Package: read.abares (via r-universe)

January 13, 2026

Type Package

Title Download and Import Agricultural Data from the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) and Australian Bureau of Statistics (ABS)

Version 2.0.0

Description Download and import agricultural data from the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) <https://www.agriculture.gov.au/abares> and Australian Bureau of Statistics (ABS) <https://www.abs.gov.au>. Data types serviced include spreadsheets, CSV files, geospatial data including shape files and geotiffs covering topics including broadacre crops, livestock, soil data, commodities and more.

License MIT + file LICENSE

URL https://github.com/ropensci/read.abares, https://docs.ropensci.org/read.abares/

BugReports https://github.com/ropensci/read.abares/issues

Depends R (>= 4.1.0)

Imports brio, cli, data.table, fs, htm2txt, httr2, lubridate, purrr, readxl, rlang, sf, stars, stringr, terra, tidync, utils, whoami, withr

Suggests bit64, knitr, openxlsx, pander, rmarkdown, roxyglobals, skimr, spelling, testthat (>= 3.0.0), zip

VignetteBuilder knitr

Config/Needs/build moodymudskipper/devtag

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Config/roxyglobals/unique FALSE

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Encoding UTF-8

Language en-US

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RemoteUrl https://github.com/ropensci/read.abares

RemoteRef main

RemoteSha 5cf7d3e6fda39cd302ff60e9795799b67a439b9f

Contents

print_topsoil_thickness_metadata *Prints the text file Metadata for ABARES' Topsoil Thickness for "Australian Areas of Intensive Agriculture of Layer 1"*

Description

Prints the complete set of metadata associated with the soil thickness data in your R console. For including the metadata in documents or other methods outside of R, see `.get_topsoil_thickness()` for an example using `pander::pander()` to print the metadata.

Usage

```
print_topsoil_thickness_metadata(x = NULL)
```

Arguments

x	An optional file path to a zip file containing the topsoil thickness data from ABARES. If left as NULL, the default value, a copy will be downloaded from the ABARES website.

Value

Nothing, called for its side effects, it prints the complete metadata file to the R console.

Note

The original metadata use a title of "Soil Thickness", in the context of this package, we refer to it as "Topsoil Thickness" to be consistent with the actual values in the data.

Source

https://anrdl-integration-web-catalog-saxfirxkxt.s3-ap-southeast-2.amazonaws.com/warehouse/staiar9cl__059/staiar9cl__05911a01eg_geo___.zip

References

<https://data.agriculture.gov.au/geonetwork/srv/eng/catalog.search#/metadata/faa9f157-8e17-4b23-b6a7-37eb7920ead6.

See Also

Other topsoil thickness: `read_topsoil_thickness_stars()`, `read_topsoil_thickness_terra()`

Examples

```
print_print_topsoil_thickness_metadata()
```

read.abares_options *Get or Set read.abares Options*

Description

A convenience function to get or set options used by **read.abares**.

Usage

```
read.abares_options(...)
```

Arguments

...	Named options to set, or no arguments to retrieve current values.

Value

A list of current option values.

See Also

Other read.abares-options: read.abares-options

Examples

```
# See currently set options for {read.abares}
read.abares_options()

# Set to "verbosity" to "quiet" suppress messages
read.abares_options(read.abares.verbosity = "quiet")
read.abares_options()
```

read_aagis_regions *Read ABARES' "Australian Agricultural and Grazing Industries Survey" (AAGIS) Region Mapping Files*

Description

Download import the "Australian Agricultural and Grazing Industries Survey" (AAGIS) regions geospatial shapefile.

Usage

```
read_aagis_regions(x = NULL)
```

Arguments

x	A file path providing the file with the data to be imported. The file is assumed to be unarchived (*i.e.*, still zipped). This function does not provide any checking whether this function is the proper function for the provided file. Defaults to NULL, assuming that the file will be downloaded in the active R session.

Value

An **sf** object of the AAGIS regions.

