Package 'roadDB'

February 8, 2026

Type Package

Title Access Data from the ROCEEH Out of Africa Database (ROAD)

Version 0.1.0

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Description Provides an R interface to the ROCEEH Out of Africa Database (ROAD) (<https://www.roceeh.uni-tuebingen.de/roadweb/smarty_road_simple_search.php>), a comprehensive resource for archaeological, anthropological, paleoenvironmental and geographic data from Africa and Eurasia dating from 3,000,000 to 20,000 years BP. The package allows users to retrieve data from the online database at different levels of detail and customize search requests. Functions return `data frame` objects compatible with other R packages used in prehistoric and paleoenvironmental science, supporting reproducible workflows as an input provider.

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Encoding UTF-8

RoxygenNote 7.3.3

Suggests ggplot2, knitr, rmarkdown, testthat (>= 3.0.0)

Config/testthat/edition 3

Imports RPostgres, assertthat, utils, dplyr, stringr, glue

NeedsCompilation no

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Repository CRAN

Date/Publication 2026-02-08 16:10:02 UTC

Contents

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road_get_assemblages	*Get assemblages from the ROAD database*

Description

The `road_get_assemblages` function retrieves data on assemblages from the ROAD database. The ROAD table assemblage contains information about classes of finds. An assemblage is defined as a collected find consisting of grouped classes of materials, for example: archaeological finds (including raw material, typology, technology, function, organic tools, symbolic artifacts, feature and miscellaneous finds), human remains, faunal remains or botanical remains. An assemblage comes from a single geological layer or several geological layers of a locality, whether the nature of the locality is geological, archaeological or paleontological. Each physical object contained in any assemblage can appear only once in this table.

Usage

```
road_get_assemblages(
  continent = NULL,
  subcontinent = NULL,
  country = NULL,
  locality_type = NULL,
  cultural_period = NULL,
  technocomplex = NULL,
  category = NULL,
  age_min = NULL,
  age_max = NULL
)
```

Arguments

continent	specifies the continent(s) (e.g. Africa, Europe, Asia). Run road_list_argument_values("continent") to display possible values. The argument continent is a string (one item) or vector of strings (one or more items); defaults to NULL.
subcontinent	specifies the continental region(s) (e.g. Southern Europe). Run road_list_argument_values("subcont to display possible values. The argument subcontinent is a string (one item) or vector of strings (one or more items); defaults to NULL.
country	specifies the name of the country where a locality is situated (e.g. Germany, Kenya, Saudi Arabia). Run road_list_argument_values("country") to display possible values. The argument country is a string (one item) or vector of strings (one or more items); defaults to NULL.
locality_type	specifies the type of locality (e.g. cave, rockshelter, open air). Run road_list_argument_values("loca to display possible values. The argument locality_type is a string (one item) or vector of strings (one or more items); defaults to NULL.
cultural_period	
	specifies the main cultural epoch(s) and includes the Eurasian Paleolithic (Lower, Middle, Upper, Epi-) and the African Stone Age (Earlier, Middle, Later). Run road_list_argument_values("cultural_period") to display possible values. The argument cultural_period is a string (one item) or vector of strings (one or more items); defaults to NULL.
technocomplex	specifies an archaeological culture or named stone tool industry (e.g. Oldowan, Acheulean, Mousterian). Run road_list_argument_values("technocomplex") to display possible values. The argument technocomplex is a string (one item) or vector of strings (one or more items); defaults to NULL.
category	specifies the assemblage category with the classes human remains, raw material, typology, technology, function, organic tools, symbolic artifacts, feature, miscellaneous finds, paleofauna, animal remains, plant remains. The argument category is a string (one item) or vector of strings (one or more items); defaults to NULL.
age_min	specifies the minimum age in years before present, using 1950 CE as the baseline. If possible the argument age_min will be converted to an integer; defaults to NULL.
age_max	specifies the maximum age in years before present, using 1950 CE as the baseline. If possible the argument age_max will be converted to an integer; defaults to NULL.

Details

Use parameters to filter search results by location, type, culture, assemblage category, age or omit them to have a broader result set. All parameters are optional and should be omitted or set to NULL when not used.

Value

A data frame with assemblage information. Rows represent individual assemblages, columns contain:

`locality_id`: The unique identifier for the locality where the assemblage was found.

`continent, subcontinent, country`: The attributes specify the geopolitical information of the locality.

`locality_type`: The attribute specifies the type of locality (e.g. cave, rockshelter, open air).

`coord_x, coord_y`: The attributes specify the geographic coordinates (longitude and latitude) of the locality.

`coordinate_source`: The source of the geographic coordinates.

`assemblage_id`: The unique identifier for the assemblage.

`assemblage_name`: The name or designation of the assemblage.

`category`: The assemblage category (e.g., human remains, raw material, typology, paleofauna, plant remains).

`age_min`: The minimum age of the assemblage in years before present (BP), based on associated geological stratigraphy.

`age_max`: The maximum age of the assemblage in years before present (BP), based on associated geological stratigraphy.

`geolayers`: The name(s) of the geological layer(s) associated with the assemblage.

`archlayers`: The name(s) of the archaeological layer(s) associated with the assemblage.

`cultural_period`: The cultural period(s) associated with the assemblage (e.g., Lower Paleolithic, Middle Stone Age).

`technocomplex`: The archaeological culture(s) or stone tool industry/industries associated with the assemblage (e.g., Acheulean, Mousterian).

`is_systematic`: Description of the collection method quality (excavation, survey, or opportunistic collection).

`human_remains`: Logical value indicating whether the assemblage contains human remains.

`paleofauna`: Logical value indicating whether the assemblage contains paleofauna.

`archaeology`: Logical value indicating whether the assemblage contains archaeological finds.

`plant_remains`: Logical value indicating whether the assemblage contains plant remains.

Examples

```
road_get_assemblages(country = c("Germany", "France"), age_min = 300000,
                     category = c("miscellaneous finds"))
road_get_assemblages(subcontinent = c("Caucasus"), category = "human remains",
                     age_max = 100000)
```

---

road_get_dates	*Retrieve dating information for assemblages, geological and archaeological layers from the ROAD Database*

Description

The `road_get_dates` function retrieves absolute dating records for assemblages, geological layers, and archaeological layers from the ROAD database.

Usage

```
road_get_dates(assemblages = NULL)
```

Arguments

assemblages	specifies a data frame with a subset of assemblages, for which dating information should be retrieved. It must necessarily contain the columns `locality_id` and `assemblage_id` (e.g., the output of `road_get_assemblages()`, or other functions with this level of detail).

Details

Use the argument to filter search results by assemblage or omit it to have a broader result set. The argument is optional and should be omitted or set to NULL when not used.

The function is designed for users analyzing time series and allows for filtering results based on various criteria.

Background on Dating Context: Not all finds can be directly dated, either due to potential damage during sampling or because the materials are unsuitable for absolute dating. In such cases, the surrounding sediment or other objects—made from more suitable materials—are dated and associated with the find. As a result, absolute dates are stored in three different tables within ROAD:

- `geological_layer_age`: Dates from samples taken from geological layers.
- `archaeological_layer_age`: Dates from samples taken from archaeological layers.
- `assemblage_age`: Dates from samples taken directly from objects.

