

THE ENVIRONMENT CHANGES AND CHRONOLOGY OF THE LATE VISTULIAN (WEICHSELIAN) SEDIMENTS IN THE RĄBIEŃ MIRE

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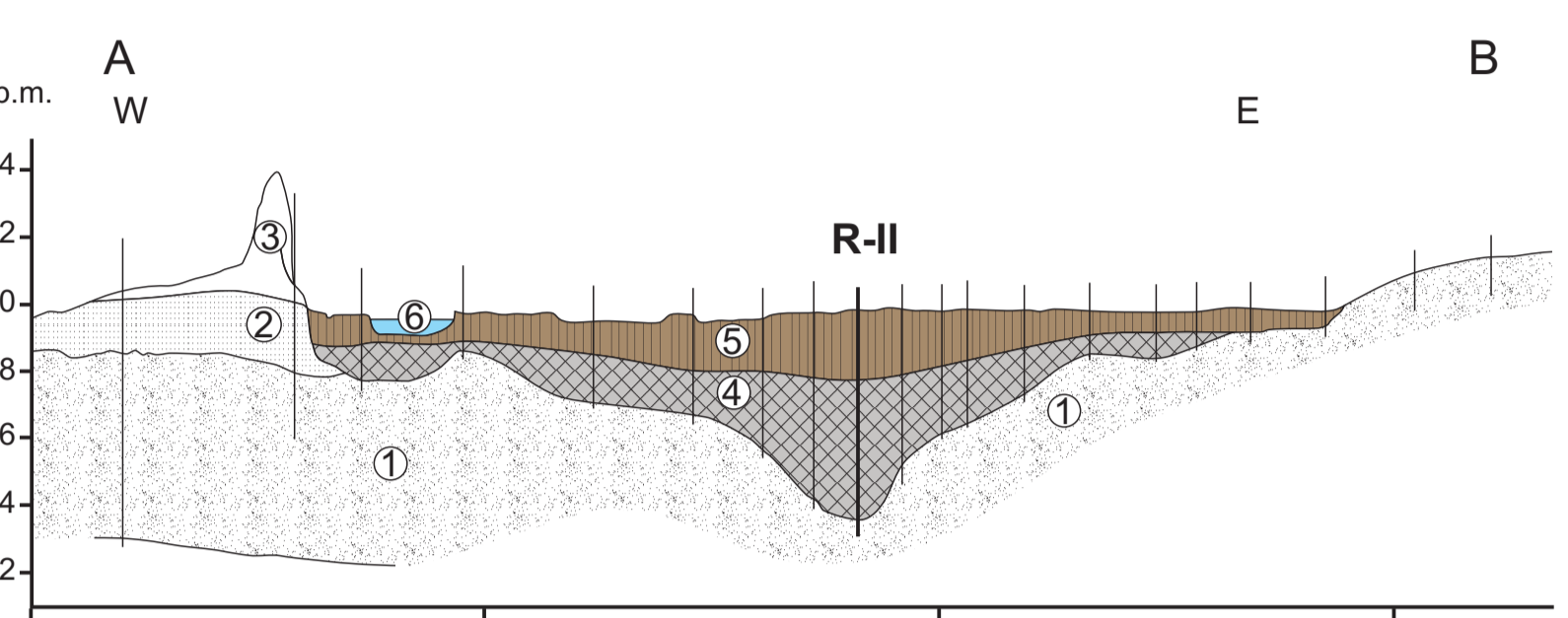
LOCATION and DESCRIPTION:

Rąbień mire is located in central Poland, in the morainic Łask Upland, about 11 km to the west of Łódź. The mire is situated in an oval depression surrounded by dunes. The deposits contain mainly biogenic sediments, consisting of gyttja and peat. Lake sediments form the base of the profile (6.2-1.8 m) are covered with peat. From the deepest part of the mire, a 6.2 m core was taken (R-II). Rąbień mire was previously the subject of palaeobotanical and geological studies (Balwierz 2005; Kloss 2005; Kloss and Żurek 2005). These studies indicate that gyttja deposition started during the Oldest Dryas and continued to present day.

