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Widespread drying of European peatlands in recent centuries

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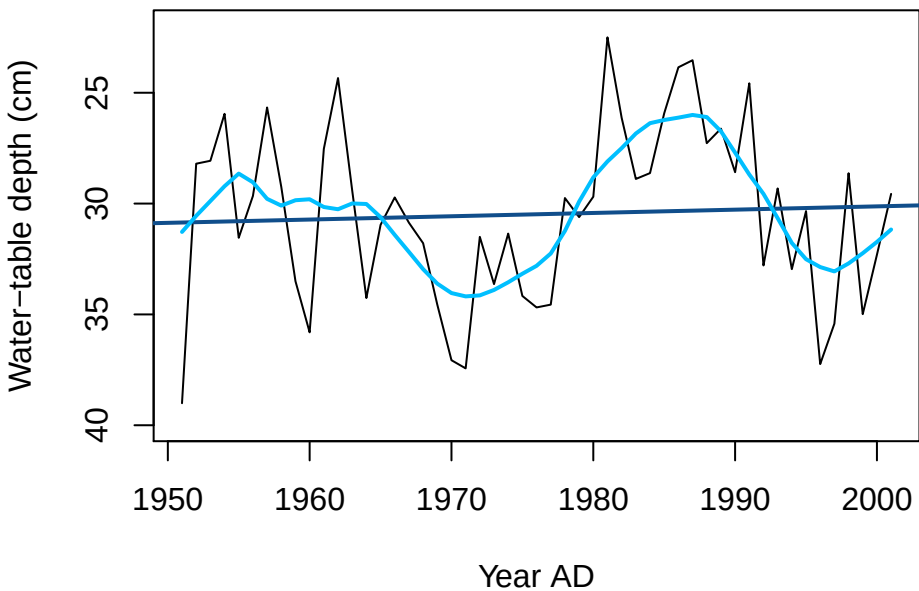
Supplementary Information

Widespread drying of European peatlands in recent centuries

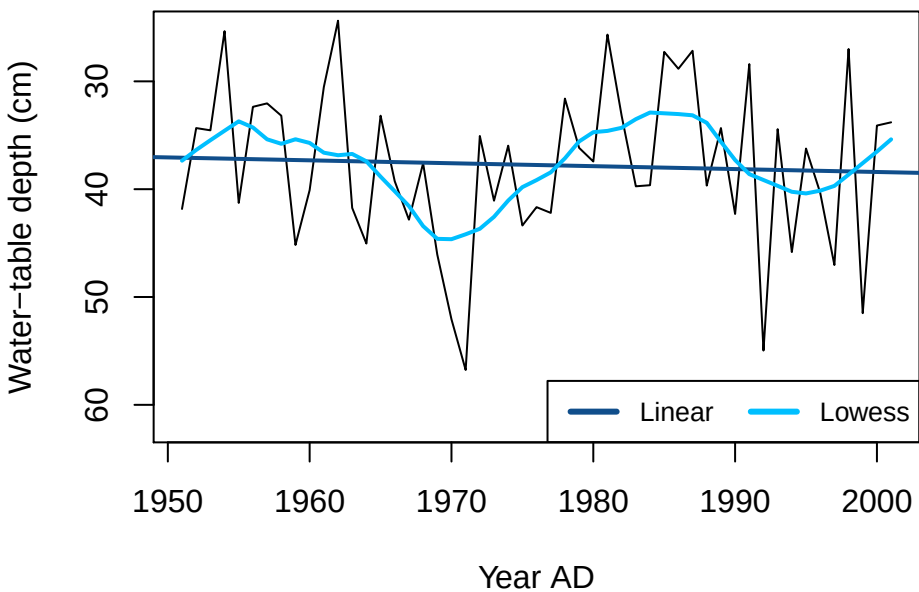
Supplementary Section 1

Monitored water tables from Männikjärve peatland, Estonia

Männikjärve mean annual WTD



Männikjärve mean summer WTD



Supplementary Section 2

Literature-based analysis

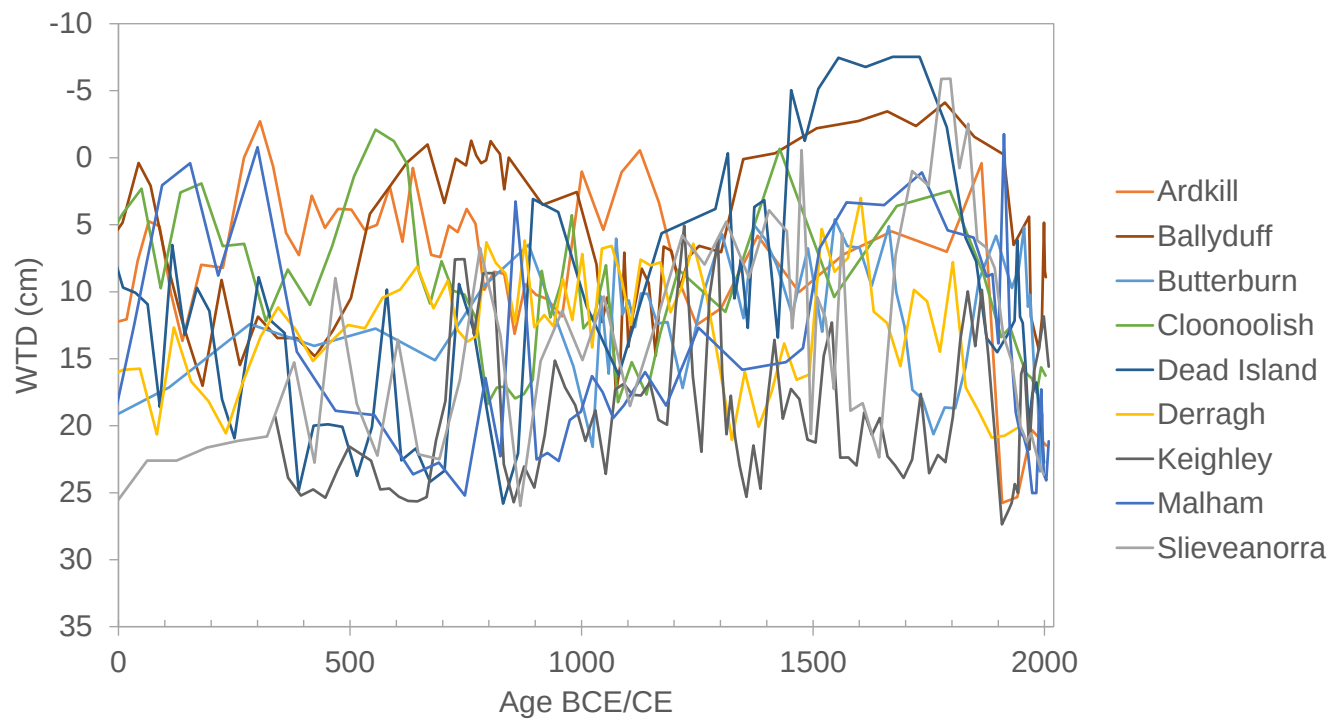
See Excel file.

Supplementary Section 3

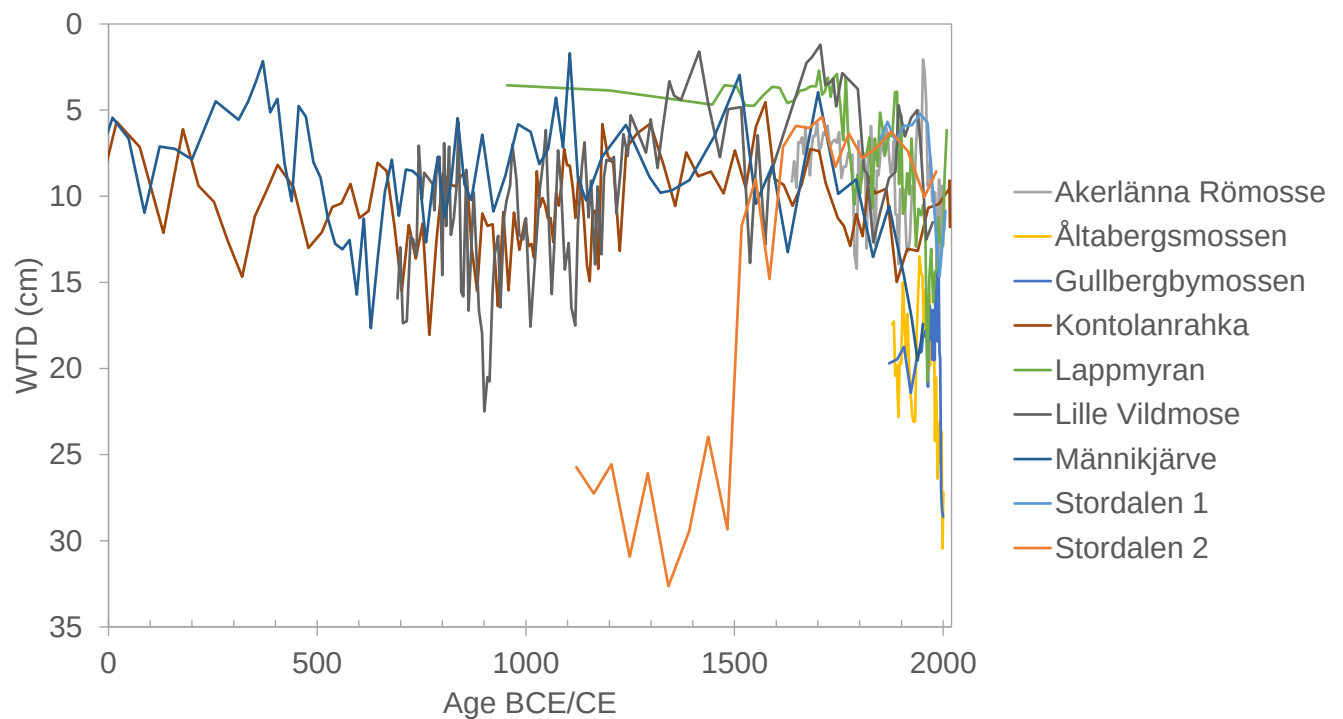
Raw water-table reconstruction data

Water-table reconstructions from each site (in cm below peatland surface).

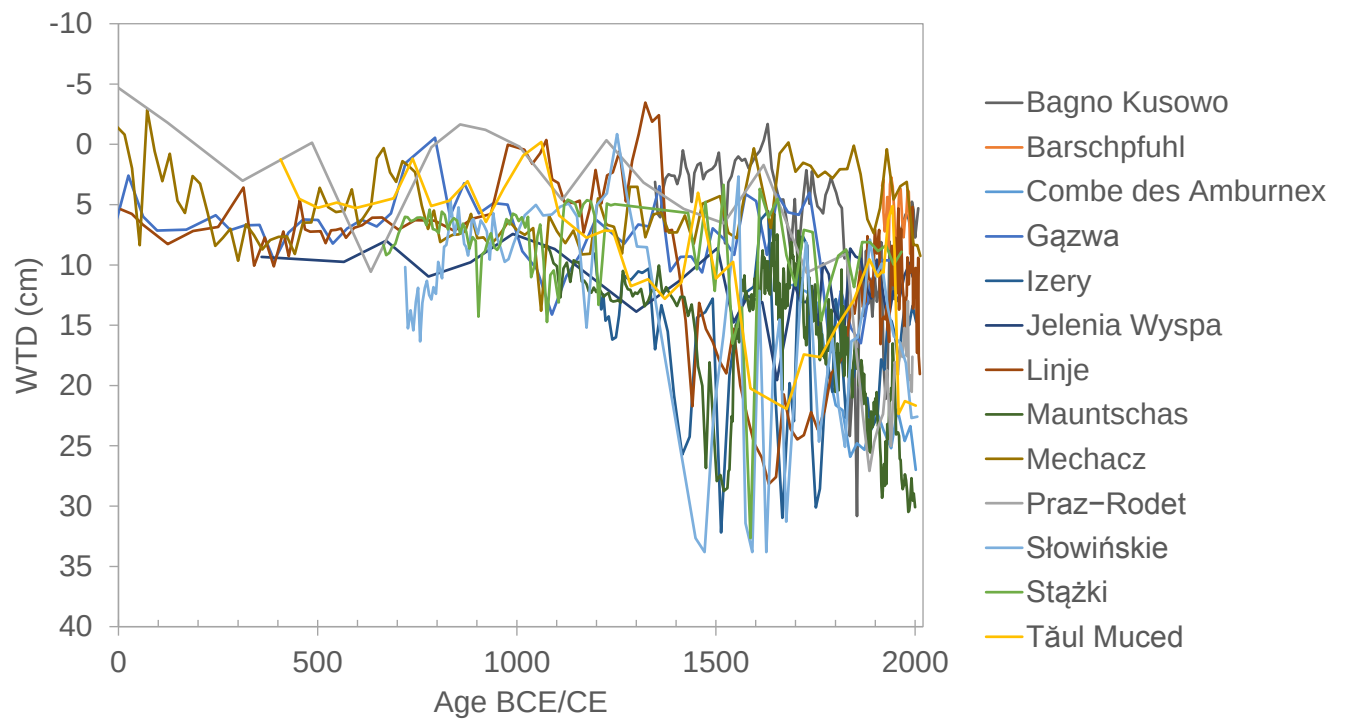
Britain and Ireland



Scandinavia and Baltics



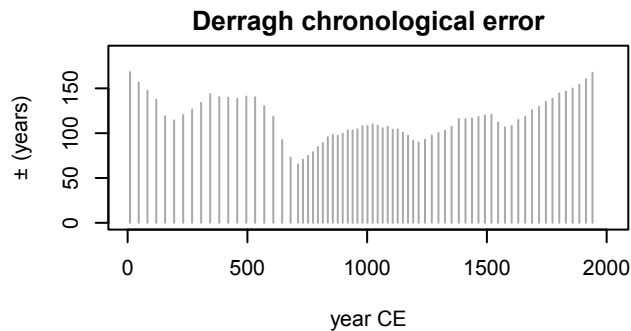
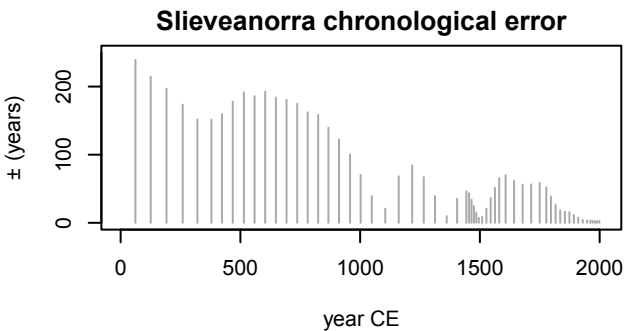
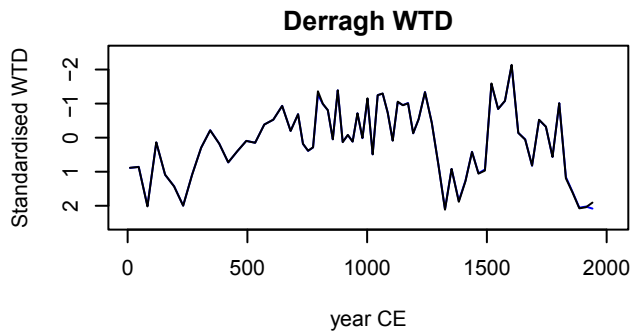
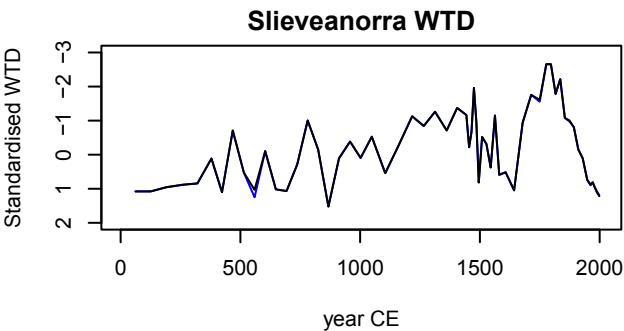
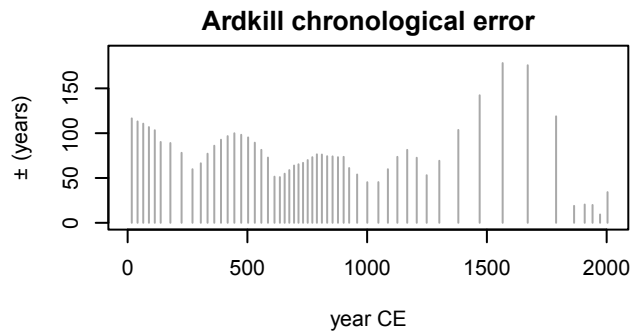
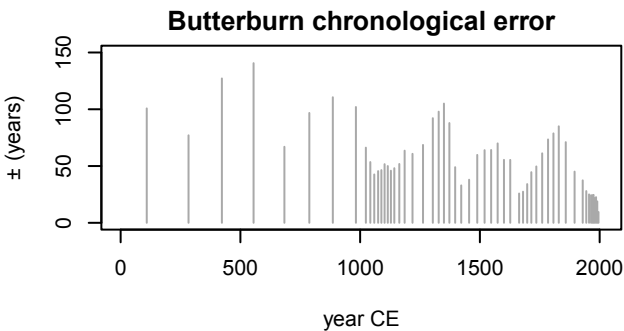
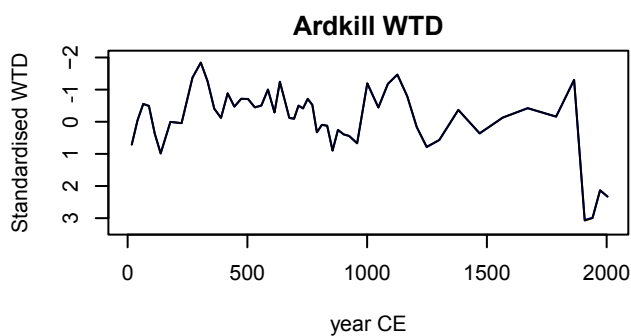
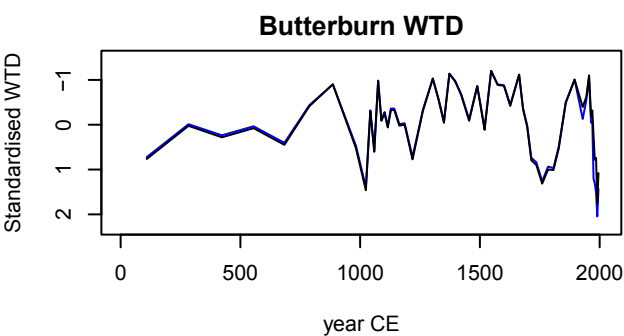
Continental Europe

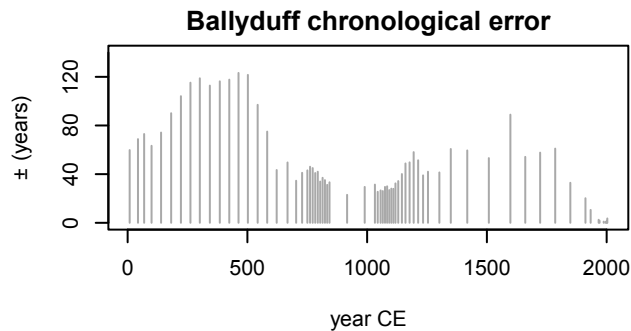
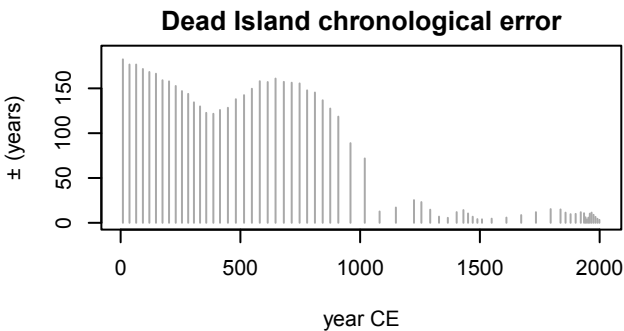
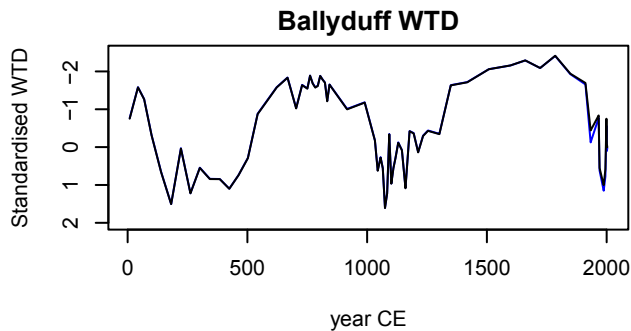
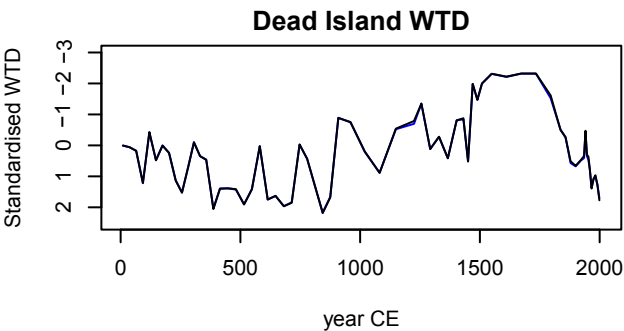
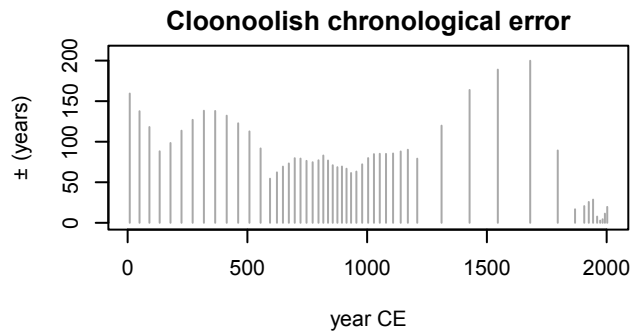
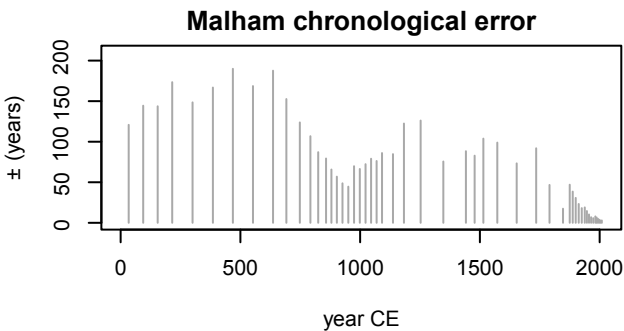
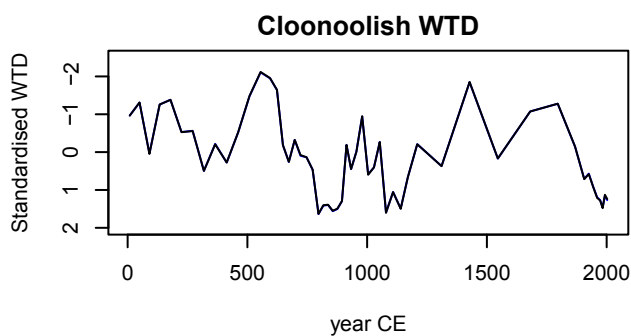
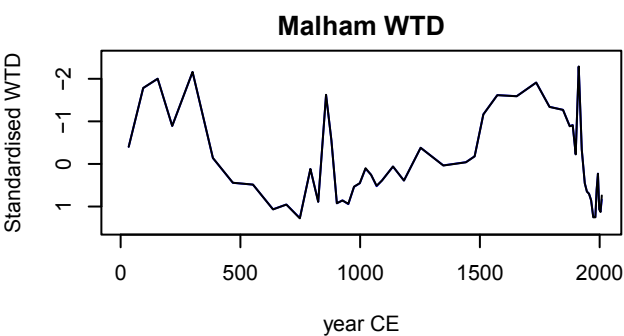


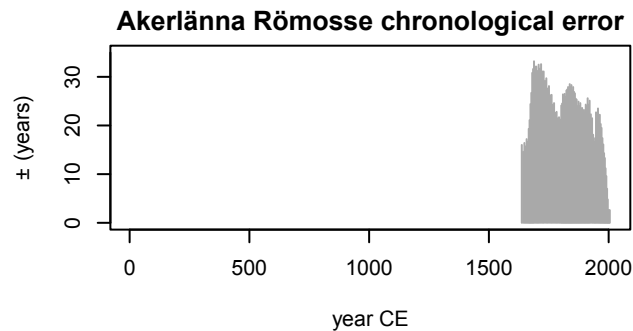
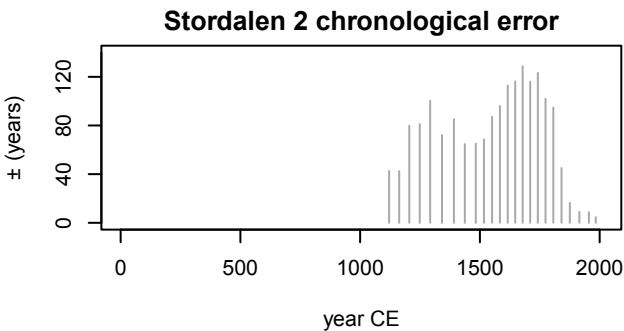
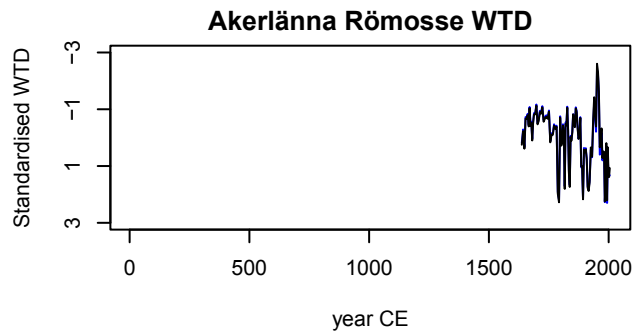
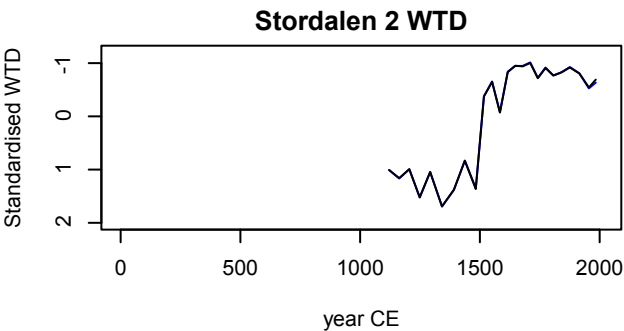
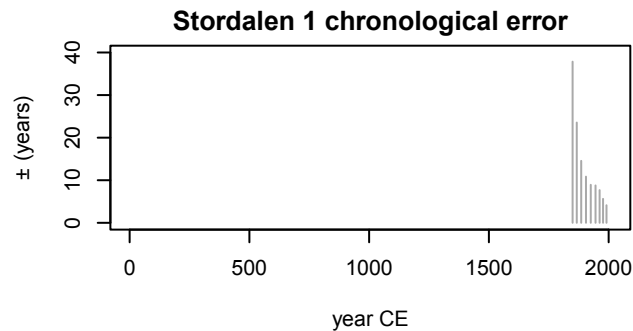
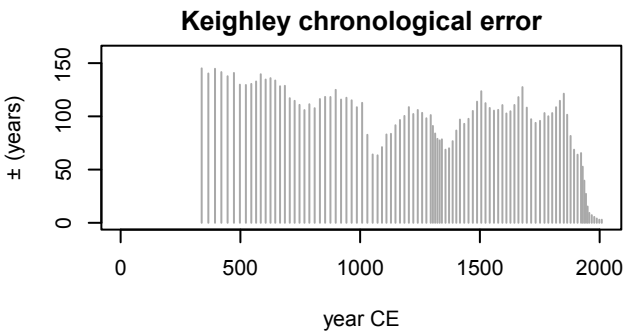
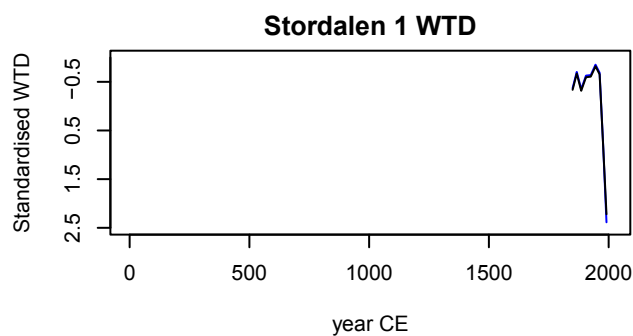
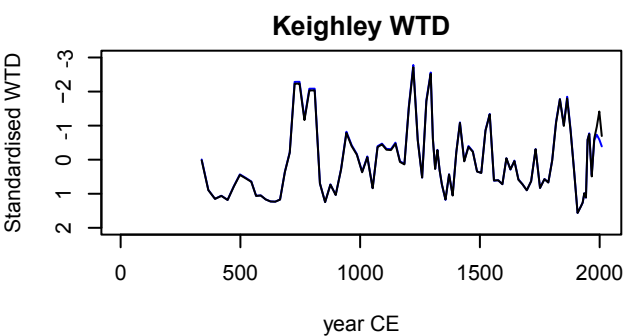
Supplementary Section 4

