

Package ‘DSSAT’

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Type Package

Title A Comprehensive R Interface for the DSSAT Cropping Systems Model

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Author Phillip D. Alderman [aut, cre]

Maintainer Phillip D. Alderman <phillip.alderman@okstate.edu>

Description The purpose of this package is to provide a comprehensive R interface to the Decision Support System for Agrotechnology Transfer Cropping Systems Model (DSSAT-CSM; see <<https://dssat.net>> for more information). The package provides cross-platform functions to read and write input files, run DSSAT-CSM, and read output files.

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Imports dplyr (>= 1.0.0), glue, lubridate, magrittr, methods, purrr, readr, rlang, stringr, tibble, tidyr, tidyselect, utils

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Suggests knitr, rmarkdown

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add_v_fmt	<i>Adds variable format information to a tibble</i>
-----------	---

Description

Adds variable format information to a tibble

Usage

```
add_v_fmt(input_tbl, v_fmt = NULL)
```

Arguments

input_tbl	a tibble
v_fmt	a named vector containing variable format information to be added to ‘input_tbl’

Value

a tibble containing the original tibble with an additional attribute that contains variable format information

Examples

```
# Extract file path for sample ecotype file
sample_eco_file <- system.file('extdata', 'SAMPLE.ECO', package='DSSAT')

# Read sample ecotype file
eco <- read_eco(sample_eco_file)

# Replace formats for TSEN and CDAY parameters
eco <- add_v_fmt(eco, v_fmt=c(TSEN='%6.1f', CDAY='%6.1f'))
```

as_DSSAT_tbl	<i>Convert tibble to DSSAT_tbl</i>
--------------	------------------------------------

Description

Convert tibble to DSSAT_tbl

Usage

```
as_DSSAT_tbl(tbl_in, v_fmt = NULL, tier_info = NULL)
```

Arguments

tbl_in	a tibble	
v_fmt	a character vector specifying the sprintf() format for each column	
tier_info	a list of character vectors storing the history of which original table that columns came from for tibbles that are comprised of multiple joined tables	

Value

a tibble of class DSSAT_tbl

calc_AMP	<i>Calculate long-term temperature amplitude (AMP)</i>
----------	--

Description

Calculate long-term temperature amplitude (AMP)

Usage

```
calc_AMP(wth)
```

Arguments

wth	a data frame that contains weather data formatted as would be generated using read_wth , namely including columns DATE, TMAX and TMIN.
-----	--

calc_TAV	<i>Calculate long-term temperature average (TAV)</i>
----------	--

Description

Calculate long-term temperature average (TAV)

Usage

```
calc_TAV(wth)
```

Arguments

wth	a data frame that contains weather data formatted as would be generated using read_wth , namely including columns TMAX and TMIN.
-----	--

clear_output	<i>Clear output files</i>
--------------	---------------------------

Description

A function to delete DSSAT output files (*.OUT) and intermediate files (*.INH, *.INP and *.LST) from a directory

Usage

```
clear_output(dir_name = getwd(), file_ext = c("OUT", "LST", "INP", "INH"))
```

Arguments

dir_name	a length-one character vector indicating the directory in which to delete output files (by default the current working directory)
file_ext	a character vector of file extensions to delete

mutate_cond	<i>Convenience function that allows mutating a subset of rows</i>
-------------	---

Description

Convenience function that allows mutating a subset of rows

Usage

```
mutate_cond(.data, condition, ..., envir = parent.frame())
```

Arguments

.data	a tibble
condition	a logical vector for subsetting rows of '.data'
...	Name-value pairs of expressions to be evaluated by 'mutate()'
envir	environment within which expressions should be evaluated

Details

Original code taken from <https://stackoverflow.com/questions/34096162/dplyr-mutate-replace-several-columns>

Value

a tibble with specified rows modified

read_cul	<i>Reads parameters from a single DSSAT cultivar parameter file (*.CUL)</i>
----------	---

Description

Reads parameters from a single DSSAT cultivar parameter file (*.CUL)

Usage

```
read_cul(
  file_name,
  col_types = NULL,
  col_names = NULL,
  left_justified = c("VAR#", "VARIABLE\\.*", "VAR-NAME\\.*", "VRNAME\\.*"),
  use_std_fmt = TRUE
)
```