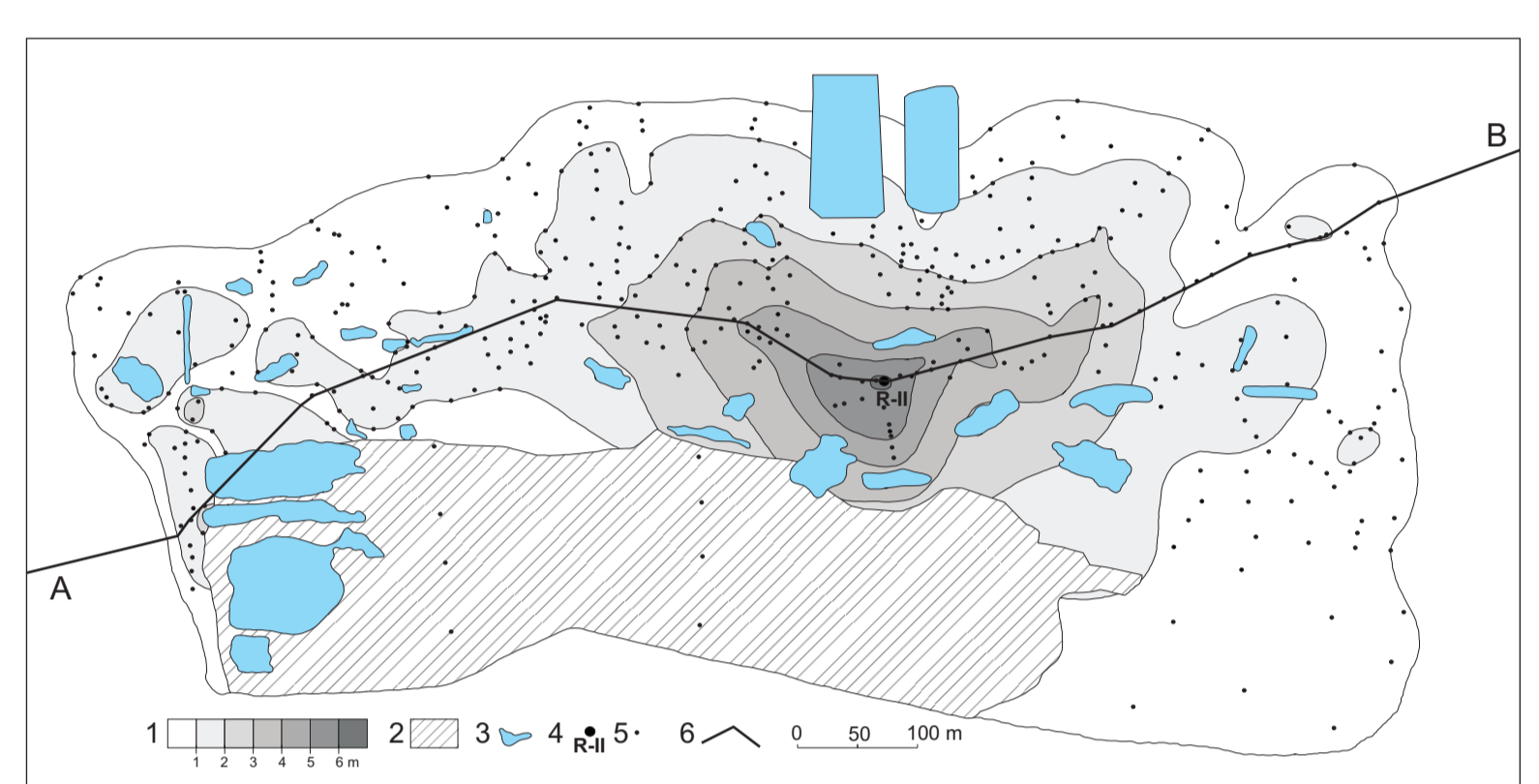
The present palaeoecological and chronological study focuses on the lower section of the R-II sequence, which is a fairly complete sedimentary record from approximately 15 to 12 ka cal BP.



Geomorphological sketch Rąbień peatland (Forysiak, 2012)
1 – fluvio-glacial hillocks; 2 – fluvial-periglacial plains; 3 – valley bottoms; 4 – aeolian sand sheets; 5 – dunes; 6 – slopes; 7 – denudational valleys; 8 – peatland; 9 – streams; 10 – line of geological cross-section AB



