

# Package ‘folio’

May 6, 2022

**Title** Datasets for Teaching Archaeology and Paleontology

**Version** 1.1.0

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**Description** Datasets for teaching quantitative approaches and modeling in archaeology and paleontology. This package provides several types of data related to broad topics (cultural evolution, radiocarbon dating, paleoenvironments, etc.), which can be used to illustrate statistical methods in the classroom (multivariate data analysis, compositional data analysis, diversity measurement, etc.).

**License** GPL (>= 3)

**URL** <https://packages.tesselle.org/folio/>,  
<https://github.com/tesselle/folio>

**BugReports** <https://github.com/tesselle/folio/issues>

**Depends** R (>= 2.10)

**Encoding** UTF-8

**LazyData** true

**RoxygenNote** 7.1.2

**NeedsCompilation** no

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**Repository** CRAN

**Date/Publication** 2022-05-05 23:20:20 UTC

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 arnold1949

*Arnold and Libby's Curve of Knowns*


---

## Description

"The agreement between prediction and observation is seen to be satisfactory."

## Usage

arnold1949

## Format

A `data.frame` with 6 observations and 8 variables:

**sample** Sample name.

**age\_expected** Expected age (year BP).

**age\_expected\_error** Error on age\_expected (year BP).

**age\_found** Measured age (year BP).

**age\_found\_error** Error on age\_found (year BP).

**activity\_expected** Expected specific activity (cpm/g of carbon).

**activity\_found** Measured specific activity (cpm/g of carbon).

**activity\_found\_error** Error on activity\_found (cpm/g of carbon).

**Source**

Arnold, J. R. and Libby, W. F. (1949). Age Determinations by Radiocarbon Content: Checks with Samples of Known Age. *Science*, 110(2869), 678-80. doi: [10.1126/science.110.2869.678](https://doi.org/10.1126/science.110.2869.678)

**See Also**

Other radiocarbon dating: [intcal09](#), [intcal13](#), [intcal20](#)

---

birds	<i>European Birds</i>
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---

**Description**

A dataset of birds species abundance in remote European woodlands.

**Usage**

birds

**Format**

A [data.frame](#) with 35 rows (species) and 3 variables (woodlands).

**Source**

Magurran, A. E. (1988). *Ecological Diversity and its Measurement*. Princeton, NJ: Princeton University Press. doi: [10.1007/9789401573580](https://doi.org/10.1007/9789401573580).

**See Also**

Other count data: [boves](#), [chevelon](#), [compiegne](#), [merzbach](#), [mississippi](#), [zuni](#)

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boves	<i>Boves Ceramics</i>
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**Description**

A dataset containing the ceramic counts from the castle site of Boves (Somme, France). The data are grouped into eight periods ranging from the 10th to the 18th century and thirteen ceramic types.

**Usage**

boves

**Format**

A `data.frame` with 8 rows and 13 variables (ceramic types):

**I**

**IIa**

**IIb**

**IIc**

**IIIa**

**IIIb**

**IIIc**

**IVa**

**IVb**

**Va**

**Vb**

**VI**

**VII**

**Source**

Racinet P. (2002). Le site castral et prioral de Boves du Xe au XVIIe siècle. Bilan des recherches 1996-2000. *Revue archéologique de Picardie*. Numéro spécial 20, 123 p.

**See Also**

Other count data: [birds](#), [chevelon](#), [compiegne](#), [merzbach](#), [mississippi](#), [zuni](#)

---

chevelon

*Chevelon Ground Stone*

---

**Description**

A dataset of ground stone artifact counts from the Cholla project (USA).