Note

Upon import a few operations are carried out,

- the geometries are automatically corrected to fix invalid geometries that are present in the original shapefile,
- column names are set to start with a upper-case letter,
- the original column named, "name", is set to "AAGIS_region" to align with column names that the `data.table::data.table()` provided by `read_historical_regional_estimates()` to allow for easier merging of data for mapping, and,
- a new column, "State" is added to be used for mapping state estimates with data for mapping state historical estimate values found in the `data.table::data.table()` from `read_historical_state_estimates(`

Source

https://www.agriculture.gov.au/sites/default/files/documents/aagis_asgs16v1_g5a.shp_.zip.

References

https://www.agriculture.gov.au/abares/research-topics/surveys/farm-definitions-methods#regions.

Examples

```
aagis <- read_aagis_regions()

plot(aagis)
```

`read_abares_trade` *Read Data from the ABARES Trade Dashboard*

Description

Fetches and imports ABARES trade data. As the data x is large, ~1.4GB uncompressed CSV x.

Usage

```
read_abares_trade(x = NULL)
```

Arguments

x	A file path providing the file with the data to be imported. The file is assumed to be unarchived (*i.e.*, still zipped). This function does not provide any checking whether this function is the proper function for the provided file. Defaults to NULL, assuming that the file will be downloaded in the active R session.

Value

A **data.table** object of the ABARES trade data.

Note

Columns are renamed for consistency with other ABARES products serviced in this package using a snake_case format and ordered consistently.

Source

https://daff.ent.sirsidynix.net.au/client/en_AU/search/asset/1033841/0

References

https://www.agriculture.gov.au/abares/research-topics/trade/dashboard

See Also

Other Trade: `read_abares_trade_regions()`

Examples

```
trade <- read_abares_trade()

trade
```

`read_abares_trade_regions` *Read "Trade Data Regions" from the ABARES Trade Dashboard*

Description

Fetches and imports ABARES "Trade Data Regions".

Usage

```
read_abares_trade_regions(x = NULL)
```

Arguments

`x`	A file path providing the file with the data to be imported. The file is assumed to be unarchived (*i.e.*, still zipped). This function does not provide any checking whether this function is the proper function for the provided file. Defaults to `NULL`, assuming that the file will be downloaded in the active R session.

Value

A **data.table** object of the ABARES trade data regions.

Note

Columns are renamed for consistency with other ABARES products serviced in this package using a snake_case format and ordered consistently.

Source

https://daff.ent.sirsidynix.net.au/client/en_AU/search/asset/1033841/2

References

https://daff.ent.sirsidynix.net.au/client/en_AU/search/asset/1033841/0

See Also

Other Trade: `read_abares_trade()`

Examples

```
trade_regions <- read_abares_trade_regions()

trade_regions
```

`read_abs_broadacre_data` *Get ABS' Broadacre Crops Production and Value by Australia, State and Territory by Year*

Description

Automates downloading and importing of ABS broadacre crop production data. Please view the comments embedded in the spreadsheets themselves (that really should be columns of comments on the data) for important information.

Usage

```
read_abs_broadacre_data(data_set = "winter", year = "latest", x = NULL)
```

Arguments

`data_set`	A character vector providing the desired cropping data, one of: • winter (default), • summer or • sugarcane.
`year`	A string value providing the year of interest to download. Formatted as `"2022-23"` or `"2023-24"` or use `"latest"` for the most recent release available. Defaults to `"latest"`.
`x`	A file path providing the file with the data to be imported. The file is assumed to be unarchived (*i.e.*, still zipped). This function does not provide any checking whether this function is the proper function for the provided file. Defaults to `NULL`, assuming that the file will be downloaded in the active R session.

Details

Technically these data are from the Australian Bureau of Statistics (ABS, not ABARES, but the data is agricultural and so it's serviced in this package.

Value

A `data.table::data.table()` object of the requested data.