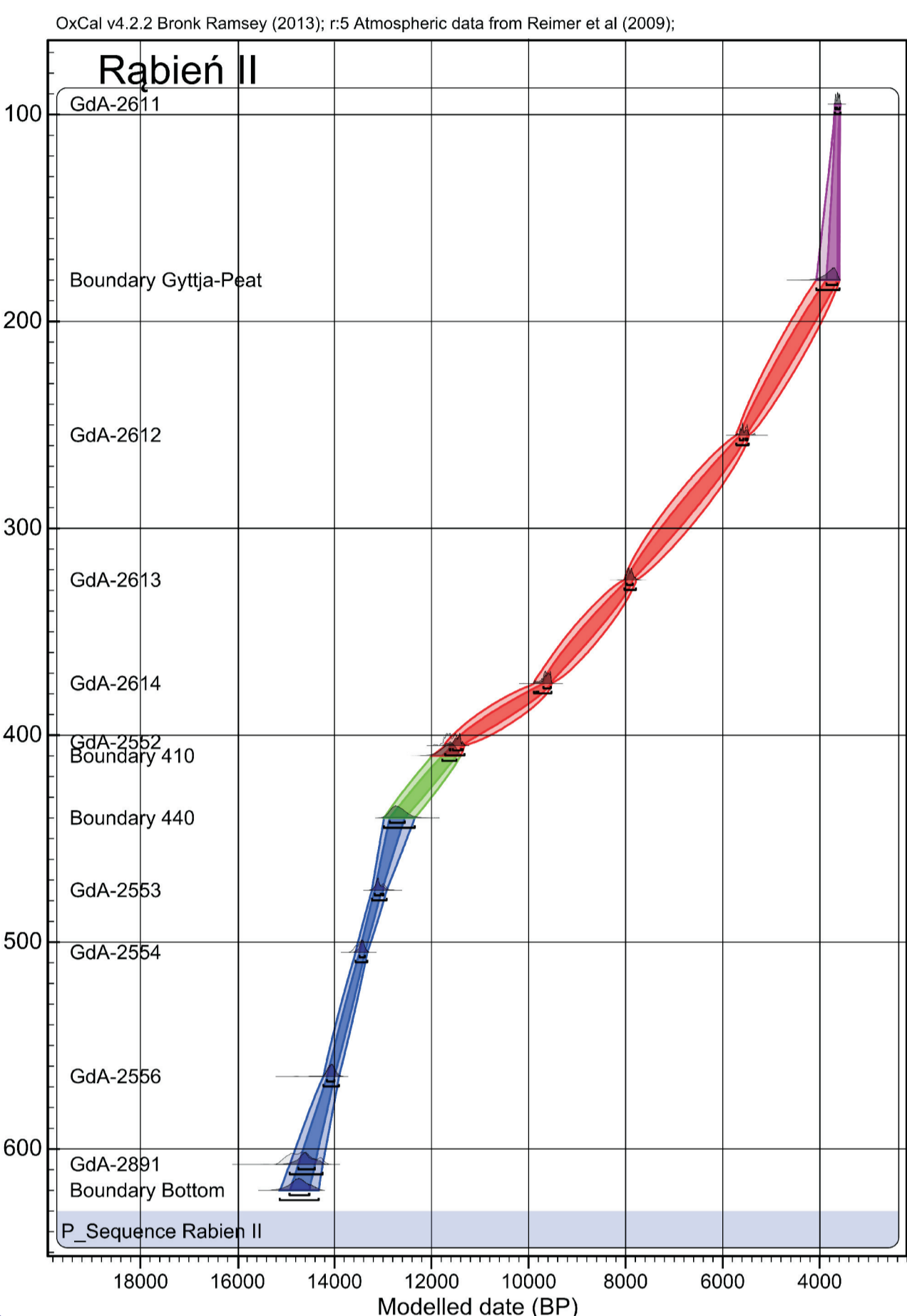
Geological cross-sections (Forysiak, 2012)
Pleniweichselian: 1 – vari-grained sands with an admixture of silts and gravels; Late Weichselian/Holocene: 2 – aeolian sands (cover), 3 – aeolian sands in dunes, 4 – gyttja, 5 – peat, 6 – water



1 – thickness of biogenic deposits; 2 – dump; 3 – post-exploitation basins; 4 – location of the R-II core; 5 – boreholes (Forysiak, 2012)