**Usage**

chevelon

**Format**

A [data.frame](#) with 12 rows and 10 variables (ground stone types):

**BMe** Basin metate.

**SMe** Slab metate.

**TMe** Trough metate.

**IMe** Indeterminate metate.

**UMa** Unifacial mano.

**BMa** Bifacial mano.

**MUHa** Modified unifacial handstone.

**MBHa** Modified bifacial handstone.

**UUHa** Unmodified unifacial handstone.

**UBHa** Unmodified bifacial handstone.

**Source**

Reid, J. J. (ed.) (1982). *Cholla Project Archaeology*. Vol. 2. Archaeological Series 161. Tucson: University of Arizona. doi: [10.6067/XCV8435710](https://doi.org/10.6067/XCV8435710)

**See Also**

Other count data: [birds](#), [boves](#), [compiegne](#), [merzbach](#), [mississippi](#), [zuni](#)

---

compiegne

*Compiègne Ceramics*

---

**Description**

A dataset containing the ceramic counts from the Place des Hallettes in Compiègne (Oise, France). The data are grouped into five periods of about a century, ranging from the 9th to the 14th century, and sixteen ceramic types.

**Usage**

compiegne

**Format**

A [data.frame](#) with 5 rows (chronological periods, numbered from the oldest to the most recent from 1 to 5) and 16 variables (ceramic types):

**A** Red to white ceramics with fine sized inclusions.

**B** Red to white ceramics with medium sized inclusions.

**C** Dark ceramics with fine sized inclusions.

- D** Dark ceramics with medium sized inclusions.
- E** Ceramics close to those of groups B or D, with similarities to group F.
- F** Black, red or beige ceramics with coarse inclusions.
- G** Red polished ceramics with fine to medium sized inclusions.
- H** Black polished ceramics with fine sized inclusions.
- I** Black polished ceramics with medium sized inclusions.
- J** Polished and painted ceramics with fine to medium sized inclusions.
- K** Painted ceramics, similar to those of group A.
- L** Painted ceramics, similar to those of group B.
- M** Painted ceramics with coarse inclusions.
- N** Glazed ceramics.
- O** Stamped ceramics.
- P** Coated ceramics.

#### Source

Lacroix, M. C. (1997). La céramique médiévale du site des Hallettes à Compiègne (Oise). *Revue archéologique de Picardie*. Numéro spécial, 13(1), 135-168. doi: [10.3406/pica.1997.1945](https://doi.org/10.3406/pica.1997.1945)

#### See Also

Other count data: [birds](#), [boves](#), [chevelon](#), [merzbach](#), [mississippi](#), [zuni](#)

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epica2008

*EPICA Dome C*

---

#### Description

EPICA Dome C 800-ka composite  $CO_2$  data.

#### Usage

epica2008

#### Format

A `data.frame` with 2 variables:

**age** Year BP.

**CO2**  $CO_2$  (ppmv).

#### Source

<https://www.ncei.noaa.gov/access/paleo-search/study/6091>

## References

Lüthi, D., Le Floch, M., Bereiter, B., Blunier, T., Barnola, J.-M., Siegenthaler, U., Raynaud, D., Jouzel, J., Fischer, H., Kawamura, K. and Stocker, T. F. (2008). High-resolution carbon dioxide concentration record 650,000-800,000 years before present. *Nature*, 453, 379-382. doi: [10.1038/nature06949](https://doi.org/10.1038/nature06949)

Monnin, E., Indermuhle, A., Dallenbach, A., Fluckiger, J., Stauffer, B., Stocker, T. F., Raynaud, D. and Barnola, J.-M. (2001). Atmospheric CO<sub>2</sub> concentrations over the last glacial termination. *Science*, 291, 112-114. doi: [10.1126/science.291.5501.112](https://doi.org/10.1126/science.291.5501.112)

Petit, J. R., Jouzel, J., Raynaud, D., Barkov, N. I., Barnola, J.-M., Basile, I., Benders, M., Chappellaz, J., Davis, M., Delayque, G., Delmotte, M., Kotlyakov, V. M., Legrand, M., Lipenkov, V. Y., Lorius, C., Pepin, L., Ritz, C., Saltzman, E. and Stievenard, M. (1999). Climate and atmospheric history of the past 420,000 years from the Vostok ice core, Antarctica. *Nature*, 399, 429-436. doi: [10.1038/20859](https://doi.org/10.1038/20859)

Siegenthaler, U., Stocker, T. F., Monnin, E., Lüthi, D., Schwander, J., Stauffer, B., Raynaud, D., Barnola, J.-M., Fischer, H., Masson-Delmotte, V., Jouzel, J. (2005). Stable Carbon Cycle-Climate Relationship During the Late Pleistocene. *Science*, 310, 1313-1317. doi: [10.1126/science.1120130](https://doi.org/10.1126/science.1120130)

