ice wedge
10
Yedoma diagonal ice veins
Yedoma normal bedding
15
20


0.85 m
0.0 m

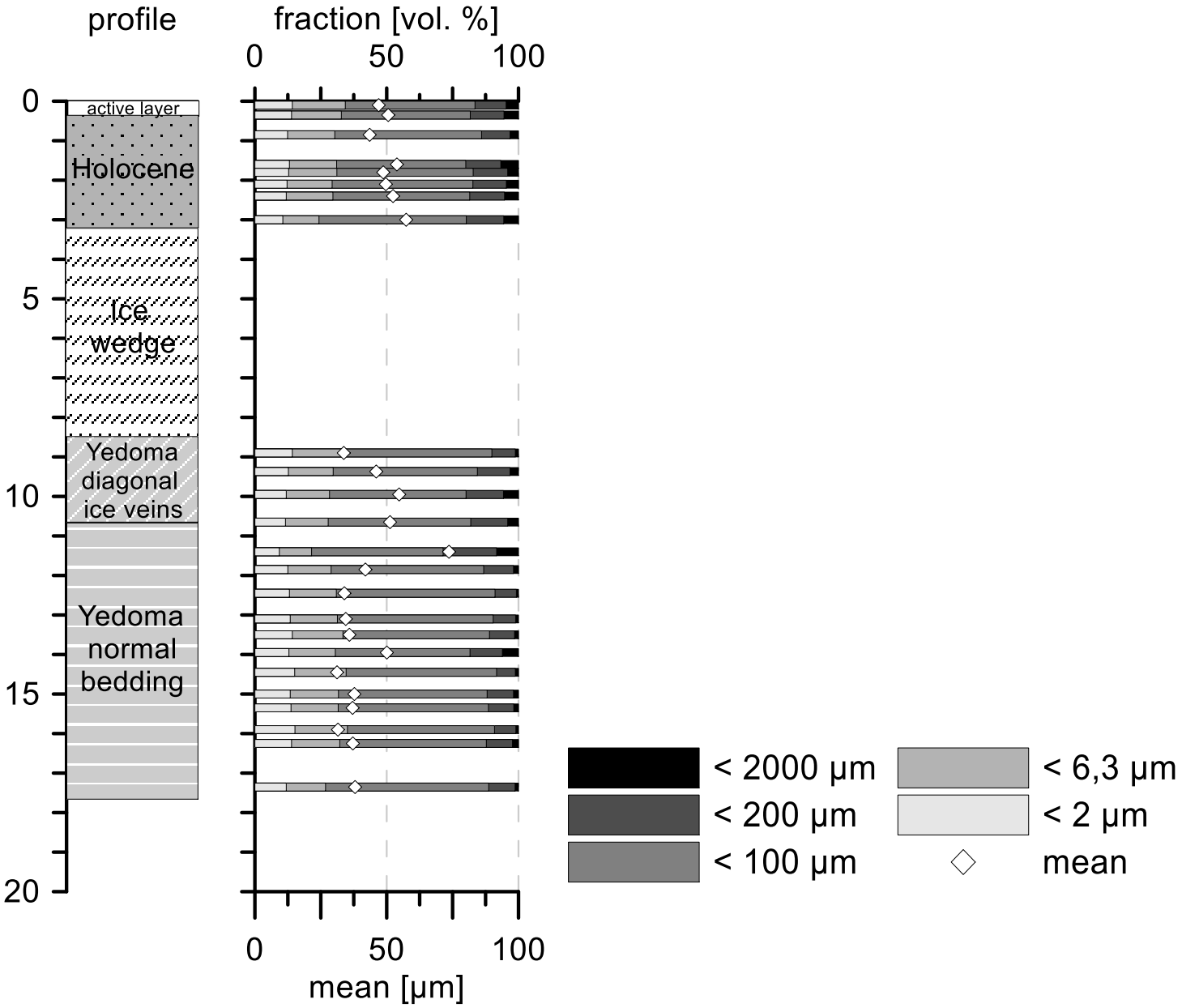

8.35 m
7.95 m
7.6 m
7.35 m


9.95 m
9.6 m
9.2 m

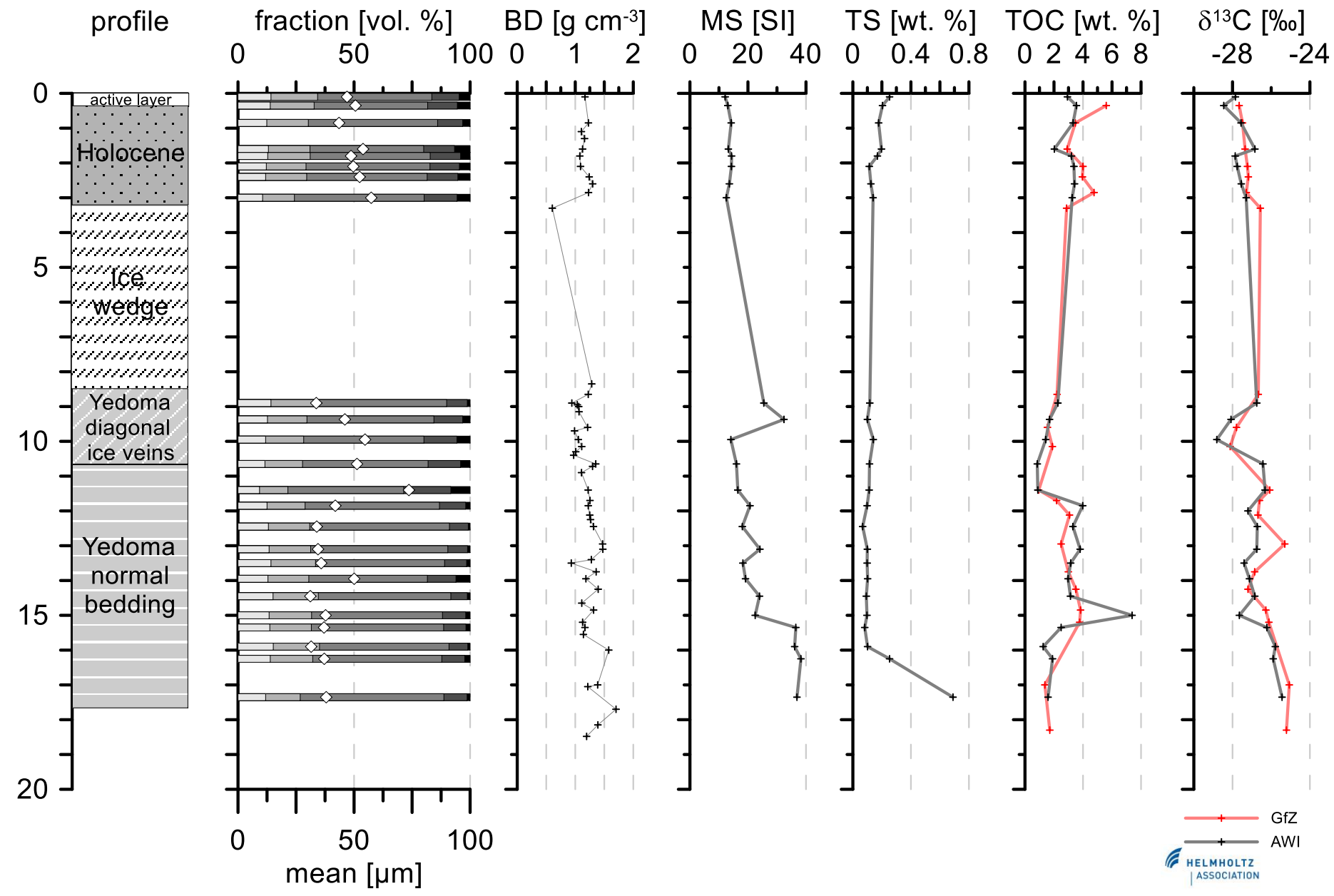

15.35 m


16.7 m

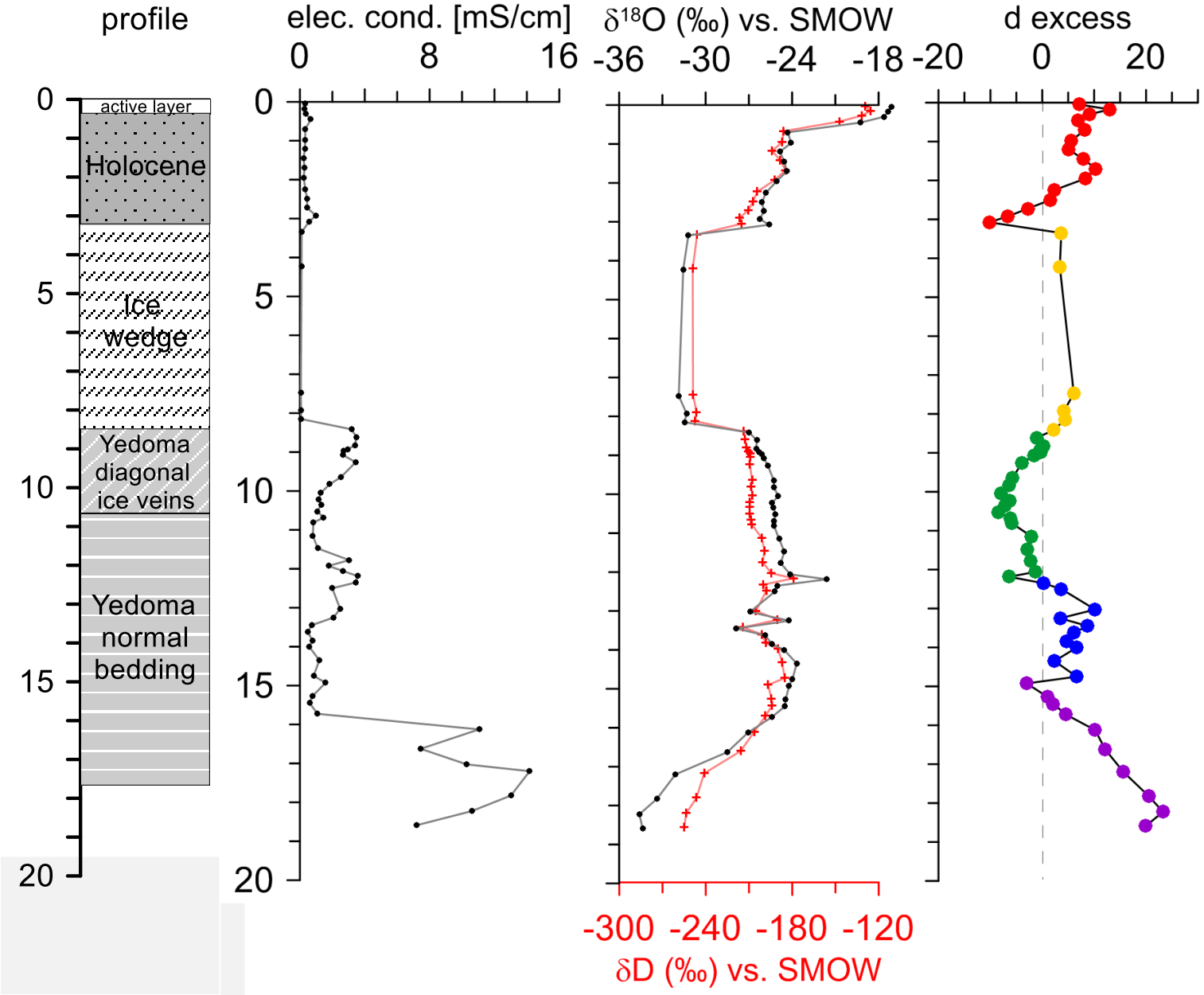
