Annika Ostlund

RIO KULTURLANDSKAPET

28 march 2024

Rif.CEDAD: 2024_0119

Results of Radiocarbon Dating

Dear sir, please find enclosed the results of the radiocarbon dating of the samples you submitted to CEDAD (AMS and radiocarbon dating facility, University of Lecce, Italy) and listed in Table 1.

Sample ID	*CEDAD Code*	*Proveneance*
2315 - 5	**LTL33114**	
2315 - 18	**LTL33116**	
2315 - 49	**LTL33118**	
2315 - 59	**LTL33121**	
2315 - 65/ 23,0044,0010	**LTL33122**	
2315 - 92 /23,0044,0012	**LTL33124**	
2315 - 110	**LTL33127**	
2315 - 120	**LTL33128**	
2315 - 121	**LTL33129**	
2315 - 123	**LTL33130**	

TABLE 1. SUMMARY OF THE DATED SAMPLES.

Macro contaminants were removed from the samples by mechanical handpicking under optical microscope. The selected portion of the samples was treated in order to chemically remove any possible source of contamination.

The purified sample material was then converted to carbon dioxide by combustion in sealed quartz tubes. The obtained carbon dioxide was converted at 550°C into graphite by using ultrahigh purity Hydrogen as reducing medium and 2 mg iron powder as catalyst.

The sample yielded enough graphite to allow an accurate determination of the radiocarbon age by the accelerator mass spectrometer.

The radiocarbon concentrations have been determined in the accelerator mass spectrometer by comparing the ^{12}C, ^{13}C currents and the ^{14}C counts obtained from the samples with those obtained from standard materials supplied by IAEA (International Atomic Energy Agency) and NIST (National Institute of Standard and Technology).

The "conventional radiocarbon age" was calculated with a $\delta^{13}C$ correction based on the $^{13}C/^{12}C$ ratio measured directly with the accelerator. For the estimation of the measurement uncertainty (standard deviation) both the radioisotope counting statistics and the scattering of the data have been taken into account. The larger of the two is given as final error in Table 2.

The conventional radiocarbon ages have been calibrated, when possible, in calendar ages by using the last internationally accepted calibration curva (INTCAL2020) for atmospheric data.

Sample	*Radiocarbon Age (BP)*	$\delta^{13}C$ (‰)(**)
LTL33114	**1536 ± 40**	**-22.6 ± 0.5**
LTL33116	**2656 ± 45**	**-37 ± 0.6**
LTL33118	**2583 ± 40**	**-20.1 ± 0.3**
LTL33121	**195 ± 40**	**-18 ± 0.2**
LTL33122	**3064 ± 45**	**-20.3 ± 0.7**
LTL33124	**2115 ± 40**	**-20.9 ± 0.3**
LTL33127	**2416 ± 45**	**-23 ± 0.8**
LTL33128	**2271 ± 40**	**-19.3 ± 0.1**
LTL33129	**2946 ± 45**	**-18.7 ± 0.3**
LTL33130	**3245 ± 40**	**-23.1 ± 0.9**

TABLE 2. MEASURED VALUES.

(**) The listed values of the carbon stable isotopes fractionation term ($\delta^{13}C$) are measured by AMS. These values can differ from the natural fractionation and from those measured by IRMS.

The conventional radiocarbon ages of the samples were converted into calendar years by using the software OxCal Ver. 3.5 based on the last atmospheric dataset [Reimer PJ, et al. 2013 *Radiocarbon* 55 No. 4-1869-1887]. The results of the calibration are reported in the following figures.