## See Also

Other palaeoenvironment data: [law2006](#), [lisiecki2005](#), [ngrip2004](#), [spratt2016](#)

## Examples

```
plot(
  x = epica2008$age / 1000,
  y = epica2008$CO2,
  type = "l",
  xlim = c(800, 0),
  xlab = "kilo year BP",
  ylab = expression("CO"[2]~"(ppmv)"),
)
```

---

intcal09

*IntCal09*

---

## Description

The IntCal series of radiocarbon calibration curves.

## Usage

intcal09

**Format**

A `data.frame` with 5 variables:

**calBP** Calendar (calibrated) age (year BP).

**age** Radiocarbon age (year BP).

**error** Radiocarbon error (year BP).

**delta** Isotopic ratio  $\Delta^{14}C$  (per mil).

**sigma** Error on del ta (per mil).

**Source**

Reimer, P. J., Baillie, M. G. L., Bard, E., Bayliss, A., Beck, J. W., Blackwell, P. G., Bronk Ramsey, C. *et al.* (2009). IntCal09 and Marine09 Radiocarbon age Calibration Curves, 0-50,000 Years Cal BP. *Radiocarbon*, 51(4): 1111-50. doi: [10.1017/S0033822200034202](https://doi.org/10.1017/S0033822200034202).

**See Also**

Other radiocarbon dating: [arnold1949](#), [intcal13](#), [intcal20](#)

---

intcal13

*IntCal13*

---

**Description**

The IntCal series of radiocarbon calibration curves.

**Usage**

intcal13

**Format**

A `data.frame` with 5 variables:

**calBP** Calendar (calibrated) age (year BP).

**age** Radiocarbon age (year BP).

**error** Radiocarbon error (year BP).

**delta** Isotopic ratio  $\Delta^{14}C$  (per mil).

**sigma** Error on del ta (per mil).

**Source**

Reimer, P. J., Bard, E., Bayliss, A., Beck, J. W., Blackwell, P. G., Bronk Ramsey, C., Buck, C. E. *et al.* (2013). IntCal13 and Marine13 Radiocarbon age Calibration Curves 0-50,000 Years cal BP. *Radiocarbon*, 55(4): 1869-87. doi: [10.2458/azu\\_js\\_rc.55.16947](https://doi.org/10.2458/azu_js_rc.55.16947).



**See Also**

Other radiocarbon dating: [arnold1949](#), [intcal09](#), [intcal20](#)

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intcal20

*IntCal20*

---

**Description**

The IntCal series of radiocarbon calibration curves.

**Usage**

intcal20

**Format**

A `data.frame` with 5 variables:

**calBP** Calendar (calibrated) age (year BP).

**age** Radiocarbon age (year BP).

**error** Radiocarbon error (year BP).

**delta** Isotopic ratio  $\Delta^{14}C$  (per mil).

**sigma** Error on del ta (per mil).

**Source**

Reimer, P. J., Austin, W. E. N., Bard, E., Bayliss, A., Blackwell, P. G., Bronk Ramsey, C., Butzin, M. *et al.* (2020). The IntCal20 Northern Hemisphere Radiocarbon âge Calibration Curve (0-55 Cal KBP). *Radiocarbon*, 62(4), 725-757. doi: [10.1017/RDC.2020.41](https://doi.org/10.1017/RDC.2020.41).

**See Also**

Other radiocarbon dating: [arnold1949](#), [intcal09](#), [intcal13](#)

---

kommos

*Transport Jars from Kommos (Crete).*

---

### Description

Chemical analysis (neutron activation analysis) of 88 Late Bronze Age transport jars found in excavations at Kommos, Crete.