Background on multiple dates: Multiple dates may be available for a single object. For example, both the top and bottom of a stratigraphic unit may be sampled to bracket the age of a find. Different dating methods might also be used to obtain robust results, which can lead to varying age estimates. This is especially true when earlier dating methods are updated with more modern techniques. It is recommended to cross-check all results against relevant literature.

Background on aggregated ages: The ROCEEH project has developed its own model to aggregate both absolute and relative dating methods to derive the variables `age_min` and `age_max`. These aggregated ages are not included in the `road_get_dates` function, which only returns raw data.

Background on radiocarbon dating: Please note that C14 dates are uncalibrated. For further analysis, use one of the available calibration tools, such as the **rcarbon** package available on CRAN (see: https://cran.r-project.org/package=rcarbon).

All parameters are optional. If not used, omit them or set them to NULL.

Value

A data frame with absolute dating information. Rows represent individual dates, columns contain standard outputs and dating-related details on:

age: The attribute specifies the result of the dating analysis as reported by the laboratory in years before present (BP). Note that 14C dates are **uncalibarated**.

negative_standard_deviation & positive_standard_deviation: The attributes specify the positive and negative standard deviation of the dating analysis in years.

material_dated: The attribute specifies the general type of material analyzed (e.g. bone, tooth, antler etc.).

dating_method: The attribute specifies the method of analysis (e.g. 14C, OSL, IRSL, etc.).

laboratory_idlaboratory: The attribute is the official abbreviation for the designated analytical laboratory.

analysis_number: The attribute specifies the official laboratory number assigned to the dated sample (e.g., Pta-2345, GrA-1234, OxA-X-2456-45). It always includes the lab prefix, followed by a single hyphen, and then the official number provided by the laboratory.

date_of_analysis: The attribute specifies the year of the analysis/report or the first publication of the results in the format yyyy.

id: The attribute is automatically generated, sequential number. This number is unique for each age table.

publication: The attribute is a list of publications describing the respective geological stratigraphy.

Examples

```
assemblages <- road_get_assemblages(country="Slovenia")
road_get_dates(assemblages)
```

---

road_get_features   *Get feature assemblages from the ROAD database*

Description

The road_get_features retrieves data on archaeological features from the ROAD database. Feature assemblages refer to archaeological features such as hearths, pits, or structures found at a site. This function enables you to query feature data from the ROAD database using parameters like geographical location, cultural periods, feature interpretation, and assemblages. Use the parameters to filter the results or omit them for broader results.

Usage

```
road_get_features(
  continent = NULL,
  subcontinent = NULL,
  country = NULL,
```

```
    locality_type = NULL,
    cultural_period = NULL,
    technocomplex = NULL,
    category = NULL,
    age_min = NULL,
    age_max = NULL,
    feature_interpretation = NULL,
    assemblages = NULL
)
```

Arguments

continent   specifies the continent(s) (e.g. Africa, Europe, Asia). Run `road_list_argument_values("continent")`
                   to display possible values. The argument `continent` is a string (one item) or
                   vector of strings (one or more items); defaults to NULL.

subcontinent   specifies the continental region(s) (e.g. Southern Europe). Run `road_list_argument_values("subcont`
                   to display possible values. The argument `subcontinent` is a string (one item)
                   or vector of strings (one or more items); defaults to NULL.

country   specifies the name of the country where a locality is situated (e.g. Germany,
                   Kenya, Saudi Arabia). Run `road_list_argument_values("country")` to dis-
                   play possible values. The argument `country` is a string (one item) or vector of
                   strings (one or more items); defaults to NULL.

locality_type   specifies the type of locality (e.g. cave, rockshelter, open air). Run `road_list_argument_values("loca`
                   to display possible values. The argument `locality_type` is a string (one item)
                   or vector of strings (one or more items); defaults to NULL.

cultural_period
                   specifies the main cultural epoch(s) and includes the Eurasian Paleolithic (Lower,
                   Middle, Upper, Epi-) and the African Stone Age (Earlier, Middle, Later). Run
                   `road_list_argument_values("cultural_period")` to display possible val-
                   ues. The argument `cultural_period` is a string (one item) or vector of strings
                   (one or more items); defaults to NULL.

technocomplex   specifies an archaeological culture or named stone tool industry (e.g. Oldowan,
                   Acheulean, Mousterian). Run `road_list_argument_values("technocomplex")`
                   to display possible values. The argument `technocomplex` is a string (one item)
                   or vector of strings (one or more items); defaults to NULL.

category   specifies the assemblage category with the classes human remains, raw mate-
                   rial, typology, technology, function, organic tools, symbolic artifacts, feature,
                   miscellaneous finds, paleofauna, animal remains, plant remains. The argument
                   `category` is a string (one item) or vector of strings (one or more items); defaults
                   to NULL.

age_min   specifies the minimum age in years before present, using 1950 CE as the base-
                   line. If possible the argument `age_min` will be converted to an integer; defaults
                   to NULL.

age_max   specifies the maximum age in years before present, using 1950 CE as the base-
                   line. If possible the argument `age_max` will be converted to an integer; defaults
                   to NULL.
```

feature_interpretation

> specifies archaeological features present in the archaeological assemblage (e.g.
> bedding, burial, butchering event). Run road_list_argument_values("feature_interpretation")
> to display possible values. The argument feature_interpretation is a string
> (one item) or vector of strings; defaults to NULL.

assemblages      specifies a data frame necessarily containing columns locality_id, assemblage_id.
> It can be generated as return value of the function 'road_get_assemblages'. It
> can be used instead of the locality and assemblage search parameters to filter the
> results.

#### Value

A data frame with information about archaeological features. Rows represent individual features,
columns contain details on:

interpretations: Interpretation of the feature present in the archaeological assemblage. Interpretations can be "bedding", "burial", "butchering event", "combustion feature", "cupule", "dumping area".

#### Examples

```
road_get_features(country = "Czech Republic", feature_interpretation = "textile imprints")
road_get_features(continent = "Africa", locality_type = c("cave"),
                                    feature_interpretation = "bedding")
```

---

road_get_human_remains
Get human remains from the ROAD database

Description

The road_get_human_remains function retrieves data on human remains from the ROAD database.
Human remains are human fossil finds and always associated with an assemblage. A human remain
is a direct and substantial piece of evidence for the presence of fossil hominids at a particular locality. Next to the assemblage information the function returns genus, species, age and sex if available
and further information regarding the remains. The dataset may also include indirect evidence such
as fossil endocasts and footprints.

Usage

```
road_get_human_remains(
  continent = NULL,
  subcontinent = NULL,
  country = NULL,
  locality_type = NULL,
  cultural_period = NULL,
  technocomplex = NULL,
  category = NULL,
```