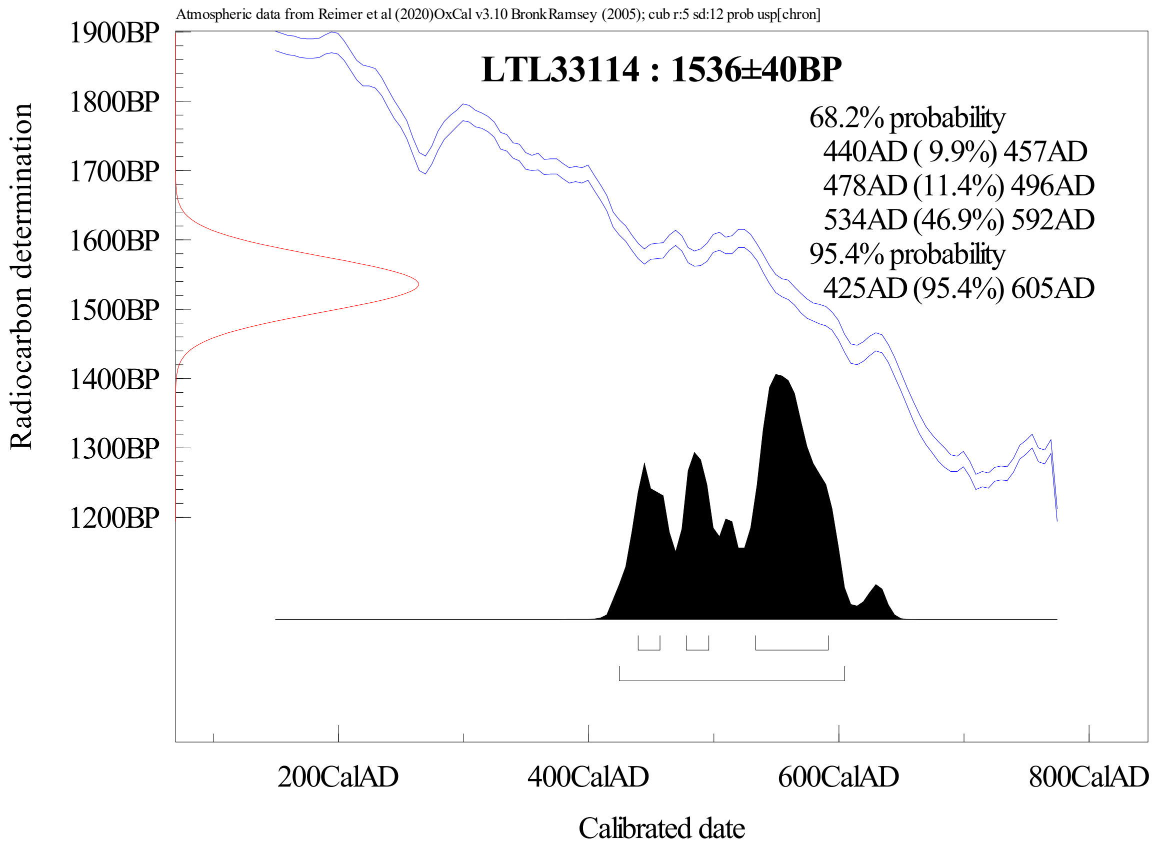

Figure 1. Calibration of the radiocarbon age of the sample LTL33114.