Arguments

file_name	a character vector of length one that contains the name of a single DSSAT output file
col_types	One of NULL, a cols() specification, or a string. See read_fwf or <code>vignette("readr")</code> for more details.
col_names	A character vector of column names; primarily helpful for cases where there are no white spaces between column names within the header line
left_justified	A character vector of column names that should be left justified
use_std_fmt	logical value indicating whether to read FileX using the standard column formats. If FALSE, column formats will be inferred from tier headers

Value

a tibble containing the data from the raw DSSAT output

Examples

```
# Extract file path for sample cultivar file path
sample_cul_file <- system.file('extdata', 'SAMPLE.CUL', package='DSSAT')

# Read sample cultivar file
cul <- read_cul(sample_cul_file)
```

read_dssat	<i>Reads data from a single DSSAT file</i>
------------	--

Description

Reads data from a single DSSAT file

Usage

```
read_dssat(
  file_name,
  col_types = NULL,
  col_names = NULL,
  na_strings = NULL,
  left_justified = "EXCODE",
  guess_max = 10
)
```

Arguments

file_name	a character vector of length one that contains the name of a single DSSAT output file
col_types	One of NULL, a cols() specification, or a string. See read_fwf or <code>vignette("readr")</code> for more details.
col_names	A character vector of column names; primarily helpful for cases where there are no white spaces between column names within the header line
na_strings	A character vector containing strings that should be interpreted as missing values
left_justified	A character vector of column names that should be left justified
guess_max	An integer indicating the maximum number of lines that should be used to guess the type of a column

Value

a tibble containing the data from the raw DSSAT output

Examples

```
# Extract file path for sample output file path
sample_output <- system.file('extdata', 'SAMPLE.OUT', package='DSSAT')

read_dssat(sample_output)
```

read_dssbatch	<i>Reads data from a single DSSAT batch file</i>
---------------	--

Description

Reads data from a single DSSAT batch file

Usage

```
read_dssbatch(file_name = "DSSBatch.V47")
```

Arguments

file_name	a character vector of length one that contains the name of a single DSSAT batch file
-----------	--

Value

a tibble containing the data from the DSSAT batch file

Examples

```
# Create example batch file path
batch_file_path <- paste0(tempdir(), '/DSSBatch.V47')

# Write example batch file
write_dssbatch(x='UFGA0601.BMX', trtno=1:4, file_name = batch_file_path)

# Read example batch file
dssbatch <- read_dssbatch(batch_file_path)
```

read_eco	<i>Reads parameters from a single DSSAT ecotype parameter file (*.ECO)</i>
----------	--

Description

Reads parameters from a single DSSAT ecotype parameter file (*.ECO)

Usage

```
read_eco(
  file_name,
  col_types = NULL,
  col_names = NULL,
  left_justified = c("ECO   ", "ECO#", "ECONAME\\*.*", "ECO-NAME\\*.")
)
```

Arguments

file_name	a character vector of length one that contains the name of a single DSSAT output file
col_types	One of NULL, a cols() specification, or a string. See read_fwf or vignette("readr") for more details.
col_names	A character vector of column names; primarily helpful for cases where there are no white spaces between column names within the header line
left_justified	A character vector of column names that should be left justified

Value

a tibble containing the data from the raw DSSAT file

Examples

```
# Extract file path for sample ecotype file path
sample_eco <- system.file('extdata', 'SAMPLE.ECO', package='DSSAT')

eco <- read_eco(sample_eco)
```

read_filea	<i>Reads data from a single DSSAT file A</i>
------------	--

Description

Reads data from a single DSSAT file A

Usage

```
read_filea(file_name, col_types = NULL, col_names = NULL, na_strings = NULL)
```

Arguments

file_name	a character vector of length one that contains the name of a single DSSAT output file
col_types	One of NULL, a cols() specification, or a string. See read_fwf or <code>vignette("readr")</code> for more details.
col_names	A character vector of column names; primarily helpful for cases where there are no white spaces between column names within the header line
na_strings	a character vector of string to represent missing values

Value

a tibble containing the data from the raw DSSAT file

Examples

```
# Extract FileA path for sample file
sample_filea <- system.file('extdata', 'SAMPLE.CRA', package='DSSAT')

filea <- read_filea(sample_filea)
```

read_filet	<i>Reads time series data from a single DSSAT file T</i>
------------	--

Description

Reads time series data from a single DSSAT file T

Usage

```
read_filet(file_name, col_types = NULL, col_names = NULL, na_strings = NULL)
```

