Package: BlueCarbon (via r-universe)

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Title Collection of Functions for Blue Carbon Scientists

Version 0.0.1.1

Description The BlueCarbon package is a collection of functions with the main focus to help ``blue carbon'' scientists.

License file LICENSE

Encoding UTF-8

LazyData true

Suggests dplyr, drc, aomisc, knitr, rmarkdown

Remotes OnofriAndreaPG/aomisc

VignetteBuilder knitr

Roxygen list(markdown = TRUE)

RoxygenNote 7.1.2

Imports ggplot2

Repository https://costavale.r-universe.dev

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bc_compaction *bc_compaction*

Description

Calculates Percentage of core compression for cores Accepts a data.frame with core properties and returns a modified version of it, with the addition of the estimated parameters

Usage

```
bc_compaction(
  core_data,
  sampler_length = "sampler_length",
  internal_distance = "internal_distance",
  external_distance = "external_distance"
)
```

Arguments

core_data	data.frame with core properties
sampler_length	name of the column with the total length of the sampler tube
internal_distance	name of the column with distance between sampler top and core surface
external_distance	name of the column with distance between sampler top and sediment surface

Value

the initial data.frame with the addition of Percentage of core compression

bc_cores *Blue Carbon sediment core data*

Description

Example data from cores collected for Blue Carbon stock estimations in Portugal. Cores have been de-identified.

Usage

```
data(bc_data)
```

Format

Two dataframes, with core and sample properties

bc_cores TODO

bc_samples TODO

Examples

```
data(bc_data)
TODO
```

`bc_decomp` *bc_decomp*

Description

This function uses six arguments

Usage

```
bc_decomp(
  data,
  sampler_length,
  internal_distance,
  external_distance,
  sampler_diameter,
  method = "linear"
)
```

Arguments

`data`	data.frame with the following columns "ID" "cm" "weight" "LOI" "c_org".
`sampler_length`	name of the column with the total length of the sampler tube
`internal_distance`	The length in cm of the part of the sampler left outside of the sediment (from the inside of the sampler).
`external_distance`	The length in cm of the part of the sampler left outside of the sediment (from the outside of the sampler).
`sampler_diameter`	diameter in cm of the sampler
`method`	used to estimate the decompressed depth of each section, "linear" or "exp". Default is "linear".

bc_depth_correction *bc_depth_correction*

Description

Calculates corrected sample depth and sample volume to account for compaction (linear or exponential methods). User provides a core data.frame and a sample data.frame User can specify if the sample volume is estimated from a half of the core or in another way.

The function returns the sample data.frame modified with the addition of the estimated parameters

Usage

```
bc_depth_correction(
  core_data,
  sample_data,
  sampler_length = "sampler_length",
  sampler_diameter = "sampler_diameter",
  internal_distance = "internal_distance",
  external_distance = "external_distance",
  method = "linear"
)
```

Arguments

core_data	data.frame with core properties
sample_data	data.frame with sample properties
sampler_length	name of the column with the total length of the sampler tube
sampler_diameter	name of the column with the diameter of the sampler tube
internal_distance	name of the column with distance between sampler top and core surface
external_distance	name of the column with distance between sampler top and sediment surface
method	linear or exponential correction

Value

the initial sample_data with the addition of the corrected sample depth and volume

bc_stocks *bc_stock()*

Description

Estimate the stock of an element contained given its concentration along a sediment core.

Usage

```
bc_stocks(
  sample_data,
  core_id,
  sample_depth,
  element_concentration,
  maximum_depth,
  method = NULL,
  section_height = NULL,
  diagnostic_plot = FALSE
)
```

Arguments

sample_data	Sediment sample properties, after calculating elemental concentration and correcting compaction
core_id	Name of for core the identifier. Should be a string
sample_depth	Name of variable for the depth at which samples were taken
element_concentration	Name of the variable for the concentration of the element whose stock is being estimated
maximum_depth	Depth to which to estimate the stock.
method	Method used to estimate the stock, one of "rectangle" or "trapezoid"
diagnostic_plot	Should a plot of how the stock was estimated be shown? FALSE (default) or TRUE
section_start	(Optional, only for "rectangle" method) Depth at which the core section represented by each sample begins
section_end	(Optional, only for "rectangle" method) Depth at which the core section represented by each sample ends

Details

Calculate elemental stocks:

1. Trapezoid rule (Martins, M. et al 2021)
2. Rectangle rule (Howard, J. et al 2014)

- User provides start and end of sections represented by samples
- Heights of sections are automatically estimated 3.(optional) - Plots how the stock is being estimated, with a special draw towards any sections that have to be extrapolated

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`plot_stock_diagnostic` *plot_stock_diagnostic*

Description

Internal function used to plot stock estimations in `bc_stocks`

Usage

```
plot_stock_diagnostic(
  sample_data,
  core_id,
  sample_depth,
  element_concentration,
  maximum_depth,
  method
)
```

Arguments

`sample_data`	Sample data as a list, split by sediment core
`method`	Method used to calculate elemental stock

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