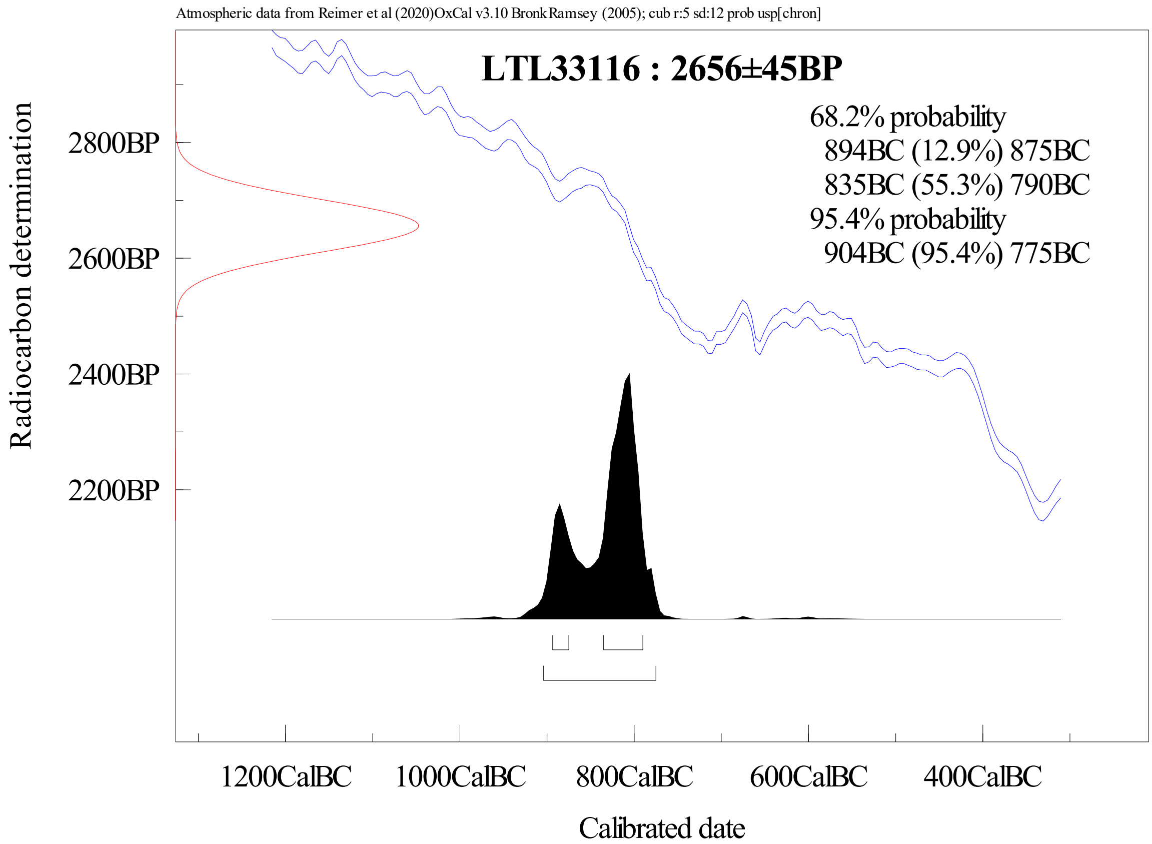

Figure 2. Calibration of the radiocarbon age of the sample LTL33116.

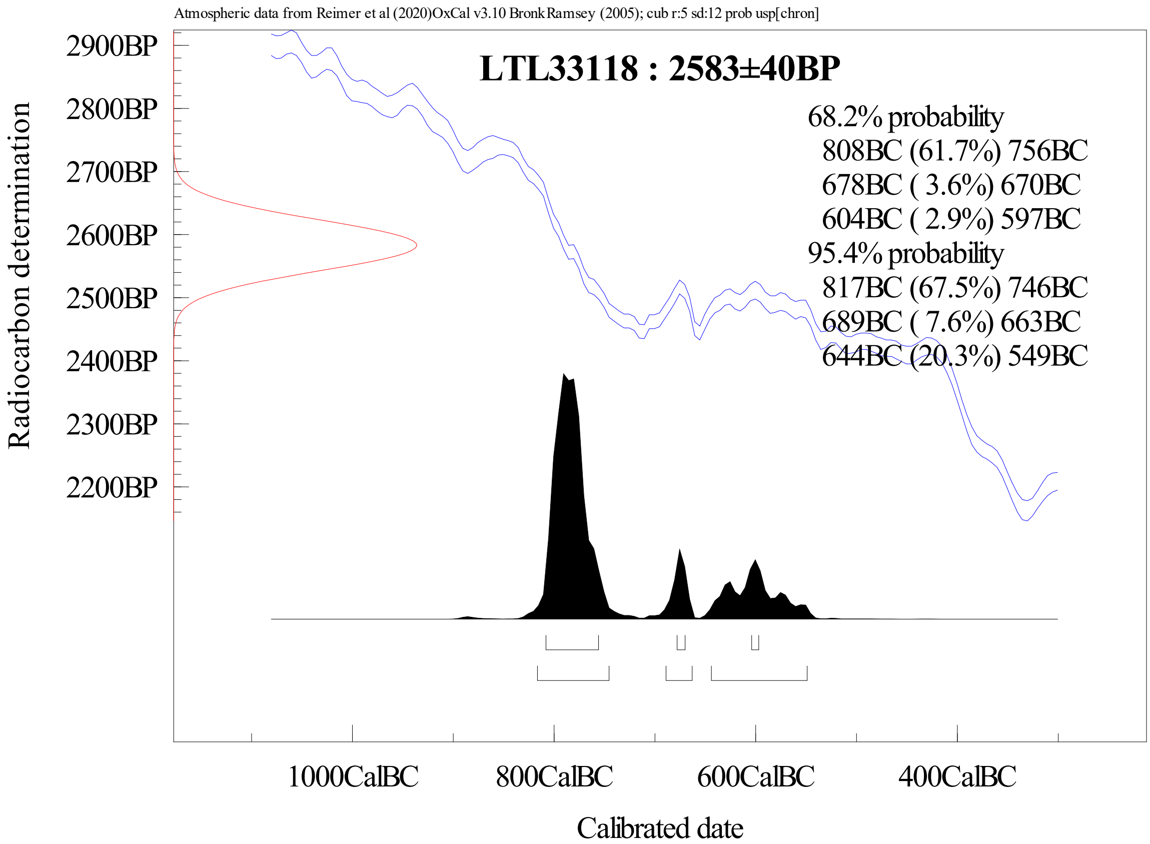

Figure 3. Calibration of the radiocarbon age of the sample LTL33118.