```
    age_min = NULL,
    age_max = NULL,
    assemblages = NULL,
    human_genus = NULL,
    human_species = NULL
)
```

Arguments

continent	specifies the continent(s) (e.g. Africa, Europe, Asia). Run `road_list_argument_values("continent")` to display possible values. The argument `continent` is a string (one item) or vector of strings (one or more items); defaults to NULL.
subcontinent	specifies the continental region(s) (e.g. Southern Europe). Run `road_list_argument_values("subcont` to display possible values. The argument `subcontinent` is a string (one item) or vector of strings (one or more items); defaults to NULL.
country	specifies the name of the country where a locality is situated (e.g. Germany, Kenya, Saudi Arabia). Run `road_list_argument_values("country")` to display possible values. The argument `country` is a string (one item) or vector of strings (one or more items); defaults to NULL.
locality_type	specifies the type of locality (e.g. cave, rockshelter, open air). Run `road_list_argument_values("loca` to display possible values. The argument `locality_type` is a string (one item) or vector of strings (one or more items); defaults to NULL.
cultural_period	
	specifies the main cultural epoch(s) and includes the Eurasian Paleolithic (Lower, Middle, Upper, Epi-) and the African Stone Age (Earlier, Middle, Later). Run `road_list_argument_values("cultural_period")` to display possible values. The argument `cultural_period` is a string (one item) or vector of strings (one or more items); defaults to NULL.
technocomplex	specifies an archaeological culture or named stone tool industry (e.g. Oldowan, Acheulean, Mousterian). Run `road_list_argument_values("technocomplex")` to display possible values. The argument `technocomplex` is a string (one item) or vector of strings (one or more items); defaults to NULL.
category	specifies the assemblage category with the classes human remains, raw material, typology, technology, function, organic tools, symbolic artifacts, feature, miscellaneous finds, paleofauna, animal remains, plant remains. The argument `category` is a string (one item) or vector of strings (one or more items); defaults to NULL.
age_min	specifies the minimum age in years before present, using 1950 CE as the baseline. If possible the argument `age_min` will be converted to an integer; defaults to NULL.
age_max	specifies the maximum age in years before present, using 1950 CE as the baseline. If possible the argument `age_max` will be converted to an integer; defaults to NULL.
assemblages	specifies a data frame necessarily containing columns locality_id, assemblage_id. It can be generated as return value of the function 'road_get_assemblages'. It can be used instead of the locality and assemblage search parameters to filter the results.

human_genus   specifies the genus to which the described fossil is attributed to. Possible entries
                   include: "Australopithecus", "Homo", "indet", etc. Run `road_list_argument_values("human_genus")`
                   to display possible values. The argument `human_genus` is a string (one item) or
                   vector of strings; defaults to NULL.

human_species   specifies the species to which the described fossil is attributed. Possible entries
                   include: "afarensis", "sapiens", "erectus" or "sp." for unidentified species. Run
                   `road_list_argument_values("human_species")` to display possible values.The
                   parameter `human_species` is a string (one item) or vector of strings; defaults to
                   NULL.

Details

Use the parameters to filter the results or omit them to retrieve a broader dataset. Genus and species
parameters can be entered as a vector of strings to search for multiple entries. If genus and species
are both specified, most of the time it's more sensible to enter them as single strings and not as
vectors with multiple search words to recieve useful results.

Value

A data frame with human remains information. Rows represent individual human remains finds,
columns contain standard outputs and human remains-related details on:

`human_remains_id`: Unique identifier for each human remains entry per assemblage.

`genus`: The genus to which the described fossil is attributed to.

`species`: The species to which the described fossil is attributed to.

`age`: The age class of the individual at death (e.g. infant, juvenile, adult, subadult, mature).

`sex`: The sex of the individual (e.g. F for female or M for male).

`skeletal_element`: The attribute skeletal_element is an anatomical designation and contains a
brief description of the fossil described in the dataset. Cranial and postcranial bones are named
by their anatomical appellation in Latin, for example: humerus, (os) capitatum, (os) zygomaticum,
os coxae, etc. Left and right are denoted as "L" and "R". Teeth are abbreviated by letters (M =
molars, P = premolars, I = incisors, C = canines) combined with Arabic numerals ([automatically
generated]) to definitively assign their position in the dental arch. The appellations "upper" and
"lower" are not expressed through a subscript or superscript number but written as words. Possible
examples include: upper L M1, R humeral epiphysis, natural endocast, etc.

`human_remains_category`: The attribute category indicates the element group to which the fossil
belongs. C for cranial bones, D for dental remains, P for postcranial bones, E for natural endocasts,
I for imprints that are negative molds of body parts, including footprints, S for sediment (containing
human aDNA).

Examples

```
road_get_human_remains(subcontinent = "East Africa", human_genus = c('Paranthropus'))
road_get_human_remains(subcontinent = 'Caucasus', human_genus = 'Homo',
                        human_species = 'neanderthalensis')
```

road_get_lithic_raw_materials
                    Get lithic raw material from the ROAD database

Description

The `road_get_lithic_raw_materials` retrieves data of lithic finds from the ROAD database. Lithic raw materials refer to the types of rock used for tool production in archaeological contexts. This function allows you to query lithic raw material data from the ROAD database using parameters such as geographical location, cultural periods, raw material types, and assemblages. Use the parameters to filter the results or omit them to retrieve a broader dataset.

Usage

```
road_get_lithic_raw_materials(
  continent = NULL,
  subcontinent = NULL,
  country = NULL,
  locality_type = NULL,
  cultural_period = NULL,
  technocomplex = NULL,
  category = NULL,
  age_min = NULL,
  age_max = NULL,
  raw_material_list = NULL,
  transport_distance = NULL,
  assemblages = NULL
)
```

Arguments

continent	specifies the continent(s) (e.g. Africa, Europe, Asia). Run `road_list_argument_values("continent")` to display possible values. The argument `continent` is a string (one item) or vector of strings (one or more items); defaults to NULL.
subcontinent	specifies the continental region(s) (e.g. Southern Europe). Run `road_list_argument_values("subcont` to display possible values. The argument `subcontinent` is a string (one item) or vector of strings (one or more items); defaults to NULL.
country	specifies the name of the country where a locality is situated (e.g. Germany, Kenya, Saudi Arabia). Run `road_list_argument_values("country")` to display possible values. The argument `country` is a string (one item) or vector of strings (one or more items); defaults to NULL.
locality_type	specifies the type of locality (e.g. cave, rockshelter, open air). Run `road_list_argument_values("loca` to display possible values. The argument `locality_type` is a string (one item) or vector of strings (one or more items); defaults to NULL.

cultural_period

specifies the main cultural epoch(s) and includes the Eurasian Paleolithic (Lower, Middle, Upper, Epi-) and the African Stone Age (Earlier, Middle, Later). Run `road_list_argument_values("cultural_period")` to display possible values. The argument `cultural_period` is a string (one item) or vector of strings (one or more items); defaults to NULL.

technocomplex   specifies an archaeological culture or named stone tool industry (e.g. Oldowan, Acheulean, Mousterian). Run `road_list_argument_values("technocomplex")` to display possible values. The argument `technocomplex` is a string (one item) or vector of strings (one or more items); defaults to NULL.

category   specifies the assemblage category with the classes human remains, raw material, typology, technology, function, organic tools, symbolic artifacts, feature, miscellaneous finds, paleofauna, animal remains, plant remains. The argument `category` is a string (one item) or vector of strings (one or more items); defaults to NULL.

age_min   specifies the minimum age in years before present, using 1950 CE as the baseline. If possible the argument `age_min` will be converted to an integer; defaults to NULL.

age_max   specifies the maximum age in years before present, using 1950 CE as the baseline. If possible the argument `age_max` will be converted to an integer; defaults to NULL.

raw_material_list

specifies lithic raw materials (e.g. quartz, chert, flint). Consider the function `road_get_organic_tools()` for non-lithic raw materials. Run `road_list_argument_values("raw_ma` to display possible values. The argument `raw_material_list` is a string (one item) or vector of strings (one or more items); defaults to NULL.

transport_distance

specifies one of the five category, each distinguished by specific intervals of transport for the raw materials present in the assemblage. The five classes of transport distance are:

- local (0-5 km)
- regional (6-20 km)
- supra-regional (21-100 km)
- distant (>100 km)
- unknown

Run `road_list_argument_values("transport_distance")` to display possible values. The argument `transport_distance` is a string (one item) or vector of strings; defaults to NULL.

assemblages   specifies a data frame necessarily containing columns locality_id, assemblage_id. It can be generated as return value of the function 'road_get_assemblages'. It can be used instead of the locality and assemblage search parameters to filter the results.

Value

A data frame with information about lithic finds. Rows represent individual raw material finds, columns contain details on:

transport distance: Specific interval of transport for the raw materials in the given record.

percentage: Percentage of the raw materials of the given record in the corresponding assemblage.

raw material list: List of raw materials of the given record.

Examples