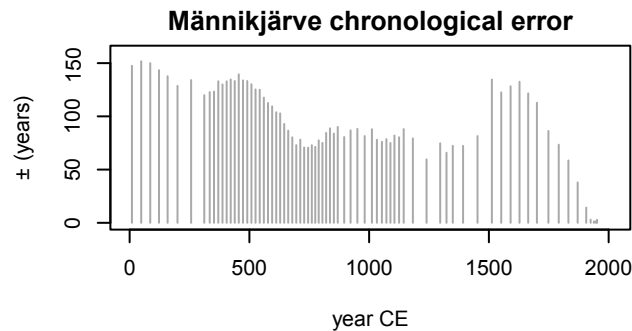
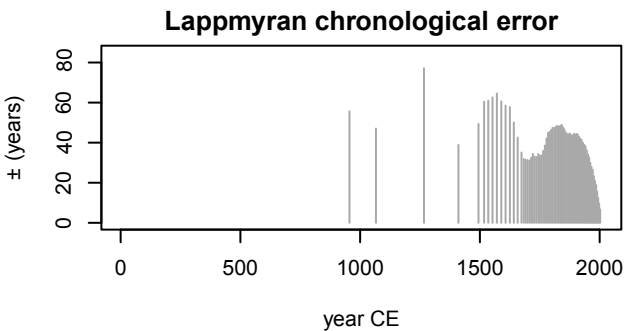
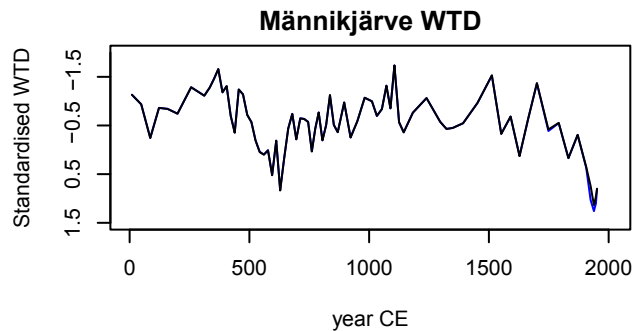
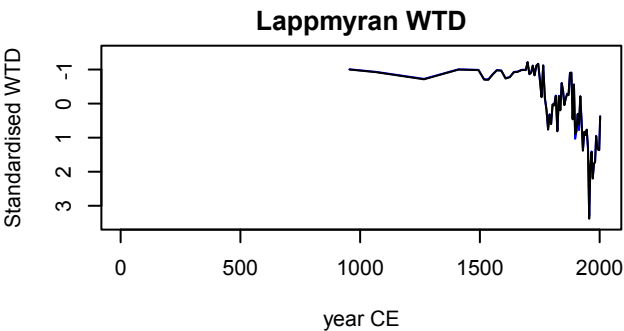
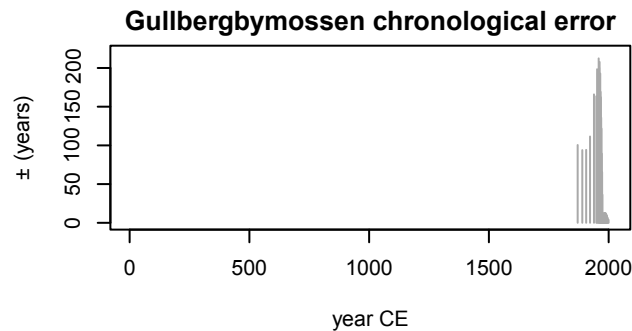
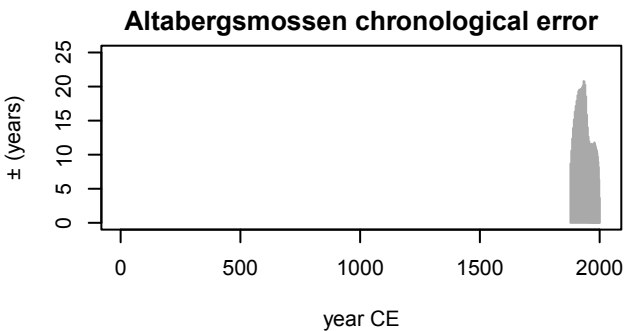
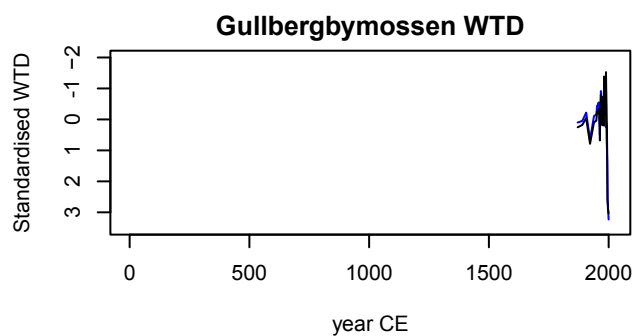
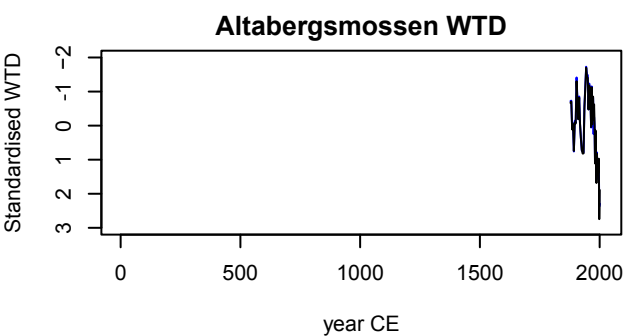
Water-table reconstructions

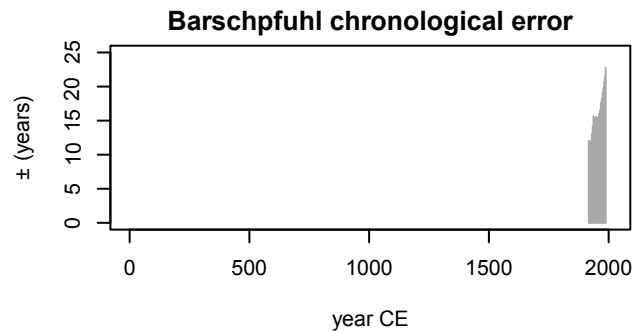
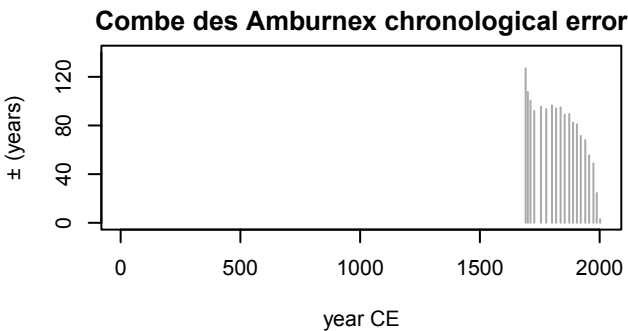
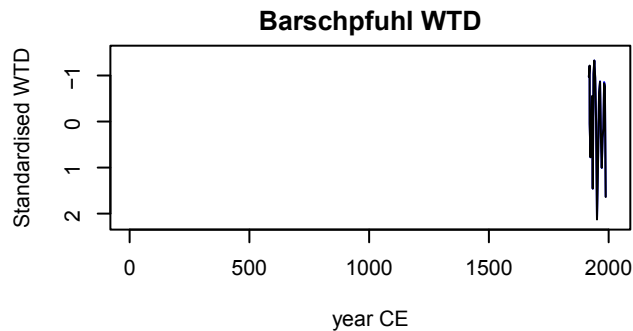
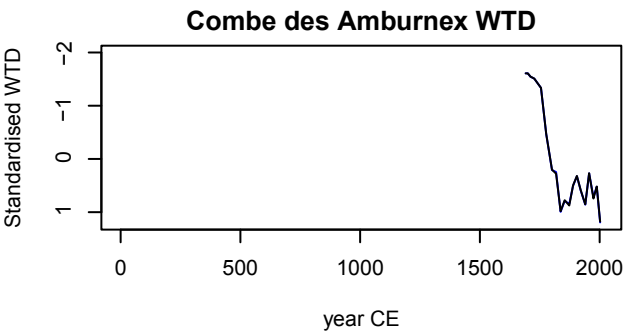
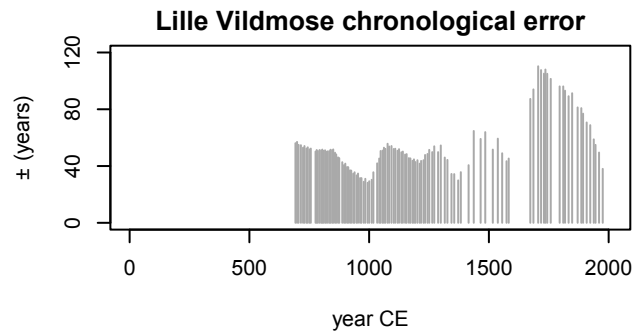
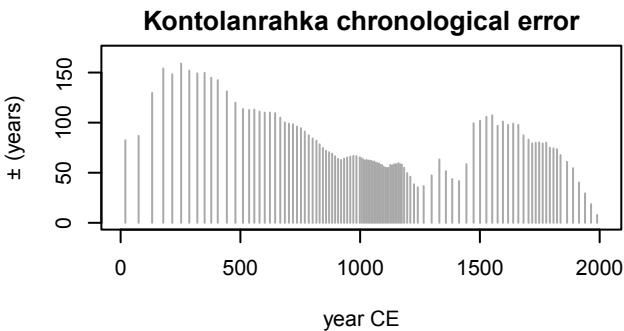
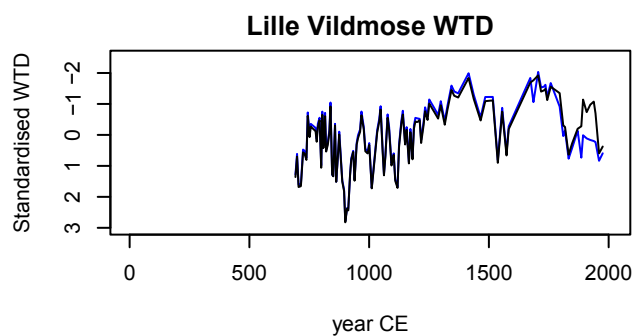
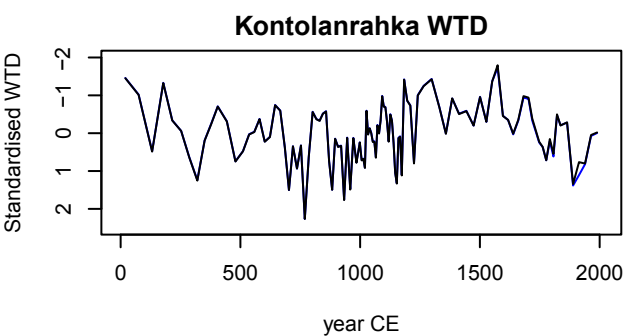
Black lines represent the standardised reconstructions after removal of taxa with weak silicic idiosomic tests (*Corythion-Trinema* type, *Euglypha ciliata* type and *Euglypha rotunda* type – following Amesbury et al., 2016). The blue lines are the reconstructions with these taxa included. Indicative chronological errors from the Bayesian age models are shown as grey bars (95% confidence ranges). This is calculated as (maximum age [97.5% quantile] – minimum age [2.5% quantile])/2.

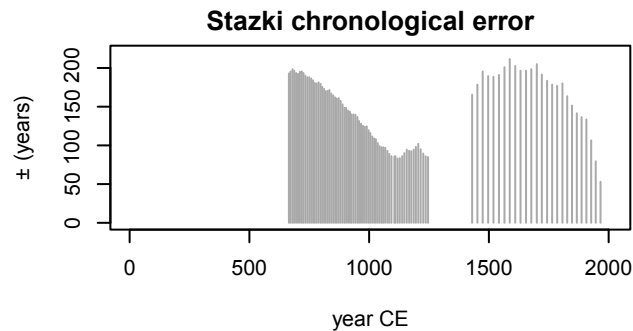
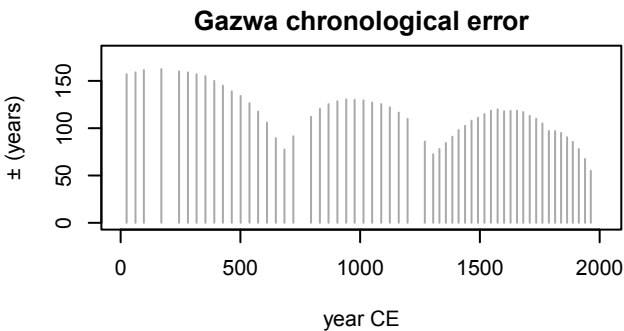
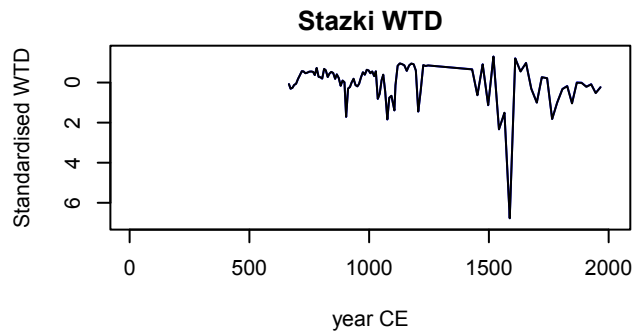
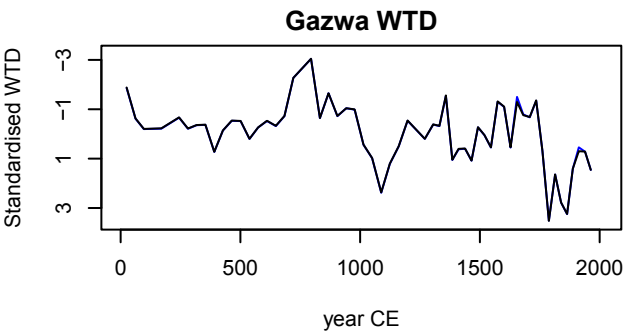
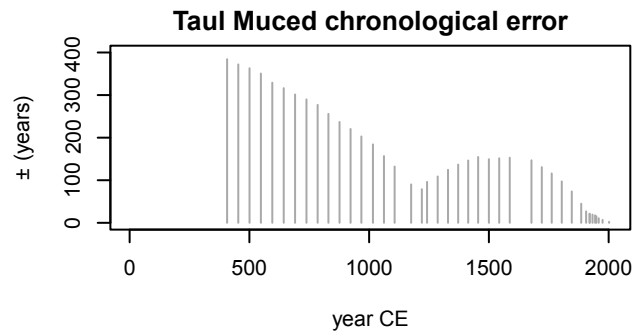
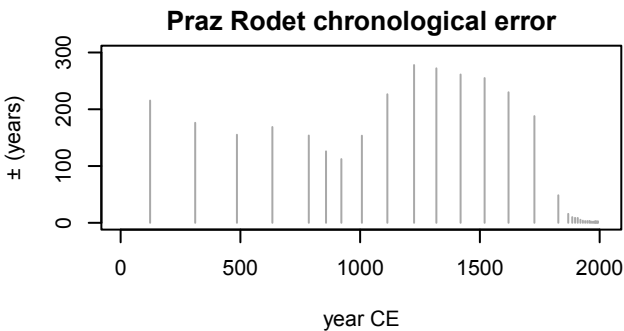
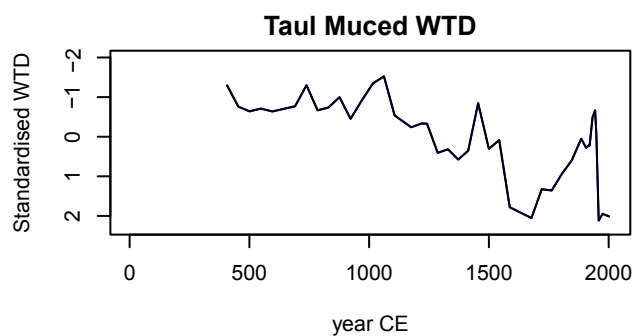
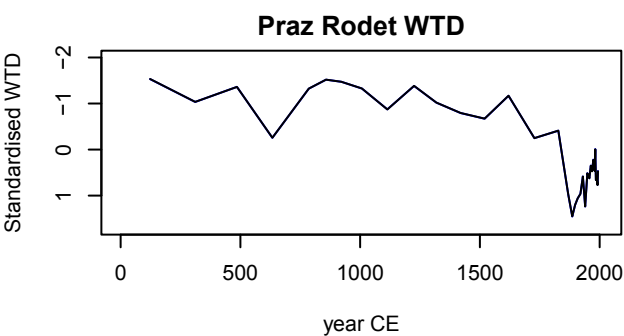


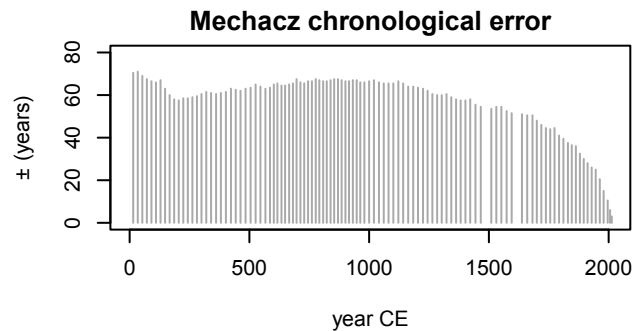
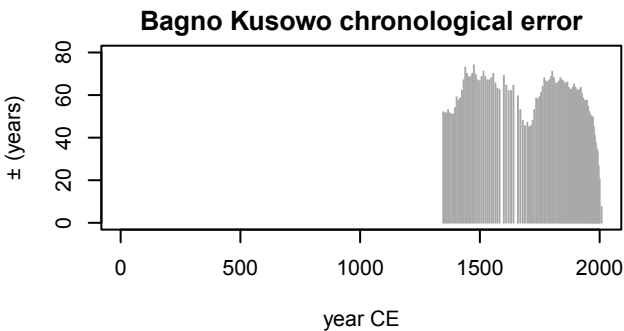
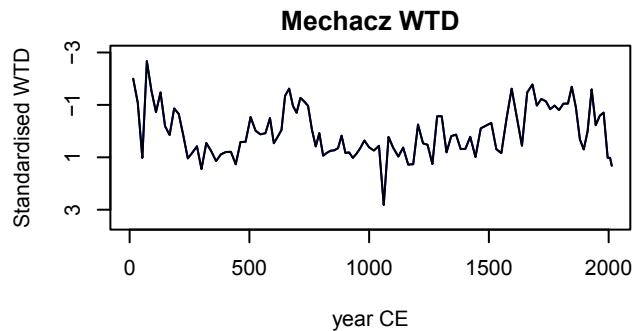
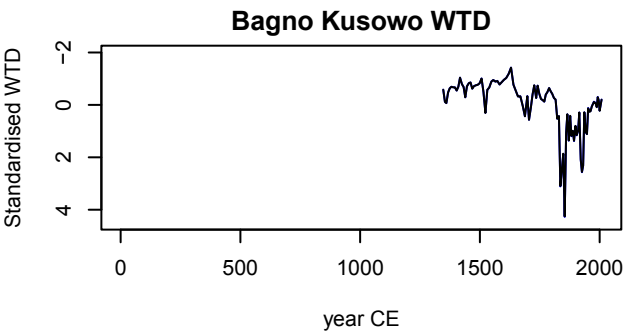
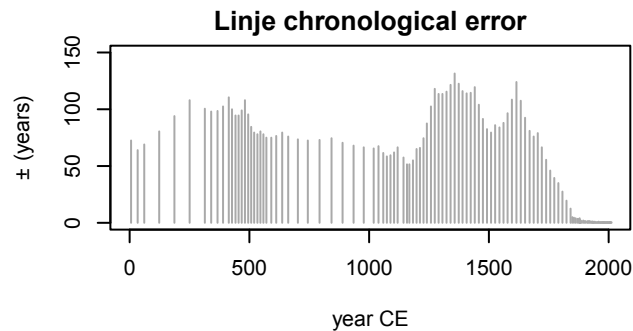
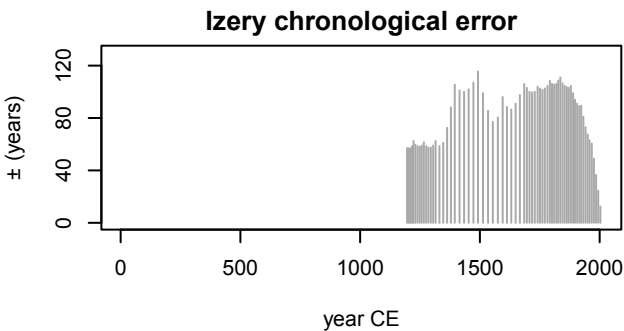
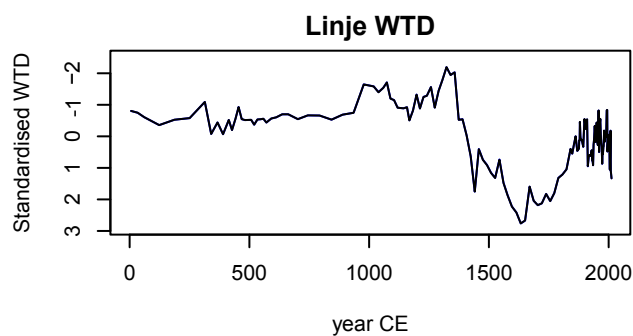
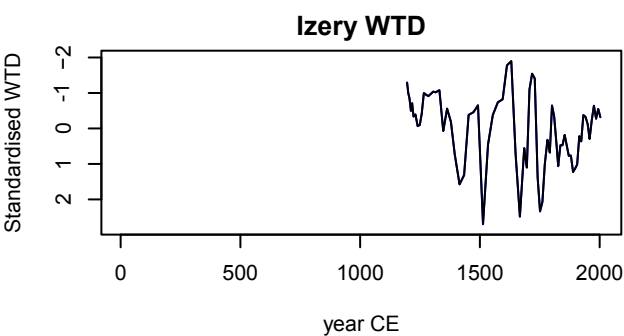


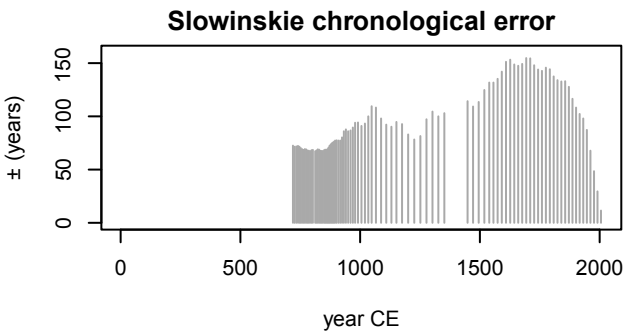
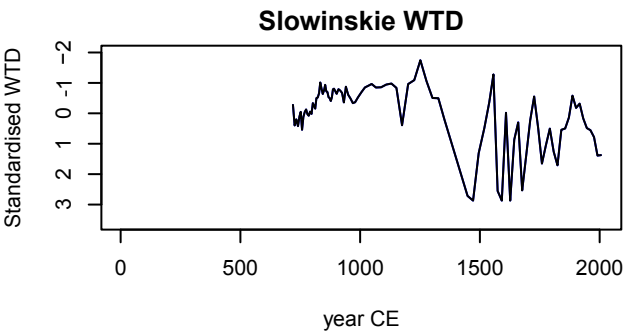
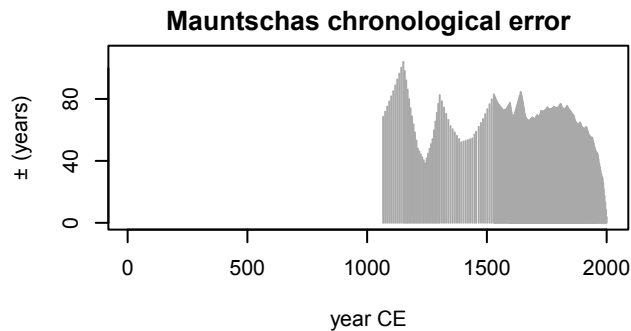
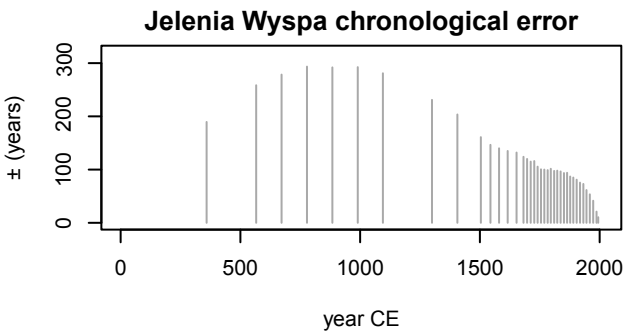
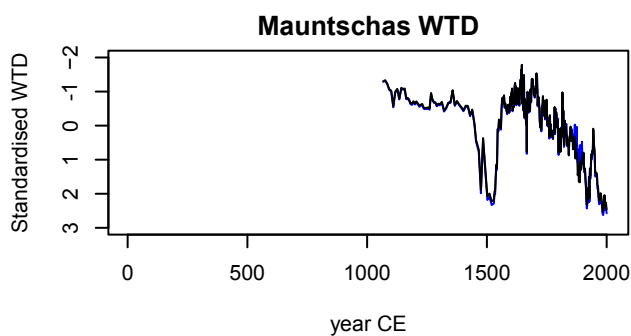
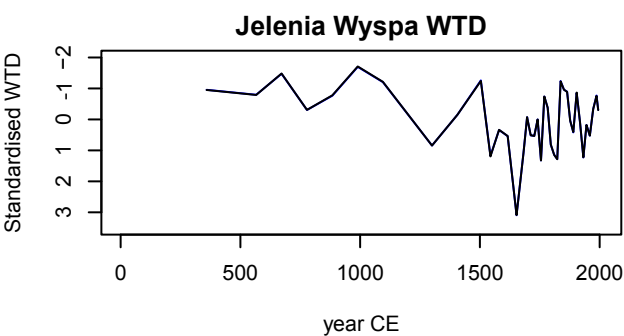












Supplementary Section 5

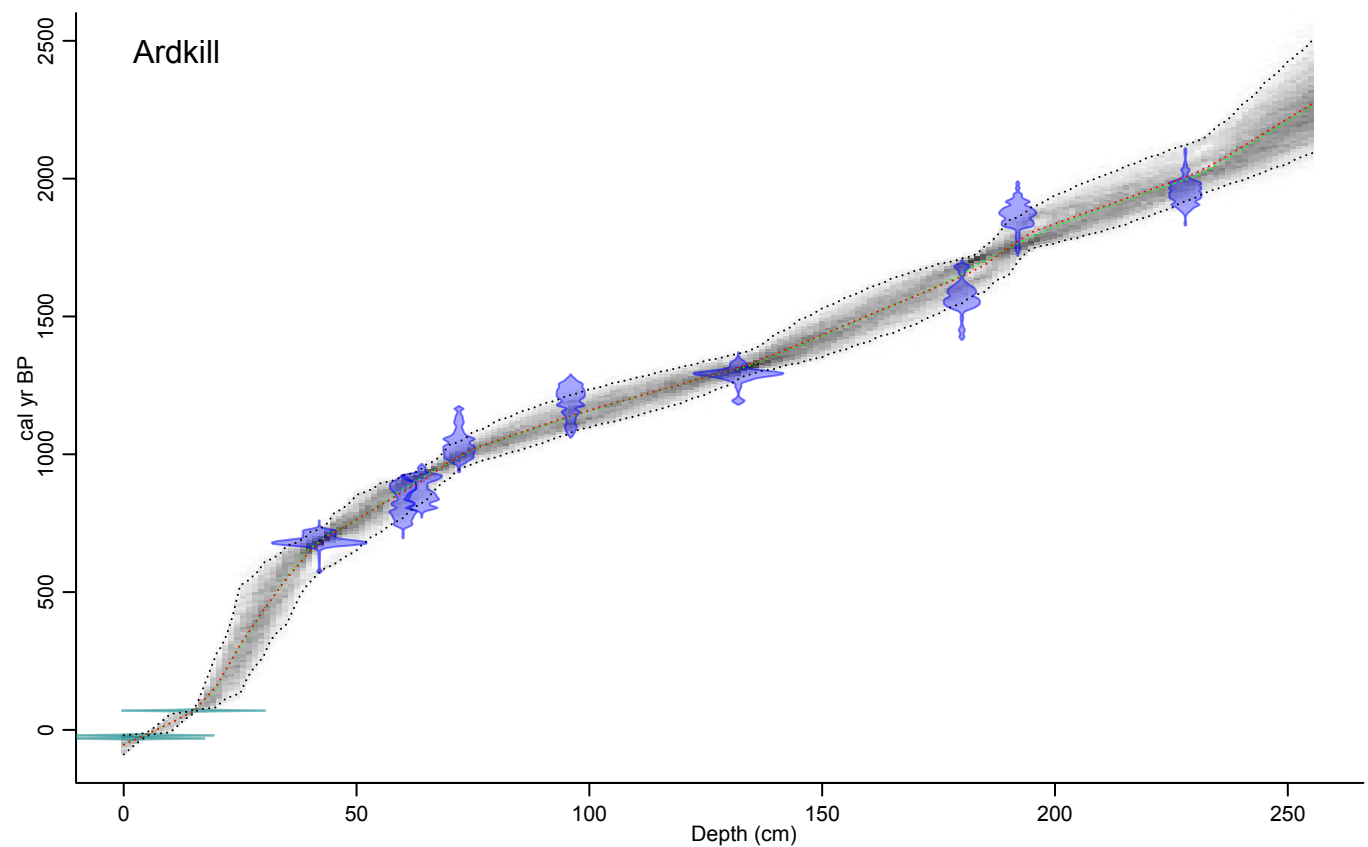
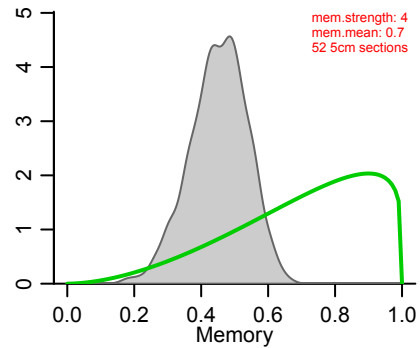
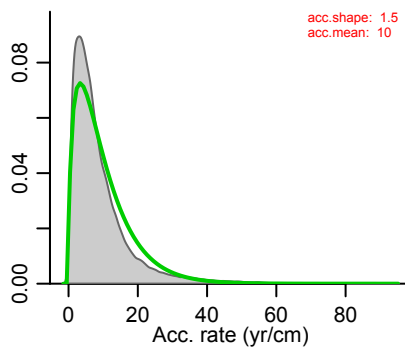
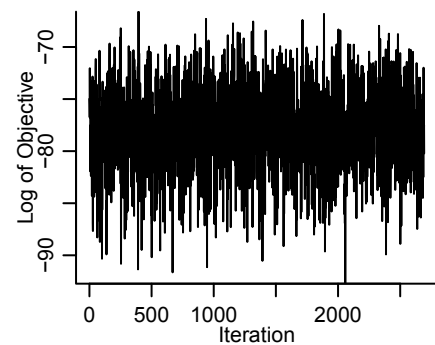
Bayesian age-depth models

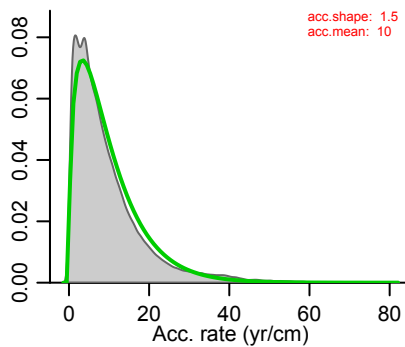
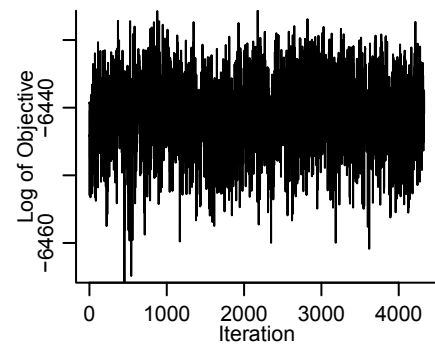
Guide to age-depth model figures:

Upper panels depict the MCMC iterations (left; good runs show a stationary distribution with little structure among neighbouring iterations), the prior (green curves) and posterior (grey histograms) distributions for the accumulation rate (middle panel) and memory (right panel). Bottom panel shows the calibrated ^{14}C dates (transparent blue) and the age-depth model (darker greys indicate more likely calendar ages; grey stippled lines show 95% confidence intervals; red curve shows single 'best' model based on the mean age for each depth).