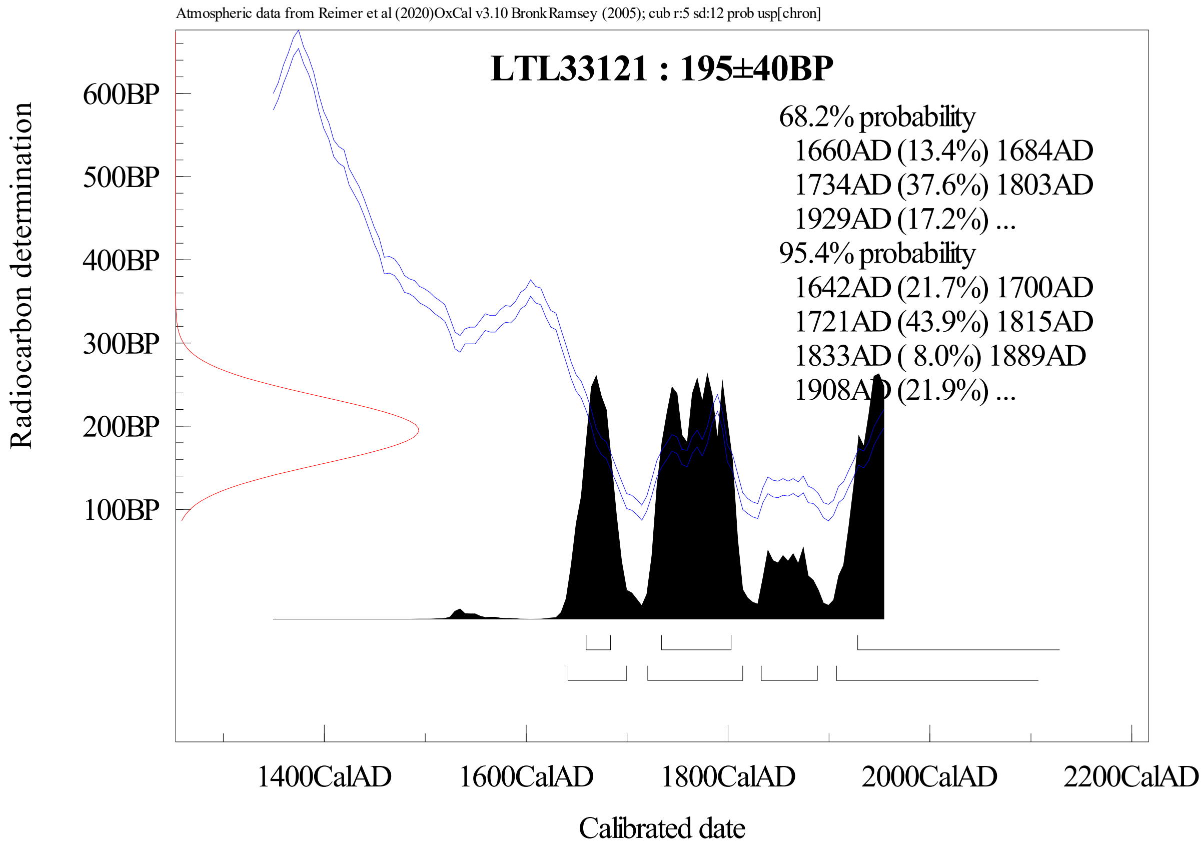

Figure 4. Calibration of the radiocarbon age of the sample LTL33121.