```
road_get_lithic_raw_materials(subcontinent = "South Asia", raw_material_list = c("limestone"))
road_get_lithic_raw_materials(subcontinent = c("Caucasus"), locality_type = "cave",
                              raw_material_list = c("chalcedony", "limestone"))
```

---

road_get_lithic_typologies

Get lithic typology from the ROAD database

Description

The road_get_lithic_typologies function retrieves data on find typology from the ROAD database. Lithic typology refers to the classification of stone tools based on their shape, technology, and function. This function allows you to query lithic typology data using various parameters, such as geographical location, cultural period, tool type, and assemblage. Use these parameters to filter results according to your research needs, or omit them to retrieve a broader dataset.

Usage

```
road_get_lithic_typologies(
  continent = NULL,
  subcontinent = NULL,
  country = NULL,
  locality_type = NULL,
  cultural_period = NULL,
  technocomplex = NULL,
  category = NULL,
  age_min = NULL,
  age_max = NULL,
  assemblages = NULL,
  tool_list = NULL
)
```

Arguments

continent   specifies the continent(s) (e.g. Africa, Europe, Asia). Run road_list_argument_values("continent")
               to display possible values. The argument continent is a string (one item) or
               vector of strings (one or more items); defaults to NULL.

subcontinent   specifies the continental region(s) (e.g. Southern Europe). Run road_list_argument_values("subcont
               to display possible values. The argument subcontinent is a string (one item)
               or vector of strings (one or more items); defaults to NULL.

country   specifies the name of the country where a locality is situated (e.g. Germany, Kenya, Saudi Arabia). Run `road_list_argument_values("country")` to display possible values. The argument `country` is a string (one item) or vector of strings (one or more items); defaults to NULL.

locality_type   specifies the type of locality (e.g. cave, rockshelter, open air). Run `road_list_argument_values("loca` to display possible values. The argument `locality_type` is a string (one item) or vector of strings (one or more items); defaults to NULL.

cultural_period

                 specifies the main cultural epoch(s) and includes the Eurasian Paleolithic (Lower, Middle, Upper, Epi-) and the African Stone Age (Earlier, Middle, Later). Run `road_list_argument_values("cultural_period")` to display possible values. The argument `cultural_period` is a string (one item) or vector of strings (one or more items); defaults to NULL.

technocomplex   specifies an archaeological culture or named stone tool industry (e.g. Oldowan, Acheulean, Mousterian). Run `road_list_argument_values("technocomplex")` to display possible values. The argument `technocomplex` is a string (one item) or vector of strings (one or more items); defaults to NULL.

category   specifies the assemblage category with the classes human remains, raw material, typology, technology, function, organic tools, symbolic artifacts, feature, miscellaneous finds, paleofauna, animal remains, plant remains. The argument `category` is a string (one item) or vector of strings (one or more items); defaults to NULL.

age_min   specifies the minimum age in years before present, using 1950 CE as the baseline. If possible the argument `age_min` will be converted to an integer; defaults to NULL.

age_max   specifies the maximum age in years before present, using 1950 CE as the baseline. If possible the argument `age_max` will be converted to an integer; defaults to NULL.

assemblages   specifies a data frame necessarily containing columns locality_id, assemblage_id. It can be generated as return value of the function 'road_get_assemblages'. It can be used instead of the locality and assemblage search parameters to filter the results.

tool_list   specifies values that can be entered for various tool types. Tool types can contain 1) chipped tool types like scraper end, scraper side, scraper, carinated, burin, handaxe, chopper, cleaver, point, point unifacial, segment, unknown; 2) non-chipped tool types like grindstone upper, hammerstone, anvil, retoucher; 3) non-tools like core, debitage, flake, point; 4) unknown like cobble, block, manuport. Run `road_list_argument_values("tool_list")` to display possible values. The argument `tool_list` is a string (one item) or vector of strings (one or more items); defaults to NULL.

Value

A data frame with information about lithic typology. Rows represent individual lithic finds, columns contain typology-related details on:

typology: Description of the tool type group present in the lithic record. Possible values are: "chipped tool", "non-chipped tool", "non-tool", and "unknown".

percentage:Percentage of the given typology within the corresponding assemblage.

`tool_list`: List of specific tool types present in the lithic record.

Examples

```
road_get_lithic_typologies(country = c("South Africa"), tool_list = "adze")
road_get_lithic_typologies(subcontinent = "Eastern Europe",
                           tool_list = c("bladelet burin spall"))
```

road_get_localities   *Get localities from the ROAD Database*

Description

The `road_get_localities` funrction retrieves data of archaeological sites (localities) from the ROAD database. The ROAD table locality provides basic information about each location where an assemblage of archaeological, paleoanthropological, paleontological, paleobotanical or other relevant material was described, recorded, sampled or collected. Every locality (site) is situated in a specific country within a given geographic region. The name of every locality is unique.

Usage