BK8 sediment



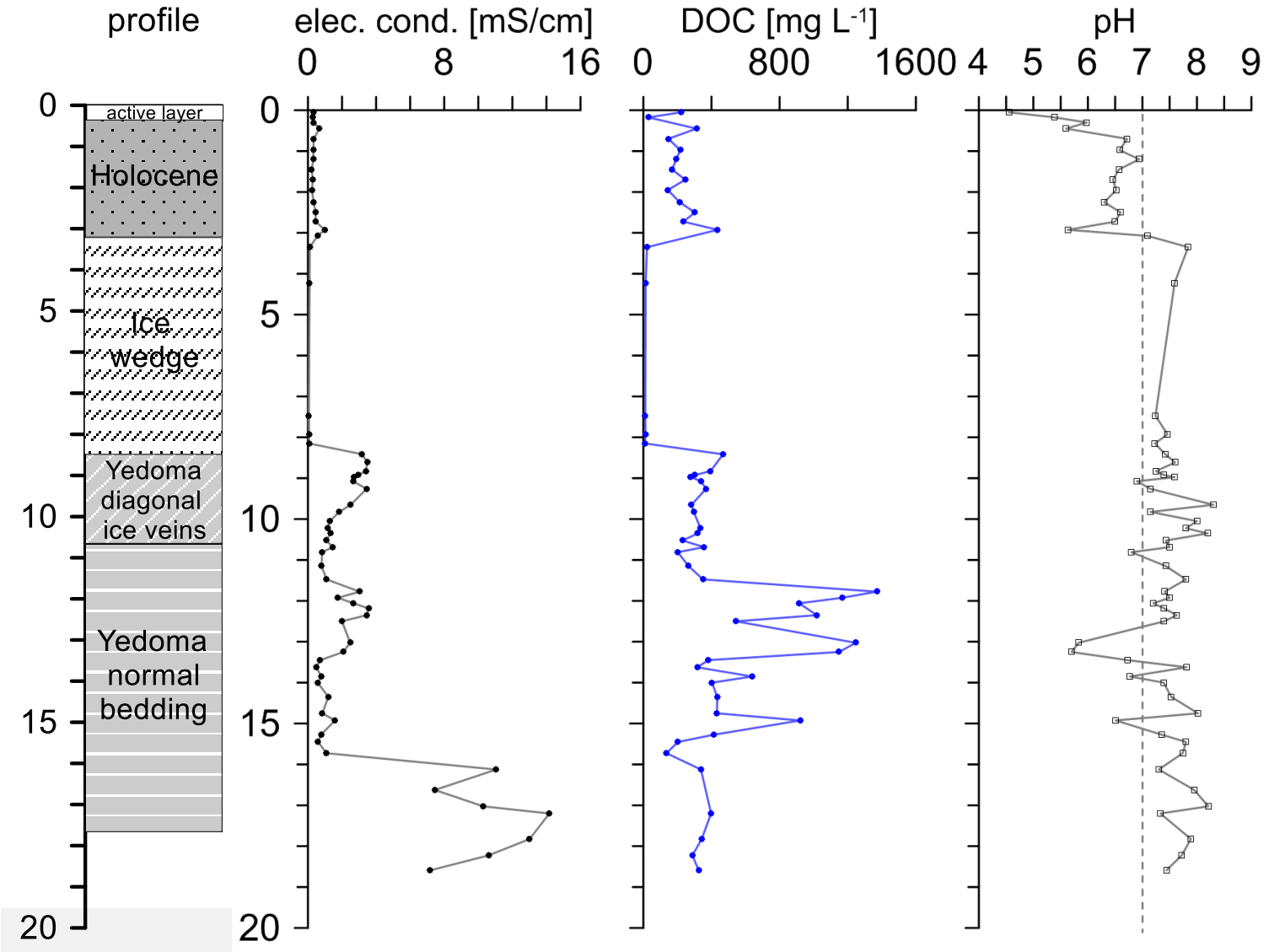
BK8 sediment



BK8 pore water chemistry



BK8 pore water chemistry



Conclusions

- Sediments drilled at the BK8 site share characteristics of typical ice complex (Yedoma) stratigraphy, including part of a Pleistocene ice wedge
- Surface sediments are of Holocene and older age; from the ice wedge downward, sediment is > 50ka; OSL ages are in progress
- Sediment is silty and ice rich throughout the profile, with reticulate to ataxitic cryostructure

Conclusions

- The lowermost 3 m of BK8 are more saline than overlying material; stable isotopes point towards downward freezing of sediment after deposition
- Suggested deposition environment for BK2 is fluvial/alluvial, which may have led to thawing of lowermost portion of BK8