References

https://www.abs.gov.au/statistics/industry/agriculture/australian-agriculture-broadacre-crops.

See Also

Other ABS: `read_abs_horticulture_data()`, `read_abs_livestock_data()`

Examples

```
broadacre_data  <- read_abs_broadacre_data()

broadacre_data
```

`read_abs_horticulture_data` *Get ABS' Horticulture Crops Production and Value by Australia, State and Territory by Year*

Description

Automates downloading and importing of ABS horticulture crop production data. Please view the comments embedded in the spreadsheets themselves (that really should be columns of comments on the data) for important information.

Usage

```
read_abs_horticulture_data(year = "latest", x = NULL)
```

Arguments

`year`	A string value providing the year of interest to download. Formatted as `"2022-23"` or `"2023-24"` or use `"latest"` for the most recent release available. Defaults to `"latest"`.
`x`	A file path providing the file with the data to be imported. The file is assumed to be unarchived (*i.e.*, still zipped). This function does not provide any checking whether this function is the proper function for the provided file. Defaults to `NULL`, assuming that the file will be downloaded in the active R session.

Details

Technically these data are from the Australian Bureau of Statistics (ABS, not ABARES, but the data is agricultural and so it's serviced in this package.

Value

A `data.table::data.table()` object of the requested data.

References

https://www.abs.gov.au/statistics/industry/agriculture/australian-agriculture-horticulture.

See Also

Other ABS: `read_abs_broadacre_data()`, `read_abs_livestock_data()`

Examples

```
horticulture_data <- read_abs_horticulture_data()
horticulture_data
```

`read_abs_livestock_data` *Read ABS' Livestock Production and Value by Australia, State and Territory by Year*

Description

Automates downloading and importing of ABS livestock production data. Please view the comments embedded in the spreadsheets themselves (that really should be columns of comments on the data) for important information.

Usage

```
read_abs_livestock_data(data_set = "livestock_and_products", x = NULL)
```

Arguments

`data_set`	A string value providing the desired livestock data, one of: **livestock_and_products** (default) value of livestock disposals and products by Australia, state and territory, **cattle_herd** Cattle herd experimental estimates by Australia, state and territory, **cattle_herd_series** Cattle herd experimental and historical estimates by Australia, state and territory – 2005 to 2024.
`x`	A file path providing the file with the data to be imported. The file is assumed to be unarchived (*i.e.*, still zipped). This function does not provide any checking whether this function is the proper function for the provided file. Defaults to `NULL`, assuming that the file will be downloaded in the active R session.

Details

Technically these data are from the Australian Bureau of Statistics (ABS, not ABARES, but the data is agricultural and so it's serviced in this package.

Value

A `data.table::data.table()` object of the requested data.

References

https://www.abs.gov.au/statistics/industry/agriculture/australian-agriculture-livestock.

See Also

Other ABS: `read_abs_broadacre_data()`, `read_abs_horticulture_data()`

Examples

```
livestock_data <- read_abs_livestock_data()

livestock_data
```

`read_agfd_dt` *Read ABARES' "Australian Gridded Farm Data" (AGFD) NCDF Files as a data.table Object*

Description

Read "Australian Gridded Farm Data", (AGFD), as a `data.table::data.table()` object.

Usage

```
read_agfd_dt(yyyy = 1991:2023, fixed_prices = TRUE, x = NULL)
```

Arguments

`yyyy`	Returns only data for the specified year or years for climate data (fixed prices) or the years for historical climate and prices depending upon the setting of `fixed_prices`. Note that this will still download the entire data set, that cannot be avoided, but will only return the requested year(s) in your R session. Valid years are from 1991 to 2023 inclusive.
`fixed_prices`	Download historical climate and prices or historical climate and fixed prices as described in (Hughes *et al.* 2022). Defaults to `TRUE` and downloads the data with historical climate and fixed prices "to isolate the effects of climate variability on financial incomes for broadacre farm businesses" (ABARES 2024). Using `TRUE` will download simulations where global output and input price indexes are fixed at values from the most recently completed financial year.
`x`	A file path providing the file with the data to be imported. The file is assumed to be unarchived (*i.e.*, still zipped). This function does not provide any checking whether this function is the proper function for the provided file. Defaults to `NULL`, assuming that the file will be downloaded in the active R session.