```
road_get_localities(
  continent = NULL,
  subcontinent = NULL,
  country = NULL,
  locality_type = NULL,
  cultural_period = NULL,
  technocomplex = NULL,
  category = NULL,
  age_min = NULL,
  age_max = NULL
)
```

Arguments

continent	specifies the continent(s) (e.g. Africa, Europe, Asia). Run `road_list_argument_values("continent")` to display possible values. The argumentcontinent is a string (one item) or vector of strings (one or more items); defaults to NULL.
subcontinent	specifies the continental region(s) (e.g. Southern Europe). Run `road_list_argument_values("subcont` to display possible values. The argument subcontinent is a string (one item) or vector of strings (one or more items); defaults to NULL.
country	specifies the name of the country where a locality is situated (e.g. Germany, Kenya, Saudi Arabia). Run `road_list_argument_values("country")` to display possible values. The argument country is a string (one item) or vector of strings (one or more items); defaults to NULL.

locality_type	specifies the type of locality (e.g. cave, rockshelter, open air). Run road_list_argument_values("loca to display possible values. The argument locality_type is a string (one item) or vector of strings (one or more items); defaults to NULL.
cultural_period	
	specifies the main cultural epoch(s) and includes the Eurasian Paleolithic (Lower, Middle, Upper, Epi-) and the African Stone Age (Earlier, Middle, Later). Run road_list_argument_values("cultural_period") to display possible values. The argument cultural_period is a string (one item) or vector of strings (one or more items); defaults to NULL.
technocomplex	specifies an archaeological culture or named stone tool industry (e.g. Oldowan, Acheulean, Mousterian). Run road_list_argument_values("technocomplex") to display possible values. The argument technocomplex is a string (one item) or vector of strings (one or more items); defaults to NULL.
category	specifies the assemblage category with the classes human remains, raw material, typology, technology, function, organic tools, symbolic artifacts, feature, miscellaneous finds, paleofauna, animal remains, plant remains. The argument category is a string (one item) or vector of strings (one or more items); defaults to NULL.
age_min	specifies the minimum age in years before present, using 1950 CE as the baseline. If possible the argument age_min will be converted to an integer; defaults to NULL.
age_max	specifies the maximum age in years before present, using 1950 CE as the baseline. If possible the argument age_max will be converted to an integer; defaults to NULL.

Details

Use parameters to filter search results by location, type, or culture or omit them to have a broader result set. All parameters are optional and should be omitted or set to NULL when not used.

Value

A data frame with location information. Rows represent individual locations, columns contain location-related details on:

continent, subcontinent, country: The attributes specify the geopolitical information of the locality.

locality_type: The attribute specifies the type of locality (e.g. cave, rockshelter, open air).

coord_x, coord_y: The attributes specify the geographic coordinates (longitude and latitude) of the locality.

coordination_source: The attribute contains information about the source of coordinates for a locality.

category: Specifies the category of the findings associated with the locality. If there are multiple, they are returned in a comma separated list.

cultural_period: Specifies the cultural epoch(s) associated with the locality. If there are multiple, they are returned in a comma separated list.

technocomplex: Specifies the archaeological culture or named stone tool industry associated with the locality. If there are multiple, they are returned in a comma separated list.

subset_age_min, subset_age_max: The attributes specify the minimum and maximum age of all assemblages associated with the locality that match the search criteria.

locality_age_min, locality_age_max: The attributes specify the overall minimum and maximum age of all assemblages associated with this locality.

Examples

```
road_get_localities(continent = "Europe",
                    locality_type = c("basin", "quarry"))
road_get_localities(country = c("Germany","Austria"),
                    cultural_period = "Epipaleolithic")
```

---

road_get_miscellaneous_finds

Get miscellaneous finds from the ROAD database

Description

The road_get_miscellaneous_finds retrieves data of miscellaneous finds from the ROAD database. Miscellaneous finds are archaeological objects that do not fit into other specific categories. Miscellaneous finds are classified by their material. This function allows you to query miscellaneous finds data from the ROAD database using parameters such as geographical location, cultural periods, material types, and assemblages. Use the parameters to filter the results or omit them to retrieve a broader dataset.

Usage

```
road_get_miscellaneous_finds(
  continent = NULL,
  subcontinent = NULL,
  country = NULL,
  locality_type = NULL,
  cultural_period = NULL,
  technocomplex = NULL,
  category = NULL,
  age_min = NULL,
  age_max = NULL,
  miscellaneous_find_material = NULL,
  assemblages = NULL
)
```

Arguments

continent	specifies the continent(s) (e.g. Africa, Europe, Asia). Run `road_list_argument_values("continent")` to display possible values. The argument `continent` is a string (one item) or vector of strings (one or more items); defaults to NULL.
subcontinent	specifies the continental region(s) (e.g. Southern Europe). Run `road_list_argument_values("subcont` to display possible values. The argument `subcontinent` is a string (one item) or vector of strings (one or more items); defaults to NULL.
country	specifies the name of the country where a locality is situated (e.g. Germany, Kenya, Saudi Arabia). Run `road_list_argument_values("country")` to display possible values. The argument `country` is a string (one item) or vector of strings (one or more items); defaults to NULL.
locality_type	specifies the type of locality (e.g. cave, rockshelter, open air). Run `road_list_argument_values("loca` to display possible values. The argument `locality_type` is a string (one item) or vector of strings (one or more items); defaults to NULL.
cultural_period	
	specifies the main cultural epoch(s) and includes the Eurasian Paleolithic (Lower, Middle, Upper, Epi-) and the African Stone Age (Earlier, Middle, Later). Run `road_list_argument_values("cultural_period")` to display possible values. The argument `cultural_period` is a string (one item) or vector of strings (one or more items); defaults to NULL.
technocomplex	specifies an archaeological culture or named stone tool industry (e.g. Oldowan, Acheulean, Mousterian). Run `road_list_argument_values("technocomplex")` to display possible values. The argument `technocomplex` is a string (one item) or vector of strings (one or more items); defaults to NULL.
category	specifies the assemblage category with the classes human remains, raw material, typology, technology, function, organic tools, symbolic artifacts, feature, miscellaneous finds, paleofauna, animal remains, plant remains. The argument `category` is a string (one item) or vector of strings (one or more items); defaults to NULL.
age_min	specifies the minimum age in years before present, using 1950 CE as the baseline. If possible the argument `age_min` will be converted to an integer; defaults to NULL.
age_max	specifies the maximum age in years before present, using 1950 CE as the baseline. If possible the argument `age_max` will be converted to an integer; defaults to NULL.
miscellaneous_find_material	
	specifies material of the miscellaneous finds (e.g. shell, ochre, ostrich eggshell). Run `road_list_argument_values("miscellaneous_find_material")` to display possible values. The argument `miscellaneous_find_material` is a string (one item) or vector of strings; defaults to NULL.
assemblages	specifies a data frame necessarily containing columns locality_id, assemblage_id. It can be generated as return value of the function 'road_get_assemblages'. It can be used instead of the locality and assemblage search parameters to filter the results.

Value

A data frame with information about miscellaneous finds. Rows represent individual finds, columns contain details on:

`miscellaneous find material`: Material of the miscellaneous find. Some examples: beeswax, bitumen, clay, flax fiber, fossil, mineral diverse (materials such as crystals), mineral pigment (colorants such as ochre, hematite, limonite, goethite, specularite, etc.) ostrich eggshell

`miscellaneous find material source`: List with specific intervals of transport for the raw material used to manufacture the miscellaneous finds. Five fixed types of material source are possible:

- local (0-5 km)
- regional (6-20 km)
- supra-regional (21-100 km)
- distant (>100 km)
- unknown

`number`: Number of individual pieces of a given material present in an assemblage with miscellaneous finds.

Examples