Arguments

file_name	a character vector of length one that contains the name of a single DSSAT output file
col_types	One of NULL, a cols() specification, or a string. See read_fwf or <code>vignette("readr")</code> for more details.
col_names	A character vector of column names; primarily helpful for cases where there are no white spaces between column names within the header line
na_strings	a character vector of string to represent missing values

Value

a tibble containing the data from the raw DSSAT file

Examples

```
# Extract FileT path for sample file
sample_filet <- system.file('extdata', 'SAMPLE.CRT', package='DSSAT')

read_filet(sample_filet)
```

read_filex

Reads input data from a single DSSAT experiment file (.X)*

Description

Reads input data from a single DSSAT experiment file (*.X)

Usage

```
read_filex(
  file_name,
  col_types = NULL,
  col_names = NULL,
  na_strings = NULL,
  store_v_fmt = FALSE,
  use_std_fmt = FALSE
)
```

Arguments

file_name	a character vector of length one that contains the name of a single DSSAT output file
col_types	One of NULL, a cols() specification, or a string. See read_fwf or <code>vignette("readr")</code> for more details.

col_names	A character vector of column names; primarily helpful for cases where there are no white spaces between column names within the header line
na_strings	A character vector containing strings that should be interpreted as missing values
store_v_fmt	a logical value indicating whether or not to store the format for variables being read
use_std_fmt	logical value indicating whether to read FileX using the standard column formats. If FALSE, column formats will be inferred from tier headers

Value

a tibble containing the data from the raw DSSAT file

read_filex_multiple *Read multiple File X*

Description

Read multiple File X

Usage

```
read_filex_multiple(
  file_name,
  col_types = NULL,
  col_names = NULL,
  na_strings = NULL,
  store_v_fmt = FALSE,
  use_std_fmt = TRUE
)
```

Arguments

file_name	a character vector of length one that contains the name of a single DSSAT output file
col_types	One of NULL, a cols() specification, or a string. See read_fwf or <code>vignette("readr")</code> for more details.
col_names	A character vector of column names; primarily helpful for cases where there are no white spaces between column names within the header line
na_strings	A character vector containing strings that should be interpreted as missing values
store_v_fmt	a logical value indicating whether or not to store the format for variables being read
use_std_fmt	logical value indicating whether to read FileX using the standard column formats. If FALSE, column formats will be inferred from tier headers

`read_output`*Reads data from a single DSSAT output file*

Description

Reads data from a single DSSAT output file

Usage

```
read_output(  
  file_name,  
  col_types = NULL,  
  col_names = NULL,  
  left_justified = NULL,  
  read_only = NULL,  
  store_v_fmt = FALSE  
)
```

Arguments

<code>file_name</code>	a character vector of length one that contains the name of a single DSSAT output file
<code>col_types</code>	One of <code>NULL</code> , a <code>cols()</code> specification, or a string. See read_fwf or <code>vignette("readr")</code> for more details.
<code>col_names</code>	A character vector of column names; primarily helpful for cases where there are no white spaces between column names within the header line
<code>left_justified</code>	A character vector of column names that should be left justified
<code>read_only</code>	<code>NULL</code> or a character vector of column names that should be read in; If non- <code>NULL</code> only the columns listed will be read in.
<code>store_v_fmt</code>	a logical value indicating whether or not to store the format for variables being read

Value

a tibble containing the data from the raw DSSAT output

Examples

```
# Extract file path for sample output file path  
sample_output <- system.file('extdata', 'SAMPLE.OUT', package='DSSAT')  
  
out <- read_output(sample_output)
```

read_pest	<i>Reads input data from a single DSSAT pest file (*.PST)</i>
-----------	---

Description

Reads input data from a single DSSAT pest file (*.PST)

Usage

```
read_pest(file_name, col_types = NULL, col_names = NULL)
```

Arguments

file_name	a character vector of length one that contains the name of a single DSSAT output file
col_types	One of NULL, a cols() specification, or a string. See read_fwf or vignette("readr") for more details.
col_names	A character vector of column names; primarily helpful for cases where there are no white spaces between column names within the header line

Value

a tibble containing the data from the raw DSSAT file

read_soil_profile	<i>Reads a single DSSAT formatted soil profile from a raw character vector</i>
-------------------	--