Details

From the ABARES website: "The Australian Gridded Farm Data (AGFD) are a set of national scale maps containing simulated data on historical broadacre farm business outcomes including farm profitability on an 0.05-degree (approximately 5 km) grid.
These data have been produced by ABARES as part of the ongoing Australian Agricultural Drought Indicator (AADI) project (previously known as the Drought Early Warning System Project) and

were derived using ABARES *farmpredict* model, which in turn is based on ABARES Agricultural and Grazing Industries Survey (AAGIS) data.
Australian Agricultural Drought Indicator (AADI) project (previously known as the Drought Early Warning System Project) and were derived using ABARES *farmpredict* model, which in turn is based on ABARES Agricultural and Grazing Industries Survey (AAGIS) data.
These maps provide estimates of farm business profit, revenue, costs and production by location (grid cell) and year for the period 1990-91 to 2022-23. The data do not include actual observed outcomes but rather model predicted outcomes for representative or 'typical' broadacre farm businesses at each location considering likely farm characteristics and prevailing weather conditions and commodity prices."
– ABARES, 2024-11-25

If you have not already downloaded the files, both sets of data are large in file size, *i.e.*, >1GB, and will require time to download.

Value

A `data.table::data.table()` object of the "Australian Gridded Farm Data".

Model scenarios

Historical Climate (fixed prices):

The Historical Climate (fixed prices) scenario is similar to that described in Hughes *et al.* (2022) and is intended to isolate the effects of climate variability on financial incomes for broadacre farm businesses. In these simulations, global output and input price indexes are fixed at values from the most recently completed financial year. However, in these scenarios the spread between domestic and global grain (wheat, barley and sorghum) prices, along with Australian fodder prices are allowed to vary in response to climate data (to capture domestic increases in grain and fodder prices in drought years, see Hughes *et al.* 2022). A 33-year historical climate sequence (including historical simulated crop and pasture data from the AADI project) is simulated for each grid cell (1990-91 to 2022-23).

Historical Climate and Prices:

As part of the AADI project an additional scenario was developed accounting for changes in both climate conditions and output and input prices (*i.e.*, global commodity market variability). In this historical climate and prices scenario the 33-year reference period allows for variation in both historical climate conditions and historical prices. For this scenario, historical price indexes were de-trended, to account for consistent long-term trends in some real commodity prices (particularly sheep and lamb). The resulting simulation results and percentile indicators are intended to reflect the combined impacts of annual climate and commodity price variability."

– Taken from *Australian Bureau of Agricultural and Resource Economics and Sciences (2024)*

Data files

Simulation output data are saved as multilayer NetCDF files, which are named using following convention:

f<farm year>.c<climate year>.p<price year>.t<technology year>.nc

where:

- *<farm year>* = Financial year of farm business data is used in simulations.
- *<climate year>* = Financial year of climate data is used in simulations.
- *<price year>* = Financial year of output and input prices used in simulations.
- *<technology year>* = Financial year of farm 'technology' (equal to farm year in all simulations) Here financial years are referred to by the closing calendar year (*e.g.*, 2022 = 1 July 2021 to 30 June 2022).

– Taken from *Australian Bureau of Agricultural and Resource Economics and Sciences (2024)*

Data layers

The data layers from the downloaded NetCDF files are described in Table 2 as seen in *Australian Bureau of Agricultural and Resource Economics and Sciences (2024).*

Following is a copy of Table 2 for your convenience, please refer to the full document for all methods and metadata.