```
road_get_miscellaneous_finds(country = "Sudan", miscellaneous_find_material = "wood fossil")
road_get_miscellaneous_finds(continent = c("Africa"), locality_type = "open air",
                             miscellaneous_find_material = "shell")
```

---

road_get_organic_tools

Get organic tools from the ROAD database

Description

The `road_get_organic_tools` function retrieves data on organic tools from the ROAD database. Organic tools are artifacts made from organic materials such as bone, antler, or wood, found in archaeological contexts. This function enables you to query organic tool data from the ROAD database based on parameters like geographical location, cultural periods, tool interpretation, and assemblages. Use the parameters to filter the results or omit them for broader results.

Usage

```
road_get_organic_tools(
  continent = NULL,
  subcontinent = NULL,
  country = NULL,
  locality_type = NULL,
  cultural_period = NULL,
  technocomplex = NULL,
  category = NULL,
```

```
    age_min = NULL,
    age_max = NULL,
    organic_tool_interpretation = NULL,
    assemblages = NULL
)
```

Arguments

continent	specifies the continent(s) (e.g. Africa, Europe, Asia). Run `road_list_argument_values("continent")` to display possible values. The argument `continent` is a string (one item) or vector of strings (one or more items); defaults to NULL.
subcontinent	specifies the continental region(s) (e.g. Southern Europe). Run `road_list_argument_values("subcont` to display possible values. The argument `subcontinent` is a string (one item) or vector of strings (one or more items); defaults to NULL.
country	specifies the name of the country where a locality is situated (e.g. Germany, Kenya, Saudi Arabia). Run `road_list_argument_values("country")` to display possible values. The argument `country` is a string (one item) or vector of strings (one or more items); defaults to NULL.
locality_type	specifies the type of locality (e.g. cave, rockshelter, open air). Run `road_list_argument_values("loca` to display possible values. The argument `locality_type` is a string (one item) or vector of strings (one or more items); defaults to NULL.
cultural_period	
	specifies the main cultural epoch(s) and includes the Eurasian Paleolithic (Lower, Middle, Upper, Epi-) and the African Stone Age (Earlier, Middle, Later). Run `road_list_argument_values("cultural_period")` to display possible values. The argument `cultural_period` is a string (one item) or vector of strings (one or more items); defaults to NULL.
technocomplex	specifies an archaeological culture or named stone tool industry (e.g. Oldowan, Acheulean, Mousterian). Run `road_list_argument_values("technocomplex")` to display possible values. The argument `technocomplex` is a string (one item) or vector of strings (one or more items); defaults to NULL.
category	specifies the assemblage category with the classes human remains, raw material, typology, technology, function, organic tools, symbolic artifacts, feature, miscellaneous finds, paleofauna, animal remains, plant remains. The argument `category` is a string (one item) or vector of strings (one or more items); defaults to NULL.
age_min	specifies the minimum age in years before present, using 1950 CE as the baseline. If possible the argument `age_min` will be converted to an integer; defaults to NULL.
age_max	specifies the maximum age in years before present, using 1950 CE as the baseline. If possible the argument `age_max` will be converted to an integer; defaults to NULL.
organic_tool_interpretation	
	specifies interpreted organic tool types (e.g. lance/spear, point, retoucher). Run `road_list_argument_values("organic_tool_interpretation")` to display possible values. The argument `organic_tool_interpretation` is a string (one item) or vector of strings; defaults to NULL.

assemblages   specifies a data frame necessarily containing columns locality_id, assemblage_id. It can be generated as return value of the function 'road_get_assemblages'. It can be used instead of the locality and assemblage search parameters to filter the results.

Value

A data frame with information about organic tools. Rows represent individual organic finds, columns contain details on:

`organic tool interpretation`: List of organic tool types of the given record.

`organic raw material`: Material from which an organic tool is made.

`organic tool technology`: List of actions used to manufacture organic tools of the given record.

`number`: Number of individual pieces for the organic raw material in the assemblage.

Examples

```
road_get_organic_tools(country = c("France"), organic_tool_interpretation = "fishhook")
road_get_organic_tools(country = "Germany", organic_tool_interpretation = c("lance/spear"))
```

---

road_get_paleofauna   *Get paleofauna data from the ROAD database*

Description

The `road_get_paleofauna` function retrieves data on paleofauna finds from the ROAD database. Paleofauna finds are animal fossil remains discovered in archaeological contexts and are always associated with an assemblage. These finds provide direct evidence for the presence of animal species at a particular locality and time. The function returns information about the assemblage in which certain faunal remains were found as well as their genus and species.

Usage

```
road_get_paleofauna(
  continent = NULL,
  subcontinent = NULL,
  country = NULL,
  locality_type = NULL,
  cultural_period = NULL,
  technocomplex = NULL,
  category = NULL,
  age_min = NULL,
  age_max = NULL,
  assemblages = NULL,
  fauna_genus = NULL,
  fauna_species = NULL
)
```

Arguments

continent	specifies the continent(s) (e.g. Africa, Europe, Asia). Run road_list_argument_values("continent") to display possible values. The argument continent is a string (one item) or vector of strings (one or more items); defaults to NULL.
subcontinent	specifies the continental region(s) (e.g. Southern Europe). Run road_list_argument_values("subcont to display possible values. The argument subcontinent is a string (one item) or vector of strings (one or more items); defaults to NULL.
country	specifies the name of the country where a locality is situated (e.g. Germany, Kenya, Saudi Arabia). Run road_list_argument_values("country") to display possible values. The argument country is a string (one item) or vector of strings (one or more items); defaults to NULL.
locality_type	specifies the type of locality (e.g. cave, rockshelter, open air). Run road_list_argument_values("loca to display possible values. The argument locality_type is a string (one item) or vector of strings (one or more items); defaults to NULL.
cultural_period	
	specifies the main cultural epoch(s) and includes the Eurasian Paleolithic (Lower, Middle, Upper, Epi-) and the African Stone Age (Earlier, Middle, Later). Run road_list_argument_values("cultural_period") to display possible values. The argument cultural_period is a string (one item) or vector of strings (one or more items); defaults to NULL.
technocomplex	specifies an archaeological culture or named stone tool industry (e.g. Oldowan, Acheulean, Mousterian). Run road_list_argument_values("technocomplex") to display possible values. The argument technocomplex is a string (one item) or vector of strings (one or more items); defaults to NULL.
category	specifies the assemblage category with the classes human remains, raw material, typology, technology, function, organic tools, symbolic artifacts, feature, miscellaneous finds, paleofauna, animal remains, plant remains. The argument category is a string (one item) or vector of strings (one or more items); defaults to NULL.
age_min	specifies the minimum age in years before present, using 1950 CE as the baseline. If possible the argument age_min will be converted to an integer; defaults to NULL.
age_max	specifies the maximum age in years before present, using 1950 CE as the baseline. If possible the argument age_max will be converted to an integer; defaults to NULL.
assemblages	specifies a data frame necessarily containing columns locality_id, assemblage_id. It can be generated as return value of the function 'road_get_assemblages'. It can be used instead of the locality and assemblage search parameters to filter the results.
fauna_genus	specifies the genus to which the described faunal remains is attributed to. Possible entries include: "Mammuthus", "Vulpes" etc. Run road_list_argument_values("fauna_genus") to display possible values. The argument fauna_genus is a string (one item) or vector of strings; defaults to NULL.
fauna_species	specifies the species to which the described faunal remains is attributed. Possible entries include: "primigenius", "vulpes" or "sp." for unidentified species. Run

road_list_argument_values("fauna_species") to display possible values. The argument fauna_species is a string (one item) or vector of strings; defaults to NULL.

Details

Use the parameters to filter the results or omit them to retrieve a broader dataset. Genus and species parameters can be entered as a vector of strings to search for multiple entries. If genus and species are both specified, most of the time it's more sensible to enter them as single strings and not as vectors with multiple search words to recieve useful results.

Value

A data frame with paleofauna information. Rows represent individual faunal remains finds, columns contain standard outputs and faunal remains-related details on:

fauna_genus, fauna_species: The attributes specify the taxonomic classification of the paleofaunal remains.

Examples

