1. ABOUT THE DATASET

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**Title:** Holocene archaeological radiocarbon data of the Iberian Peninsula

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**Rights-holder(s):** Luke Sweeney, University of Reading, University of Bournemouth

**Publication Year:** 2021

**Description**: Archaeological radiocarbon dated material to estimate changes in population size has been widely used, based on the “dates as data” approach (Rick, 1987). This approach links the quantity of radiocarbon dated material with approximate population density for an area. Additionally, archaeological radiocarbon data is often associated with particular cultures and can thus be used, for example, to identify the start of Neolithic agriculture at a specific site. Here we present a dataset of radiocarbon dated archaeological material for the Iberian Peninsula, covering the Holocene period.

The datafile includes basic information for each radiocarbon dated archaeological item (e.g. longitude, latitude, elevation, archaeological site name and dataset citation), age and dating information (e.g. radiocarbon age, radiocarbon age error, lab identification code, INTCAL curve type and marine offset information) and item information (e.g. material type, whether the culture from which the items was draft was Neolithic). There are 6,343 individual items within the dataset.

**Cite as:** Sweeney, Luke and Harrison, Sandy P., (2021): Holocene archaeological radiocarbon data of the Iberian Peninsula. University of Reading. Dataset. https://doi.org/10.17864/1947.000340.

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2. TERMS OF USE

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Dataset (radiocarbon\_data): Copyright 2021 Luke Sweeney, University of Reading, University of Bournemouth. This dataset is licensed by the rights-holder(s) under a Creative Commons Attribution 4.0 International Licence: https://doi.org/10.17864/1947.000340.

Code: (R\_CODE\_TO\_GENERATE\_DATASET): Copyright 2021 Luke Sweeney. Source code is licensed under a GNU General Public License 3.0: https://www.gnu.org/licenses/gpl-3.0.en.html.

3. PROJECT AND FUNDING INFORMATION

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**Title:** Holocene archaeological radiocarbon data of the Iberian Peninsula

**Dates:** 2021

**Funding organisations:** Leverhulme Centre for Wildfires, Environment and Society, through the Leverhulme Trust (grant: RC-2018-023);

ERC, through the ERC-funded project GC 2.0 (Global Change 2.0: Unlocking the past for a clearer future; grant number 694481

4. CONTENTS

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**File listing:** radiocarbon\_data.csv;

R\_CODE\_TO\_GENERATE\_DATASET.docx

**Number of items:** 6,343

**Variables:**

c14\_age: age of object based on measurements of stable (12C and unstable (14C) isotopes of carbon

c14\_std: single standard deviation of c14\_age

longitude: degrees decimal where +ve is E and -ve is W

latitude: degrees decimal where +ve is N and -ve is S

lab\_nr: item unique radiocarbon lab identifier

site: site name

site\_id: generated site id

material: type of material

neolithic\_tag: whether the material has been tagged as being from a Neolithic culture (“Neolithic”)

elevation: in meters above sea level

calibration\_curve: the type of calibration curve that should be used for radiocarbon date calibration (“intcal20” or “marine20”)

reservoir\_effect: for marine samples, the local level marine offset that should be applied

reservoir\_std: the standard error of the marine offset

dataset: the dataset from which the data was extracted

dataset\_citation: dataset reference details

5. METHODS

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This dataset is itself a compilation of data drawn from ten other cited datasets, which cover differing regions or time periods (see Table 1). Where duplicate records existed between these datasets, a single radiocarbon date has been preserved. In some instances, there was conflicting information between the datasets in relation to, for example, the precise radiocarbon date associated with a duplicated items. In these instances, the details have been checked and the correct information used. Some information between the datasets has been consolidated, for example in relation to the cultural tagging of the data. We removed dates with standard errors > 200 years (following e.g. Fernandez-Lopez de Pablo et al., 2019; McLaughlin et al., 2021) and removed dates on marine shells where no local marine reservoir correction was provided. We indicated the correct calibration curve to be used based on the material type. Data was limited to the date range 20,000 to 0 BP based on uncalibrated radiocarbon dates, and to elevations below 2,000m.

The complete R code used to construct this dataset is provided in the document R\_CODE\_TO\_GENERATE\_DATASET.docx saved to this archive, as well as within the data\_import.R code saved to GitHub: <https://github.com/sweeney-l/Iberian_fire_history>. The code has the following elements:

1. URL locations of the adapted datasets in Table 1 for download;
2. URL locations of elevation maps used in the analysis;
3. Method to generate an expanded map of Iberia;
4. For each imported dataset:
   1. Standardisation of format
   2. Updates based on dataset consolidation / web search of site and lab number to:
      1. radiocarbon lab numbers;
      2. coordinate information
      3. material details
      4. 14C dates
      5. 14C standard errors;
5. Extraction of elevation for each item by coordinate, and exclusion of items >2000m;
6. Consolidation of material and cultural information;
7. Testing for, and deletion of, duplicates;
8. Determination of appropriate calibration curve;
9. Incorporation of marine offset values (where appropriate);
10. Adding adapted dataset citation information relating to the associated item;
11. Export of dataset

Table 1: Details of published archaeological radiocarbon datasets from which this dataset is drawn