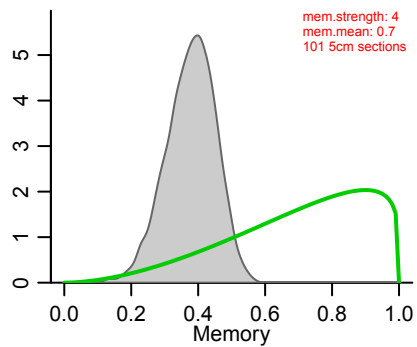
Prior information for accumulation rate and its memory or variability are shown as red text.

Please refer to http://www.chrono.qub.ac.uk/blaauw/manualBacon_2.3.pdf and Blaauw and Christen (2011) for further information.

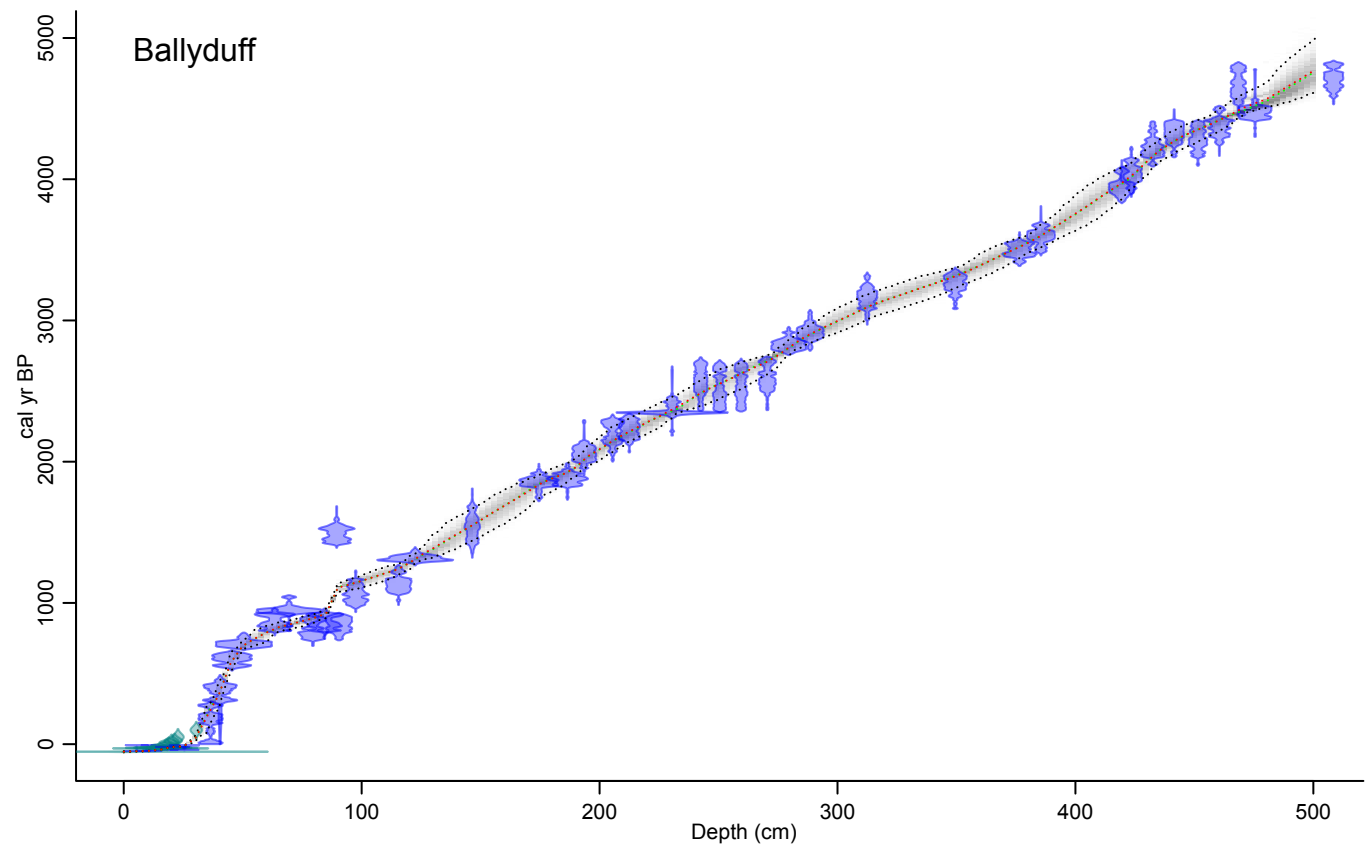


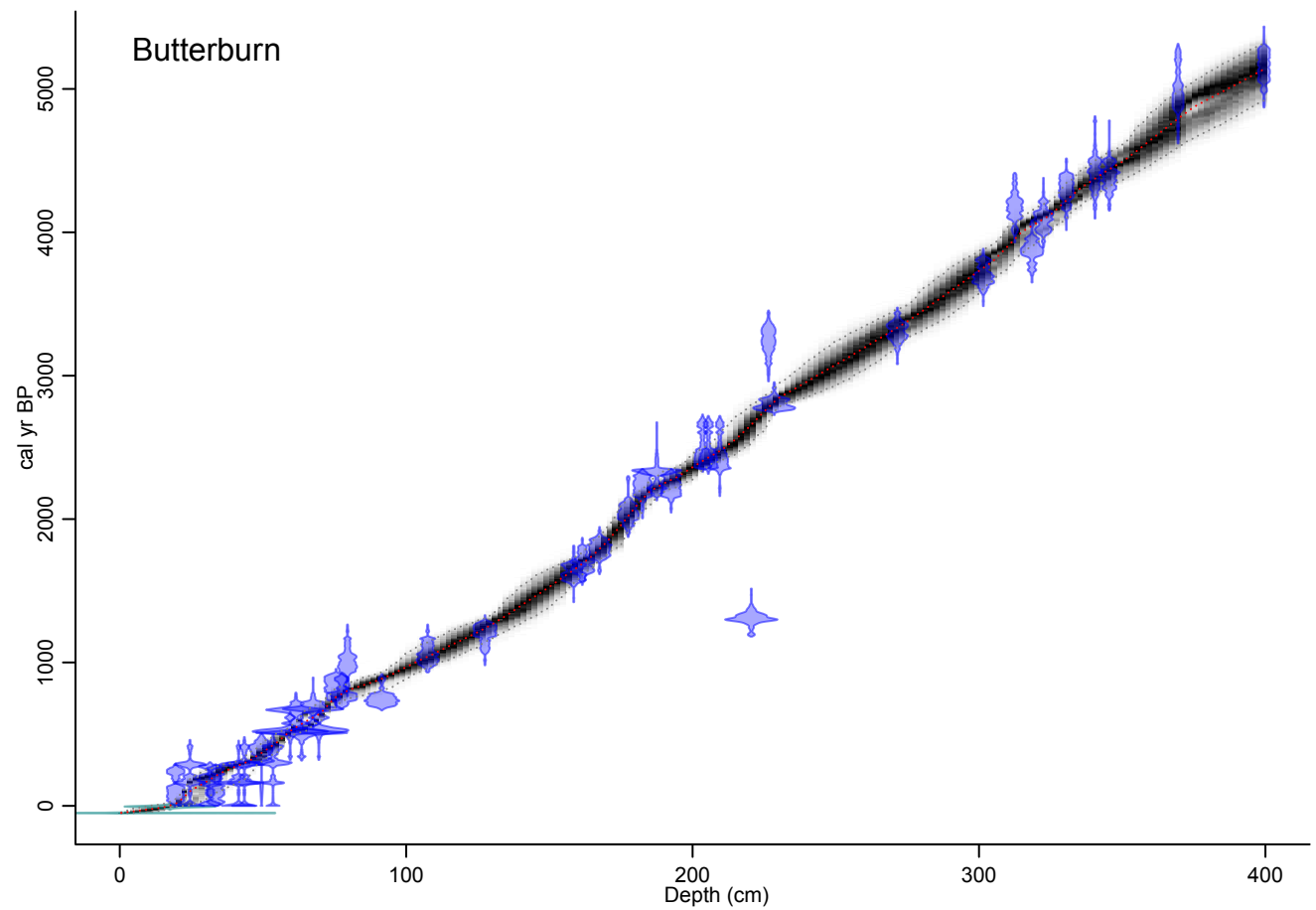
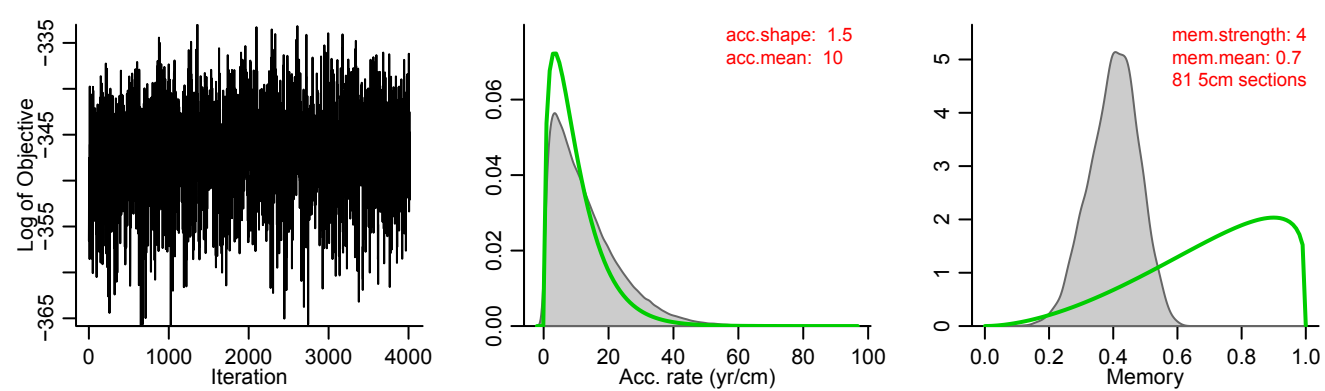


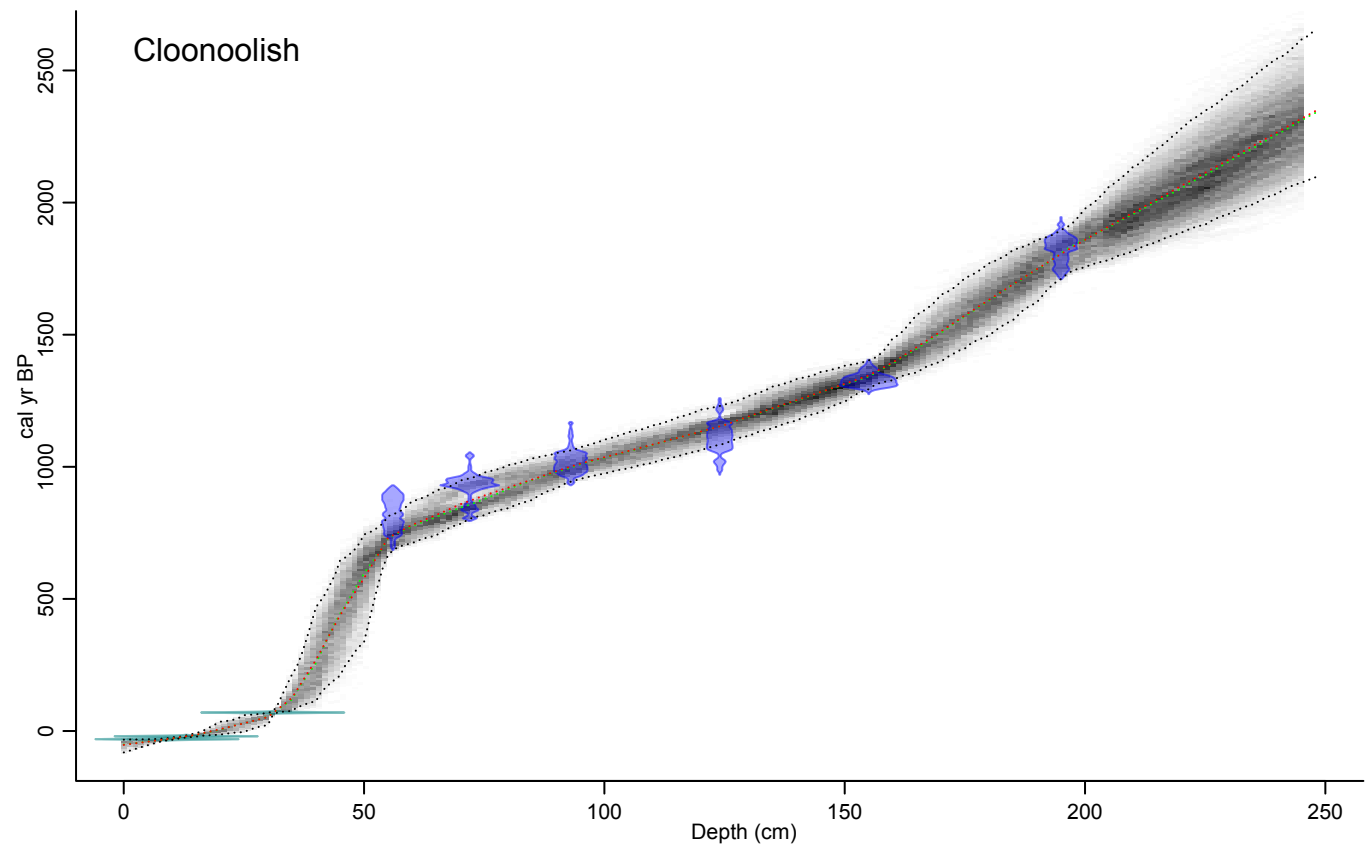
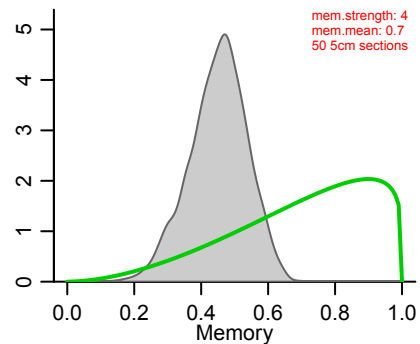
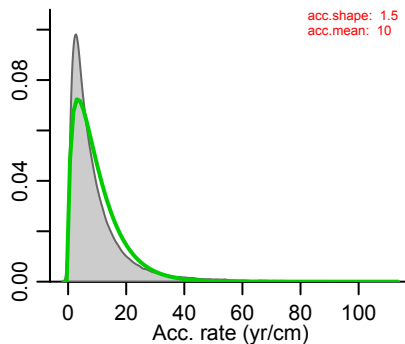
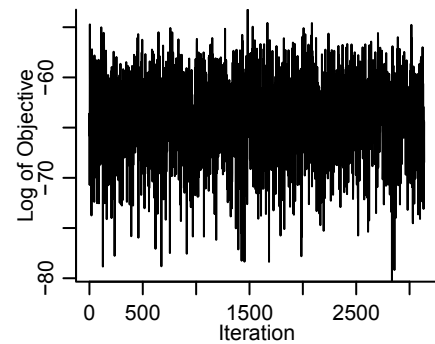
acc.shape: 1.5
acc.mean: 10

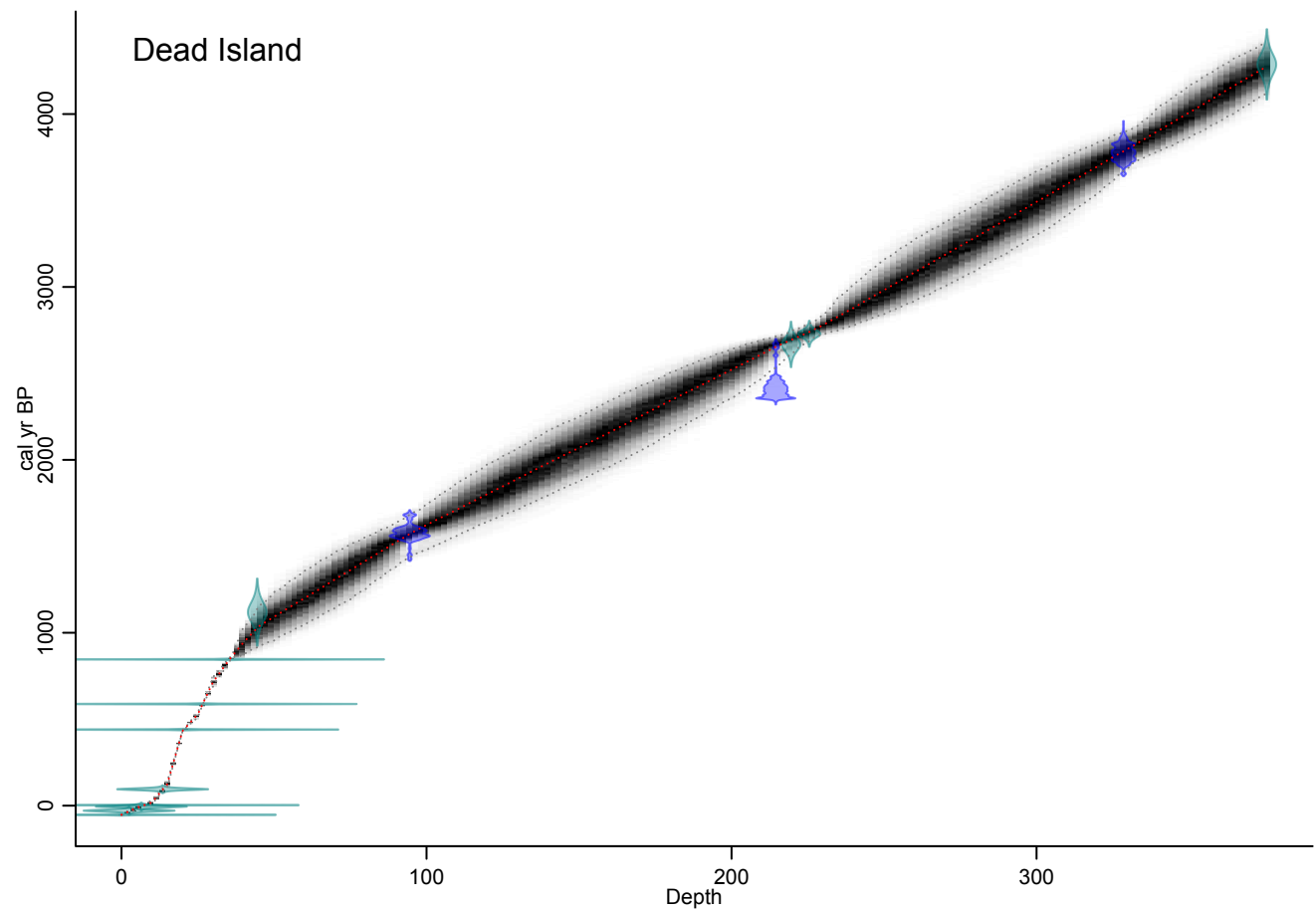
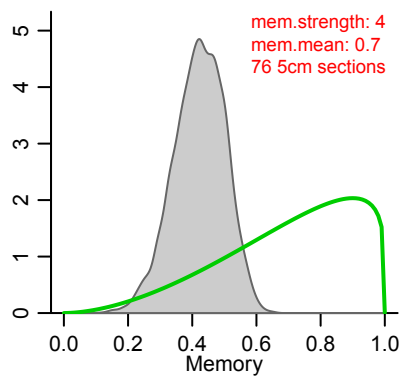
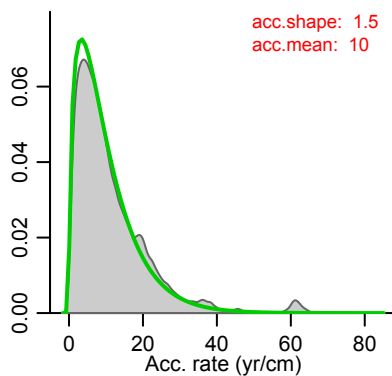
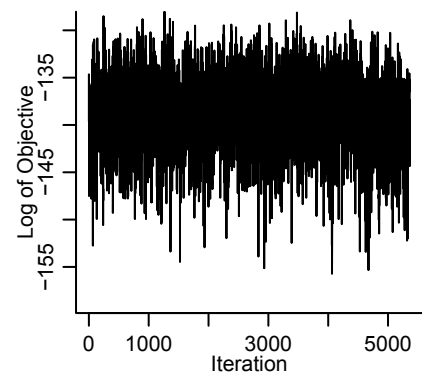


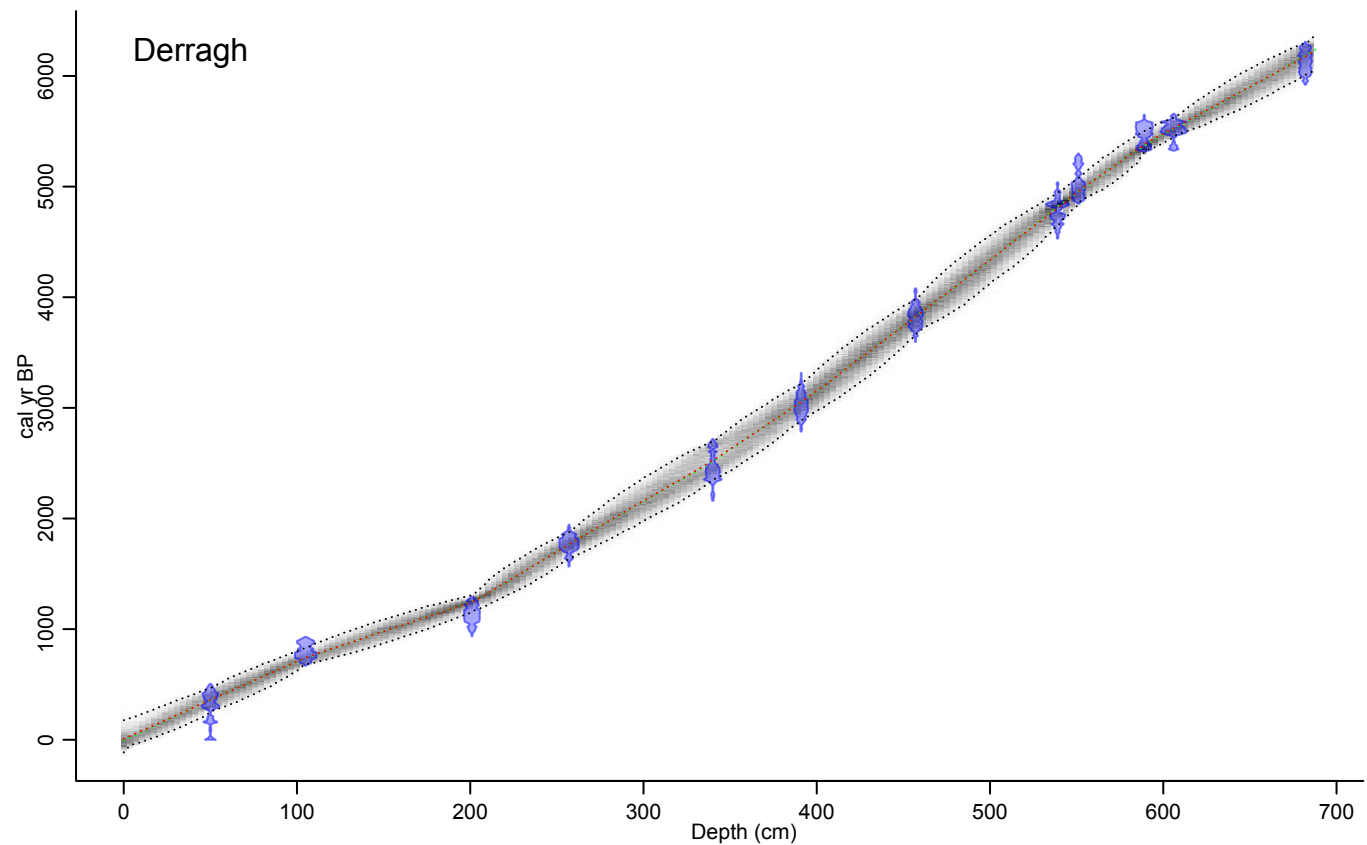
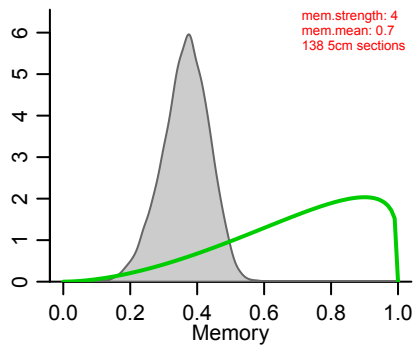
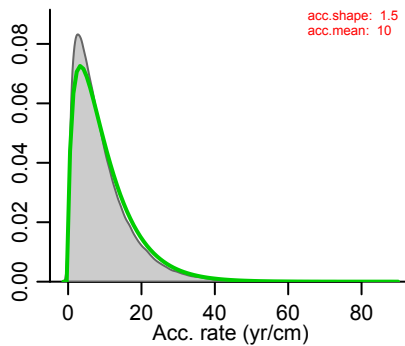
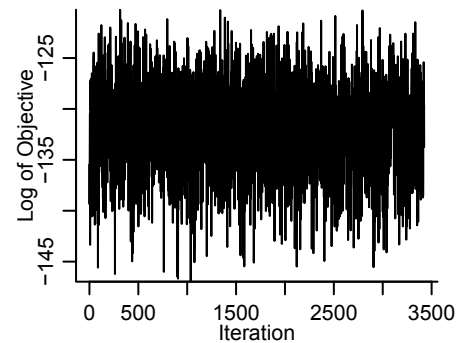
mem.strength: 4
mem.mean: 0.7
101 5cm sections