Description

Reads a single DSSAT formatted soil profile from a raw character vector

Usage

```
read_soil_profile(
  raw_lines,
  left_justified = NULL,
  col_types = NULL,
  col_names = NULL
)
```

Arguments

raw_lines	a character vector that includes the contents of a single tier of data (including headline, but excluding version stamp and other header information) from a DSSAT output file
left_justified	A character vector of column names that should be left justified
col_types	One of NULL, a cols() specification, or a string. See read_fwf or vignette("readr") for more details.
col_names	A character vector of column names; primarily helpful for cases where there are no white spaces between column names within the header line

Value

a list containing tibbles for each tier of a DSSAT formatted soil profile

Examples

```
sample_sol <- c(
  "*IB00000001 IBSNAT      SIC      210 DEFAULT - DEEP SILTY CLAY",
  "@SITE      COUNTRY      LAT      LONG SCS FAMILY",
  " Generic      Generic      -99      -99 Generic",
  "@ SCOM SALB SLU1 SLDR SLRO SLNF SLPF SMHB SMPX SMKE",
  " -99 0.11 6.0 0.30 85.0 1.00 1.00 IB001 IB001 IB001",
  "@ SLB SLMH SLLL SDUL SSAT SRGF SSKS SBDM SLOC SLCL SLSI SLCF SLNI SLHW SLHB",
  " 5 -99 0.228 0.385 0.481 1.000 -99 1.30 1.75 50.0 45.0 0.0 0.170 6.5 -99",
  " 15 -99 0.228 0.385 0.481 1.000 -99 1.30 1.75 50.0 45.0 0.0 0.170 6.5 -99",
  " 30 -99 0.249 0.406 0.482 0.638 -99 1.30 1.60 50.0 45.0 0.0 0.170 6.5 -99",
  " 45 -99 0.249 0.406 0.465 0.472 -99 1.35 1.45 50.0 45.0 0.0 0.140 6.5 -99",
  " 60 -99 0.249 0.406 0.465 0.350 -99 1.35 1.45 50.0 45.0 0.0 0.140 6.5 -99",
  " 90 -99 0.308 0.456 0.468 0.223 -99 1.35 1.10 50.0 45.0 0.0 0.110 6.5 -99",
  " 120 -99 0.207 0.341 0.452 0.122 -99 1.40 0.65 50.0 45.0 0.0 0.060 6.5 -99",
  " 150 -99 0.243 0.365 0.455 0.067 -99 1.40 0.30 50.0 45.0 0.0 0.030 6.5 -99",
  " 180 -99 0.259 0.361 0.457 0.037 -99 1.40 0.10 50.0 45.0 0.0 0.010 6.5 -99",
  " 210 -99 0.259 0.361 0.457 0.020 -99 1.40 0.01 50.0 45.0 0.0 0.000 6.5 -99")

read_soil_profile(sample_sol)
```

read_sol

Reads soil parameters from a single DSSAT soil parameter file (.SOL)*

Description

Reads soil parameters from a single DSSAT soil parameter file (*.SOL)

Usage

```
read_sol(
  file_name,
  id_soil = NULL,
  left_justified = NULL,
  col_types = NULL,
  col_names = NULL
)
```

Arguments

file_name	a character vector of length one that contains the name of a single DSSAT output file
id_soil	a length-one character vector containing the soil ID code for a single soil profile
left_justified	A character vector of column names that should be left justified
col_types	One of NULL, a cols() specification, or a string. See read_fwf or <code>vignette("readr")</code> for more details.
col_names	A character vector of column names; primarily helpful for cases where there are no white spaces between column names within the header line

Value

a tibble containing the data from the raw DSSAT file

Examples

```
# Extract file path for sample soil file
sample_sol <- system.file('extdata', 'SAMPLE.SOL', package='DSSAT')

sol <- read_sol(sample_sol)
```

read_tier	<i>Reads and combines data and header information from a single tier of a DSSAT output file</i>
-----------	---

Description

Reads and combines data and header information from a single tier of a DSSAT output file

Usage

```
read_tier(
  raw_lines,
  col_types = NULL,
  col_names = NULL,
  na_strings = NULL,
  left_justified = "EXCODE",
  guess_max = 1000,
  store_v_fmt = TRUE,
  read_only = NULL
)
```