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| --- | --- | --- | --- |
| **Reference** | **Title** | **Dataset region** | **Approx. focus period (uncal. BP)** |
| Balsera et al. (2015) | Approaching the demography of late prehistoric Iberia through summed calibrated date probability distributions (7000-2000 cal BC) | Iberia | 7k – 2k |
| Capuzzo et al. (2014) \* | EUBAR: A Database of 14 C Measurements for the European Bronze Age. A Bayesian Analysis of 14 C-Dated Archaeological Contexts from Northern Italy and Southern France | Western Europe | 4k – 2k |
| d’Errico et al. (2011) \* | PACEA geo-referenced radiocarbon database | Europe | 40k – 8k |
| Drake et al. (2017) | Regional Demographic Dynamics in the Neolithic Transition in Iberia: Results from Summed Calibrated Date Analysis | Iberia | 9k – 6k |
| Hinz et al. (2012) \* | RADON - Radiocarbon dates online 2012. Central European database of 14 C dates for the Neolithic and the Early Bronze Age | Europe | 40k – 0k |
| Kniesel et al. (2014) \* | Radon-B | Europe | 4.5k – 2.5k |
| Manning et al. (2016) \* | The Cultural Evolution of Neolithic Europe. EUROEVOL Dataset 1: Sites, Phases and Radiocarbon Data | Western Europe | 8k – 4k |
| McLaughlin et al. (2021) | Late Glacial and Early Holocene human demographic responses to climatic and environmental change in Atlantic Iberia | West / Southwest Coast Portugal | 20k – 5k |
| Pardo-Gordó et al. (2019) | Timing the Mesolithic-Neolithic Transition in the Iberian Peninsula: The Radiocarbon Dataset | Iberia | 8k – 5.5k |
| Vermeersch (2020) \* | Radiocarbon Palaeolithic Europe database: A regularly updated dataset of the radiometric data regarding the Palaeolithic of Europe, Siberia included | Europe | From palaeolithic to modern |

\* Datasets accessed via R package *c14bazAAR* (Schmid et al., 2019)

REFERENCES

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Balsera, V., Díaz-del-Río, P., Gilman, A., Uriarte, A., Vicent, J.M., 2015. Approaching the demography of late prehistoric Iberia through summed calibrated date probability distributions (7000–2000 cal BC). Quat. Int. 386, 208–211. https://doi.org/10.1016/j.quaint.2015.06.022

Capuzzo, G., Boaretto, E., Barceló, J.A., 2014. EUBAR: A Database of 14 C Measurements for the European Bronze Age. A Bayesian Analysis of 14 C-Dated Archaeological Contexts from Northern Italy and Southern France. Radiocarbon 56, 851–869. https://doi.org/10.2458/56.17453

d’Errico, F., Banks, W.E., Vanhaeren, M., Laroulandie, V., Langlais, M., 2011. PACEA geo-referenced radiocarbon database. PaleoAnthropology 2011, 1–12. https://doi.org/doi:10.4207/PA.2011.ART40

Drake, B.L., Blanco-González, A., Lillios, K.T., 2017. Regional Demographic Dynamics in the Neolithic Transition in Iberia: Results from Summed Calibrated Date Analysis. J. Archaeol. Method Theory 24, 796–812. https://doi.org/10.1007/s10816-016-9286-y

Fernández-López de Pablo, J., Gutiérrez-Roig, M., Gómez-Puche, M., McLaughlin, R., Silva, F., Lozano, S., 2019. Palaeodemographic modelling supports a population bottleneck during the Pleistocene-Holocene transition in Iberia. Nat. Commun. 10, 1872. https://doi.org/10.1038/s41467-019-09833-3

Hinz, M., Furholt, M., Müller, J., Raetzel-fabian, D., 2012. RADON - Radiocarbon dates online 2012. Central European database of 14 C dates for the Neolithic and the Early Bronze Age. www.jungsteinSITE.de 0, 0–5. https://doi.org/10.12766/jna.2012.65

Kniesel, J., Hinz, M., Rinne, C., 2014. Radon-B. In: http://radon-b.ufg.uni-kiel.de.

Manning, K., Colledge, S., Crema, E.R., Shennan, S., Timpson, A., 2016. The Cultural Evolution of Neolithic Europe. EUROEVOL Dataset 1: Sites, Phases and Radiocarbon Data. J. Open Archaeol. Data 5. https://doi.org/10.5334/joad.40

McLaughlin, T.R., Gómez-Puche, M., Cascalheira, J., Bicho, N., Fernández-López de Pablo, J., 2021. Late Glacial and Early Holocene human demographic responses to climatic and environmental change in Atlantic Iberia. Philos. Trans. R. Soc. B Biol. Sci. 376, 20190724. https://doi.org/10.1098/rstb.2019.0724

Pardo-Gordó, S., García Puchol, O., Bernabeu Aubán, J., Diez Castillo, A., 2019. Timing the Mesolithic-Neolithic Transition in the Iberian Peninsula: The Radiocarbon Dataset. J. Open Archaeol. Data 7. https://doi.org/10.5334/joad.49

Rick, J.W., 1987. Dates as Data: An Examination of the Peruvian Preceramic Radiocarbon Record. Am. Antiq. 52, 55. https://doi.org/10.2307/281060

Schmid, C., Seidensticker, D., Hinz, M., 2019. c14bazAAR: An R package for downloading and preparing C14 dates from different source databases. J. Open Source Softw. 4, 1914. https://doi.org/10.21105/joss.01914

Vermeersch, P.M., 2020. Radiocarbon Palaeolithic Europe database: A regularly updated dataset of the radiometric data regarding the Palaeolithic of Europe, Siberia included. Data Br. 31, 105793. https://doi.org/10.1016/j.dib.2020.105793