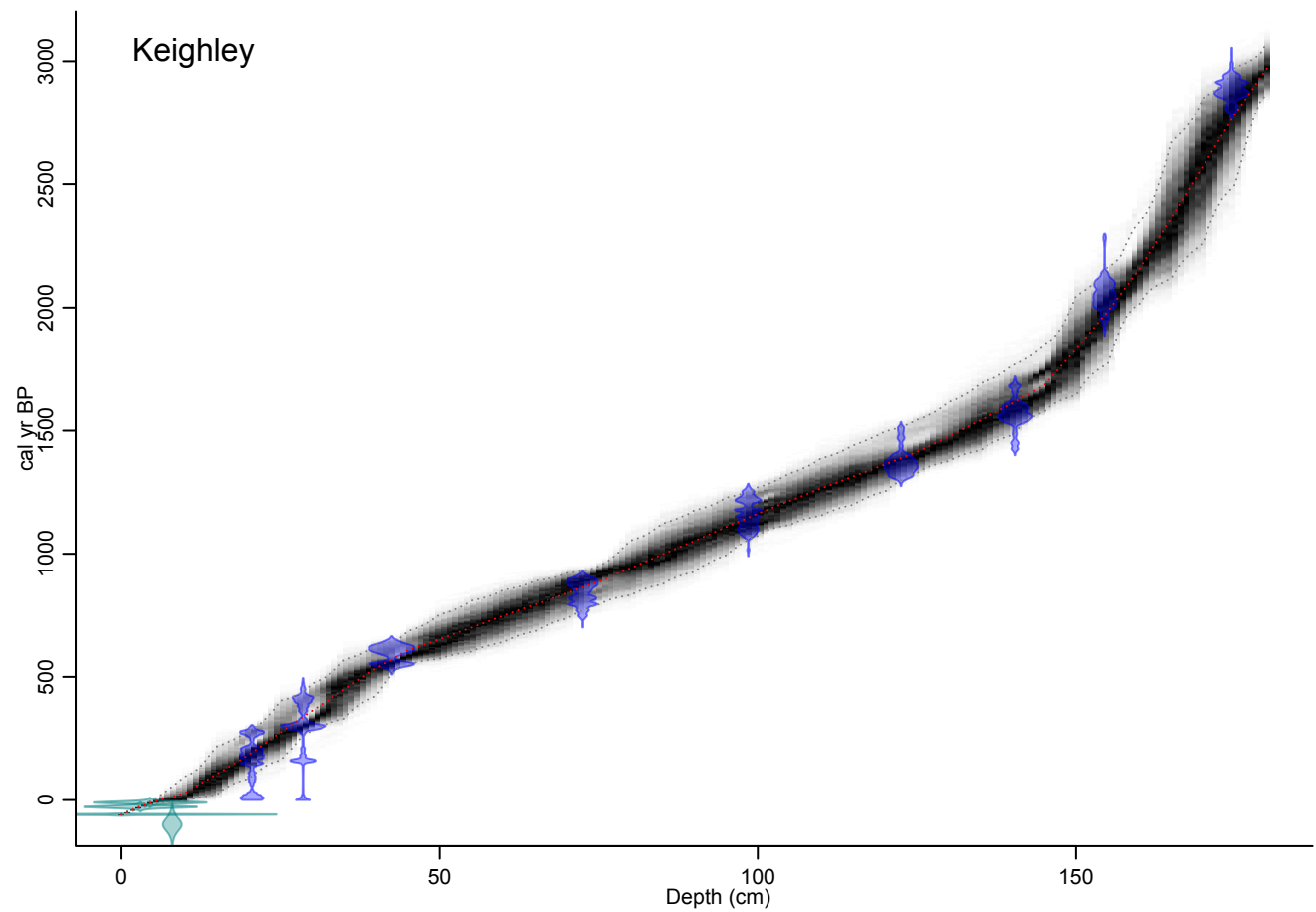
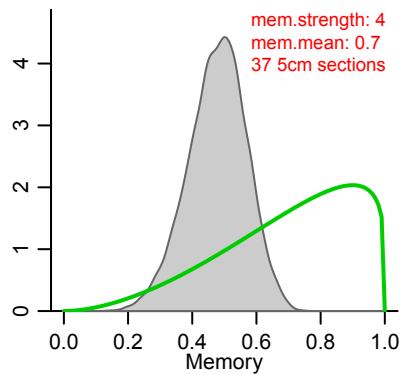
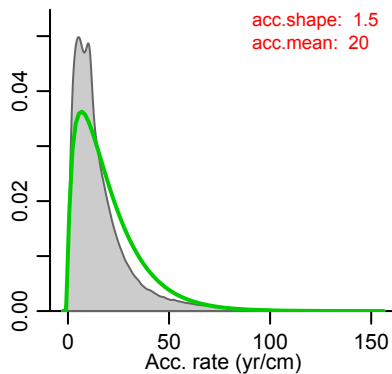
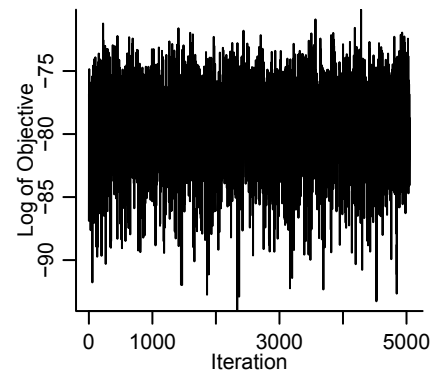


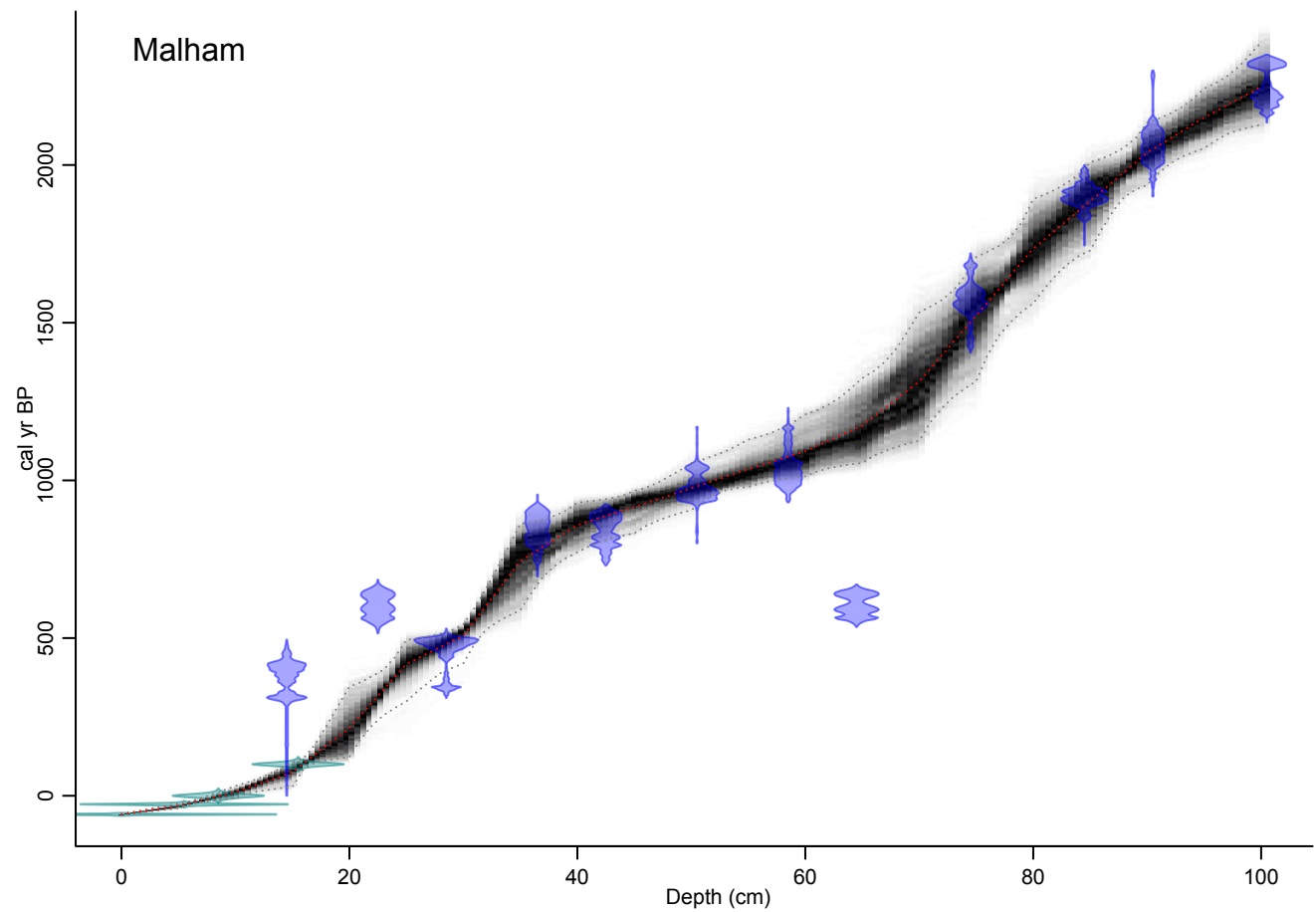
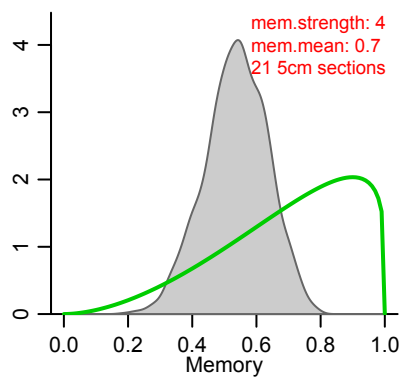
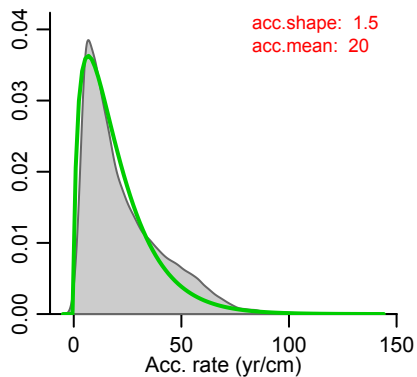
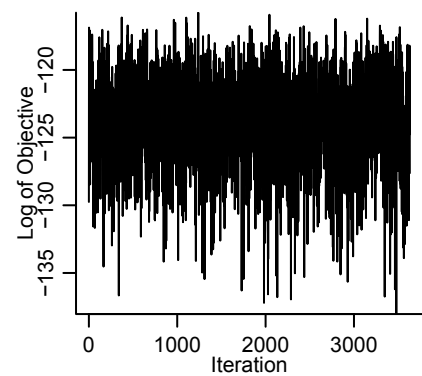


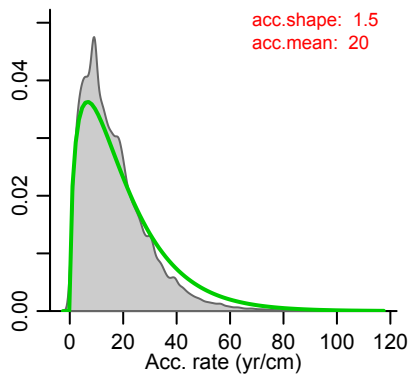
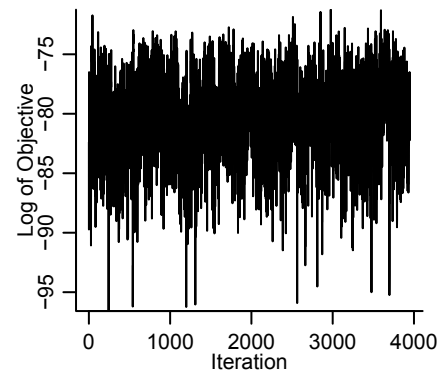




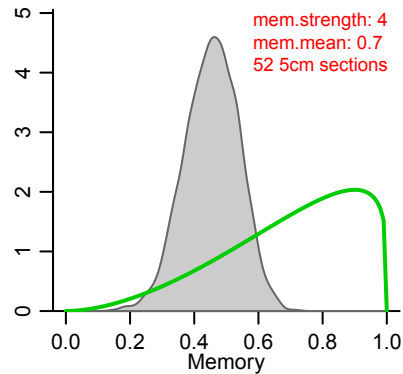




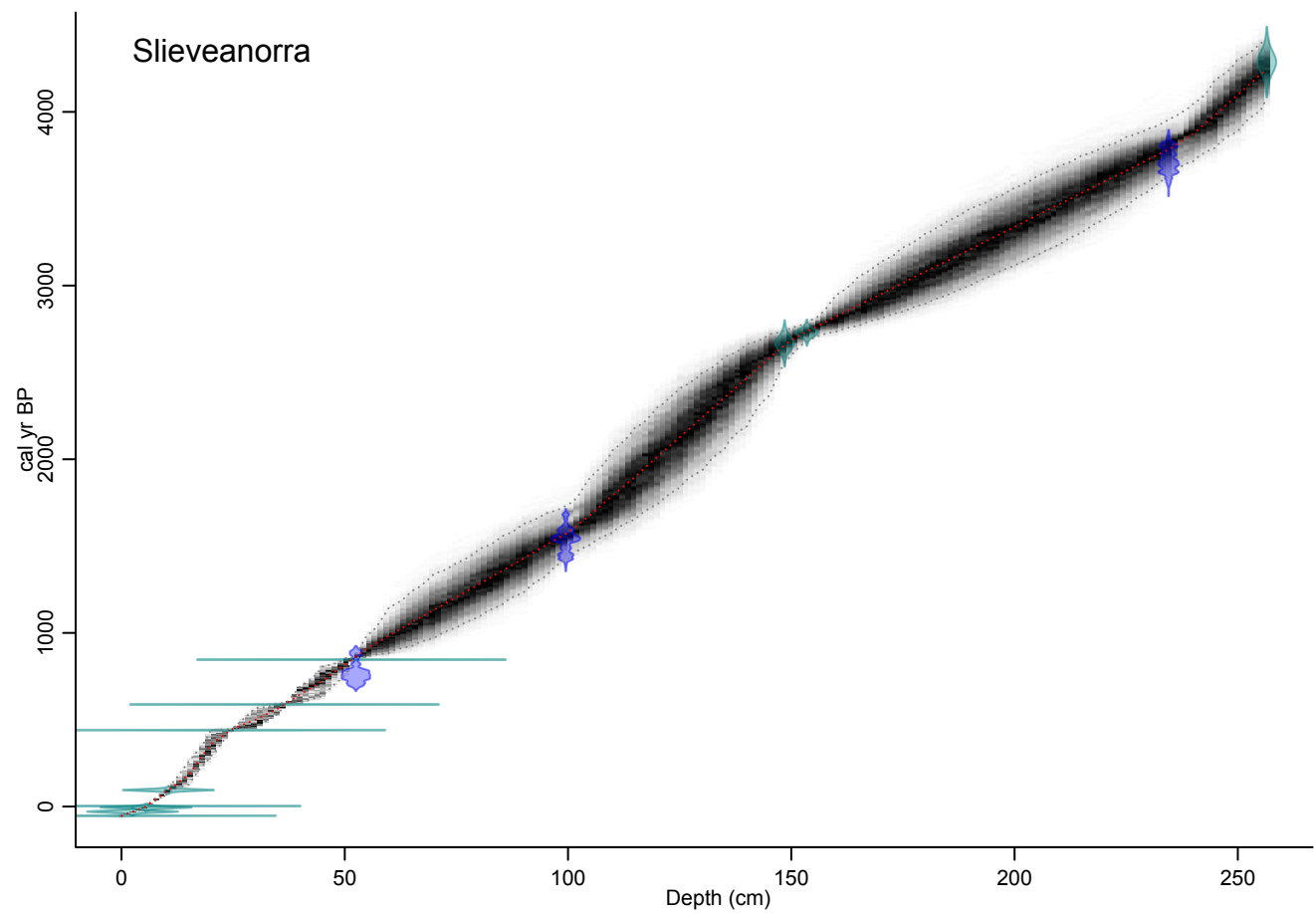


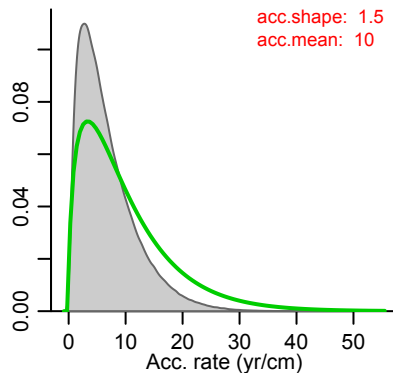
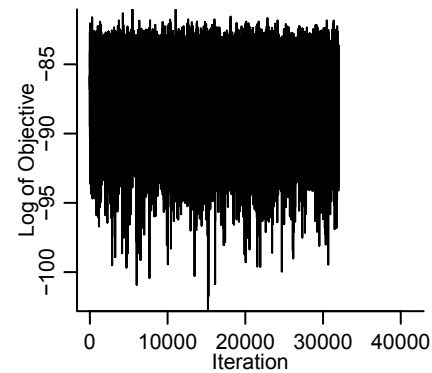


acc.shape: 1.5
acc.mean: 20

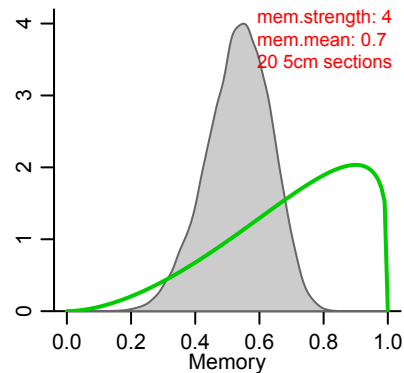


mem.strength: 4
mem.mean: 0.7
52 5cm sections

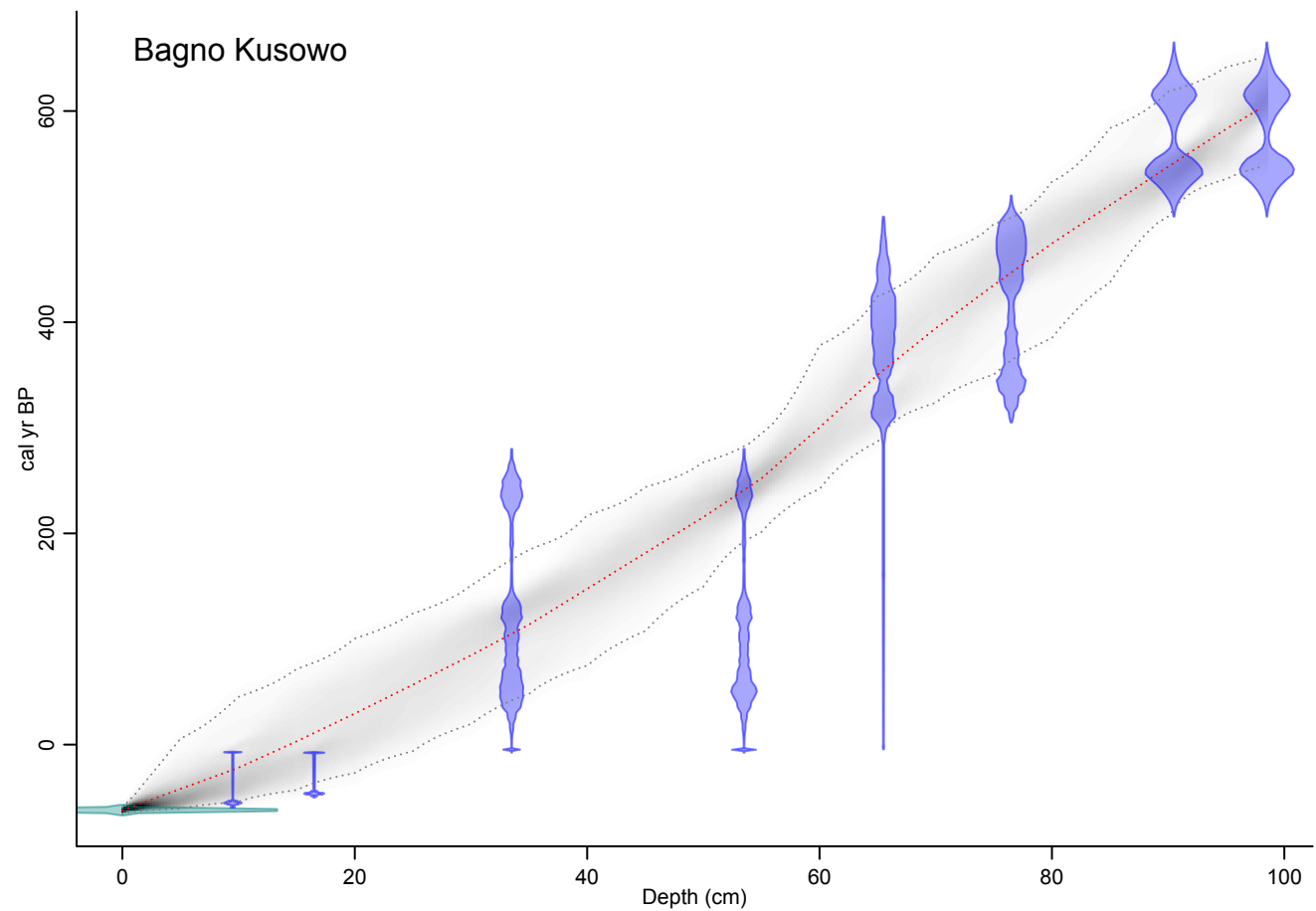


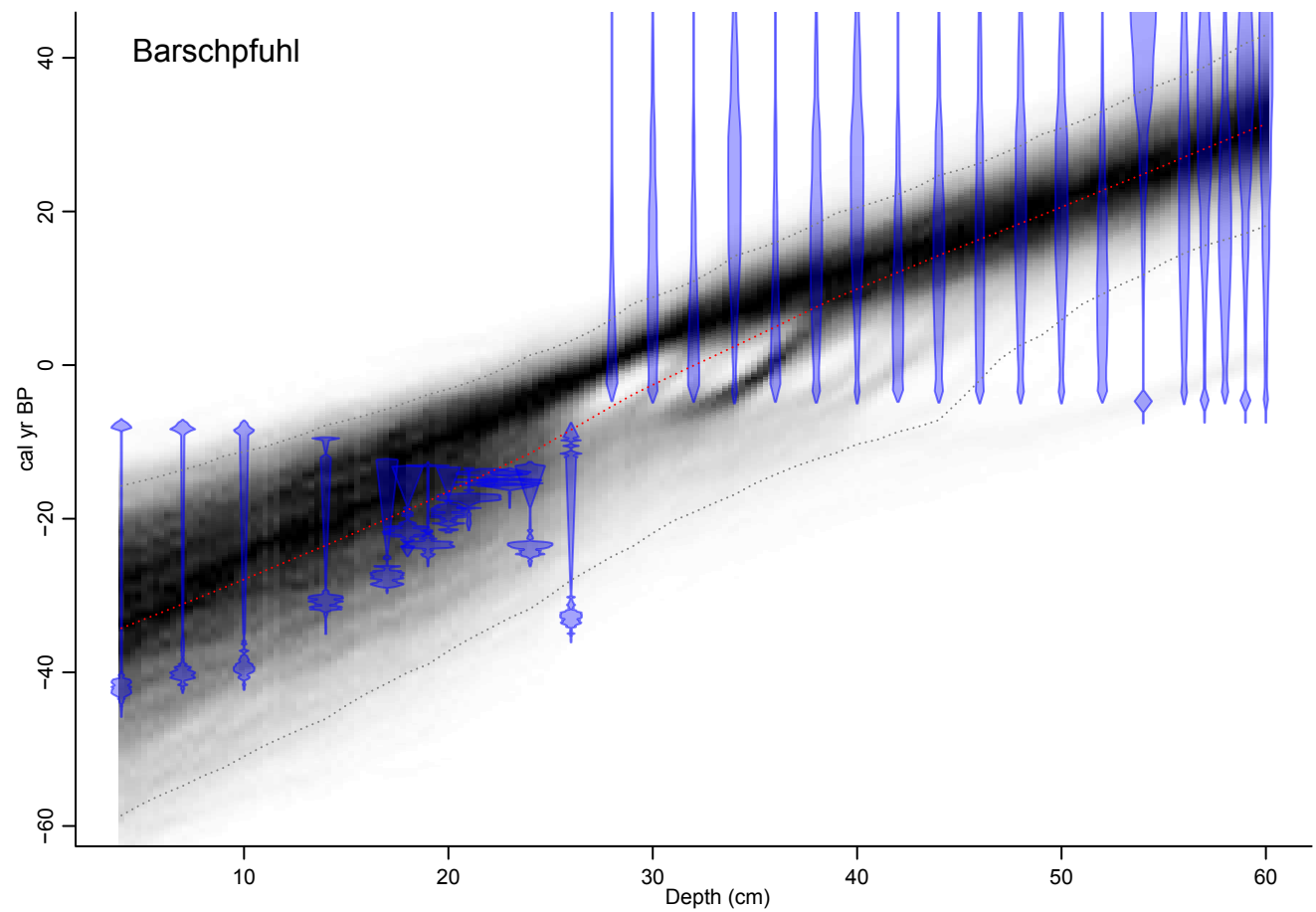
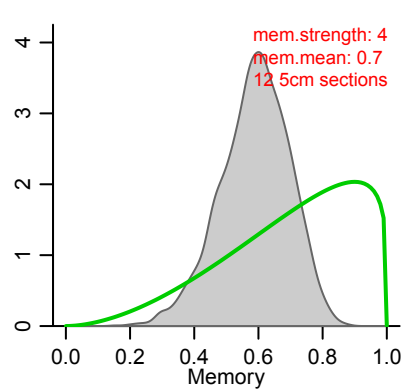
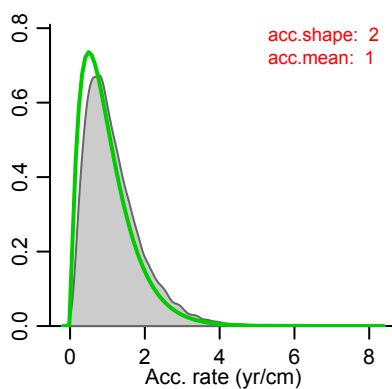
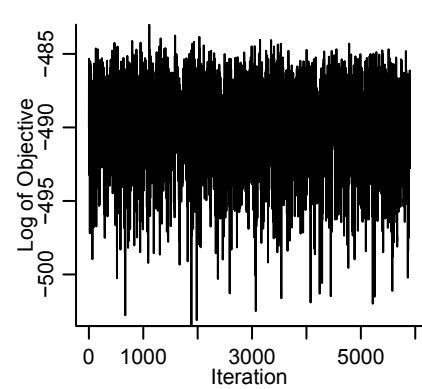


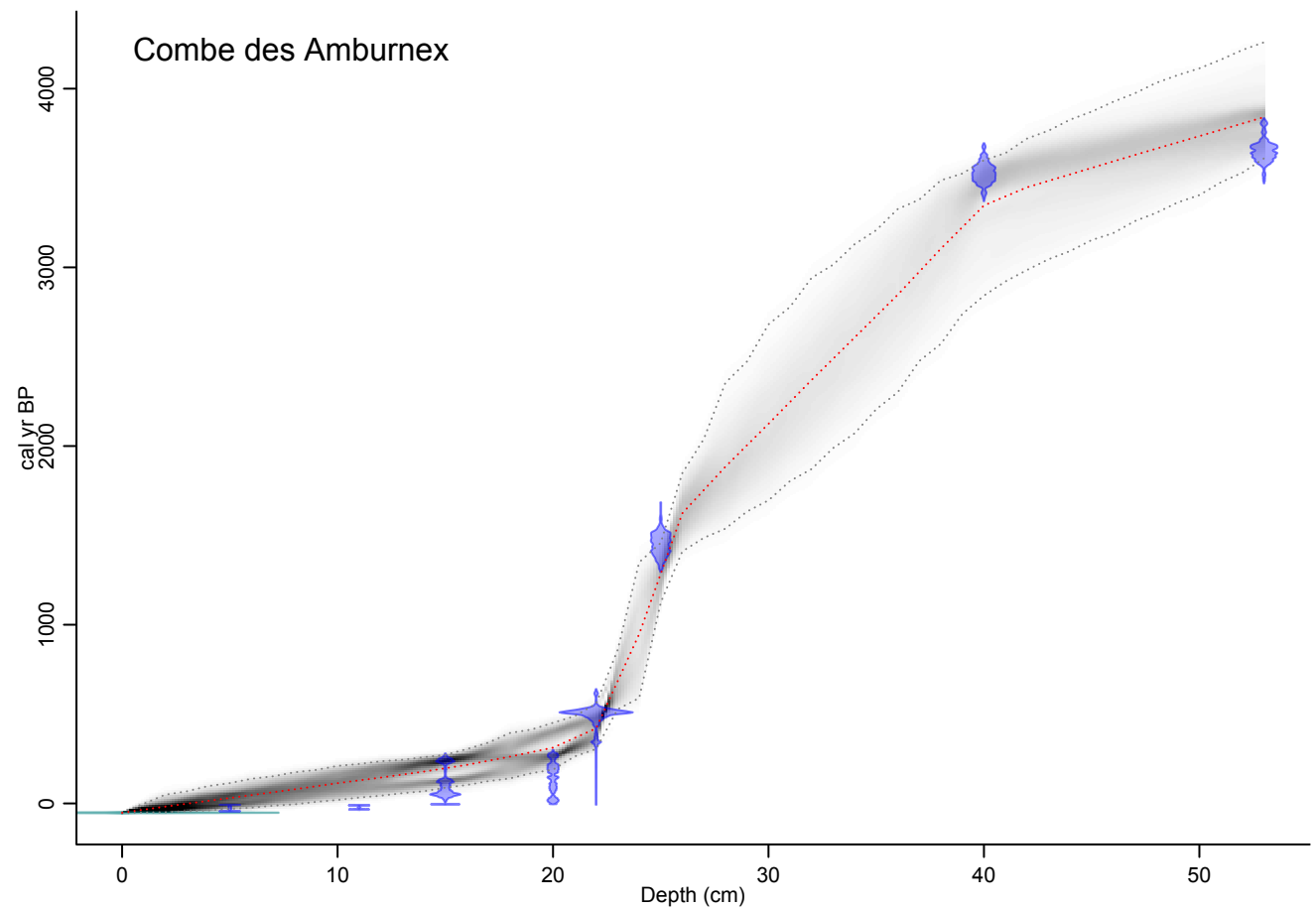
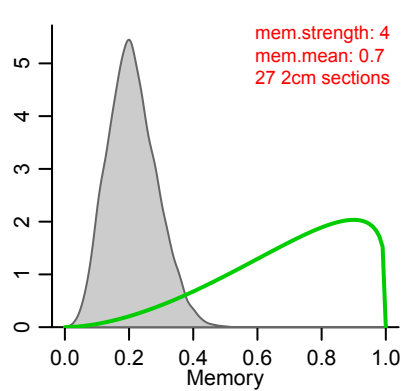
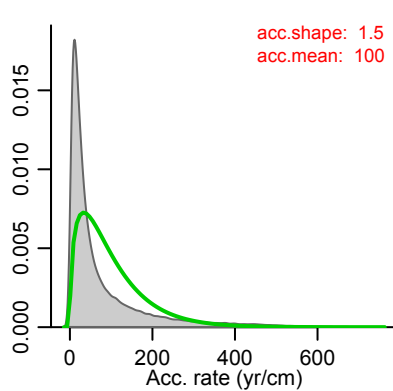
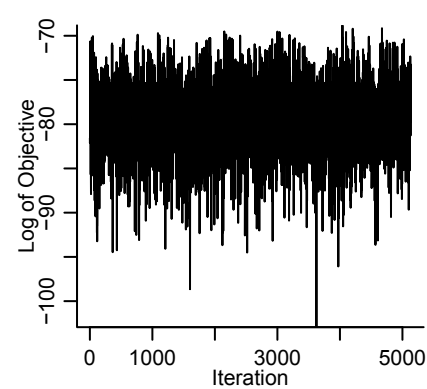
acc.shape: 1.5
acc.mean: 10