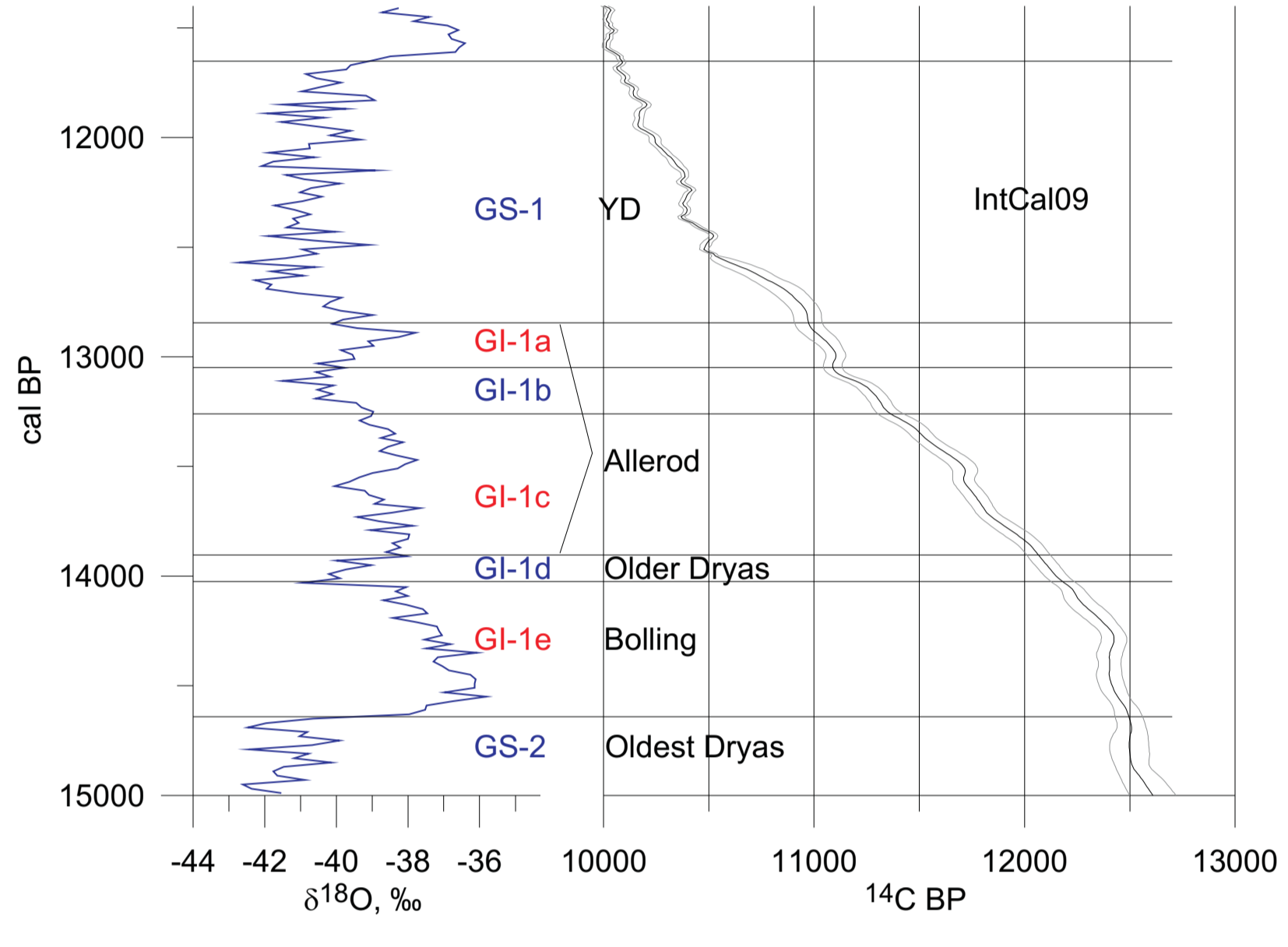
AGE - DEPTH RELATION:

The stratigraphic framework for the Rąbień profile was constructed on the basis of ten radiocarbon dates of organic material using the P-Sequence function of the OxCal calibration programme. This indicates the base of the profile is 14920-14500 cal yr BP (68.2% conf. interval). The lithological and geochemical data indicate that sudden changes in deposition rate took place at 1.8, 4.1 and 4.4 m.