```
road_get_paleofauna(country = c("Spain", "Portugal"), fauna_genus = "Mammuthus")
road_get_paleofauna(continent = "Africa", fauna_genus = "Vulpes",
                    fauna_species = "vulpes")
```

---

road_get_plantremains   *Get paleobotany data from the ROAD database*

Description

The function road_get_plantremains retrieves data on paleobotanical remains from the ROAD database. Paleobotanical remains are plant remains found in archaeological contexts and are associated with assemblages.

Usage

```
road_get_plantremains(
  continent = NULL,
  subcontinent = NULL,
  country = NULL,
  locality_type = NULL,
  cultural_period = NULL,
  technocomplex = NULL,
  category = NULL,
  age_min = NULL,
  age_max = NULL,
  assemblages = NULL,
  plant_remains = NULL,
```

```
    plant_family = NULL,
    plant_genus = NULL,
    plant_species = NULL
)
```

Arguments

continent   specifies the continent(s) (e.g. Africa, Europe, Asia). Run road_list_argument_values("continent")
                to display possible values. The argument continent is a string (one item) or
                vector of strings (one or more items); defaults to NULL.

subcontinent   specifies the continental region(s) (e.g. Southern Europe). Run road_list_argument_values("subcont
                to display possible values. The argument subcontinent is a string (one item)
                or vector of strings (one or more items); defaults to NULL.

country   specifies the name of the country where a locality is situated (e.g. Germany,
                Kenya, Saudi Arabia). Run road_list_argument_values("country") to dis-
                play possible values. The argument country is a string (one item) or vector of
                strings (one or more items); defaults to NULL.

locality_type   specifies the type of locality (e.g. cave, rockshelter, open air). Run road_list_argument_values("loca
                to display possible values. The argument locality_type is a string (one item)
                or vector of strings (one or more items); defaults to NULL.

cultural_period
                specifies the main cultural epoch(s) and includes the Eurasian Paleolithic (Lower,
                Middle, Upper, Epi-) and the African Stone Age (Earlier, Middle, Later). Run
                road_list_argument_values("cultural_period") to display possible val-
                ues. The argument cultural_period is a string (one item) or vector of strings
                (one or more items); defaults to NULL.

technocomplex   specifies an archaeological culture or named stone tool industry (e.g. Oldowan,
                Acheulean, Mousterian). Run road_list_argument_values("technocomplex")
                to display possible values. The argument technocomplex is a string (one item)
                or vector of strings (one or more items); defaults to NULL.

category   specifies the assemblage category with the classes human remains, raw mate-
                rial, typology, technology, function, organic tools, symbolic artifacts, feature,
                miscellaneous finds, paleofauna, animal remains, plant remains. The argument
                category is a string (one item) or vector of strings (one or more items); defaults
                to NULL.

age_min   specifies the minimum age in years before present, using 1950 CE as the base-
                line. If possible the argument age_min will be converted to an integer; defaults
                to NULL.

age_max   specifies the maximum age in years before present, using 1950 CE as the base-
                line. If possible the argument age_max will be converted to an integer; defaults
                to NULL.

assemblages   specifies a data frame necessarily containing columns locality_id, assemblage_id.
                It can be generated as return value of the function 'road_get_assemblages'. It
                can be used instead of the locality and assemblage search parameters to filter the
                results.

plant_remains specifies the type of plant remains. Possible entries include: "pollen", "plant macroremains" etc. Run `road_list_argument_values("plant_remains")` to display possible values. The argument `plant_remains` is a string (one item) or vector of strings; defaults to NULL.

plant_family specifies the family to which the described plant remains is attributed to. Possible entries include: "Poaceae", "Typhaceae" etc. Run `road_list_argument_values("plant_family")` to display possible values. The argument `plant_family` is a string (one item) or vector of strings; defaults to NULL.

plant_genus specifies the genus name of the taxon. Run `road_list_argument_values("plant_genus")` to display possible values. The argument `plant_genus` is a string (one item) or vector of strings; defaults to NULL.

plant_species specifies the full and valid species name including author's name (e.g. Quercus ilex L., Sciadopitys verticillata (Thunb.) Siebold & Zucc). Run `road_list_argument_values("plant_s` to display possible values. The argument `plant_species` is a string (one item) or vector of strings; defaults to NULL.

Details

This function allows you to query paleobotanical data based on various parameters such as geographical location, cultural periods, plant taxonomy, and assemblages. Use the parameters to filter the results or omit them to retrieve a broader dataset. Genus and species parameters can be entered as a vector of strings to search for multiple entries. If genus and species are both specified, most of the time it's more sensible to enter them as single strings and not as vectors with multiple search words to receive useful results.

Value

A data frame with plant remains information. Rows represent individual plant remains finds, columns contain standard outputs and plant remains-related details on:

`plant_remains`: The attribute specifies the type of plant remains (e.g. pollen, plant macroremains).

`plant_family`, `plant_genus`, `plant_species`: The attributes specify the taxonomic classification of the plant remains.

Examples

```
road_get_plantremains(subcontinent = "Central Asia", plant_family = "Poaceae",
                      plant_genus = "Setaria")
road_get_plantremains(country = c("Israel"), plant_remains = "starch")
```

---

road_get_publications *Get publication references from the ROAD database*

Description

The `road_get_publications` function retrieves publication references from the ROAD database. Entries are available in the `BibTex` format or formatted according to bibliographic conventions, including books, journal articles, book chapters, theses, and web pages.

Usage

```
road_get_publications(localities = NULL, bibtex = FALSE)
```

Arguments

localities   specifies the subset of localities for which publications should be retrieved. This
                parameter can be a string (a single locality name), a vector of strings (multiple
                locality names), or a data frame containing a `locality_id` column (e.g., the
                output of `road_get_localities()`). Defaults to NULL.

bibtex   specifies if publication references should be formatted as BibTeX. Defaults to
                FALSE.

Details

Use arguments to filter search results by location or output format, or omit them to have a broader
result set. All arguments are optional and should be omitted or set to NULL when not used.

With `localities = NULL` (the default), the function produces a complete list of all references com-
piled in ROAD, with each publication appearing only once. When `localities` is specified, dupli-
cates may occur in the `Publication` column, if a single source provides information for multiple
sites.

All parameters are optional. If not used, omit them or set them to NULL.

Value

A data frame with two columns:

`Locality`: Is only returned, if the argument `localities` is populated.

`Publication`: Items from ROAD's publication table, formatted as reference or `BibTex`.

Examples