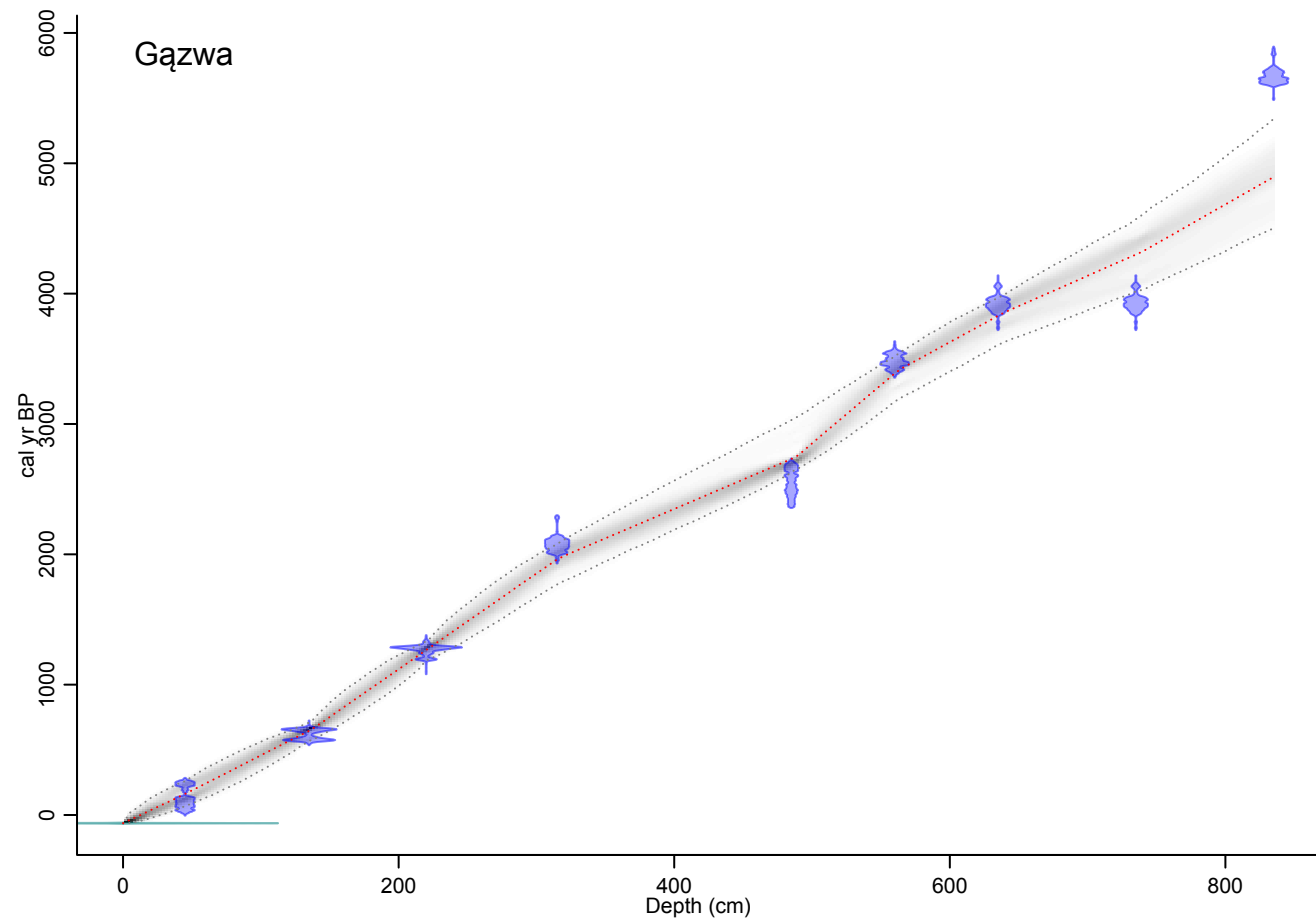
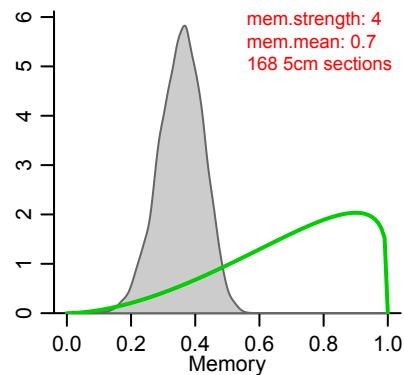
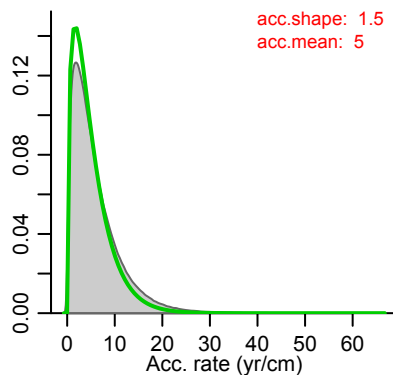
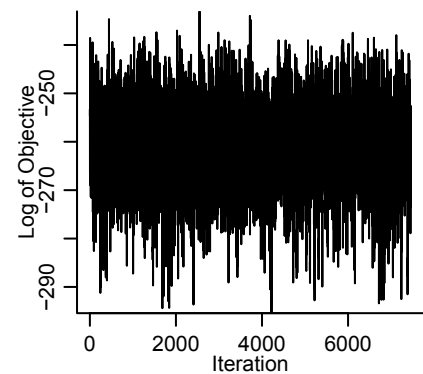


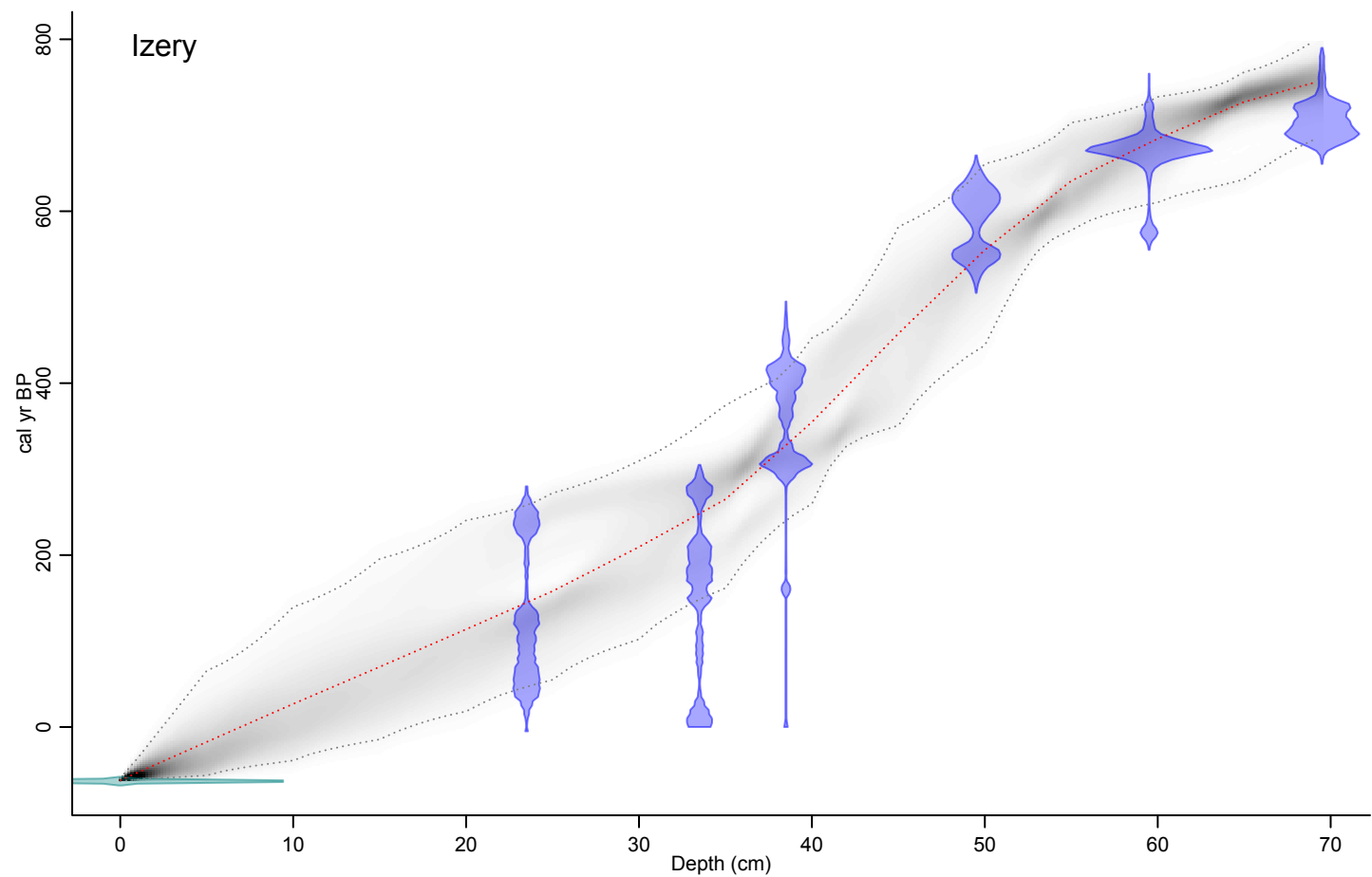
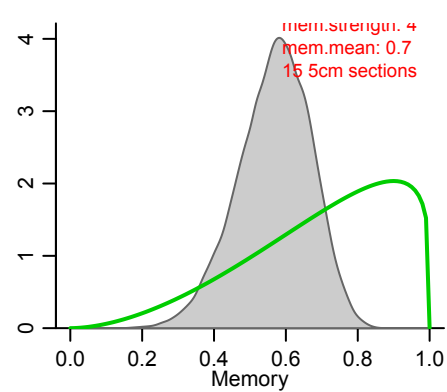
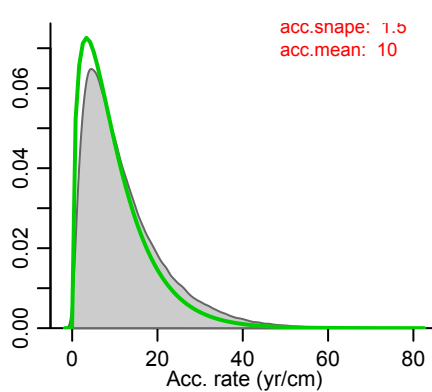
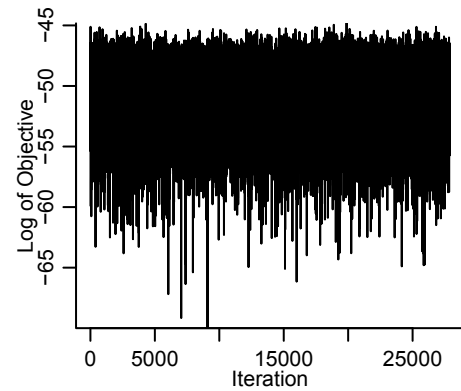
mem.strength: 4
mem.mean: 0.7
20 5cm sections

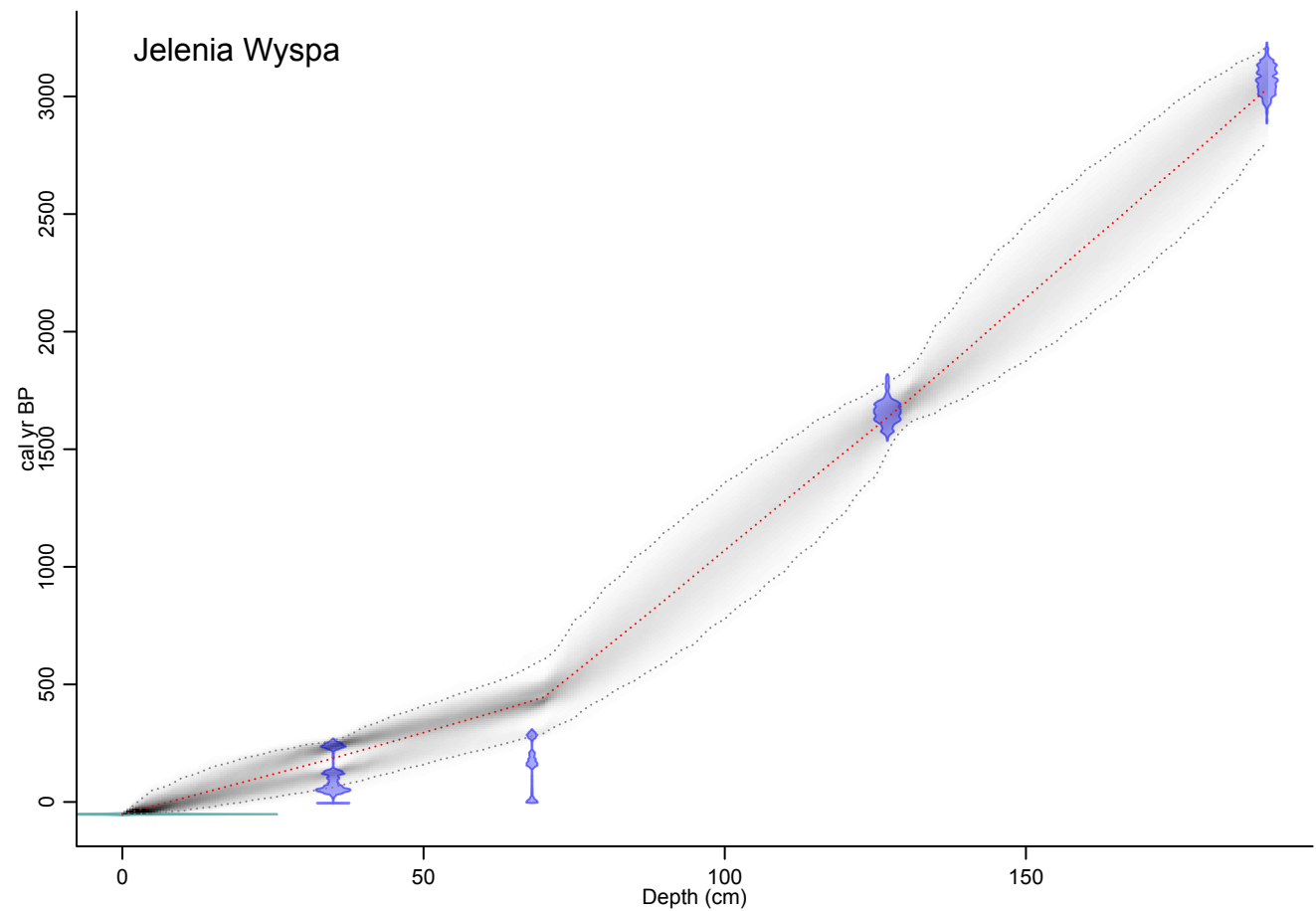
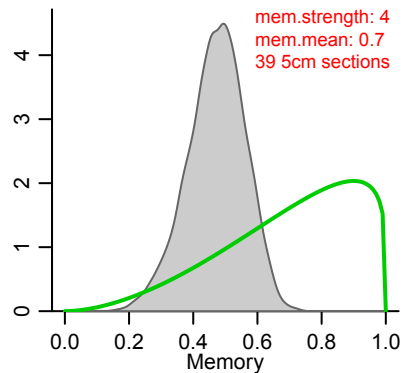
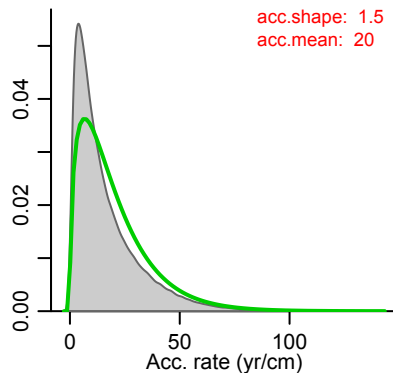
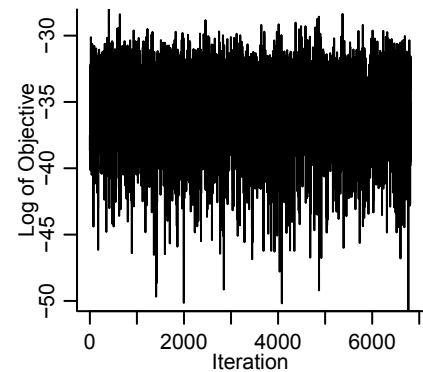


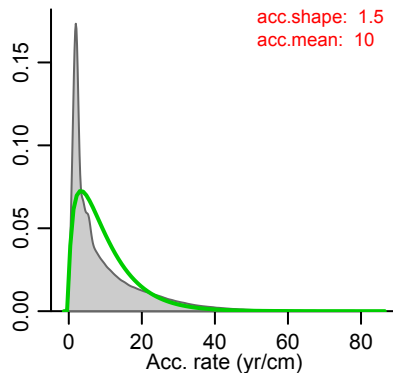
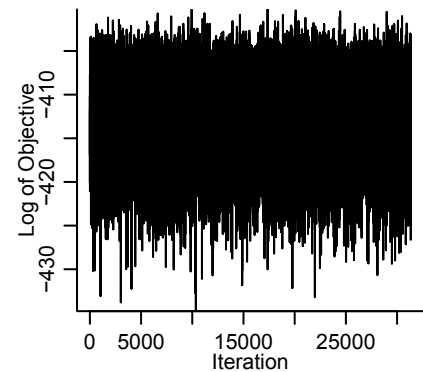




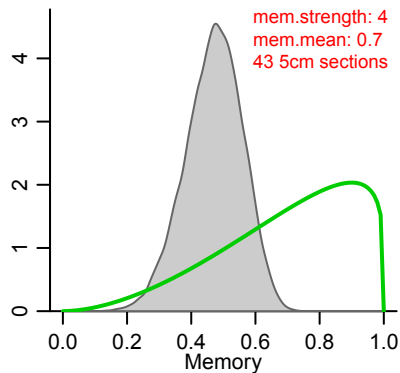




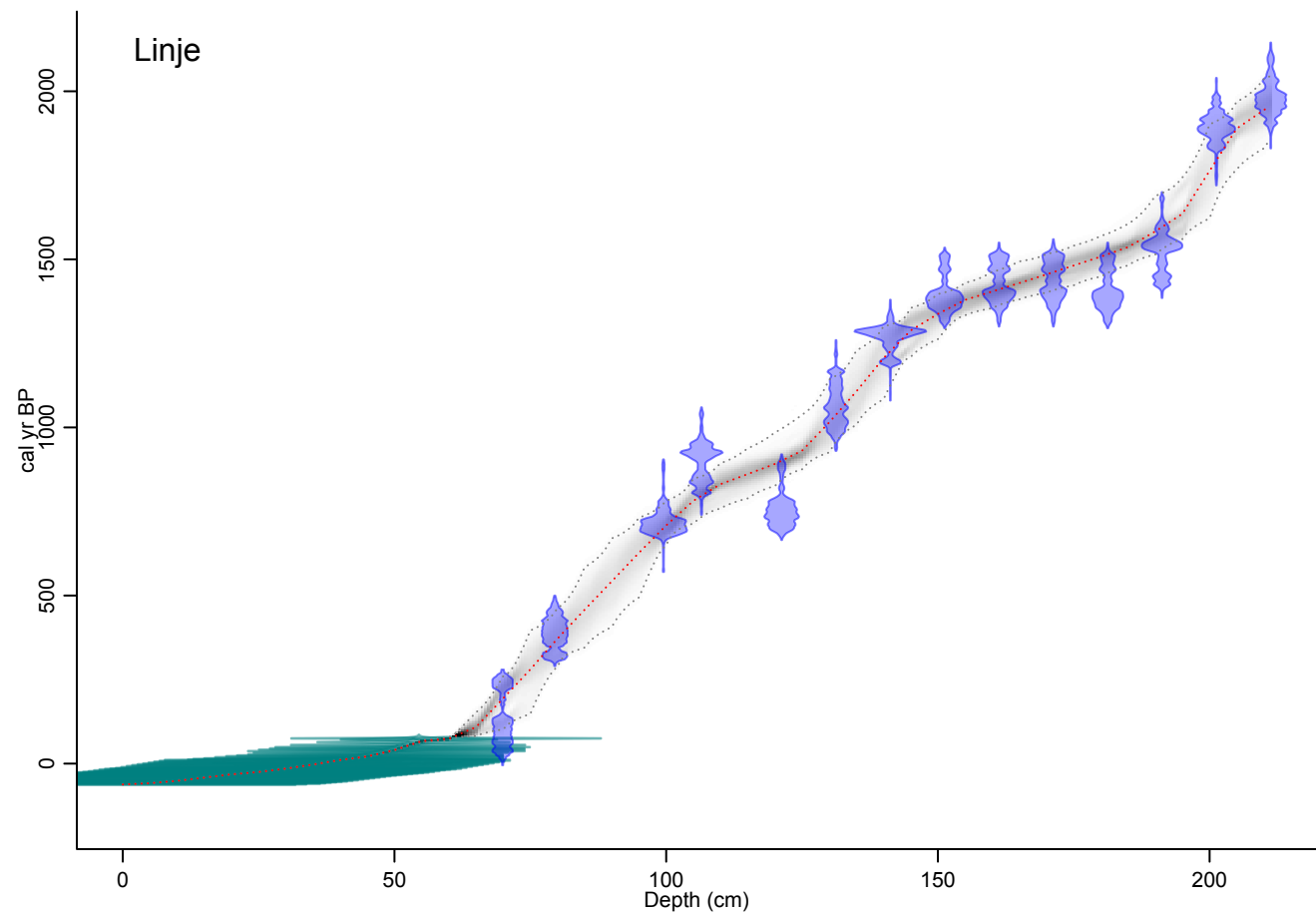


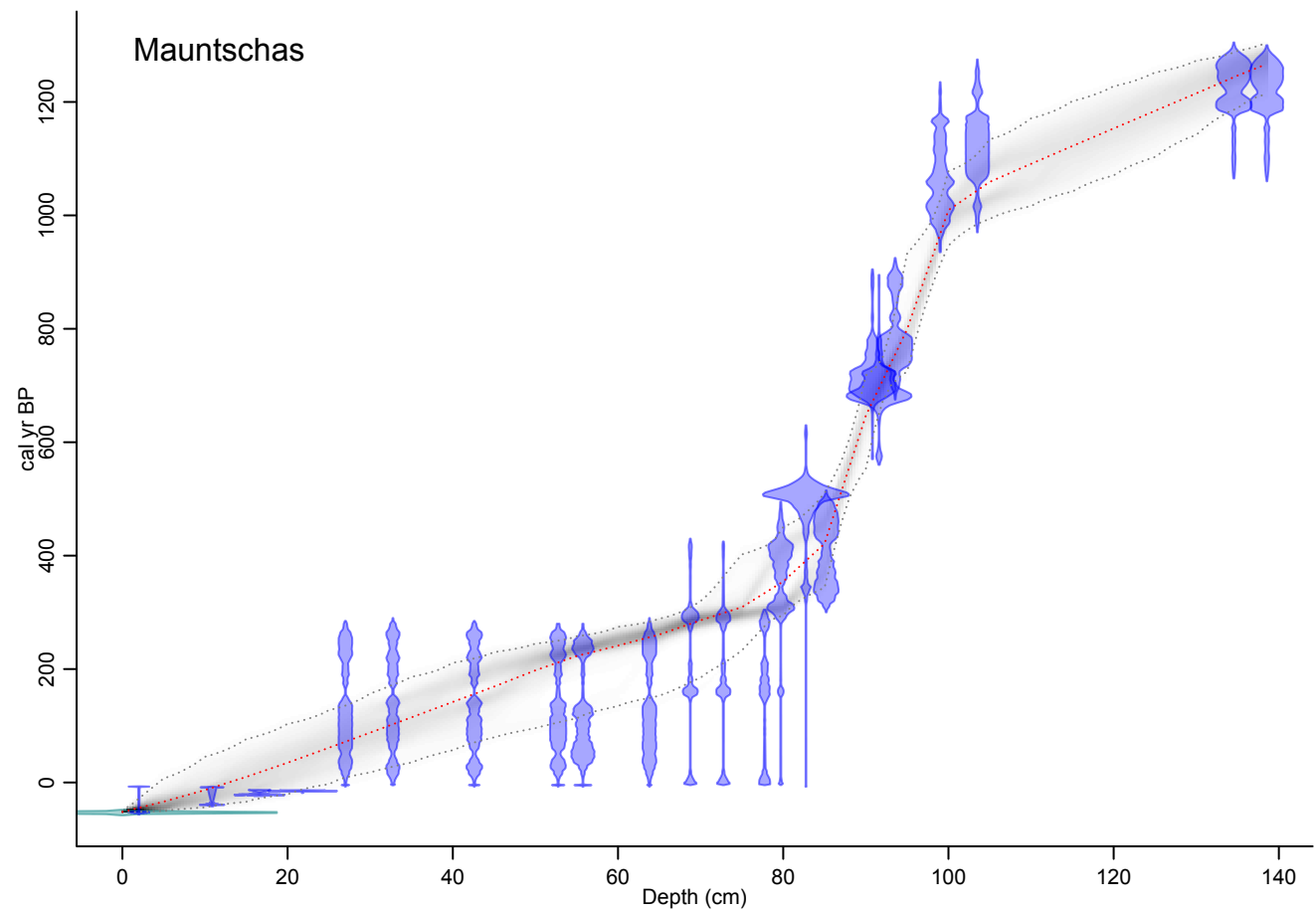
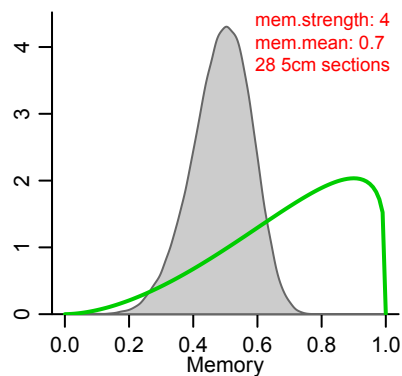
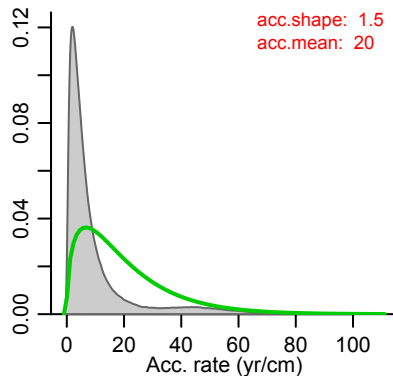
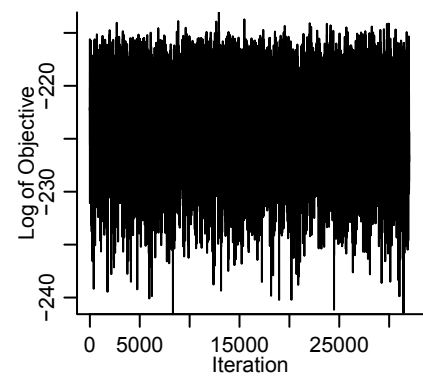