### Usage

kommos

### Format

A [data.frame](#) with 22 variables (chemical elements):

**type** CJ: Canaanite jar; EJ: Egyptian jar; TSJ: transport stirrup jar; SNA: short-necked amphora.

**date** Chronology (period).

**Sm** Sm content (ppm).

**Lu** Lu content (ppm).

**U** U content (ppm).

**Yb** Yb content (ppm).

**As** As content (ppm).

**Sb** Sb content (ppm).

**Ca** Ca content (ppm).

**Na** Na content (ppm).

**La** La content (ppm).

**Ce** Ce content (ppm).

**Th** Th content (ppm).

**Cr** Cr content (ppm).

**Hf** Hf content (ppm).

**Cs** Cs content (ppm).

**Sc** Sc content (ppm).

**Rb** Rb content (ppm).

**Fe** Fe content (ppm).

**Ta** Ta content (ppm).

**Co** Co content (ppm).

**Eu** Eu content (ppm).

## References

Day, P. M., Quinn, P. S., Rutter, J. B. & Kilikoglou, V. (2011). A World of Goods: Transport Jars and Commodity Exchange at the Late Bronze Age Harbor of Kommos, Crete. *Hesperia*, 80, 511-558. doi: [10.2972/hesperia.80.4.0511](https://doi.org/10.2972/hesperia.80.4.0511)

## See Also

Other chemical data: [verre](#)

---

law2006

*Law Dome Ice Core*

---

## Description

Law Dome Ice Core 2000-year  $CH_4$ ,  $CO_2$  and  $N_2O$  data.

## Usage

law2006

## Format

A [data.frame](#) with 2004 observations and 8 variables:

**year** Year AD.

**NOAA04** NOAA04  $CH_4$  scale.

**CH4\_spl**  $CH_4$  spline (ppb).

**CH4\_grw**  $CH_4$  growth Rate (ppb/yr).

**CO2\_spl**  $CO_2$  spline (ppb).

**CO2\_grw**  $CO_2$  growth Rate (ppb/yr).

**N2O\_spl**  $N_2O$  spline (ppb).

**N2O\_grw**  $N_2O$  growth Rate (ppb/yr).

## Source

<https://www.ncei.noaa.gov/access/paleo-search/study/9959>

## References

MacFarling Meure, C., Etheridge, D., Trudinger, C., Steele, P., Langenfelds, R., van Ommen, T., Smith, A. and Elkins, J. (2006). The Law Dome  $CO_2$ ,  $CH_4$  and  $N_2O$  Ice Core Records Extended to 2000 years BP. *Geophysical Research Letters*, 33(14), L14810. doi: [10.1029/2006GL026152](https://doi.org/10.1029/2006GL026152).

## See Also

Other palaeoenvironment data: [epica2008](#), [lisiECKi2005](#), [ngrip2004](#), [spratt2016](#)

## Examples

```
plot(  
  x = law2006$year,  
  y = law2006$CO2_spl,  
  type = "l",  
  xlab = "Year AD",  
  ylab = expression("CO"[2]~"(ppm)")  
)
```

---

lisiecki2005

*Global Benthic  $\delta^{18}O$  Stack*

---

## Description

A global Pliocene-Pleistocene benthic  $\delta^{18}O$  stack.

## Usage

```
lisiecki2005
```

## Format

A `data.frame` with 3 variables:

**age** Calendar age (kilo year cal BP).

**delta** Benthic  $\delta^{18}O$  (per mil).

**error** Standard error (per mil).

## Details

The LR04 stack spans 5.3 Myr and is an average of 57 globally distributed benthic  $\delta^{18}O$  records (which measure global ice volume and deep ocean temperature) collected from the scientific literature.

## Source

<https://www.ncei.noaa.gov/access/paleo-search/study/5847>

## References

Lisiecki, L. E. and Raymo, M. E. (2005). A Pliocene-Pleistocene stack of 57 globally distributed benthic  $\delta^{18}O$  records. *Paleoceanography*, 20, PA1003. doi: [10.1029/2004PA001071](https://doi.org/10.1029/2004PA001071)

## See Also

Other palaeoenvironment data: [epica2008](#), [law2006](#), [ngrip2004](#), [spratt2016](#)

Other isotopic data: [ngrip2004](#), [nydal1996](#), [spratt2016](#)

## Examples

```
plot(  
  x = lisiiecki2005$age,  
  y = lisiiecki2005$delta,  
  type = "l",  
  xlim = c(500, 0),  
  xlab = "kilo year BP",  
  ylab = expression(delta^{18}*"0")  
)
```

---

merzbach

*Merzbach Ceramics*

---

## Description

A dataset containing the ceramic counts from the Merzbach assemblage (Germany). The data are grouped into eight phases.