```
road_get_publications(localities = c("Apollo 11", "Berg Aukas"))

# Using result from road_get_localities
locs <- road_get_localities(country = "Estonia")
road_get_publications(localities = locs)
```

---

road_get_symbolic_artifacts

Get symbolic artifacts from the ROAD database

Description

The `road_get_symbolic_artifacts` retrieves data on symbolic artifacts from the ROAD database.
Symbolic artifacts are objects interpreted as having symbolic or cultural significance in archaeolog-
ical contexts. This function allows you to query symbolic artifact data from the ROAD database
using parameters such as geographical location, cultural periods, artifact interpretation, and assem-
blages. Use the parameters to filter the results or omit them to retrieve a broader dataset.

Usage

```
road_get_symbolic_artifacts(
  continent = NULL,
  subcontinent = NULL,
  country = NULL,
  locality_type = NULL,
  cultural_period = NULL,
  technocomplex = NULL,
  category = NULL,
  age_min = NULL,
  age_max = NULL,
  symbolic_artifact_interpretation = NULL,
  assemblages = NULL
)
```

Arguments

continent	specifies the continent(s) (e.g. Africa, Europe, Asia). Run `road_list_argument_values("continent")` to display possible values. The argument `continent` is a string (one item) or vector of strings (one or more items); defaults to NULL.
subcontinent	specifies the continental region(s) (e.g. Southern Europe). Run `road_list_argument_values("subcont` to display possible values. The argument `subcontinent` is a string (one item) or vector of strings (one or more items); defaults to NULL.
country	specifies the name of the country where a locality is situated (e.g. Germany, Kenya, Saudi Arabia). Run `road_list_argument_values("country")` to display possible values. The argument `country` is a string (one item) or vector of strings (one or more items); defaults to NULL.
locality_type	specifies the type of locality (e.g. cave, rockshelter, open air). Run `road_list_argument_values("loca` to display possible values. The argument `locality_type` is a string (one item) or vector of strings (one or more items); defaults to NULL.
cultural_period	
	specifies the main cultural epoch(s) and includes the Eurasian Paleolithic (Lower, Middle, Upper, Epi-) and the African Stone Age (Earlier, Middle, Later). Run `road_list_argument_values("cultural_period")` to display possible values. The argument `cultural_period` is a string (one item) or vector of strings (one or more items); defaults to NULL.
technocomplex	specifies an archaeological culture or named stone tool industry (e.g. Oldowan, Acheulean, Mousterian). Run `road_list_argument_values("technocomplex")` to display possible values. The argument `technocomplex` is a string (one item) or vector of strings (one or more items); defaults to NULL.
category	specifies the assemblage category with the classes human remains, raw material, typology, technology, function, organic tools, symbolic artifacts, feature, miscellaneous finds, paleofauna, animal remains, plant remains. The argument `category` is a string (one item) or vector of strings (one or more items); defaults to NULL.

age_min   specifies the minimum age in years before present, using 1950 CE as the base-
                   line. If possible the argument age_min will be converted to an integer; defaults
                   to NULL.

age_max   specifies the maximum age in years before present, using 1950 CE as the base-
                   line. If possible the argument age_max will be converted to an integer; defaults
                   to NULL.

symbolic_artifact_interpretation
                   specifies the interpretation of symbolic artifacts (e.g. abstract, anthropomorphic,
                   zoomorphic, instrument, ornament). Run road_list_argument_values("symbolic_artifact_interp
                   to display possible values. The argument symbolic_artifact_interpretation
                   is a string (one item) or vector of strings; defaults to NULL.

assemblages   specifies a data frame necessarily containing columns locality_id, assemblage_id.
                   It can be generated as return value of the function 'road_get_assemblages'. It
                   can be used instead of the locality and assemblage search parameters to filter the
                   results.

Value

A data frame with information about symbolic artifacts. Rows represent individual symbolic finds,
columns contain details on:

symbolic artifacts category: List of symbolic categories (art, music, ornament).

symbolic artifacts technology: List of technologies such as: painting, engraving, carving,
molding, polishing, imprinting, etc.

symbolic artifacts material: Material of the symbolic artifact, for example: antler, bone, cave
wall, clay, ivory, ochre, ostrich eggshell.

symbolic artifacts raw material source: List with specific intervals of transport for the raw
material used to manufacture the symbolic artifact. Five fixed types of raw material source are
possible:

- local (0-5 km)

- regional (6-20 km)

- supra-regional (21-100 km)

- distant (>100 km)

- unknown

Examples

```
road_get_symbolic_artifacts(continent = "Europe", locality_type = "rock shelter",
                            symbolic_artifact_interpretation = "instrument")
road_get_symbolic_artifacts(subcontinent = "Southern Africa",
                            symbolic_artifact_interpretation = "zoomorphic")
```

---

road_list_argument_values

Get argument values from the ROAD Database

Description

The `road_list_argument_values` function returns a list of unique values that can be used to populate functional arguments. This is particularly useful for users who want to see which values are available or verify their exact spelling (e.g., country names). Only categorical arguments are supported.

Usage

```
road_list_argument_values(function_argument)
```

Arguments

function_argument

Name of a general or specific function argument used with one of the `road_get_*` functions. Current options include:

- `continent`
- `subcontinent`
- `country`
- `locality_type`
- `cultural_period`
- `technocomplex`
- `category`
- `tool_list`
- `raw_material_list`
- `transport_distance`
- `organic_tool_interpretation`
- `symbolic_artifact_interpretation`
- `feature_interpretation`
- `miscellaneous_find_material`
- `human_genus`
- `human_species`
- `fauna_genus`
- `fauna_species`
- `plant_remains`
- `plant_family`
- `plant_genus`
- `plant_species`

Value

List of attribute values.

Examples

```
road_list_argument_values("locality_type")
road_list_argument_values("subcontinent")
```

---

road_summarize_archaeology

Get an overview of categorical values in the ROAD database

Description

The 'road_summarize_archaeology' function provides a quick overview of the presence of a given
search term across archaeology-related tables/attributes in the ROAD database and archaeology-
related `road_get_*` functions in `roadDB`. It queries all relevant functions and returns a list indicating
whether each function contains the search term. This helps you identify the appropriate `road_get_*`
functions for your search. Once identified, you can apply these functions to retrieve the relevant
assemblages.

Usage

```
road_summarize_archaeology(term)
```

Arguments

term   A string containing the search term (one item).

Details

Background: The ROAD archaeology database is rich in categorical data, where archaeological
findings are grouped according to their characteristics. These categories can be accessed using a
variety of `road_get_*` functions, such as:

- `road_get_lithic_typologies()`
- `road_get_lithic_raw_materials()`
- `road_get_organic_tools()`
- `road_get_symbolic_artifacts()`
- `road_get_features()`
- `road_get_miscellaneous_finds()`

Some search terms may not be easily categorized, while others may appear across multiple cate-
gories depending on contextual interpretations. This function assists in identifying the most relevant
categories for your search.

Value

Database search result as list.

Examples

```
road_summarize_archaeology(term = "Cores")
```

Index