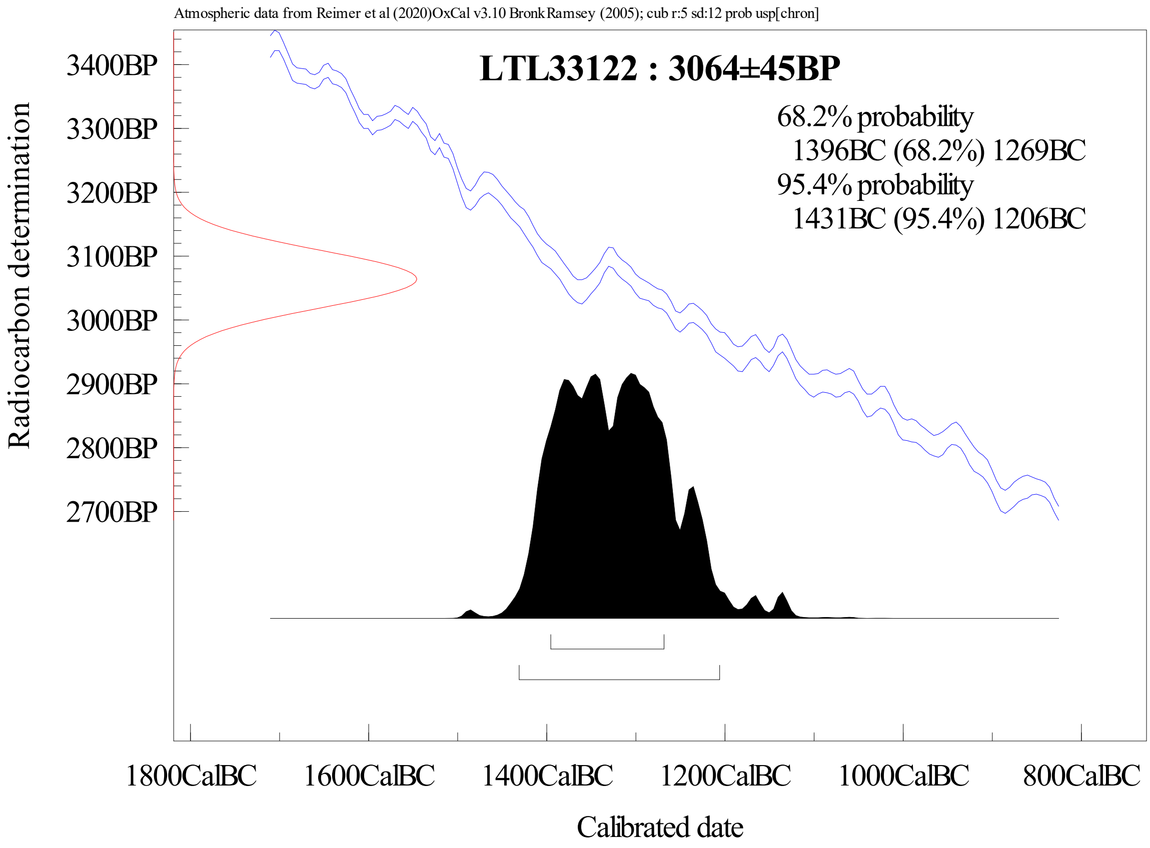

Figure 5. Calibration of the radiocarbon age of the sample LTL33122.

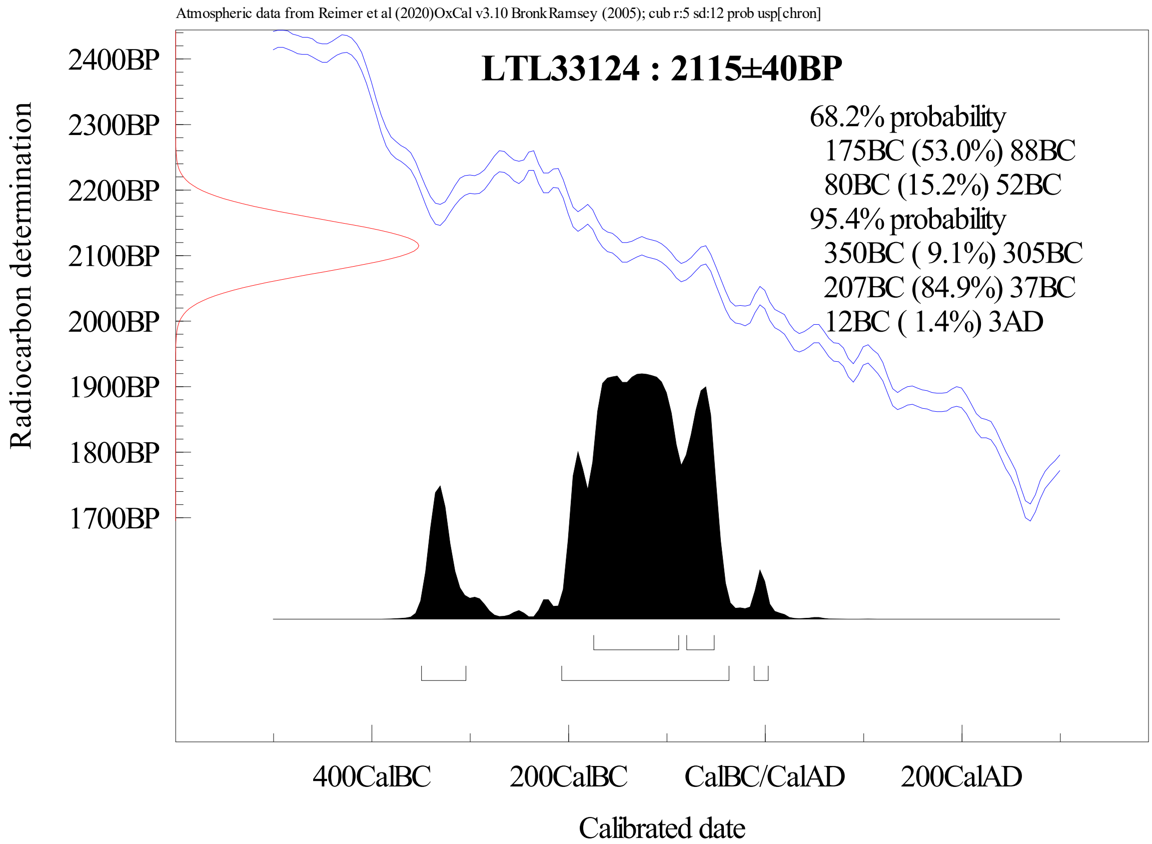

Figure 6. Calibration of the radiocarbon age of the sample LTL33124.

