Package 'soilcarbon'

August 4, 2017

Title Tools to Analyze Soil Carbon Database Created by Powell Center
Working Group

Version 1.2.0

Description A tool for importing, visualizing, and analyzing the soil carbon database created by the Powell Center working group.

URL https://powellcenter-soilcarbon.github.io/soilcarbon/

BugReports https://github.com/powellcenter-soilcarbon/soilcarbon/issues

Depends R (>= 3.3.2)

License GPL-2

Imports openxlsx, devtools, ggplot2, shiny

Encoding UTF-8

LazyData true

RoxygenNote 6.0.1

Suggests knitr, rmarkdown

VignetteBuilder knitr

NeedsCompilation no

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Repository CRAN

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R topics documented:

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checkcolnames   *checkcolnames*

Description

Check the column names of different tabs in the dataset to make sure they match, used in dataQC

Usage

```
checkcolnames(data, tab, soilcarbon_template)
```

Arguments

data   soilcarbon data

tab   specific tab of dataset , ie. dataset_name

soilcarbon_template
                    template soilcarbon file to compare

---

checknames   *checknames*

Description

Check the names of different levels in the dataset to make sure they match, used in dataQC

Usage

```
checknames(data, name, tabs)
```

Arguments

data   soilcarbon data

name   specific heirarchial name, ie. dataset_name

tabs   the tabs that will be checked, default is all

checkreqcols	*checkreqcols*

Description

Check the required columns of different tabs in the dataset to make sure they exist and have values, used in dataQC

Usage

```
checkreqcols(data, tab)
```

Arguments

data	soilcarbon data
tab	specific tab of dataset , ie. dataset_name

checkvalues	*checkvalues*

Description

Check certain column values to match what is expected, used in dataQC

Usage

```
checkvalues(data, tab)
```

Arguments

data	soilcarbon data
tab	specific tab of dataset , ie. dataset_name

comparenames	*comparenames*

Description

Compares the names at names between hierarchical levels, used in dataQC

Usage

```
comparenames(names)
```

Arguments

names	names oject, outout from getnames()

---

compileDatabase	*compileDatabase*

Description

adds dataset to soilcarbon database

Usage

```
compileDatabase(dataset_directory)
```

Arguments

dataset_directory

directory where compeleted and QC passed soilcarbon datasets are stored

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convert.Yuije	*convert.Yujie*

Description

This function converts data compiled by Yuije into format compatable with the soilcarbon template

Usage

```
convert.Yuije(Yujie_file)
```

Arguments

Yujie_file   directory to Yuije data file

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dataQC	*dataQC*

Description

Check the imported soil carbon dataset for formatting and entry errors

Usage

```
dataQC(data, tabs = c("metadata", "site", "profile", "layer", "fraction"),
  writeQCreport = F, outfile = NULL)
```

Arguments

`data`	directory to data file
`tabs`	the tabs that will be checked, default is all
`writeQCreport`	if TRUE, a text report of the QC output will be written to the outfile. Default is FALSE
`outfile`	filename of the output file if writeQCreport=TRUE. Default is NULL, and the outfile will be written to the directory where the dataset is stored, and named by the dataset being checked.

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flatten	*flatten*

Description

converts heierachically strucutred soilcarbon data into flat data.frame

Usage

```
flatten(soilcarbon_data)
```

Arguments

`soilcarbon_data`
                soilcarbon data oject

---

getnames	*getnames*

Description

Extracts the names at names between hierarchical levels, used to compare names between levels

Usage

```
getnames(data, name)
```

Arguments

`data`	directory to data file
`name`	specific heirarchial name, ie. dataset_name

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matchvocab   *matchvocab*

Description

Match values in variable to controlled vocab

Usage

```
matchvocab(var_data, var_vocab, var_name, tab, error)
```

Arguments

var_data	actual data values for a specific variable
var_vocab	controlled vocab for a specific variable
var_name	name of the variable being matched
tab	name of the tab that the variable is found in
error	error counter

Examples

```
matchvocab(var_data = c("A", "B"), var_vocab=c("A", "B", "C"), tab="site", error=0)
```

---

read.soilcarbon   *read.soilcarbon*

Description

This function imports data from xlsx format matching the standard soil carbon data template

Usage

```
read.soilcarbon(file, template = F)
```

Arguments

file	directory to data file
template	set to TRUE if reading in a template file

soilcarbon_database   *Data compiled for the soilcarbon dataset*

Description

A dataset containing soil carbon parameters collected by the powell center soil carbon working group

Usage

```
soilcarbon_database
```

Format

A data frame with 4155 rows and 42 variables:

dataset_name

site_name

profile_name

lat

long

parent_material

slope

slope_shape

aspect

veg_note

country

state_province

mat

map

elevation

observation_date

soil_taxon

layer_name

layer_top

layer_bot

hzn

rc_year

X13c

X14c

X14c_sigma

bd_tot

bet_surface_area

ph_h2o

c_tot

n_tot

c_to_n

sand_tot_psa

silt_tot_psa

clay_tot_psa

cat_exch

fe_dith

fe_ox

fe_py

al_py

al_dith

al_ox

smect_vermic

doi_number

curator_name

curator_organization

curator_email

modification_date

contact_name

contact_email

contact_orcid_id

bibliographical.reference

metadata_note

datum

site_note

climate_cat

aspect_deg

drainage_class

depth_water

parent_chem

ecoregion

land_cover

s_soc

profile_note

profile_comp

veg_note_profile

2d_position

soil_series

bedrock_depth

thaw_depth_profile

p_soc

p_soc_sigma

p_soc_depth

layer_comp

layer_note

color

burn_ev

bd_samp

bd_notes

ph_cacl

ph_other

ph_other_method

inorgC

coarse_tot

coarse_size_thresh

texture_class

base_sum

cec_sum

Ca_exch

Na_exch

Mg_exch

K_exch

ecec

bs

soc

soc_sigma

oc

loi

X15n

rc_lab

rc_lab_number

fraction_modern

fraction_modern_sigma

mbc_method

raw_mbc

reported_mbc

p_ext

p_units

p_method

si_py

c_py

py_notes

si_ox

c_ox

ox_notes

fe_hy

al_hy

si_hy

c_hy

hy_notes

si_dith

dith_notes

quartz

alkali_feldspar

plag_feldspar

mica_chlorite

amphibole

pyroxine

olivine

volc_glass

kaol_halloy

gibbsite

fe_oxides

imog_alloph

ferrihydrite

calcite_dolomite

zeolite

fraction_name

f_scheme

f_property

f_scheme_units

f_lower

f_upper

f_agent

f_scheme_conc

f_seq

f_seq_order

f_comp

f_note

f_c_perc

f_mass_perc

f_c_tot

f_oc

f_n_tot

f_c_to_n

f_15n

f_13c

f_rc_lab

f_rc_lab_number

f_rc_year

f_14c

f_14c_sigma

f_fraction_modern

f_fraction_modern_sigma

f_quartz

f_alkali_feldspar

f_plag_feldspar

f_mica_chlorite

f_amphibole

f_pyroxine

f_olivine

f_volc_glass

f_kaol_halloy

f_smect_vermic

f_gibbsite

f_fe_oxides

f_imog_alloph

f_ferrihydrite

f_fe_ox

f_al_ox

f_si_ox

f_c_ox

f_ox_notes

f_fe_hy

f_al_hy

f_si_hy

f_c_hy

f_hy_notes

f_fe_dith

f_al_dith

f_si_dith

f_zeolite ...

Source

<https://powellcenter.usgs.gov/view-project/55d4bffce4b0518e354695aa>

Yujie_database	*Data compiled for the soilcarbon dataset*

Description

A dataset containing soil carbon parameters collected by the powell center soil carbon working group

Usage

Yujie_database

Format

A data frame with 4115 rows and 42 variables:

dataset_name

site_name

profile_name

lat

long

parent_material

slope

slope_shape

aspect

veg_note

country

state_province

mat

map

elevation

observation_date

soil_taxon

layer_name

layer_top

layer_bot

hzn

rc_year

X13c

X14c

X14c_sigma

bd_tot

bet_surface_area

ph_h2o

c_tot

n_tot

c_to_n

sand_tot_psa

silt_tot_psa

clay_tot_psa

cat_exch

fe_dith

fe_ox

fe_py

al_py

al_dith

al_ox

smect_vermic

doi_number

curator_name

curator_organization

curator_email

modification_date

contact_name

contact_email

contact_orcid_id

bibliographical.reference

metadata_note

datum

site_note

climate_cat

aspect_deg

drainage_class

depth_water

parent_chem

ecoregion

land_cover

s_soc

profile_note

profile_comp

veg_note_profile

2d_position

soil_series

bedrock_depth

thaw_depth_profile

p_soc

p_soc_sigma

p_soc_depth

layer_comp

layer_note

color

burn_ev

bd_samp

bd_notes

ph_cacl

ph_other

ph_other_method

inorgC

coarse_tot

coarse_size_thresh

texture_class

base_sum

cec_sum

Ca_exch

Na_exch

Mg_exch

K_exch

ecec

bs

soc

soc_sigma

oc

loi

X15n

rc_lab

rc_lab_number

fraction_modern

fraction_modern_sigma

mbc_method

raw_mbc

reported_mbc

p_ext

p_units

p_method

si_py

c_py

py_notes

si_ox

c_ox

ox_notes

fe_hy

al_hy

si_hy

c_hy

hy_notes

si_dith

dith_notes

quartz

alkali_feldspar

plag_feldspar

mica_chlorite

amphibole

pyroxine

olivine

volc_glass

kaol_halloy

gibbsite

fe_oxides

imog_alloph

ferrihydrite

calcite_dolomite

zeolite

fraction_name

f_scheme

f_property

f_scheme_units

f_lower

f_upper

f_agent

f_scheme_conc

f_seq

f_seq_order

f_comp

f_note

f_c_perc

f_mass_perc

f_c_tot

f_oc

f_n_tot

f_c_to_n

f_15n

f_13c

f_rc_lab

f_rc_lab_number

f_rc_year

f_14c

f_14c_sigma

f_fraction_modern

f_fraction_modern_sigma

f_quartz

f_alkali_feldspar

f_plag_feldspar

f_mica_chlorite

f_amphibole

f_pyroxine

f_olivine

f_volc_glass

f_kaol_halloy

f_smect_vermic

f_gibbsite

f_fe_oxides

f_imog_alloph

f_ferrihydrite

f_fe_ox

f_al_ox

f_si_ox

f_c_ox

f_ox_notes

f_fe_hy

f_al_hy

f_si_hy

f_c_hy

f_hy_notes

f_fe_dith

f_al_dith

f_si_dith

f_zeolite ...

Source

<https://powellcenter.usgs.gov/view-project/55d4bffce4b0518e354695aa>

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