Arguments

<code>raw_lines</code>	a character vector that includes the contents of a single tier of data (including headline, but excluding version stamp and other header information) from a DSSAT output file
<code>col_types</code>	One of <code>NULL</code> , a <code>cols()</code> specification, or a string. See <code>read_fwf</code> or <code>vignette("readr")</code> for more details.
<code>col_names</code>	A character vector of column names; primarily helpful for cases where there are no white spaces between column names within the header line
<code>na_strings</code>	a character vector of string to represent missing values
<code>left_justified</code>	A character vector of column names that should be left justified
<code>guess_max</code>	An integer indicating the maximum number of lines that should be used to guess the type of a column
<code>store_v_fmt</code>	a logical value indicating whether or not to store the format for variables being read
<code>read_only</code>	<code>NULL</code> or a character vector of column names that should be read in; If non- <code>NULL</code> only the columns listed will be read in.

Value

a tibble containing the data from the raw DSSAT output

Examples

```
sample_data_tier <- c(
  "*DSSAT Cropping System Model Ver. 4.6.0.030 -forage      MAR 27, 2014; 06:11:48",
  "",
  "*RUN 1 : 0 KG N/HA PRFRM046 UFGA0601 1",
  "MODEL : PRFRM046 - Tifton 85 bermud",
  "EXPERIMENT : UFGA0601 G0 NITROGEN RESPONSE OF TIFTON 85 BERMUDAGRASS REGROW",
  "DATA PATH :",
  " TREATMENT 1 : 0 KG N/HA PRFRM046",
  "",
  "",
  "!",
  "Soil evaporation (mm/d) by soil depth (cm):",
  ""
)
```

```
"!
"@YEAR DOY DAS SRAA ES1D ES2D ES3D ES4D ES5D ES6D ES7D ES8D",
" 2006 001 1 7.40 0.508 0.175 0.060 0.101 0.083 0.110 0.098 0.035",
" 2006 002 2 8.40 0.849 0.263 0.064 0.104 0.086 0.113 0.101 0.036",
" 2006 003 3 13.10 1.148 0.549 0.091 0.132 0.108 0.144 0.128 0.046")
```

```
read_tier(sample_data_tier)
```

read_wth	<i>Reads weather input data from a single DSSAT weather file (*.WTH)</i>
----------	--

Description

Reads weather input data from a single DSSAT weather file (*.WTH)

Usage

```
read_wth(file_name, col_types = NULL, col_names = NULL)
```

Arguments

file_name	a character vector of length one that contains the name of a single DSSAT output file
col_types	One of <code>NULL</code> , a <code>cols()</code> specification, or a string. See read_fwf or <code>vignette("readr")</code> for more details.
col_names	A character vector of column names; primarily helpful for cases where there are no white spaces between column names within the header line

Value

a tibble containing the data from the raw DSSAT file

Examples

```
# Extract file path for sample weather file
sample_wth <- system.file('extdata', 'SAMPLE.WTH', package='DSSAT')

read_wth(sample_wth)
```

run_dssat	<i>Writes data from a single DSSAT data tier</i>
-----------	--

Description

Writes data from a single DSSAT data tier

Usage

```
run_dssat(run_mode = "B", file_name = NULL, suppress_output = FALSE, wd = NULL)
```

Arguments

run_mode	a length-one character vector that specifies the run mode that should be used for the DSSAT simulation. One of: A - Run all treatments. User specifies fileX on the command line and the model runs all treatments B - Batch mode. User defines fileX and treatment numbers in Batch file C - Command line mode. Use input from the command line. D - Debug mode. Model skips input module and reads temp file from the command line E - Sensitivity analysis. User defines fileX and treatment number in Batch file F - Farm model. Use Batch file to define experiment G - Gencalc. Use Command line to define experiment and treatment I - Interactive mode. Use model interface for exp. & trtno. L - Gene based model (Locus). Use Batch file to define experiment N - Seasonal analysis. Use Batch file to define experiment and treatments Q - Sequence analysis. Use Batch file to define experiment S - Spatial. Use Batch file to define experiment T - Gencalc. Use Batch file to define experiments and treatment
file_name	a length-one character vector that specifies the file name to be used for simulation. Usually the name of a batch file or file X.
suppress_output	a logical value indicating whether to suppress DSSAT-CSM output from being printed to the console
wd	an optional character string that specifies the working directory within which to run DSSAT-CSM. If left NULL, DSSAT-CSM will be run in the current working directory

Value

Invisibly returns the console output from running DSSAT-CSM

Examples

```
## Not run:
  run_dssat()

## End(Not run)
```

write_cul	<i>Reads parameters from a single DSSAT cultivar parameter file (*.CUL)</i>
-----------	---