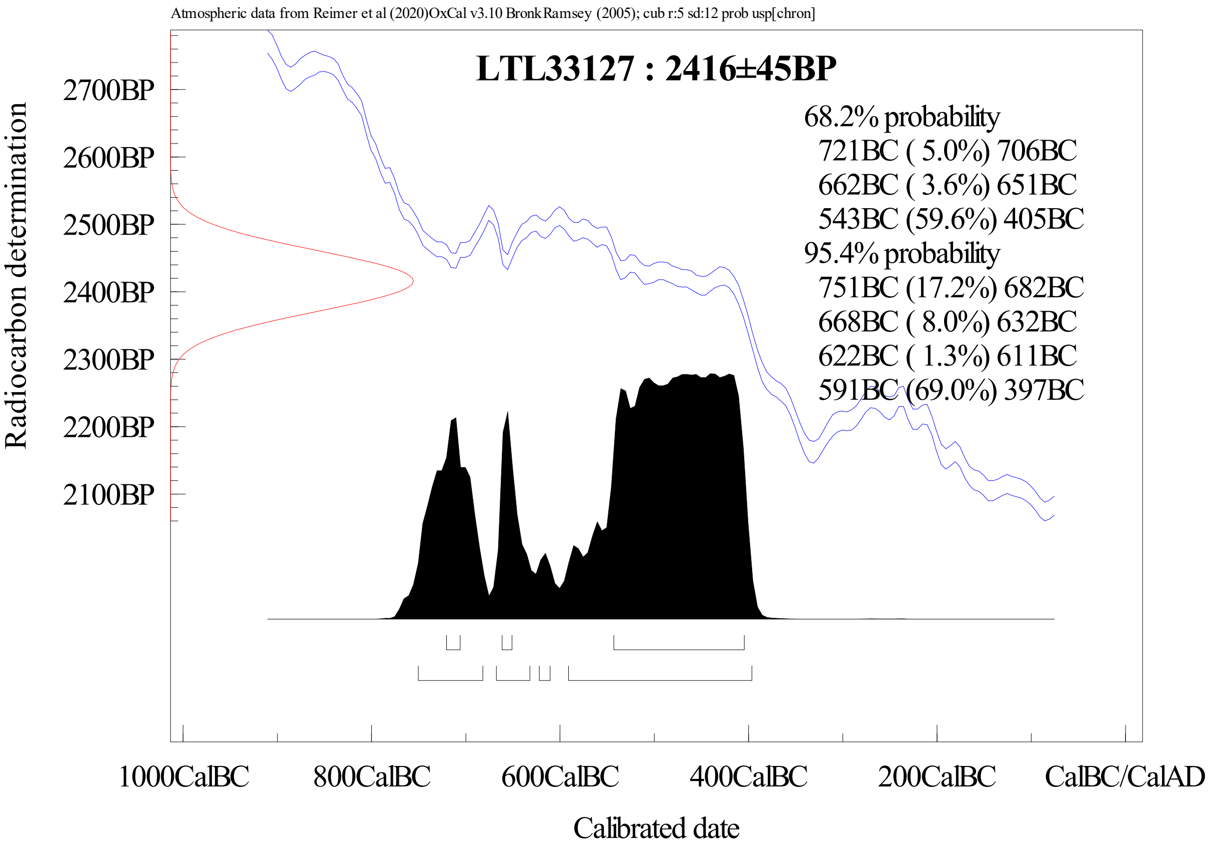

Figure 7. Calibration of the radiocarbon age of the sample LTL33127.