Layer	Unit	Description
farmno	-	Row index and column index of the grid cell in the form of YYYXXX
A_barley_hat_ha	-	Proportion of total farm area planted to barley
A_oilseeds_hat_ha	-	Proportion of total farm area planted to canola
A_sorghum_hat_ha	-	Proportion of total farm area planted to sorghum
A_total_cropped_ha	-	Proportion of total farm area planted to crops
A_wheat_hat_ha	-	Proportion of total farm area planted to wheat
C_chem_hat_ha	$/ha	Expenditure on crop and pasture chemicals per hectare
C_fert_hat_ha	$/ha	Expenditure on fertiliser per hectare
C_fodder_hat_ha	$/ha	Expenditure on fodder per hectare
C_fuel_hat_ha	$/ha	Expenditure on fuel, oil and grease per hectare
C_total_hat_ha	$/ha	Total cash costs per hectare
FBP_fci_hat_ha	$/ha	Farm cash income per hectare
FBP_fbp_hat_ha	$/ha	Farm business profit per hectare, cash income adjusted for family labour, depreciatio
FBP_pfe_hat_ha	$/ha	Profit at full equity per hectare
H_barley_dot_hat	t/ha	Barley yield (production per hectare planted)
H_oilseeds_dot_hat	t/ha	Oilseeds yield (production per hectare planted)
H_sorghum_dot_hat	t/ha	Sorghum yield (production per hectare planted)
H_wheat_dot_hat	t/ha	Wheat yield (production per hectare planted)
Q_barley_hat_ha	t/ha	Barley sold per hectare (total farm area)
Q_beef_hat_ha	Number/ha	Beef number sold per hectare
Q_lamb_hat_ha	Number/ha	Prime lamb number sold per hectare
Q_oilseeds_hat_ha	t/ha	Canola sold per hectare (total farm area)
Q_sheep_hat_ha	Number/ha	Sheep number sold per hectare
Q_sorghum_hat_ha	t/ha	Sorghum sold per hectare (total farm area)
Q_wheat_hat_ha	t/ha	Wheat sold per hectare (total farm area)
R_barley_hat_ha	$/ha	Barley gross receipts per hectare
R_beef_hat_ha	$/ha	Beef cattle receipts per hectare
R_lamb_hat_ha	$/ha	Prime lamb net receipts per hectare
R_oilseeds_hat_ha	$/ha	Receipts for oilseeds this FY for oilseeds sold this FY or in previous FYs per hectare
R_sheep_hat_ha	$/ha	Sheep gross receipts per hectare
R_sorghum_hat_ha	$/ha	Sorghum gross receipts per hectare

R_total_hat_ha	$/ha	Total farm receipts per hectare
R_wheat_hat_ha	$/ha	Wheat gross receipts per hectare
S_beef_births_hat_ha	Number/ha	Beef cattle births per hectare
S_beef_cl_hat_ha	Number/ha	Beef cattle on hand per hectare on 30 June
S_beef_deaths_hat_ha	Number/ha	Beef cattle deaths per hectare
S_sheep_births_hat_ha	Number/ha	Sheep births per hectare
S_sheep_cl_hat_ha	Number/ha	Sheep on hand per hectare on 30 June
S_sheep_deaths_hat_ha	Number/ha	Sheep deaths per hectare
S_wheat_cl_hat_ha	t/ha	Wheat on hand per hectare on 30 June
farmland_per_cell	ha	Indicative area of farmland in the grid cell

Source

- Historical climate prices fixed – https://daff.ent.sirsidynix.net.au/client/en_AU/search/asset/1036161/3,
- Historical climate and prices – https://daff.ent.sirsidynix.net.au/client/en_AU/search/asset/1036161/2

References

Australian gridded farm data, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, July 2024, doi:10.25814/7n6zev41. CC BY 4.0.

N. Hughes, W.Y. Soh, C. Boult, K. Lawson, *Defining drought from the perspective of Australian farmers*, Climate Risk Management, Volume 35, 2022, 100420, ISSN 2212-0963, doi:10.1016/j.crm.2022.100420.