Description

Reads parameters from a single DSSAT cultivar parameter file (*.CUL)

Usage

```
write_cul(cul, file_name)
```

Arguments

cul	a DSSAT_tbl containing the contents of a DSSAT cultivar parameter file
file_name	a character vector of length one that contains the name of a single DSSAT output file

Value

a tibble containing the data from the raw DSSAT output

Examples

```
# Extract file path for sample cultivar file path
sample_cul_file <- system.file('extdata', 'SAMPLE.CUL', package='DSSAT')

# Read sample cultivar file
cul <- read_cul(sample_cul_file)

# Create example cultivar file path
sample_cul_file2 <- paste0(tempdir(), '/SAMPLE.CUL')

# Write out sample cultivar file
write_cul(cul, sample_cul_file2)
```

write_dssbatch	<i>Constructs and writes a DSSAT simulation batch file</i>
----------------	--

Description

Constructs and writes a DSSAT simulation batch file

Usage

```
write_dssbatch(x, trtno = 1, rp = 1, sq = 0, op = 0, co = 0, file_name = NULL)
```

Arguments

x a tibble/data frame or character vector; if a tibble, it should contain all required columns of a DSSAT batch file (FILEX, TRTNO, RP, SQ, OP, CO); if a character vector, it should contain FileX file names

trtno, rp, sq, op, co a numeric vector

file_name an optional character vector of the intended batch file name

Value

invisibly returns a character vector containing the content of a DSSAT batch file

Examples

```
# Create example batch file path
batch_file_path <- paste0(tempdir(), '/DSSBatch.V47')

# Write example batch file
write_dssbatch(x='UFGA0601.BMX', trtno=1:4, file_name = batch_file_path)

# Construct tibble for DSSAT batch file
batch_tbl <- data.frame(FILEX='UFGA0601.BMX',
                        TRTNO=1:4,
                        RP=1,
                        SQ=0,
                        OP=0,
                        CO=0)

# Write example batch file
write_dssbatch(batch_tbl, file_name = batch_file_path)
```

write_eco *Reads parameters from a single DSSAT ecotype parameter file (*.ECO)*

Description

Reads parameters from a single DSSAT ecotype parameter file (*.ECO)

Usage

```
write_eco(eco, file_name)
```

Arguments

eco a DSSAT_tbl containing the contents of a DSSAT ecotype parameter file

file_name a character vector of length one that contains the name of a single DSSAT output file

Value

a tibble containing the data from the raw DSSAT output

Examples

```
# Extract file path for sample ecotype file path
sample_eco_file <- system.file('extdata', 'SAMPLE.ECO', package='DSSAT')

# Read sample ecotype file
eco <- read_eco(sample_eco_file)

# Create example ecotype file path
sample_eco_file2 <- paste0(tempdir(), '/SAMPLE.ECO')

# Write out sample ecotype file
write_eco(eco, sample_eco_file2)
```

write_filea	<i>Writes data to a single DSSAT file A</i>
-------------	---

Description

Writes data to a single DSSAT file A

Usage

```
write_filea(filea, file_name, drop_duplicate_rows = TRUE)
```

Arguments

filea	a tibble containing the data to write to a DSSAT file A
file_name	a character vector of length one that contains the name of a single DSSAT file into which 'filea' will be written
drop_duplicate_rows	a logical value indicating whether duplicate rows should be dropped from tier_data

Examples

```
# Extract FileA path for sample file
sample_filea <- system.file('extdata', 'SAMPLE.CRA', package='DSSAT')

filea <- read_filea(sample_filea)

# Create example FileA file path
sample_filea2 <- paste0(tempdir(), '/SAMPLE.CRA')

# Write out sample FileA
write_filea(filea, sample_filea2)
```

write_filet	<i>Writes data to a single DSSAT file T</i>
-------------	---

Description

Writes data to a single DSSAT file T

Usage

```
write_filet(filet, file_name, drop_duplicate_rows = TRUE)
```

Arguments

filet	a tibble containing the data to write to a DSSAT file T
file_name	a character vector of length one that contains the name of a single DSSAT file into which 'filet' will be written
drop_duplicate_rows	a logical value indicating whether duplicate rows should be dropped from tier_data