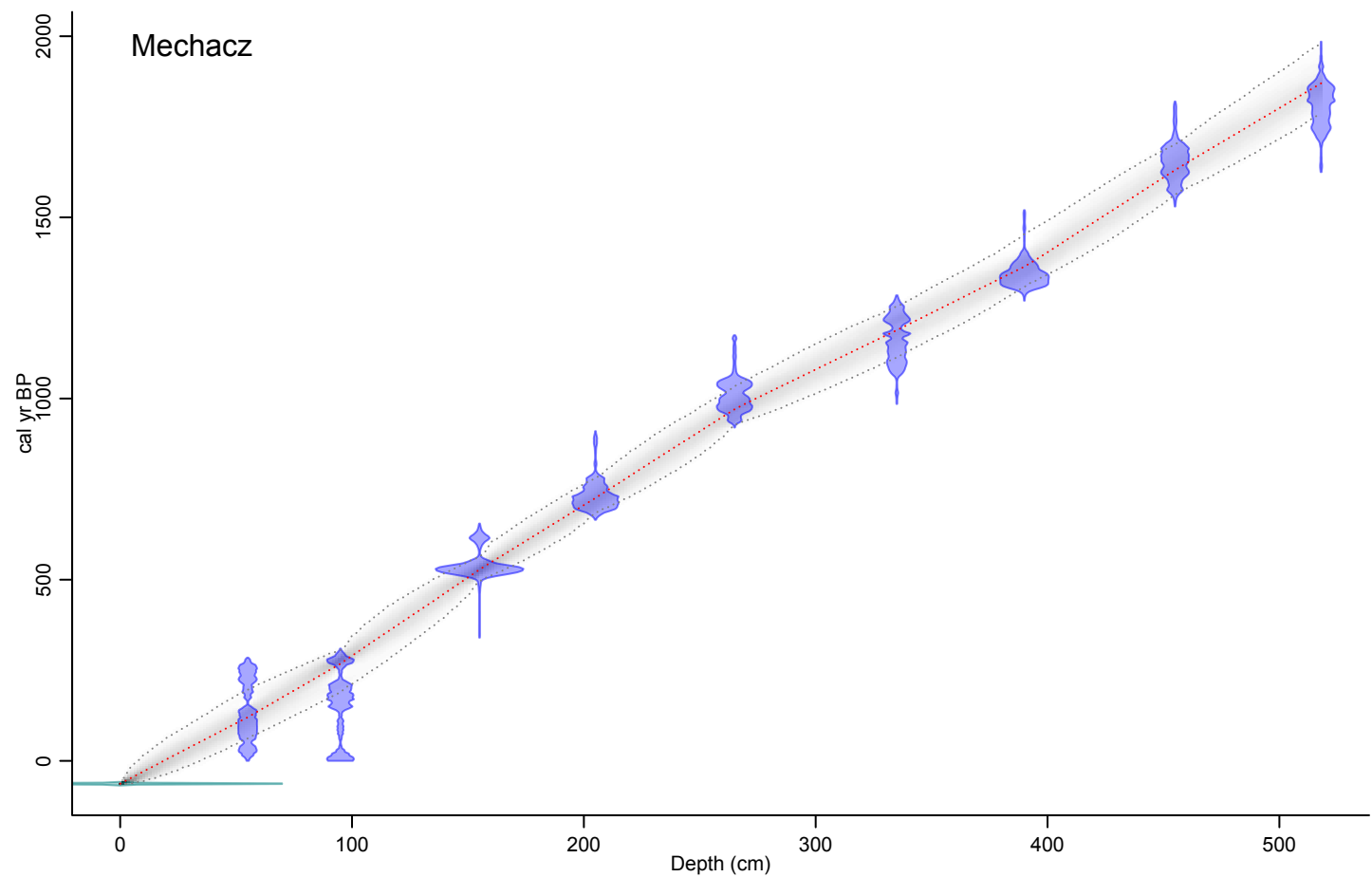
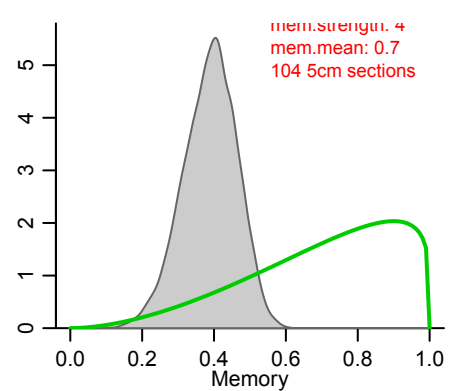
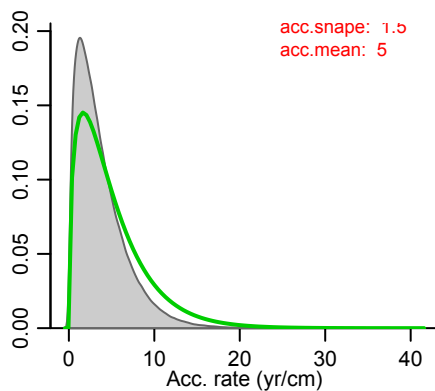
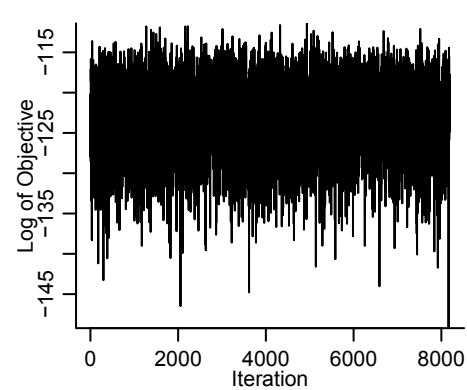
acc.shape: 1.5
acc.mean: 10

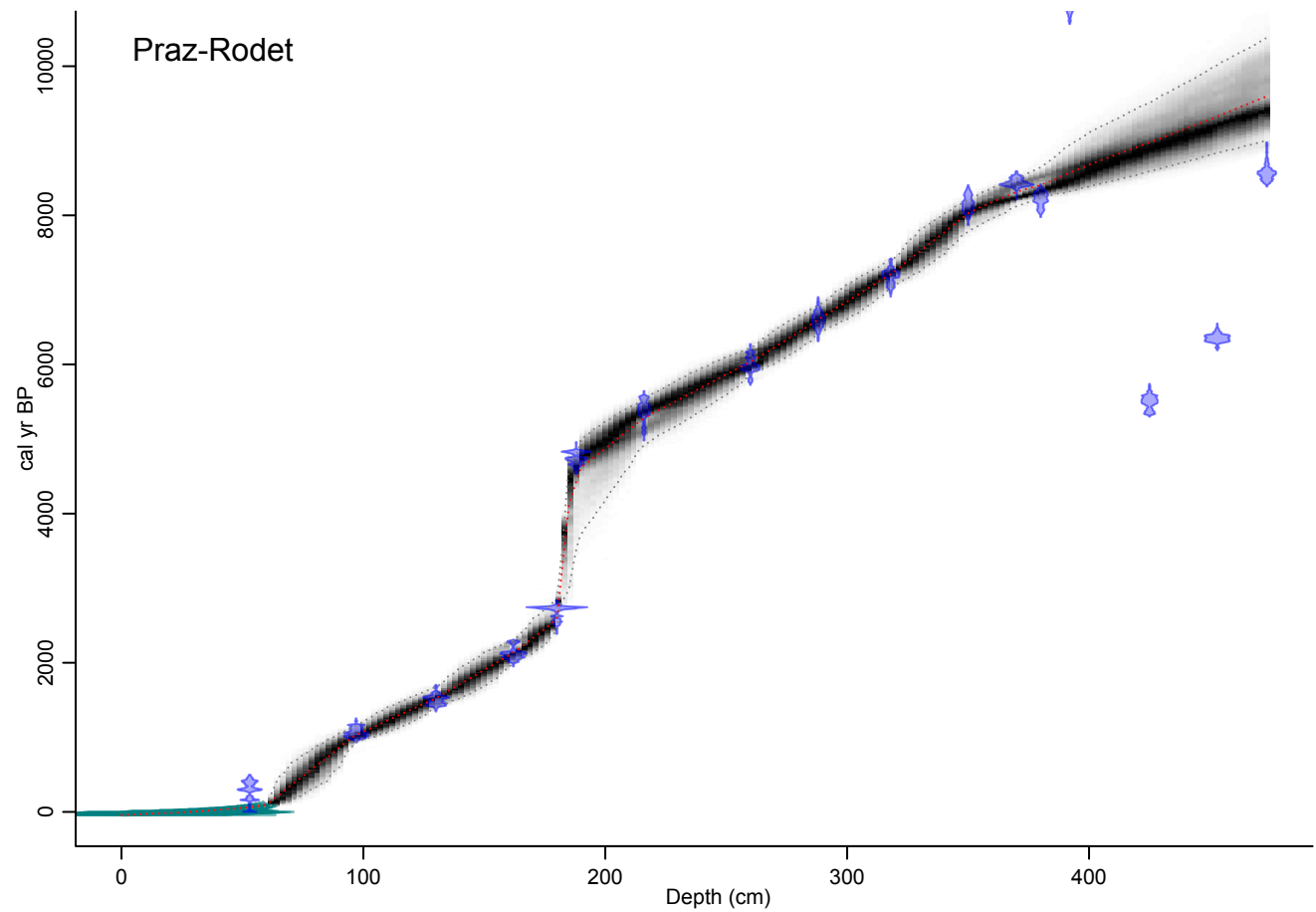
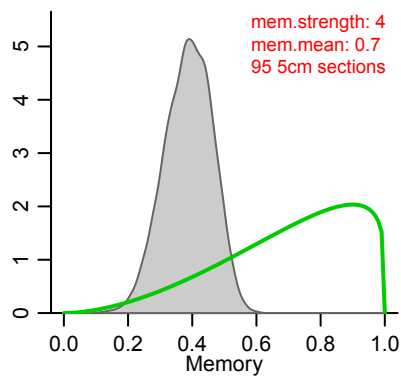
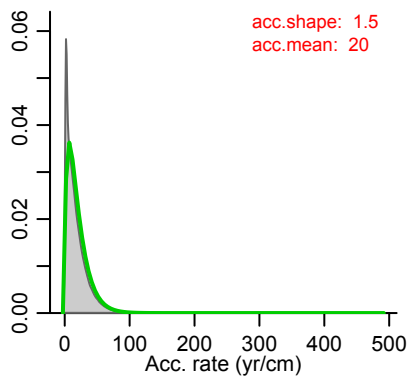
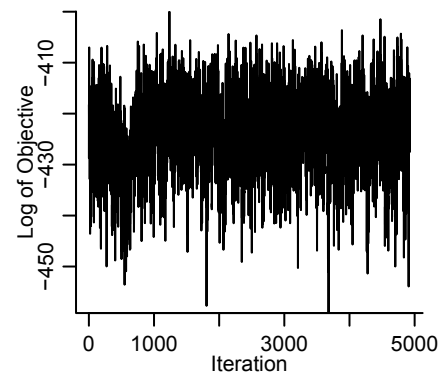


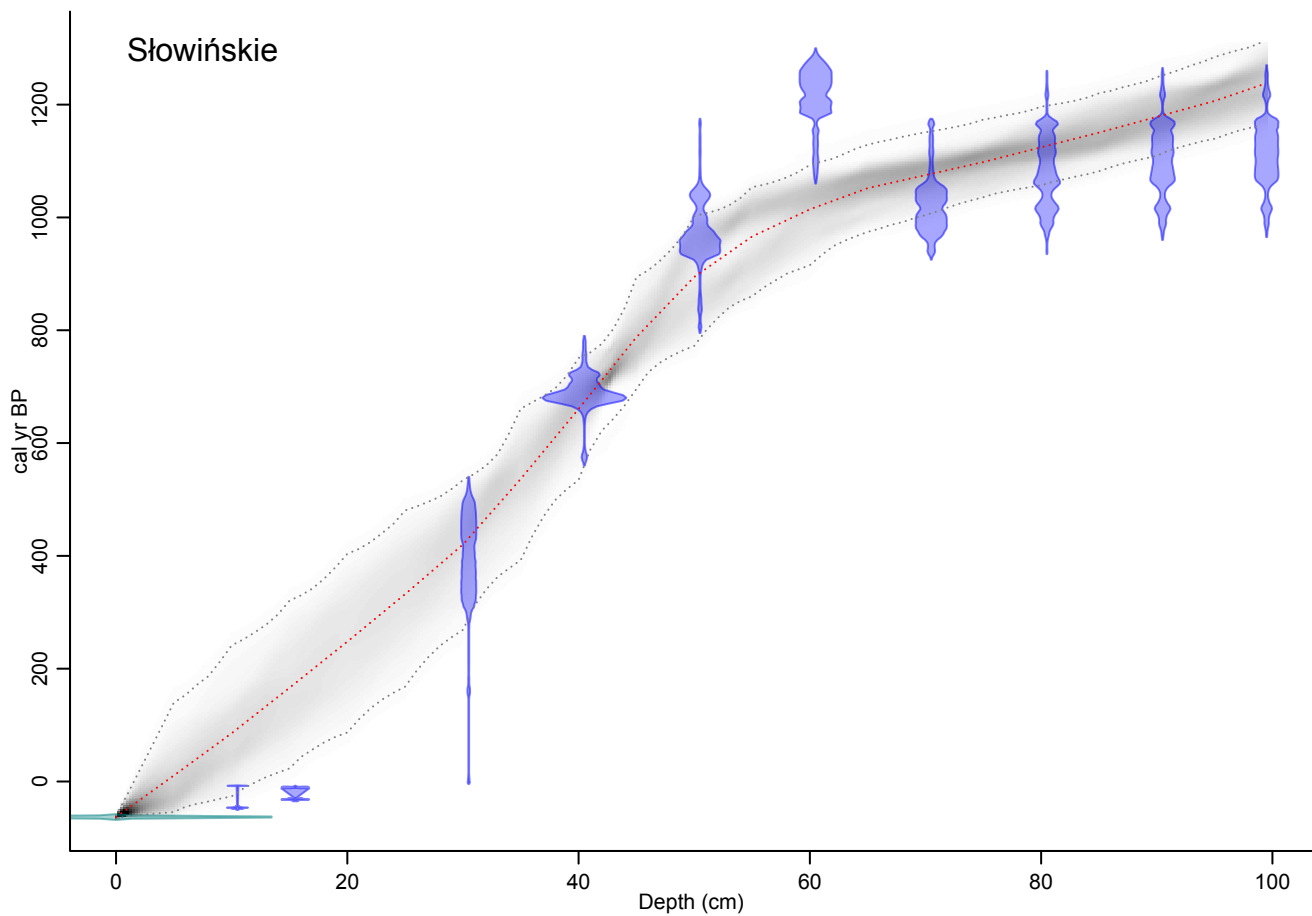
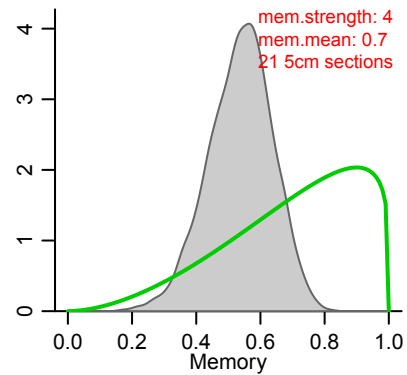
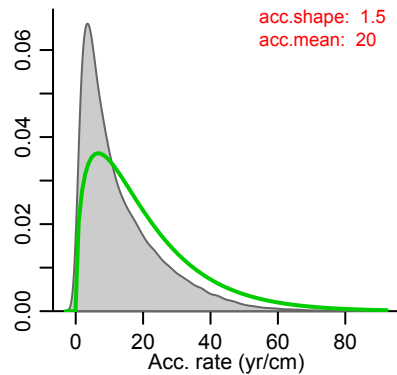
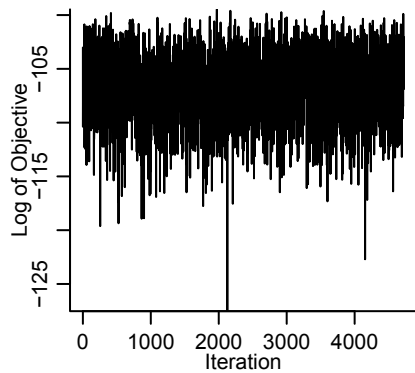
mem.strength: 4
mem.mean: 0.7
43 5cm sections

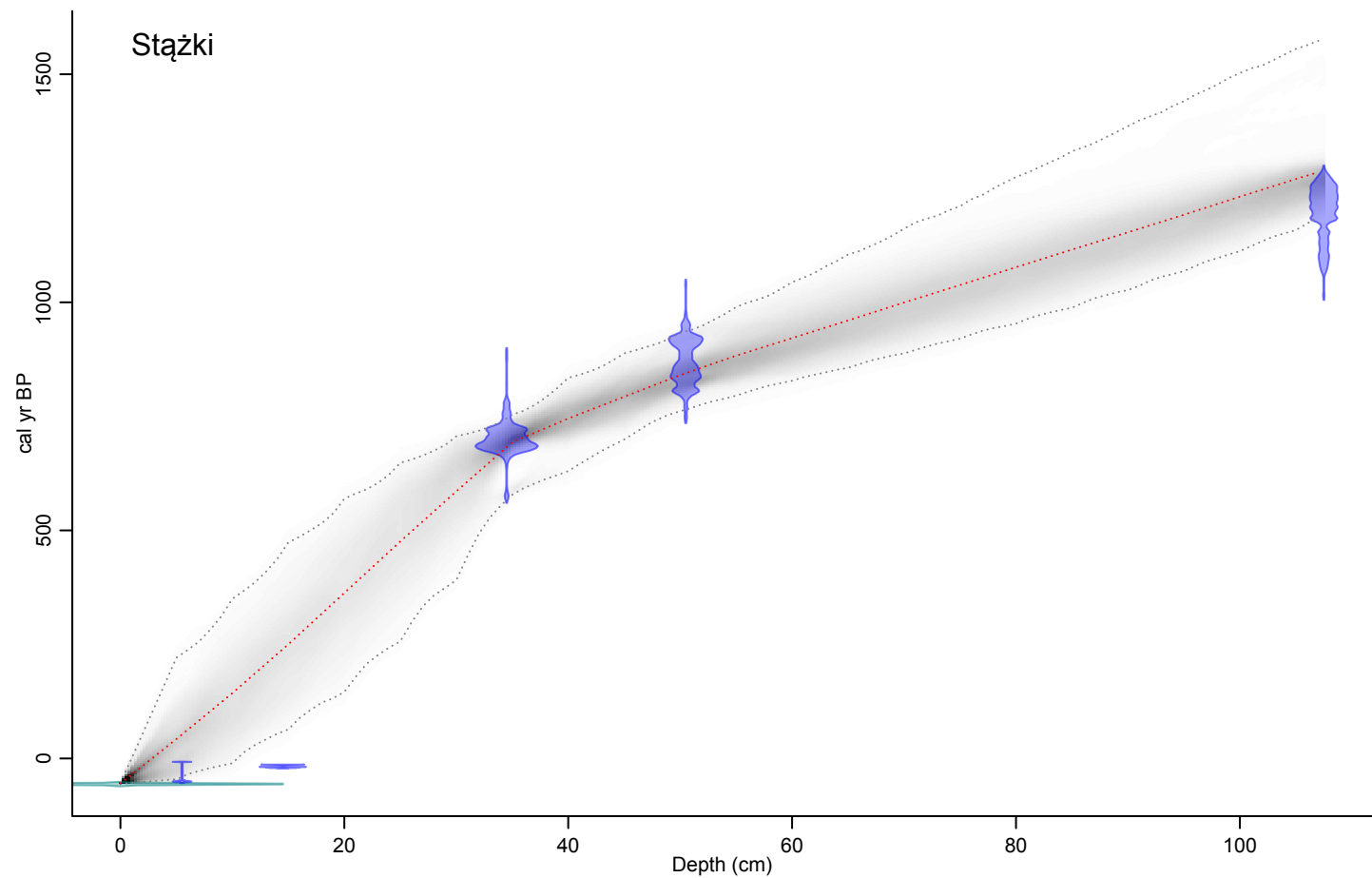
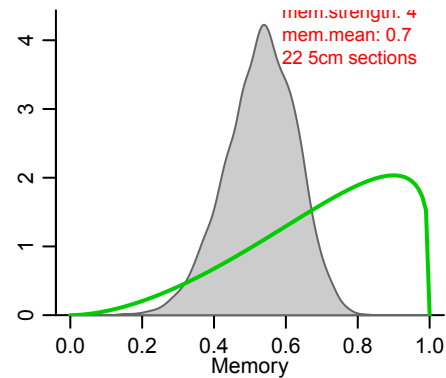
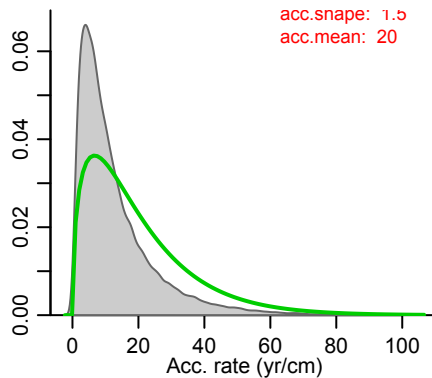
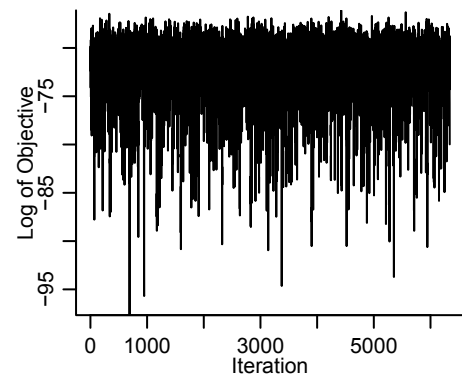


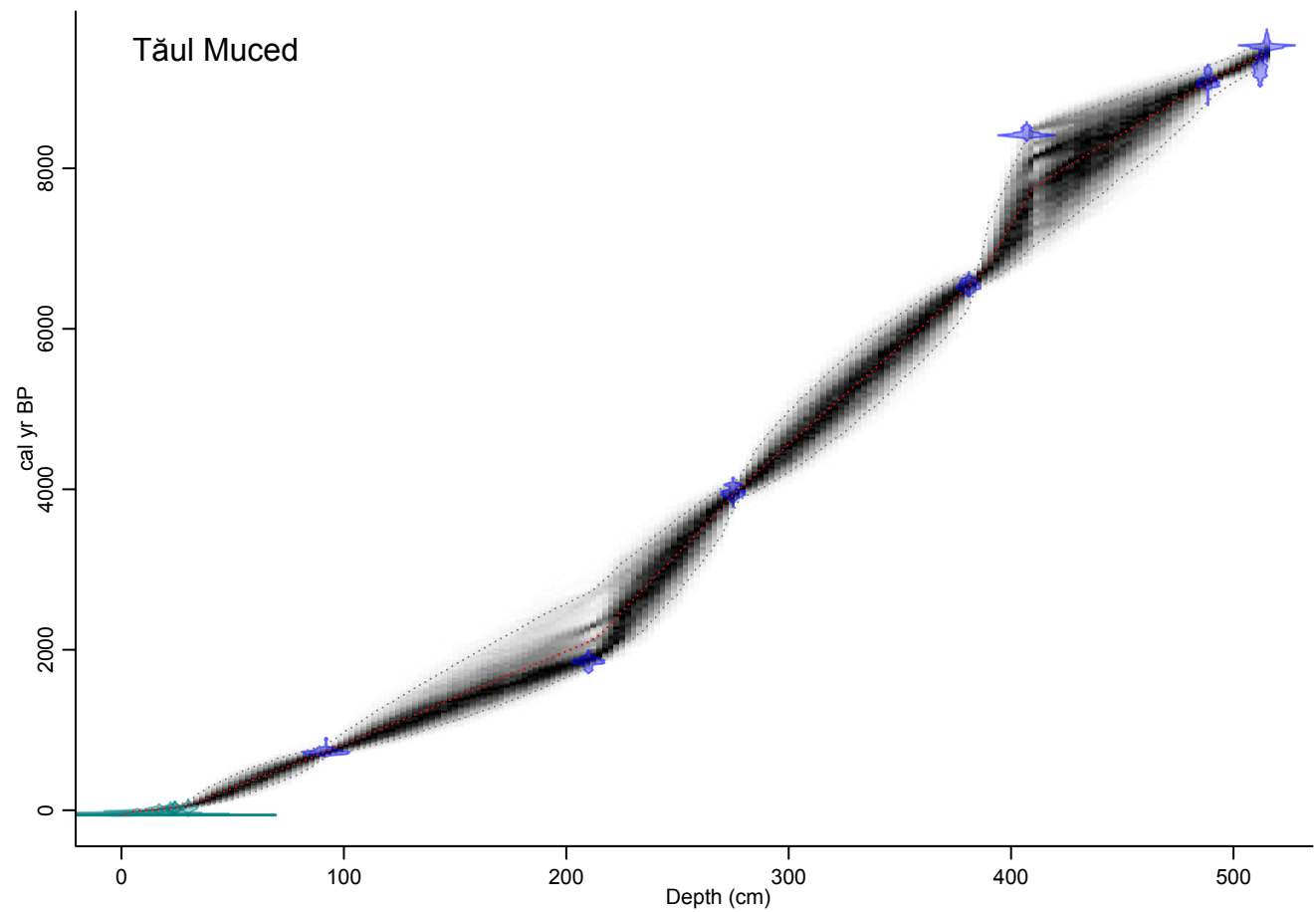
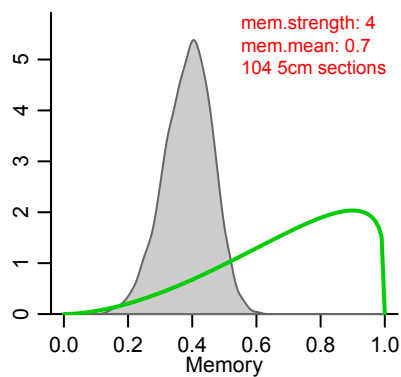
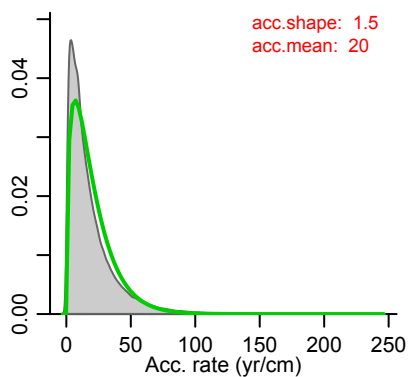
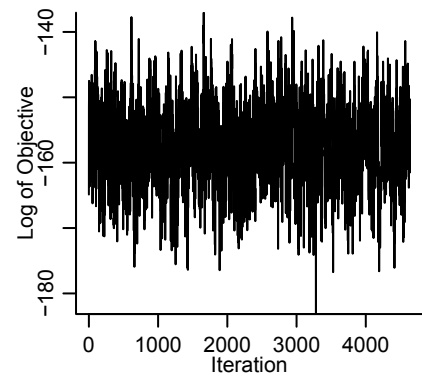


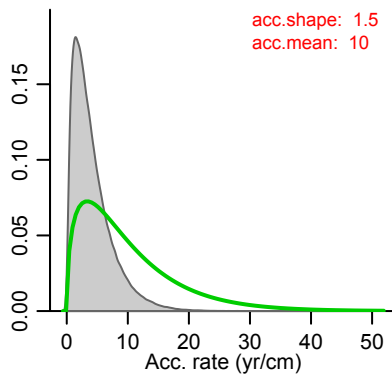
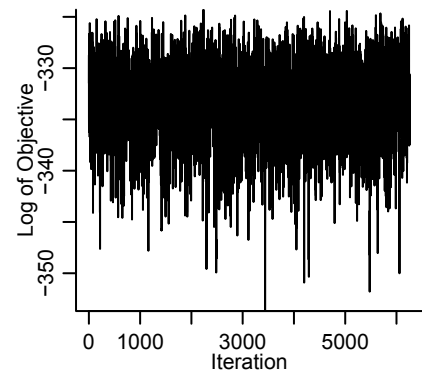