## Usage

```
merzbach
```

## Format

A `data.frame` with 8 rows (phases, numbered from VII to XIV) and 36 variables (pottery motifs).

## Source

Crema, E. R. (2016). Sample codes and data for "Revealing patterns of cultural transmission from frequency data: equilibrium and non-equilibrium assumptions". *Zenodo*, v1.0. doi: [10.5281/zenodo.187558](https://doi.org/10.5281/zenodo.187558).

## References

Crema, E. R., Kandler, A. & Shennan, S. (2016). Revealing Patterns of Cultural Transmission from Frequency Data: Equilibrium and Non-Equilibrium Assumptions. *Scientific Reports*, 6(1). doi: [10.1038/srep39122](https://doi.org/10.1038/srep39122).

## See Also

Other count data: [birds](#), [boves](#), [chevelon](#), [compiegne](#), [mississippi](#), [zuni](#)

---

mississippi

*Mississippi Ceramics*

---

### Description

A dataset containing ceramic counts from the Mississippi region.

### Usage

mississippi

### Format

A `data.frame` with 20 rows and 10 variables (ceramic types):

**ParkinPunctate**

**BartonKentMPI**

**Painted**

**FortuneNoded**

**RanchIncised**

**WallsEngraved**

**WallaceIncised**

**RhodesIncised**

**VernonPaulApplique**

**HullEngraved**

### Source

Lipo, C. P., Madsen, M. E. & Dunnell, R. C. (2015). A Theoretically-Sufficient and Computationally-Practical Technique for Deterministic Frequency Seriation. *PLOS ONE*, 10(4), e0124942. doi: [10.1371/journal.pone.0124942](https://doi.org/10.1371/journal.pone.0124942).

### See Also

Other count data: [birds](#), [boves](#), [chevelon](#), [compiegne](#), [merzbach](#), [zuni](#)

---

`ngrip2004`*North GRIP*

---

**Description**

50-year averaged oxygen isotope data from the North Greenland Ice Core Project.

**Usage**`ngrip2004`**Format**

A `data.frame` with 2 variables:

**age** Calendar age (years before 2000 AD).

**delta**  $\delta^{18}O$  (per mil).

**Source**

<https://www.ncei.noaa.gov/access/paleo-search/study/2481>

**References**

North Greenland Ice Core Project members (2004). High-resolution record of Northern Hemisphere climate extending into the last interglacial period. *Nature*, 431(7005), 147-151. doi: [10.1038/nature02805](https://doi.org/10.1038/nature02805)

**See Also**

Other palaeoenvironment data: [epica2008](#), [law2006](#), [lisiecki2005](#), [spratt2016](#)

Other isotopic data: [lisiecki2005](#), [nydal1996](#), [spratt2016](#)

**Examples**

```
plot(  
  x = ngrip2004$age / 1000,  
  y = ngrip2004$delta,  
  type = "l",  
  xlim = c(120, 0),  
  xlab = "kilo year b2k",  
  ylab = expression(delta^{18}*0")  
)
```

---

nydal1996

$\delta^{14}C$  Measurements in Atmospheric CO<sub>2</sub>

---

### Description

Corrected  $^{14}C$  measurements from air samples collected at five Norwegian sites from 1962-1993.

### Usage

nydal1996

### Format

A `data.frame` with 5 variables:

**site** Sampling station.

**start** Beginning date of the sampling period.

**end** Ending date of the sampling period.

**delta** Isotopic ratio  $\Delta^{14}C$  (per mil).

**sigma** Error on delta (per mil).

### Source

Nydal, R. and Lövseth, K. (1996). *Carbon-14 Measurements in Atmospheric CO<sub>2</sub> from Northern and Southern Hemisphere Sites, 1962-1993*. ORNL/CDIAC-93; NDP-057. Washington, DC: USDOE Office of Energy Research. doi: [10.2172/461185](https://doi.org/10.2172/461185)

### See Also

Other isotopic data: [lisiiecki2005](#), [ngrip2004](#), [spratt2016](#)

### Examples

```
plot(  
  x = nydal1996$start,  
  y = nydal1996$delta,  
  type = "p",  
  xlab = "Date",  
  ylab = expression(Delta^{14}*"%C")  
)
```



---

spratt2016

*Late Pleistocene Sea Level Stack*

---

### Description

A Late Pleistocene sea level stack based on marine sediment core data (foraminiferal carbonate  $\delta^{18}O$ ).