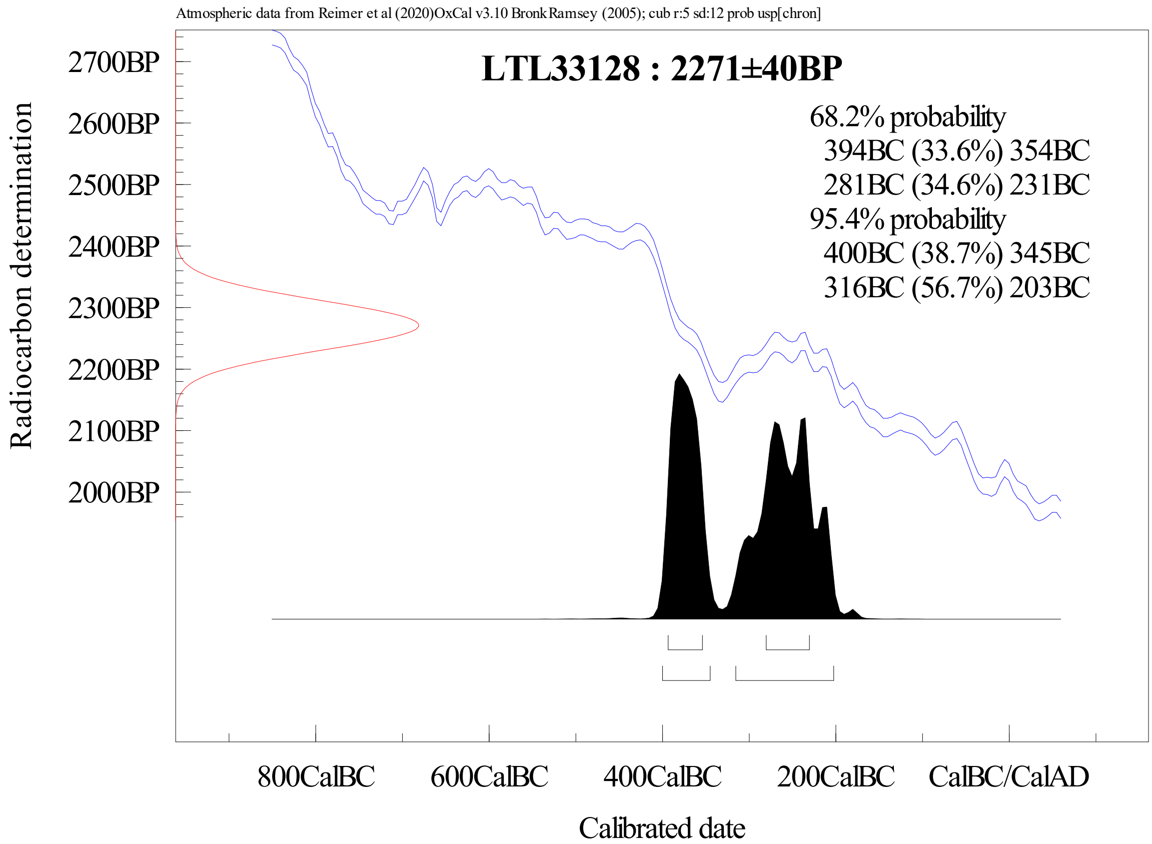

Figure 8. Calibration of the radiocarbon age of the sample LTL33128.