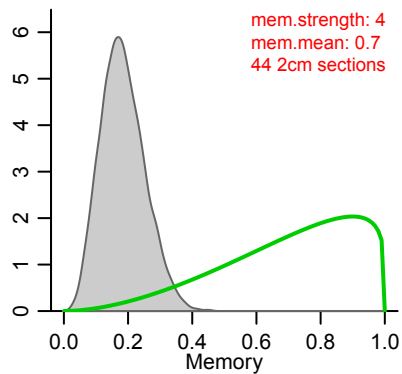




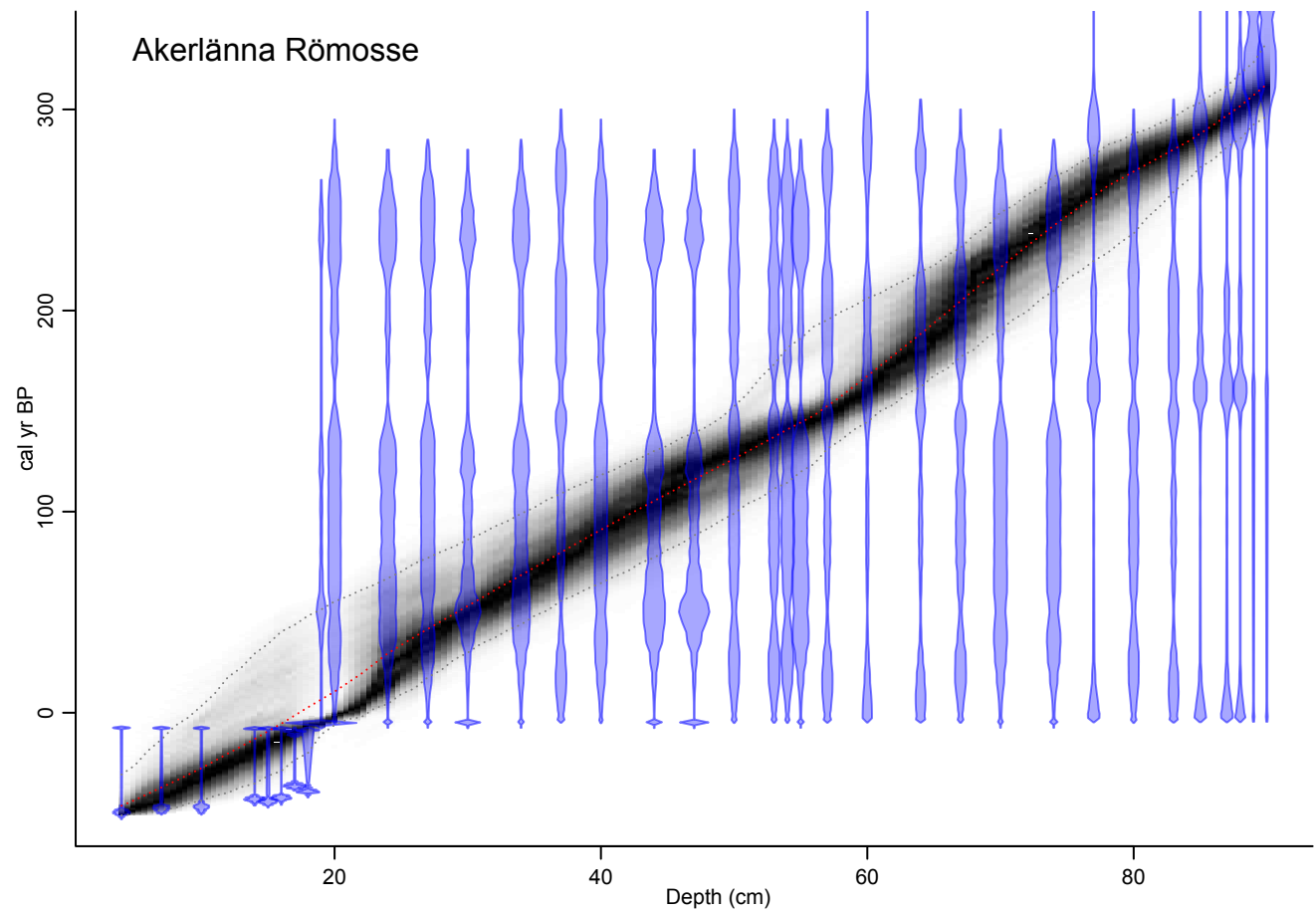


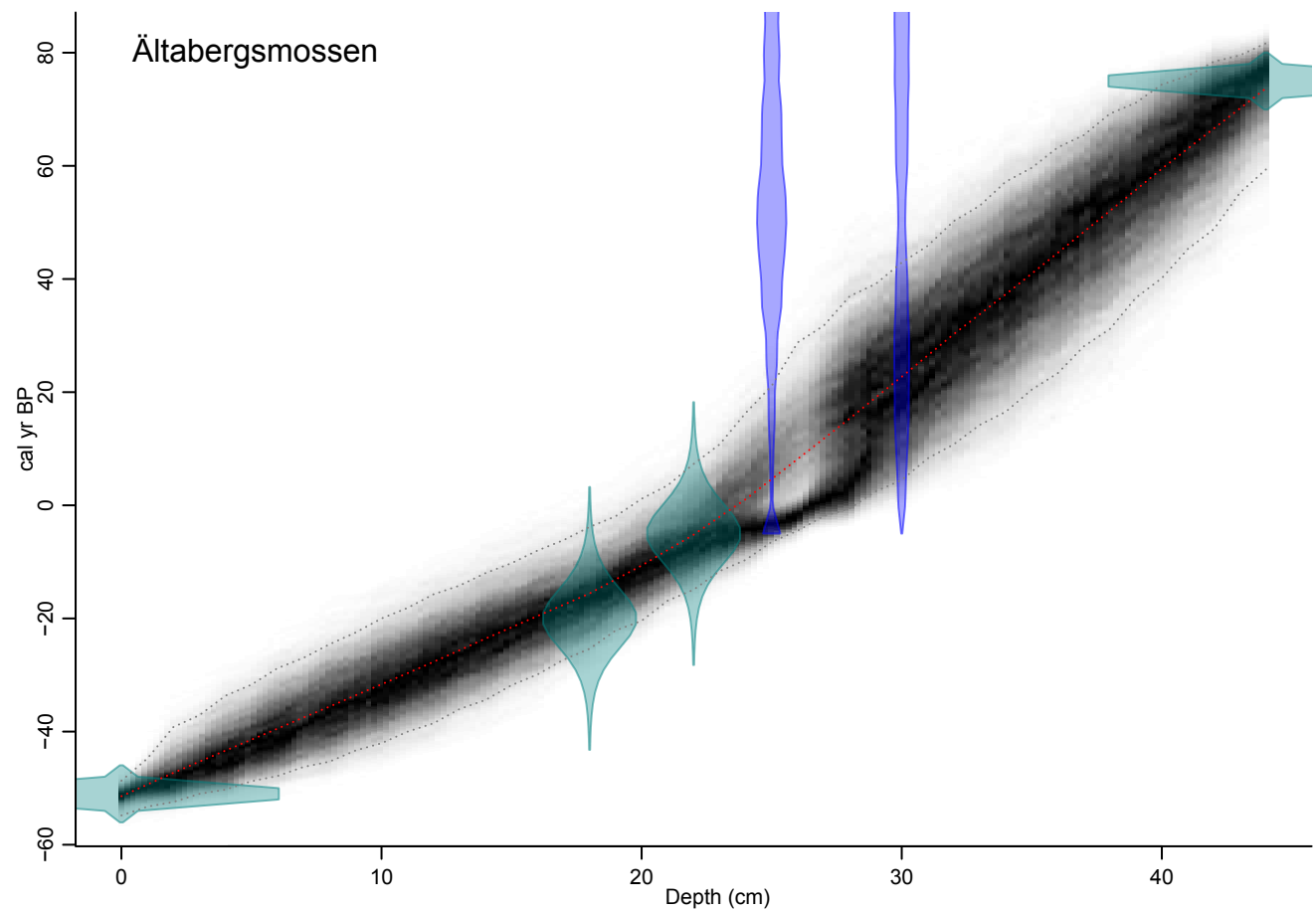
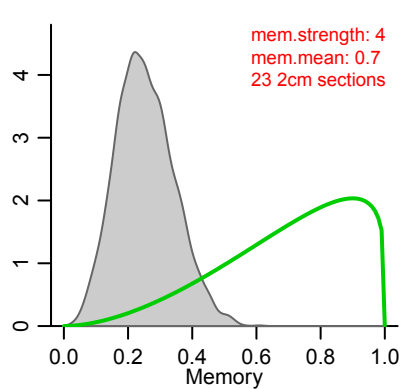
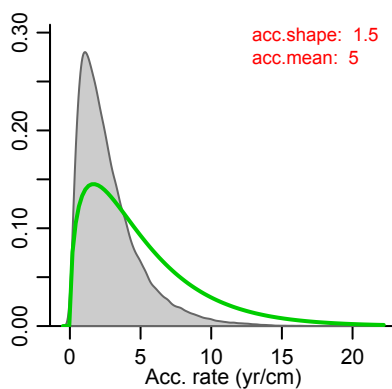
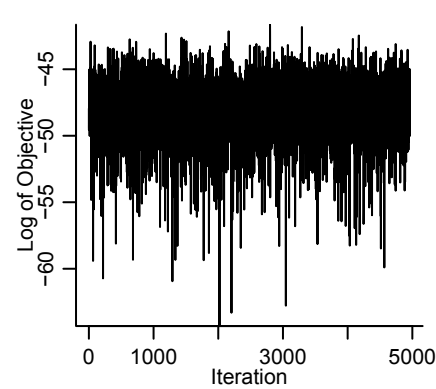


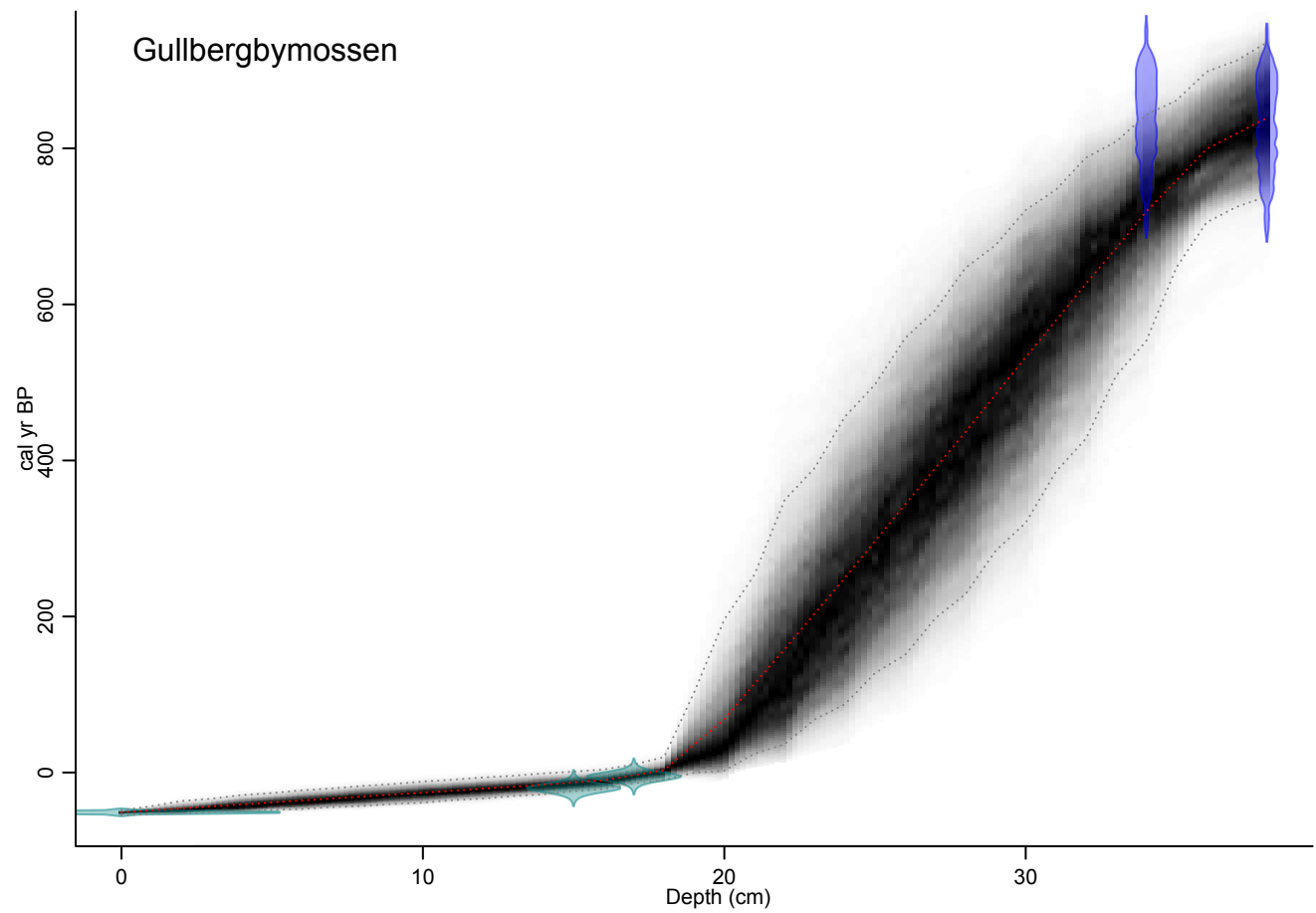
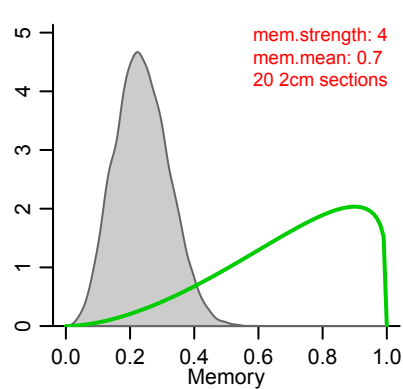
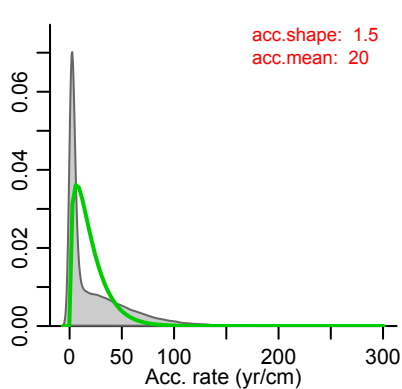
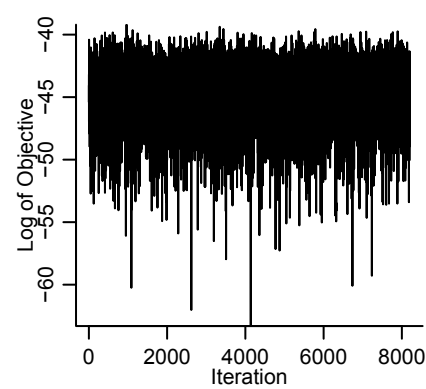
acc.shape: 1.5
acc.mean: 10

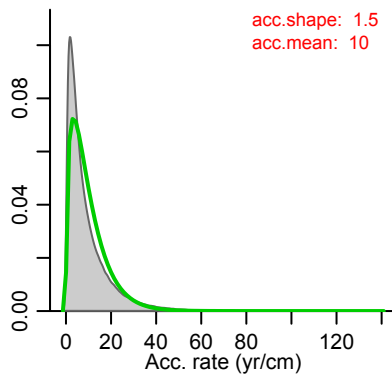
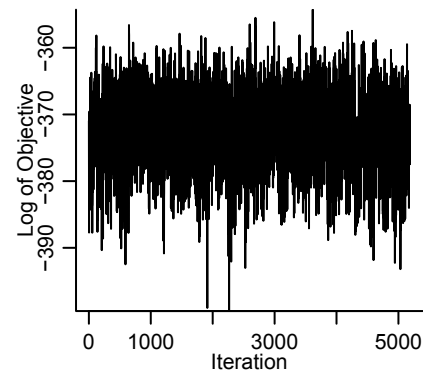


mem.strength: 4
mem.mean: 0.7
44 2cm sections

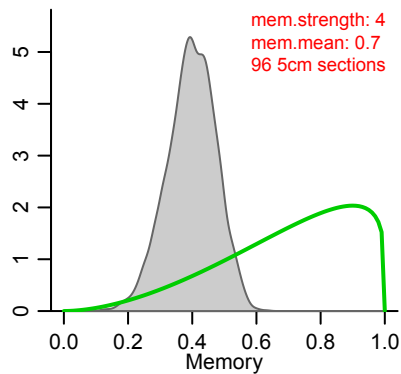




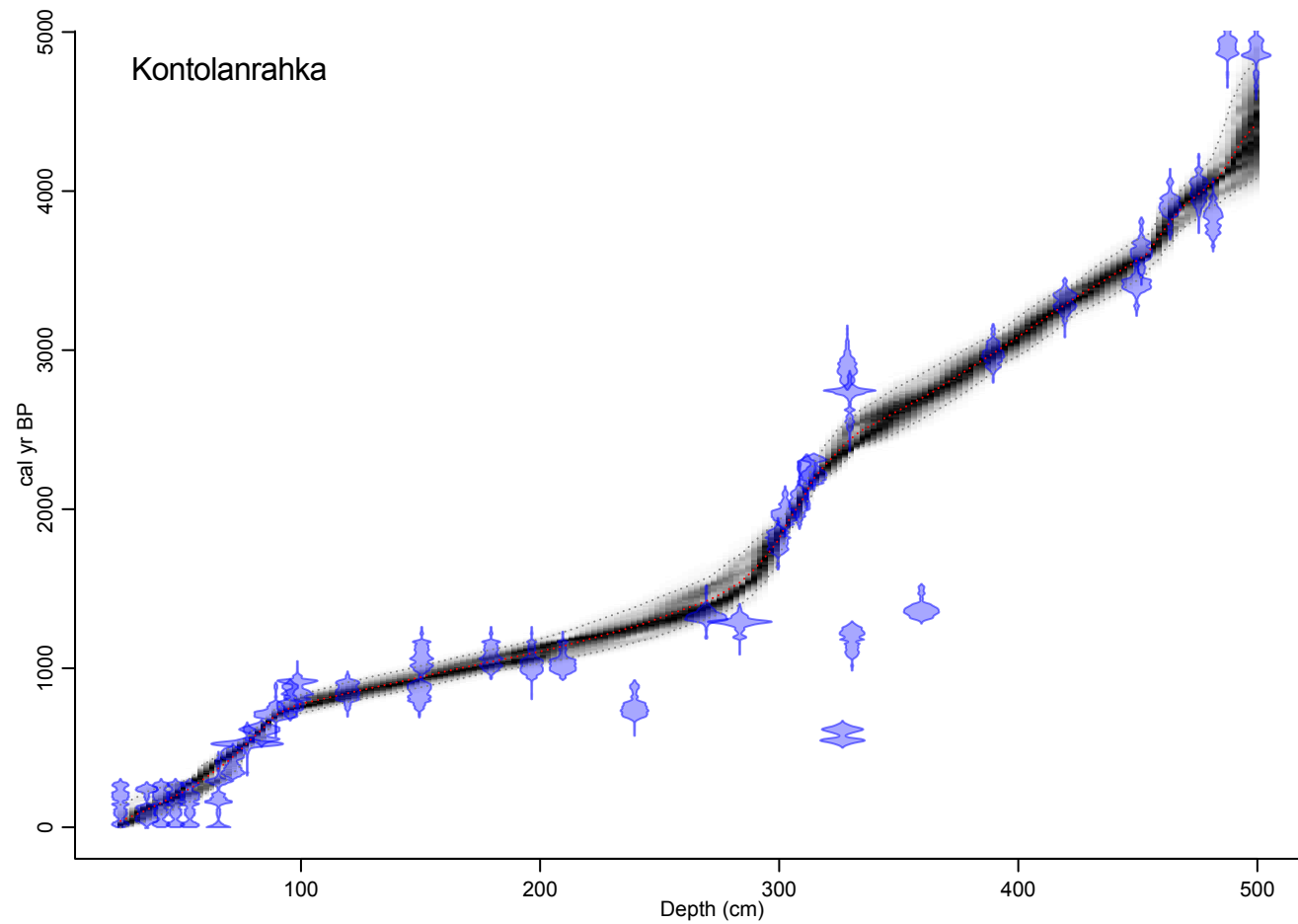


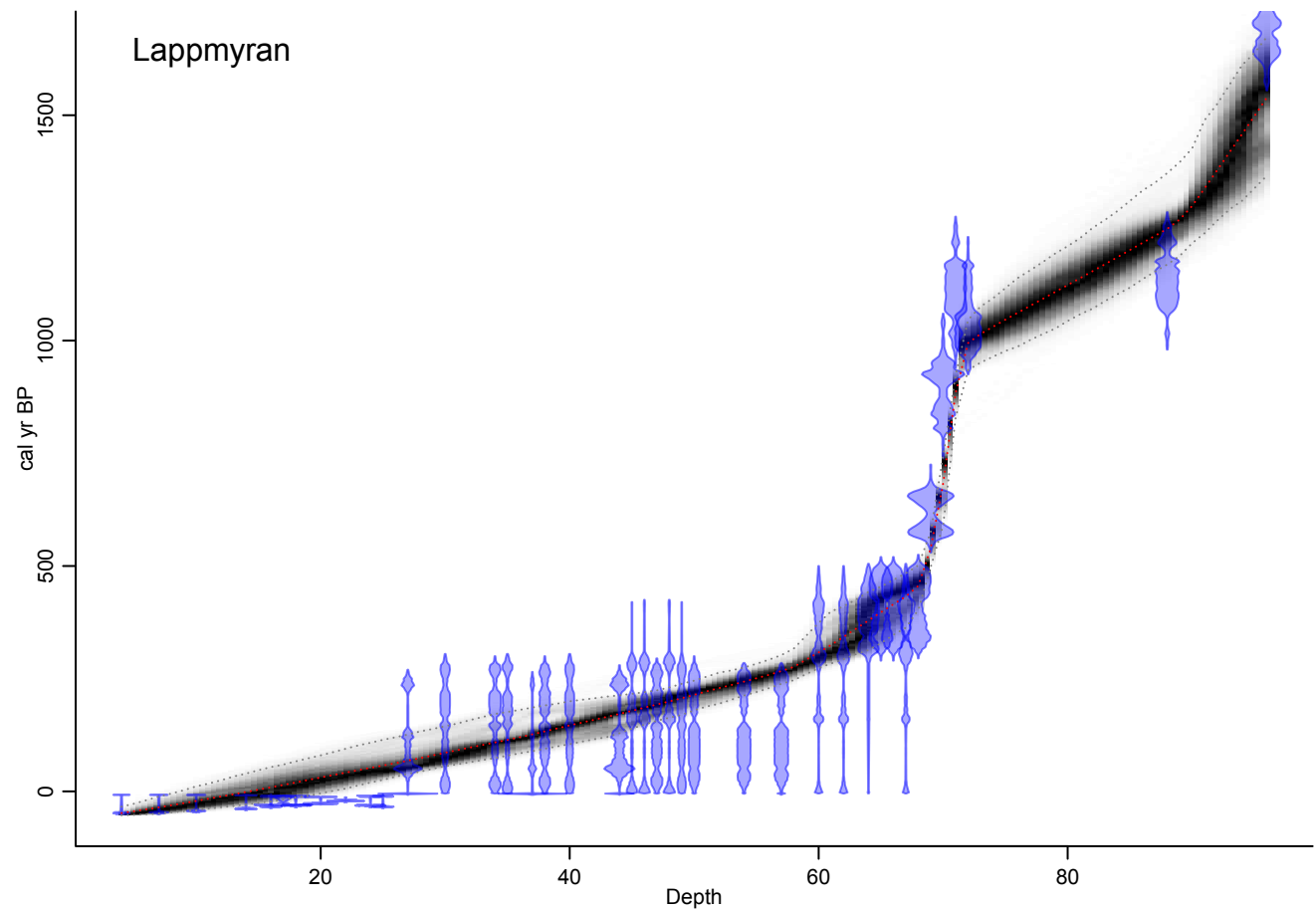
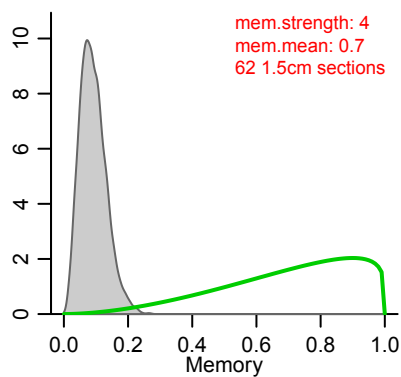
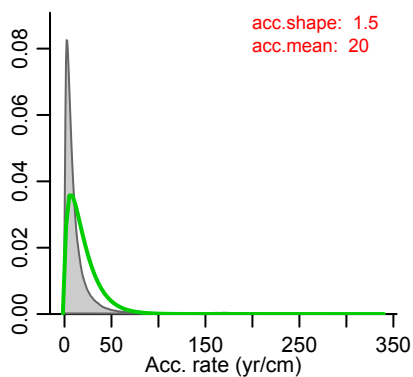
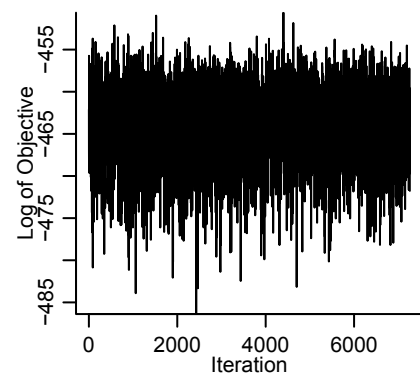


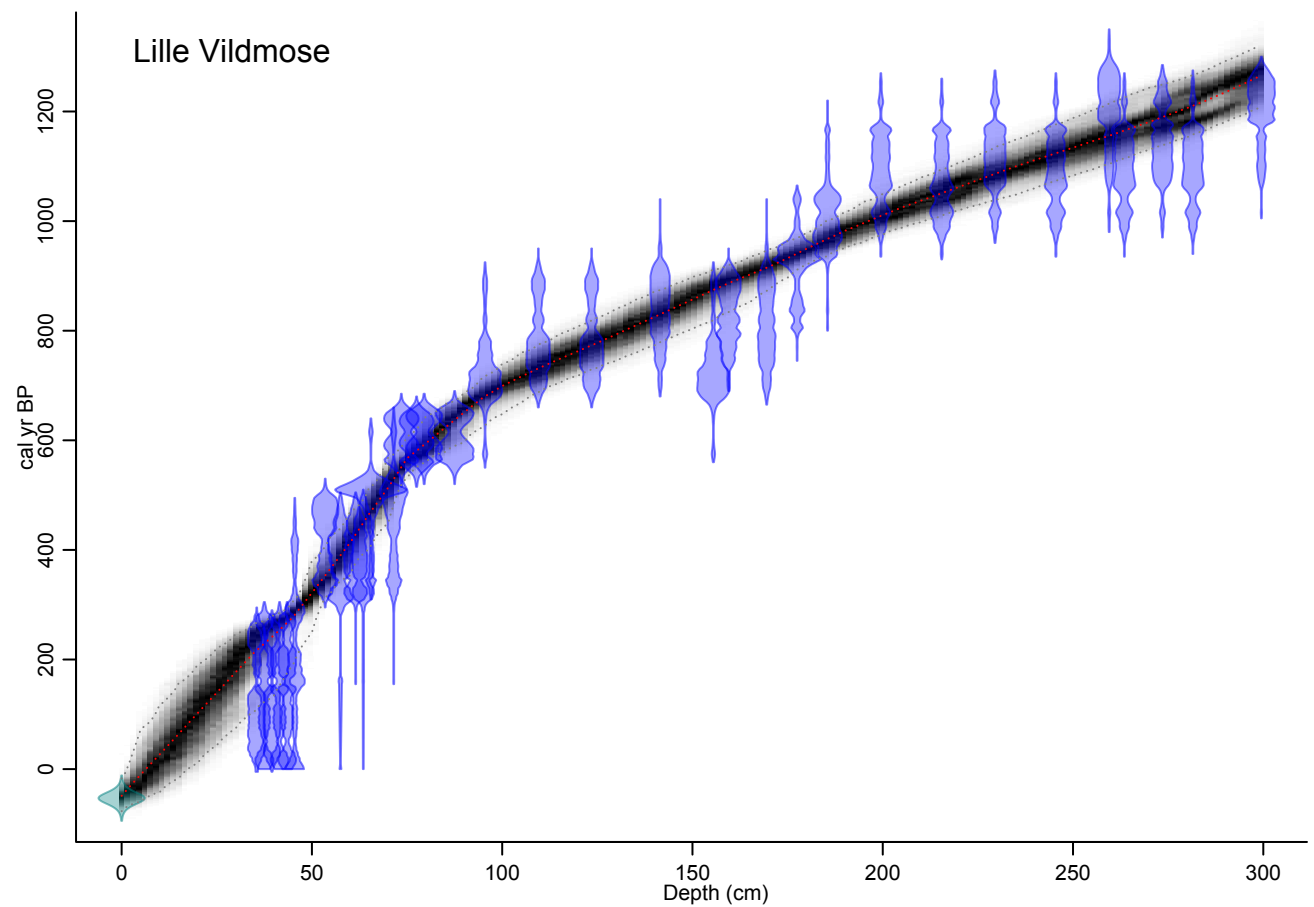
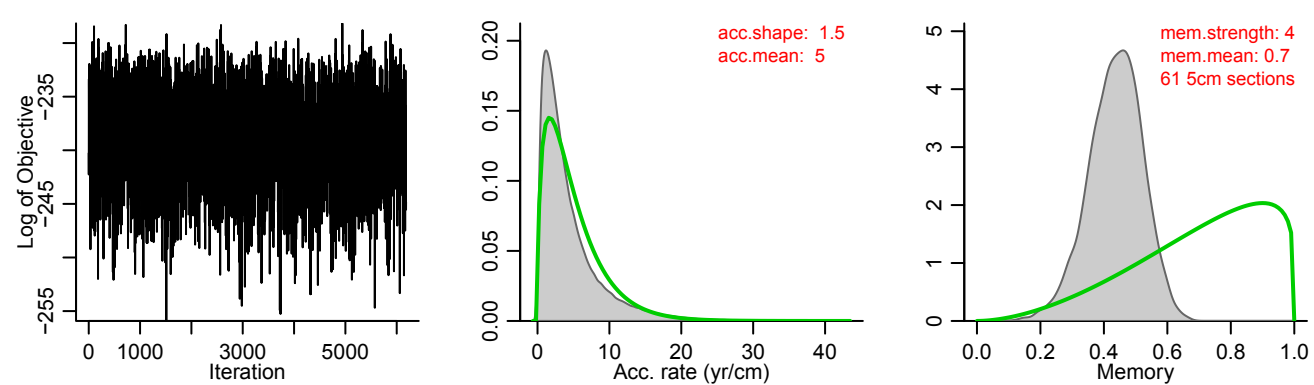
acc.shape: 1.5
acc.mean: 10