### Usage

spratt2016

### Format

A `data.frame` with 9 variables:

**age\_calkaBP** Age (calendar kilo year BP).

**SeaLev\_shortPC1** Sea Level (meters above present day), climate reconstructions (scaled first principal component of seven sea level reconstructions (0-430 ka)).

**SeaLev\_shortPC1\_err\_sig** Sea Level standard deviation from bootstrap (meters), climate reconstructions (scaled first principal component of seven sea level reconstructions (0-430 ka)).

**SeaLev\_shortPC1\_err\_lo** Sea Level 95% confidence interval lower bound (meters), climate reconstructions (scaled first principal component of seven sea level reconstructions (0-430 ka)).

**SeaLev\_shortPC1\_err\_up** Sea Level 95% confidence interval upper bound (meters), climate reconstructions (scaled first principal component of seven sea level reconstructions (0-430 ka)).

**SeaLev\_longPC1** Sea Level (meters above present day), climate reconstructions (scaled first principal component of five sea level reconstructions (0-798 ka)).

**SeaLev\_longPC1\_err\_sig** Sea Level standard deviation from bootstrap (meters), climate reconstructions (scaled first principal component of five sea level reconstructions (0-798 ka)).

**SeaLev\_longPC1\_err\_lo** Sea Level 95% confidence interval lower bound (meters), climate reconstructions (scaled first principal component of five sea level reconstructions (0-798 ka)).

**SeaLev\_longPC1\_err\_up** Sea Level 95% confidence interval upper bound (meters), climate reconstructions (scaled first principal component of five sea level reconstructions (0-798 ka)).

### Source

<https://www.ncei.noaa.gov/access/paleo-search/study/19982>

### References

Spratt, R. M. and Lisiecki, L. E. (2016). A Late Pleistocene sea level stack. *Climate of the Past*, 12, 1079-1092. doi: [10.5194/cp1210792016](https://doi.org/10.5194/cp1210792016)

**See Also**

Other palaeoenvironment data: [epica2008](#), [law2006](#), [lisiecki2005](#), [ngrip2004](#)

Other isotopic data: [lisiecki2005](#), [ngrip2004](#), [nydal1996](#)

**Examples**

```
plot(  
  x = spratt2016$age_calkaBP,  
  y = spratt2016$SeaLev_longPC1,  
  type = "l",  
  xlim = c(500, 0),  
  xlab = "kilo year BP",  
  ylab = "Sea level (meters above present)"  
)
```

---

stratigraphy

*Chronostratigraphic Chart*

---

**Description**

The ICS international chronostratigraphic chart (v2022/2).

**Usage**

```
stratigraphy
```

**Format**

A `data.frame` with 5 variables:

**type** Unit type ("eon", "era", "period", "series" or "stage"). Precambrian and Hadean are informal units.

**name** Unit name.

**age** Numerical age (Ma).

**error** Error on numerical age (Ma).

**parent** Parent unit.

**Source**

<https://stratigraphy.org/ICSchart/ChronostratChart2022-02.pdf>

**References**

Cohen, K. M., Finney, S. C., Gibbard, P. L. and Fan, J.-X. (2013). The ICS International Chronostratigraphic Chart. *Episodes*, 36(3): 199-204. doi: [10.18814/epiugs/2013/v36i3/002](https://doi.org/10.18814/epiugs/2013/v36i3/002)

verre

*French Medieval Glass Composition***Description**

Chemical analysis (electron probe X-ray micro analysis) of 398 medieval glass vessels found in France.