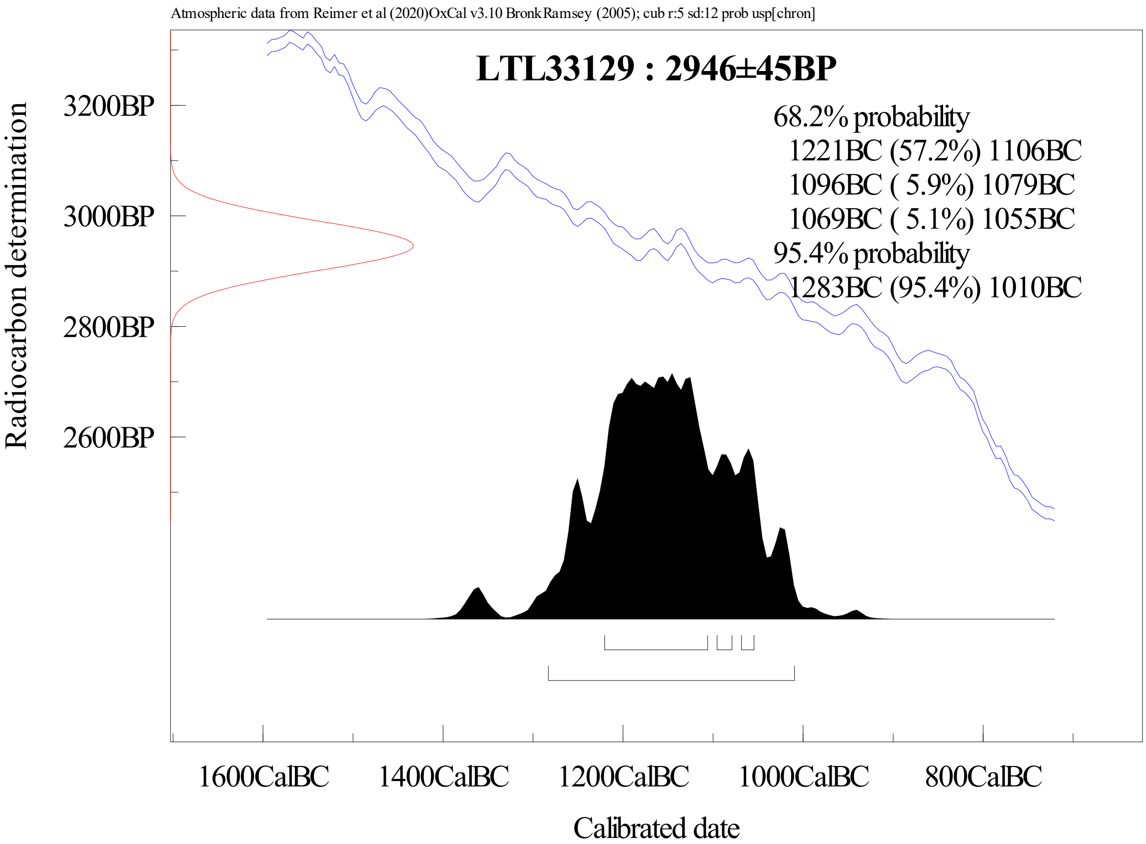

Figure 9. Calibration of the radiocarbon age of the sample LTL33129.

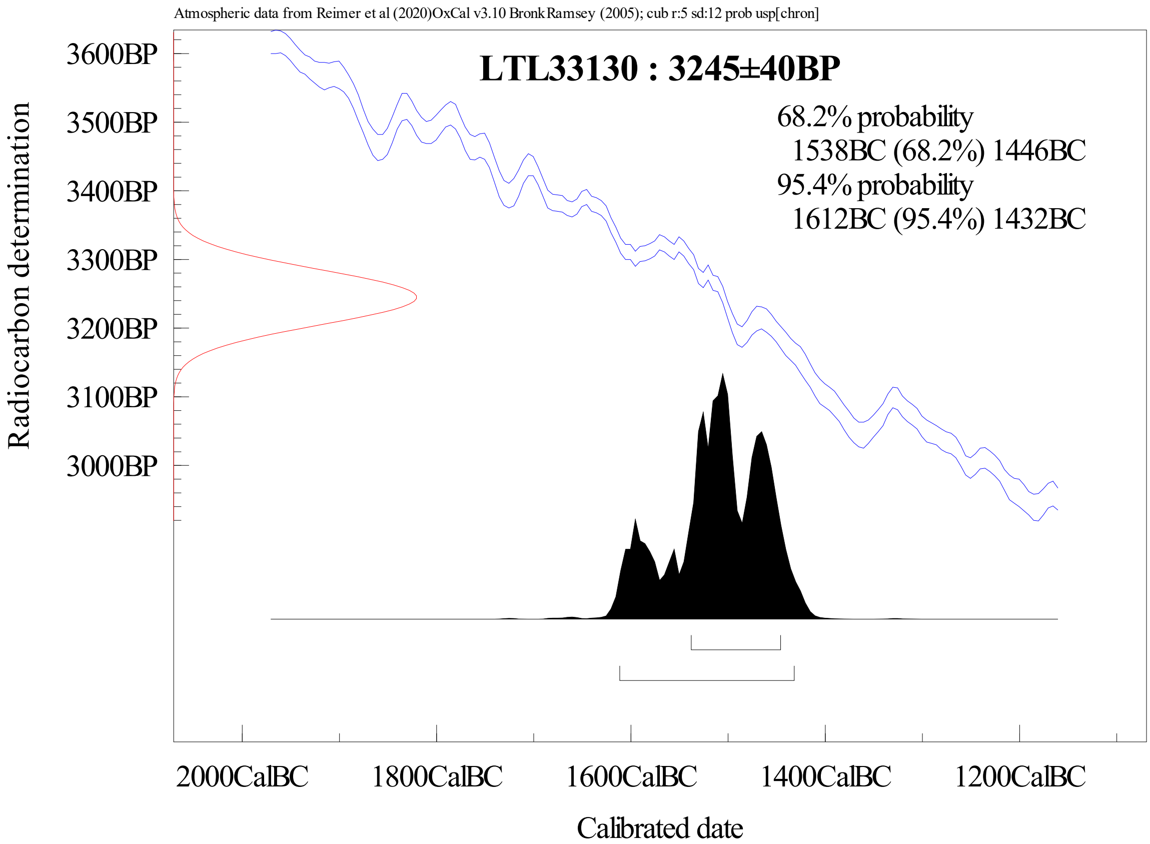

Figure 10. Calibration of the radiocarbon age of the sample LTL33130.

Best Regards,

Prof. Dr. Lucio Calcagnile

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