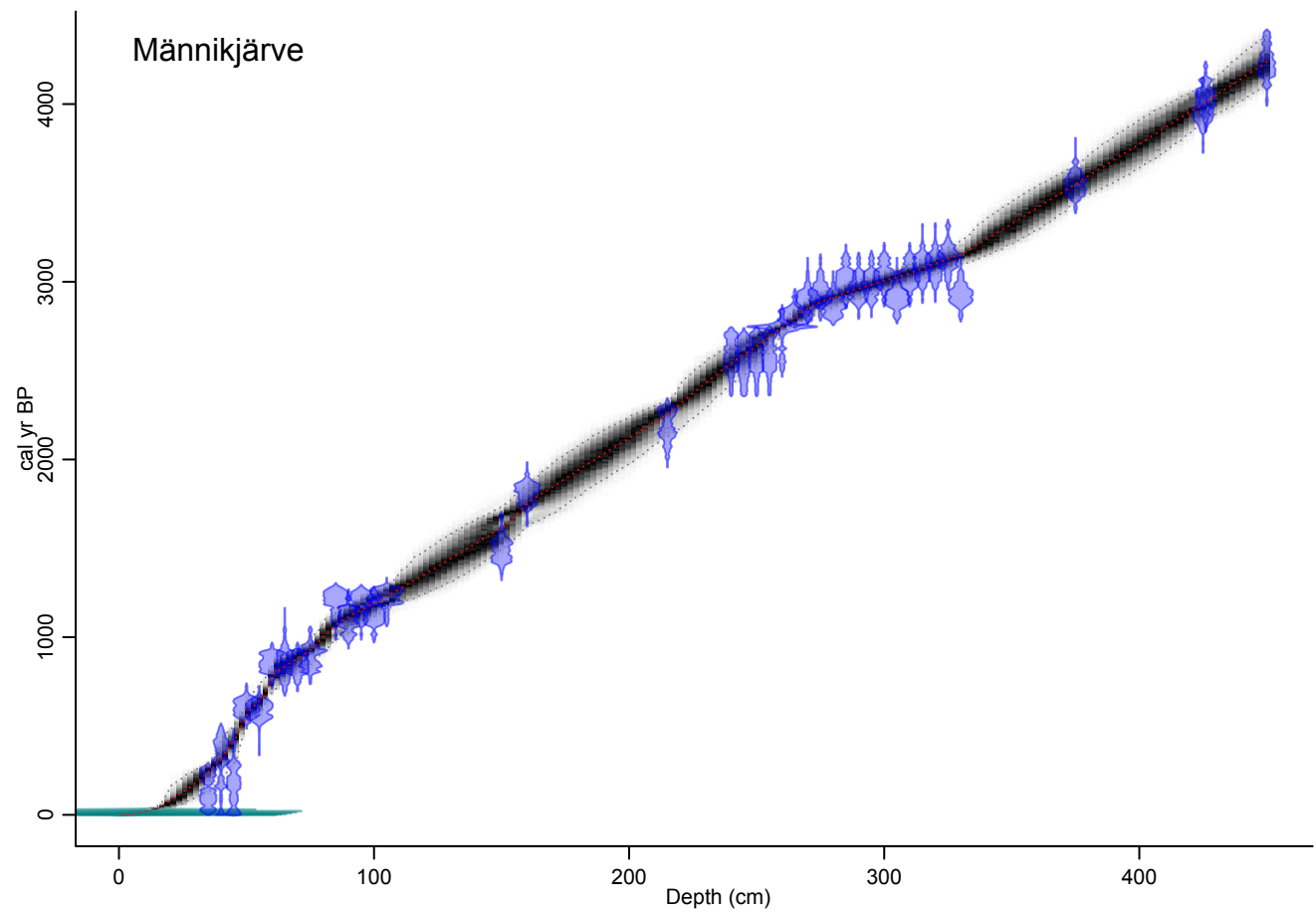
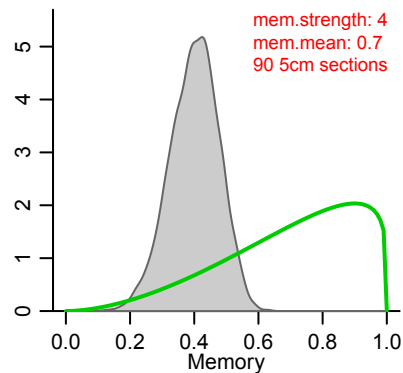
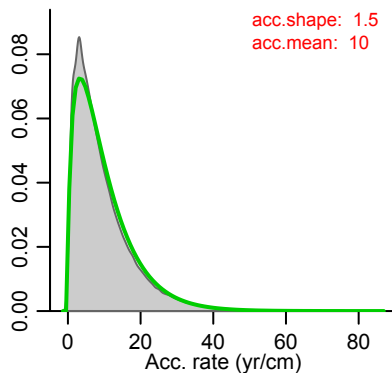
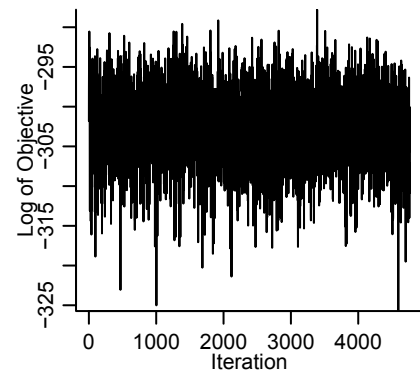


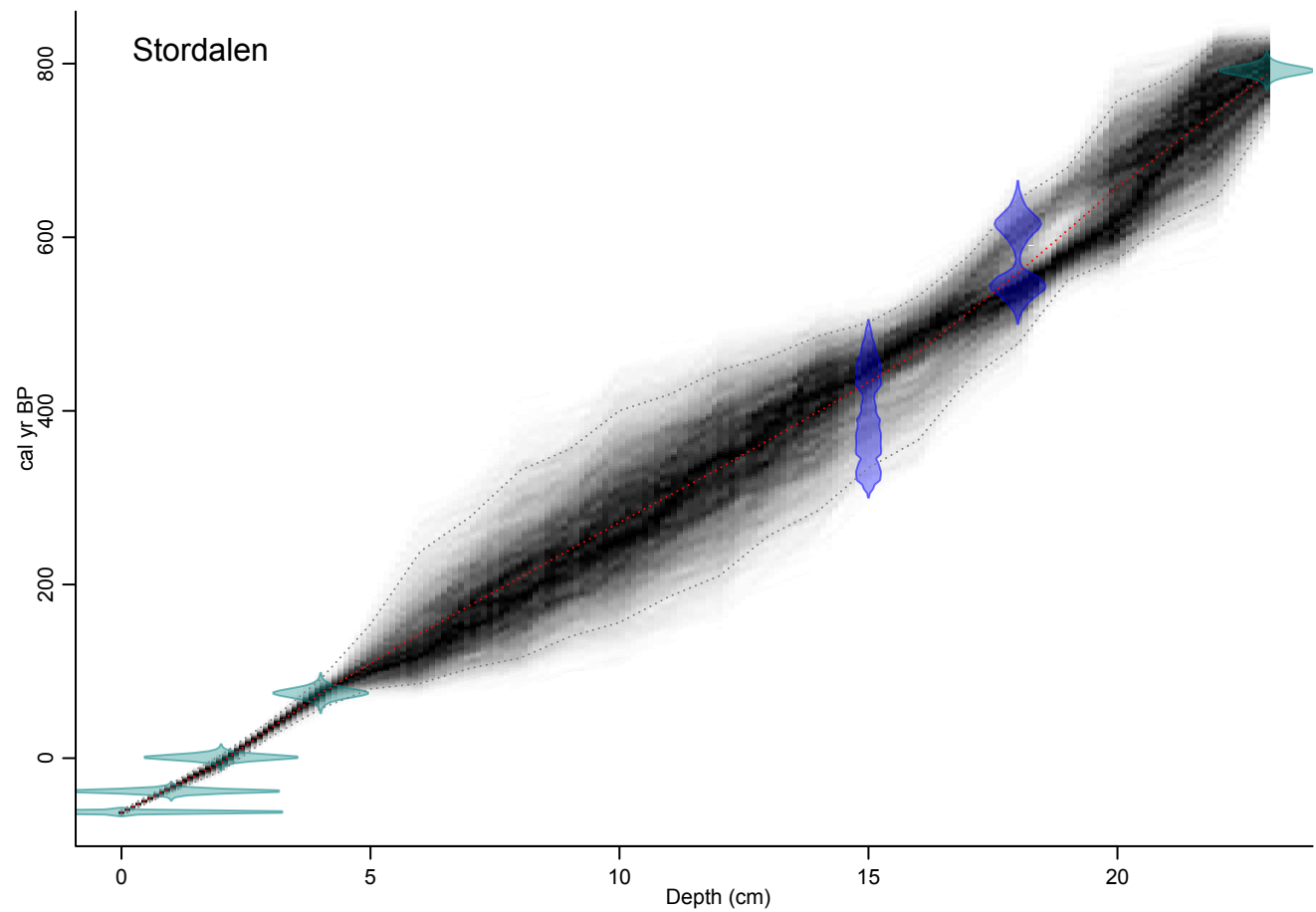
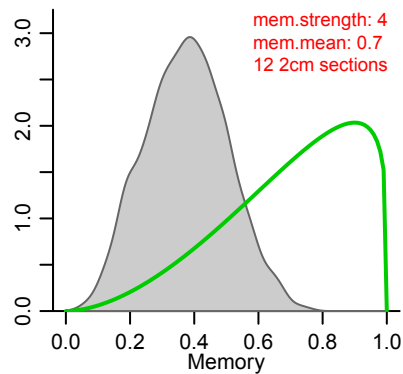
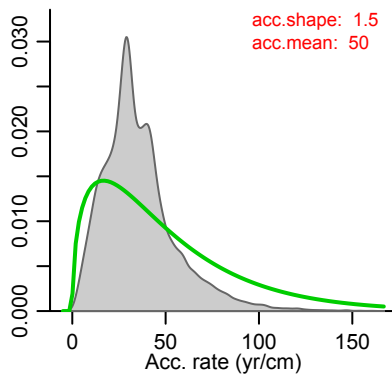
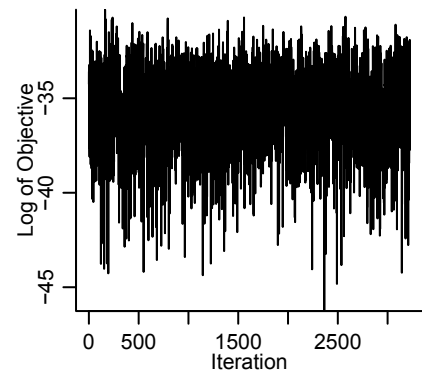
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96 5cm sections











Supplementary Section 6

Climate analysis

(A) Changes in summer mean temperatures and precipitation totals from CE 1851-2010 for Britain & Ireland, Scandinavia, Continental Europe, and the three regions combined. Data taken from NOAA-CIRES Twentieth Century Reanalysis (V2c) (Compo et al., 2011).

(B) Figure 2. Reconstructed changes in summer mean temperatures and precipitation totals from CE 1600-2000 for Britain & Ireland, Scandinavia, Continental Europe, and the three regions combined. Data taken from Luterbacher et al. (2004) for temperature and Pauling et al. (2006) for precipitation.

NB: Symbol shapes are used solely to indicate the three regions.

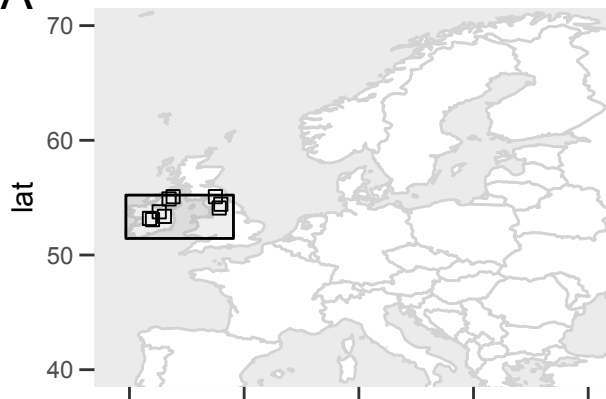
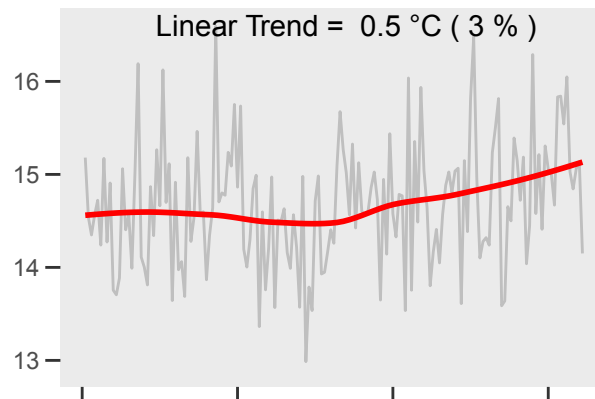
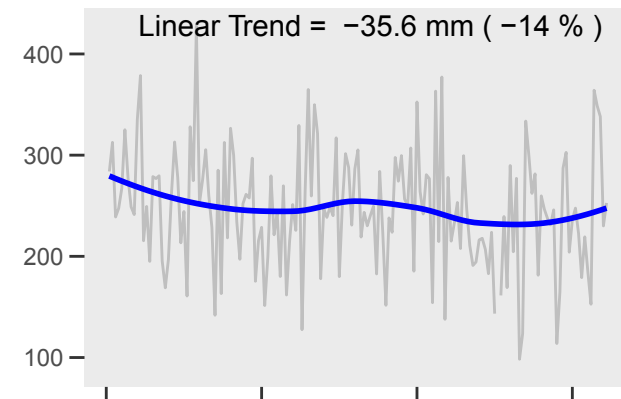
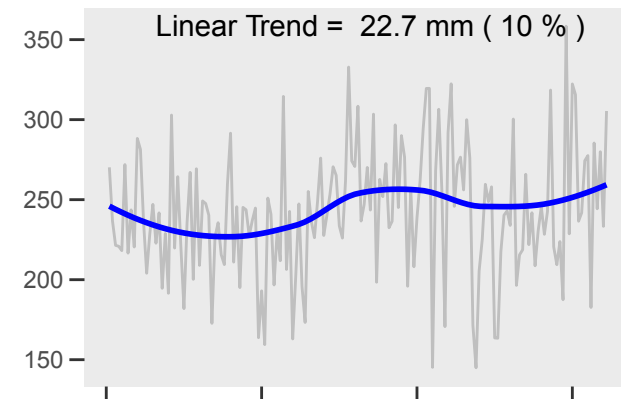
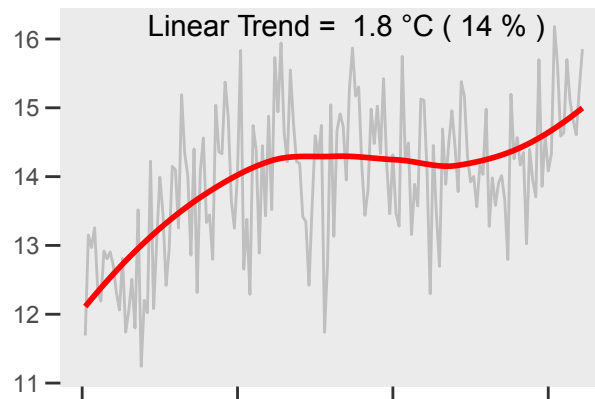
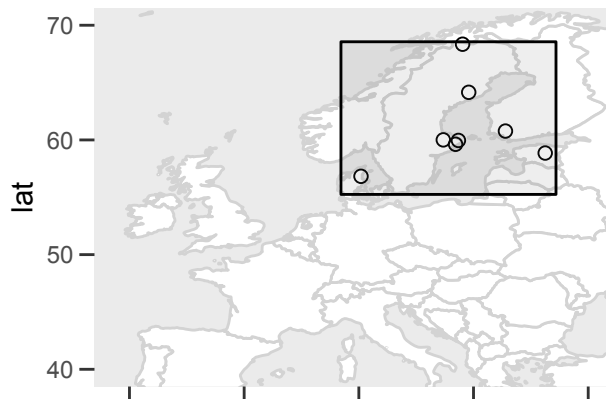
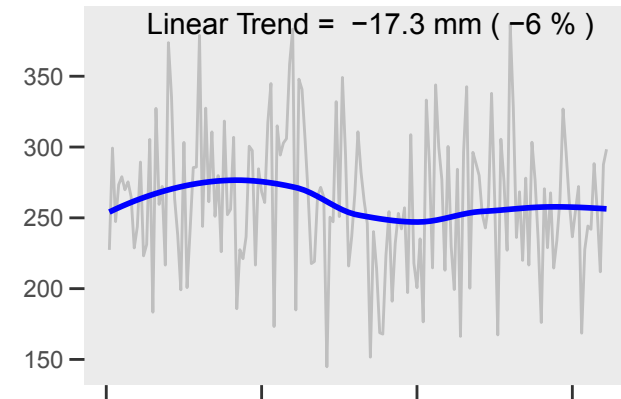
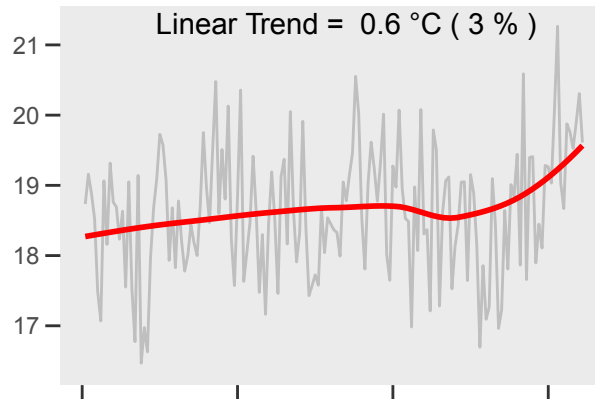
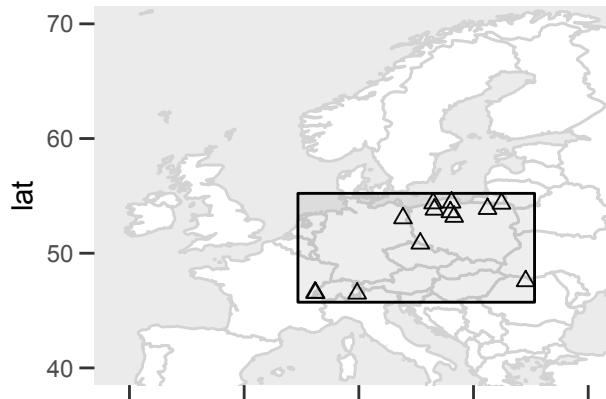
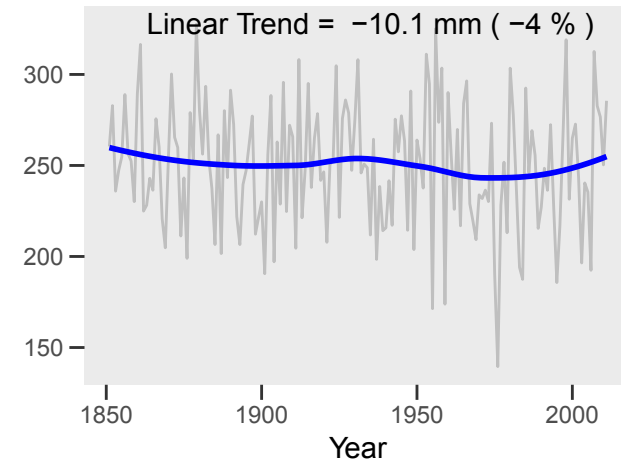
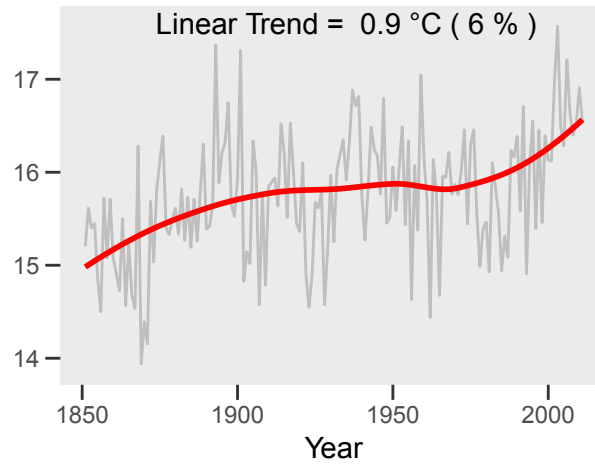
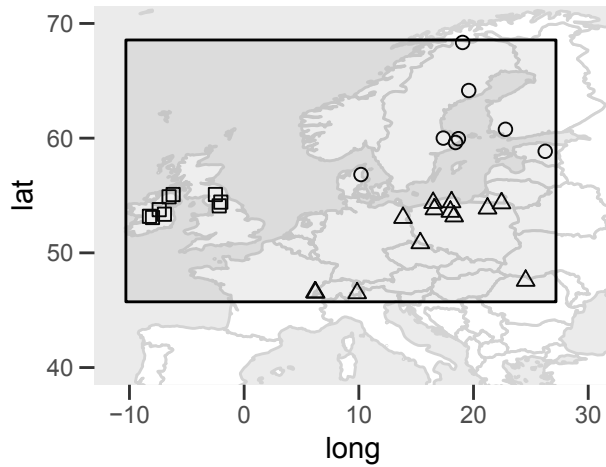
Loess functions with a span of 0.7 were used to generate smooth lines on each climate time series. Linear regression statistics (linear trend) are also shown.

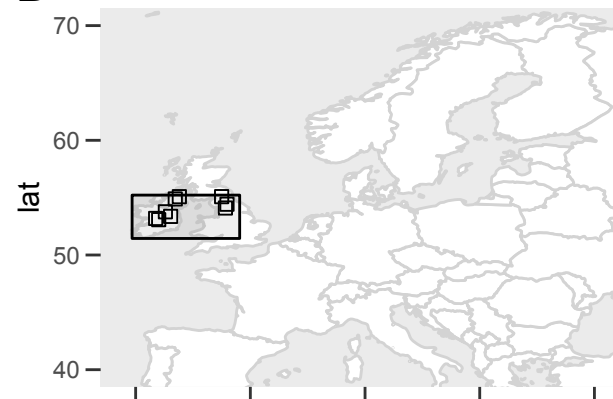
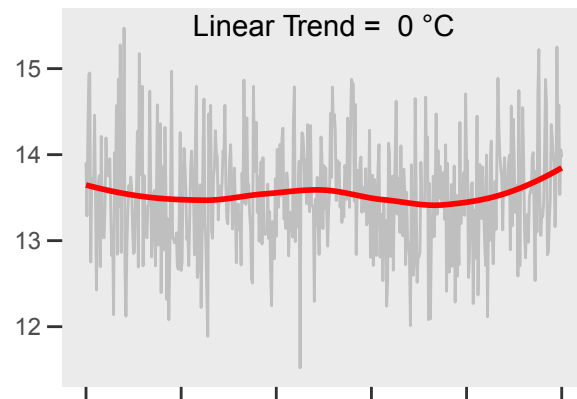
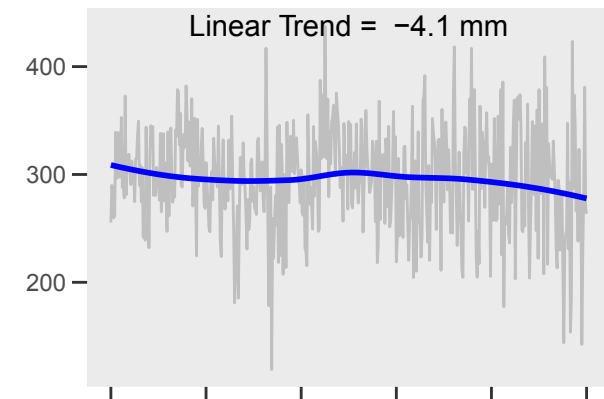
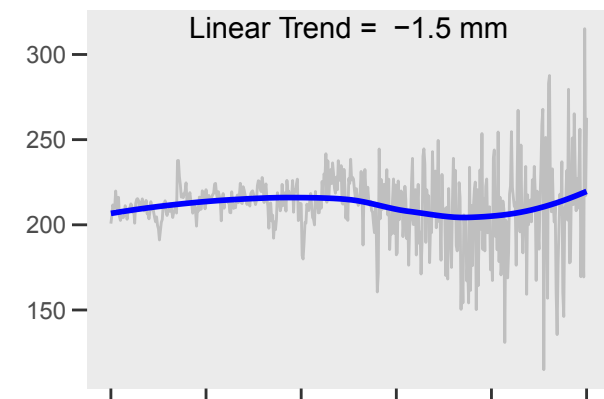
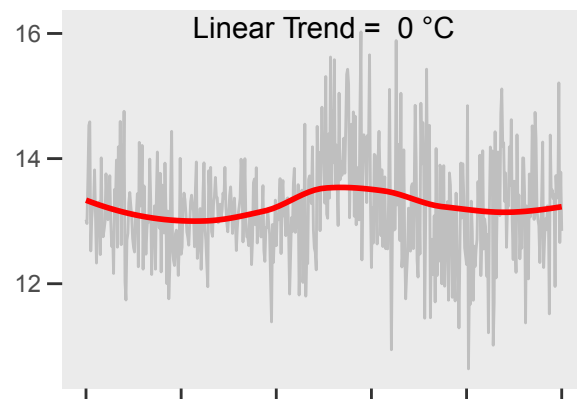
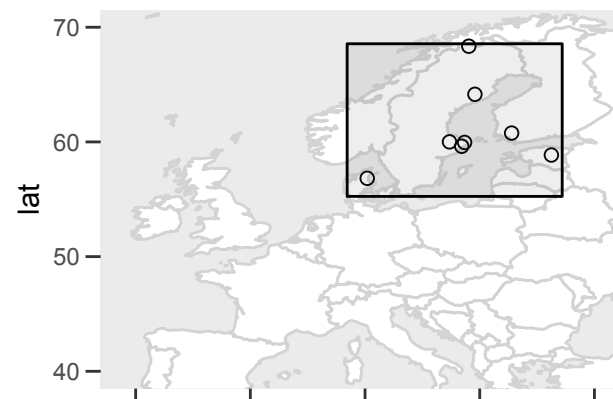
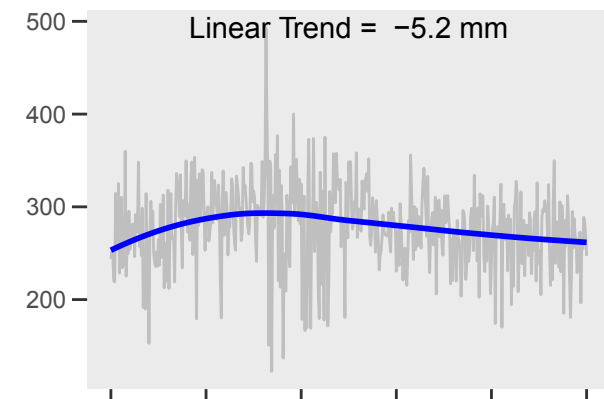
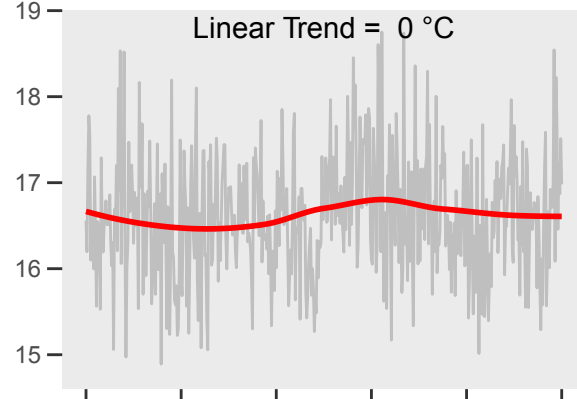
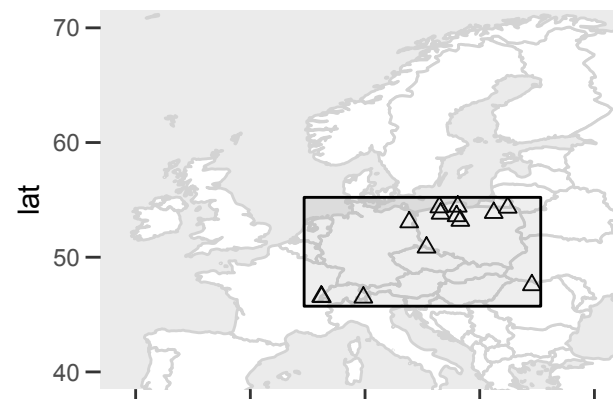
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Compo, G. P. et al. The twentieth century reanalysis project. *Quarterly Journal of the Royal Meteorological Society* **137**, 1–28 (2011).

Luterbacher, J., Dietrich, D., Xoplaki, E., Grosjean, M. & Wanner, H. European seasonal and annual temperature variability, trends, and extremes since 1500. *Science* **303**, 1499–1503 (2004).

Pauling, A., Luterbacher, J., Casty, C. & Wanner, H. Five hundred years of gridded high-resolution precipitation reconstructions over Europe and the connection to large-scale circulation. *Clim. Dyn.* **26**, 387–405 (2006).

A**Britain & Ireland****Temperatures (°C)****Precipitation (mm)****Scandinavia****Continental Europe****All Sites**

B**Britain & Ireland****Temperatures (°C)****Precipitation (mm)****Scandinavia****Continental Europe****All Sites**