Radiocarbon, Vol 60, Nr 4, 2018, p 1283 DOI:10.1017/RDC.2018.67

ERRATUM

A NOTE ON THE BAYESIAN MODELING OF THE STRATIGRAPHIC CHRONOLOGY OF CANÍMAR ABAJO, CUBA – ERRATUM

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doi: 10.1017/RDC.2018.19, published by Cambridge University Press, 22 March 2018.

In the original publication of this article (Philippe and Vibet 2018) some of the parameters were rendered incorrectly. The entire section is reproduced here with the correct notations.

GAP RANGE INTERVAL BETWEEN TWO CONSECUTIVE COLLECTIONS OF DATES

We wish to test the existence of a gap between two collections of dates $\{\tau_1, \ldots, \tau_m\} \subset \{\tau_1, \ldots, \tau_n\}$ and $\{\tau_1^*, \ldots, \tau_{m^*}^*\} \subset \{\tau_1, \ldots, \tau_n\}$. If such a gap exists, we estimate the time elapsed between the two groups. We define the gap range interval as the longest interval $[c, d]$ that is included between both collections of dates with a fixed posterior probability.

From the joint posterior distribution of the collection of dates, the 95% gap between these successive collections of dates (if it exists) is the longest interval $[c, d]$ satisfying

$$P(\tau_1, \ldots, \tau_m < c < d < \tau_1^*, \ldots, \tau_{m^*}^* \mid M) = 95\% \qquad (1)$$

It is a compact tool that describes the start, the end, and the duration of a period of time that is in between two successive groups of dates.

ESTIMATION OF PERIODS VERSUS ESTIMATION OF DATES

From the marginal posterior distributions, we can obtain an estimation of the date with its uncertainty. We can also calculate a confidence region at 95% for this date. This gives, for instance, an estimation of the beginning and the end of a group of dates from the parameters t_a and t_b defined by the boundaries in the OxCal model. This information is generally summarised by a 95% confidence region $[\underline{t_a}, \overline{t_a}]$ (resp. $[\underline{t_b}, \overline{t_b}]$) for the beginning (resp. for the end). However, these results do not give an estimation of the period of time that covers the related collection of dates with a fixed probability (95% for instance). A solution could be to take the interval $[\underline{t_a}, \overline{t_b}]$ but contrary to the time range interval, the coverage of $[\underline{t_a}, \overline{t_b}]$ interval is unknown, and generally we observe

$$P(\underline{t_a} < \tau_1, \ldots, \tau_m < \overline{t_b} \mid M) \neq 95\%$$

The same problem arises for the estimation of a gap between two groups. The function `Date()` provides a date t^* with credible interval $[\underline{t^*}, \overline{t^*}]$, i.e. $P(t^* \in [\underline{t^*}, \overline{t^*}] \mid M) = 95\%$. This date characterises the interval between two groups of dates. However, we do not know the value of the following probability:

$$P(\tau_1, \ldots, \tau_m < \underline{t^*} < \overline{t^*} < \tau_1^*, \ldots, \tau_{m^*}^* \mid M)$$

REFERENCE

Philippe Anne, Vibet Marie-Anne. 2018. A Note on the Bayesian Modeling of the Stratigraphic Chronology of Canímar Abajo, Cuba. *Radiocarbon* 60(3):1001–11, doi: 10.1017/RDC.2018.19.