**Usage**

verre

**Format**

A `data.frame` with 17 variables:

**Site** CNL: Cour Napoléon, Louvre; ORL: Orléans; POI: Poitiers; ANG: Angers; OMO: Omonville, Seine Maritime; ROU: Rouen; MEA: Meaux; CHL: Châlons-sur-Marne; PAI: Pairu (Argonne, Ardennes); BER: Bercettes (Argonne, Ardennes); BIN: Binois (Argonne, Ardennes); CHE: Chevré (Argonne, Ardennes); MIT: Mitte (Argonne, Ardennes); MET: Metz; CHM: Chambaran.

**Sample** Sample code.

**Type** Typology.

**Age** Century.

**Periode** I: 9th-12th century; II: 13th-first half of the 15th century; III: end of the 15th to end of the 16th century; IV: end of 16th to end of the 17th century.

**Tint** B: blue; CL: colourless; CLg colourless (greyish tint); PB: pale blue; PGE: pale greenish; PGE-B: pale green-blue or blue-green; PGY-B: pale grey-blue; R: opaque red; W: opaque white; \*av: added aventurine spots; \*bl: added thread blue or blue spots; \*r: added thread opaque red or opaque red spots; \*w: added thread opaque white.

**Na2O** Na<sub>2</sub>O content (percent).

**CaO** CaO content (percent).

**K2O** K<sub>2</sub>O content (percent).

**MgO** MgO content (percent).

**P2O5** P<sub>2</sub>O<sub>5</sub> content (percent).

**SiO2** SiO<sub>2</sub> content (percent).

**Al2O3** Al<sub>2</sub>O<sub>3</sub> content (percent).

**FeO** FeO content (percent).

**MnO** MnO content (percent).

**Cl** Cl content (percent).

**Reference** Site reference.

## References

Barrera J., Velde B. (1989). A study of french medieval glass composition. *Archéologie médiévale*, 19, 81-130. doi: [10.3406/arcme.1989.953](https://doi.org/10.3406/arcme.1989.953).

## See Also

Other chemical data: [kommos](#)

## Examples

```
plot(
  x = verre$Na20,
  y = verre$Ca0 / (verre$Ca0 + verre$K20),
  type = "p",
  xlab = expression("Na"[2]*"0 (%)"),
  ylab = expression("Ca0"/"(Ca0"+"K"[2]*"0)"),
)
```

---

zuni

*Zuni Ceramics*

---

## Description

A dataset containing ceramic counts from the Zuni region of the American Southwest.

## Usage

zuni

## Format

A [data.frame](#) with 420 rows (assemblages) and 18 variables (ceramic types). The numbers in brackets correspond to the date range of each type (in AD years):

**LINO** Lino Gray (575-875).

**KIAT** Kiatuthlanna Black-on-white (850-910).

**RED** Red Mesa Black-on-white (900-1030).

**GALL** Gallup Black-on-white (1025-1150).

**ESC** Escavada Black-on-white (1050-1150).

**PUBW** Puerco Black-on-white (1050-1200).

**RES** Reserve Black-on-white (1071-1115).

**TULA** Tularosa Black-on-white (1175-1300).

**PINE** Pinedale Black-on-white (1275-1325).

**PUBR** Puerco Black-on-red (1050-1200).

**WING** Wingate Black-on-red (1070-1200).

- WIPO** Wingate Polychrome (1150-1250).  
**SJ** St. Johns Black-on-red/Polychrome (1200-1300).  
**LSJ** St. Johns glaze, Techado Polychrome (1275-1300).  
**SPR** Springerville Polychrome (1250-1300).  
**PINER** Pinedale Black-on-red/Polychrome (1275-1325).  
**HESH** Heshotauthla Polychrome (1285-1400).  
**KWAK** Kwakina Polychrome (1285-1400).

**Source**

Peebles, M. A., & Schachner, G. (2012). Refining correspondence analysis-based ceramic seriation of regional data sets. *Journal of Archaeological Science*, 39(8), 2818-2827. doi: [10.1016/j.jas.2012.04.040](https://doi.org/10.1016/j.jas.2012.04.040).

**See Also**

Other count data: [birds](#), [boves](#), [chevelon](#), [compiegne](#), [merzbach](#), [mississippi](#)

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