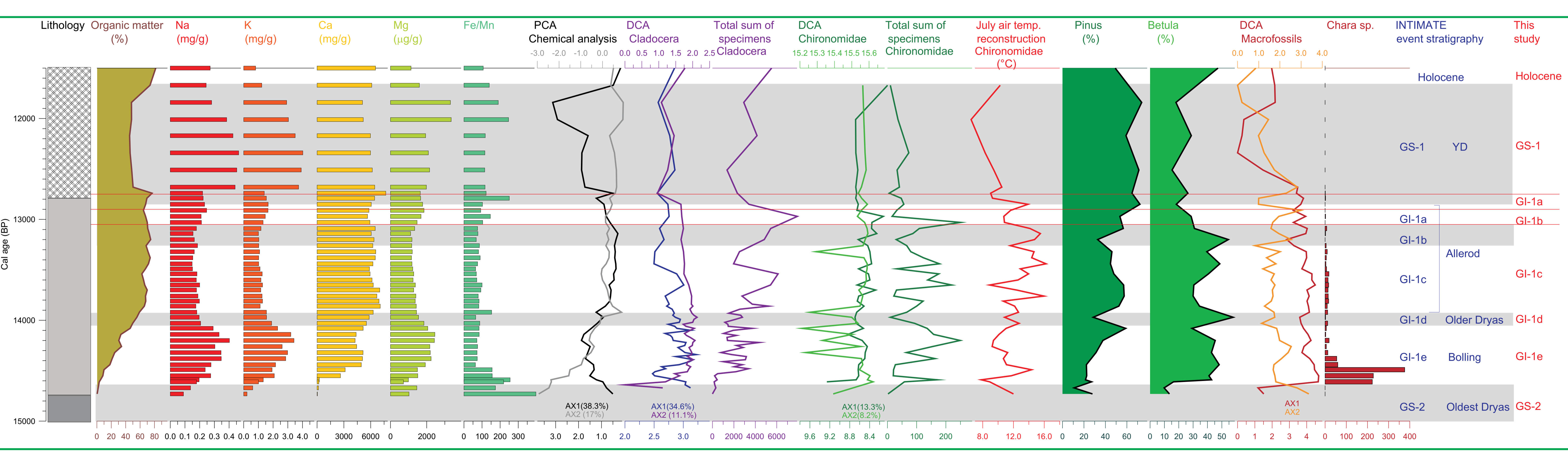
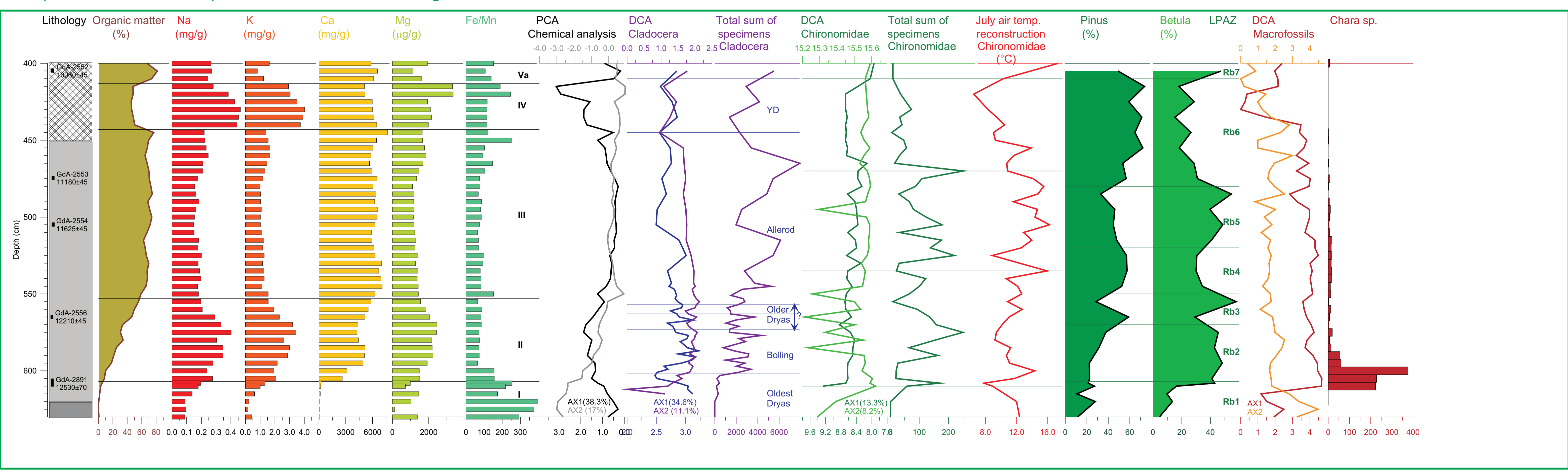
Calendar values of chronozone boundaries according to INTIMATE Stratigraphy vs. calibration curve IntCal09:

GS-2 / GI-1e	Oldest Dryas / Bolling	14642±93 cal BP
GI-1e / GI-1d	Bolling / Older Dryas	14025±85 cal BP
GI-1d / GI-1c	Older Dryas / Allerod	13904±83 cal BP
GI-1c / GI-1b		13261±75 cal BP
GI-1b / GI-1a		13049±72 cal BP
GI-1a / GS-1	Allerod / Younger Dryas	12846±69 cal BP



PROXY DATA

Below are presented chosen proxies vs depth and vs age. Values of AX1 and AX2 (PCA or DCA curves) were calculated with using CANOCO 4.5 software:



CONCLUSIONS:

The biotic and radiocarbon data are consistent and indicate the main climatic phases recognized in other Polish and European records. General agreement between proxy data for site Rąbień and INTIMATE event stratigraphy is visible, although particular boundaries are shifted. The Younger Dryas (GS-1) onset is recorded one hundred years later than in Greenland ice core NGRIP - near 12750 cal BP in Rąbień and 12850 cal BP in NGRIP.

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