Examples

```
# Extract FileT path for sample file
sample_filet <- system.file('extdata', 'SAMPLE.CRT', package='DSSAT')

filet <- read_filet(sample_filet)

# Create example FileT file path
sample_filet2 <- paste0(tempdir(), '/SAMPLE.CRT')

# Write out sample FileA
write_filet(filet, sample_filet2)
```

write_filex	<i>Writes data to a single DSSAT FileX</i>
-------------	--

Description

Writes data to a single DSSAT FileX

Usage

```
write_filex(filex, file_name, drop_duplicate_rows = TRUE, force_std_fmt = TRUE)
```

Arguments

filex	a list of tibbles containing the data to write to a DSSAT file X
file_name	a character vector of length one that contains the name of a single DSSAT file into which 'filet' will be written
drop_duplicate_rows	a logical value indicating whether duplicate rows should be dropped from tier_data
force_std_fmt	a logical value indicating whether to override the variable format stored within the FileX object with standard DSSAT formatting

write_sol	<i>Writes soil parameters to a single DSSAT soil parameter file (*.SOL)</i>
-----------	---

Description

Writes soil parameters to a single DSSAT soil parameter file (*.SOL)

Usage

```
write_sol(sol, file_name, title = NULL, append = TRUE, force_std_fmt = TRUE)
```

Arguments

sol	a tibble of soil profiles that have been read in by read_sol()
file_name	a character vector of length one that contains the name of a single DSSAT output file
title	a length-one character vector that contains the title of the soil file
append	TRUE or FALSE indicating whether soil profile should be appended to file_name. If FALSE, the soil profile will be written to a new file and will overwrite file_name (if it exists).
force_std_fmt	a logical value indicating whether to override the variable format stored within the FileX object with standard DSSAT formatting

Value

Invisibly returns NULL

Examples

```
# Extract file path for sample soil file
sample_sol <- system.file('extdata', 'SAMPLE.SOL', package='DSSAT')

# Read sample soil file
sol <- read_sol(sample_sol)

# Create example soil file path
sample_sol2 <- paste0(tempdir(), '/SAMPLE.SOL')
```

```
# Write example soil file
write_sol(sol, sample_sol2)
```

write_tier	<i>Writes data from a single DSSAT data tier</i>
------------	--

Description

Writes data from a single DSSAT data tier

Usage

```
write_tier(
  tier_data,
  pad_name = NULL,
  drop_duplicate_rows = FALSE,
  drop_na_rows = TRUE
)
```

Arguments

tier_data	a tibble containing the data to write out
pad_name	a character vector of column names for which to add leading spaces/trailing periods
drop_duplicate_rows	a logical value indicating whether duplicate rows should be dropped from tier_data
drop_na_rows	a logical value indicating whether rows containing all NA values should be dropped from tier_data

Value

a character vector

Examples

```
tier_data <- data.frame(TRNO=1:4, HWAM=rnorm(4, 2000, 250))
tier_data <- add_v_fmt(tier_data, v_fmt=c(TRNO='%6.0f', HWAM='%6.0f'))
output <- write_tier(tier_data)
```

write_wth	<i>Writes data to a single DSSAT weather file</i>
-----------	---

Description

Writes data to a single DSSAT weather file

Usage

```
write_wth(
  wth,
  file_name,
  force_std_fmt = TRUE,
  location = NULL,
  comments = NULL,
  INSI = NULL,
  LAT = NULL,
  LONG = NULL,
  ELEV = NULL,
  TAV = NULL,
  AMP = NULL,
  REFHT = NULL,
  WNDHT = NULL,
  CO2 = NULL
)
```

Arguments

wth	a tibble containing the data to write to a DSSAT weather file
file_name	a character vector of length one that contains the name of a single DSSAT file into which 'wth' will be written
force_std_fmt	a logical value indicating whether to override the variable format stored within the 'wth' object with standard DSSAT formatting
location	a character value that gives the location for the weather file header line
comments	a character vector containing any comments to be included in the weather file
INSI	Institute and site code (four-digit character code)
LAT	Latitude in decimal degrees
LONG	Longitude in decimal degrees
ELEV	Elevation in meters
TAV	Long-term average air temperature at reference height (typically 2 meters)
AMP	Long-term monthly air temperature amplitude at reference height (typically 2 meters)
REFHT	reference height for air temperature measurements
WNDHT	reference height for wind speed measurements
CO2	carbon dioxide concentration in parts per million

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