See Also

Other AGFD: `read_agfd_stars()`, `read_agfd_terra()`, `read_agfd_tidync()`

Examples

```
# download and import AGFD files
agfd_dt <- read_agfd_dt()

agfd_dt
```

`read_agfd_stars` *Read ABARES' "Australian Gridded Farm Data" (AGFD) NCDF files with stars*

Description

Read "Australian Gridded Farm Data", (AGFD), as a list of **stars** objects.

Usage

```
read_agfd_stars(yyyy = 1991:2003, fixed_prices = TRUE, x = NULL)
```

Arguments

`yyyy`	Returns only data for the specified year or years for climate data (fixed prices) or the years for historical climate and prices depending upon the setting of `fixed_prices`. Note that this will still download the entire data set, that cannot be avoided, but will only return the requested year(s) in your R session. Valid years are from 1991 to 2023 inclusive.
`fixed_prices`	Download historical climate and prices or historical climate and fixed prices as described in (Hughes *et al.* 2022). Defaults to `TRUE` and downloads the data with historical climate and fixed prices "to isolate the effects of climate variability on financial incomes for broadacre farm businesses" (ABARES 2024). Using `TRUE` will download simulations where global output and input price indexes are fixed at values from the most recently completed financial year.
`x`	A file path providing the file with the data to be imported. The file is assumed to be unarchived (*i.e.*, still zipped). This function does not provide any checking whether this function is the proper function for the provided file. Defaults to `NULL`, assuming that the file will be downloaded in the active R session.

Details

From the ABARES website: "The Australian Gridded Farm Data (AGFD) are a set of national scale maps containing simulated data on historical broadacre farm business outcomes including farm profitability on an 0.05-degree (approximately 5 km) grid.
These data have been produced by ABARES as part of the ongoing Australian Agricultural Drought Indicator (AADI) project (previously known as the Drought Early Warning System Project) and were derived using ABARES *farmpredict* model, which in turn is based on ABARES Agricultural and Grazing Industries Survey (AAGIS) data.
Australian Agricultural Drought Indicator (AADI) project (previously known as the Drought Early Warning System Project) and were derived using ABARES *farmpredict* model, which in turn is based on ABARES Agricultural and Grazing Industries Survey (AAGIS) data.
These maps provide estimates of farm business profit, revenue, costs and production by location (grid cell) and year for the period 1990-91 to 2022-23. The data do not include actual observed outcomes but rather model predicted outcomes for representative or 'typical' broadacre farm businesses at each location considering likely farm characteristics and prevailing weather conditions and commodity prices."
– ABARES, 2024-11-25

If you have not already downloaded the files, both sets of data are large in file size, *i.e.*, >1GB, and will require time to download.

Value

A `list` object of **stars** objects of the "Australian Gridded Farm Data" with the NetCDF objects' names as "year_yyyy".

Model scenarios

Historical Climate (fixed prices):

The Historical Climate (fixed prices) scenario is similar to that described in Hughes *et al.* (2022) and is intended to isolate the effects of climate variability on financial incomes for broadacre farm businesses. In these simulations, global output and input price indexes are fixed at values from the most recently completed financial year. However, in these scenarios the spread between domestic and global grain (wheat, barley and sorghum) prices, along with Australian fodder prices are allowed to vary in response to climate data (to capture domestic increases in grain and fodder prices in drought years, see Hughes *et al.* 2022). A 33-year historical climate sequence (including historical simulated crop and pasture data from the AADI project) is simulated for each grid cell (1990-91 to 2022-23).

Historical Climate and Prices:

As part of the AADI project an additional scenario was developed accounting for changes in both climate conditions and output and input prices (*i.e.*, global commodity market variability). In this historical climate and prices scenario the 33-year reference period allows for variation in both historical climate conditions and historical prices. For this scenario, historical price indexes were de-trended, to account for consistent long-term trends in some real commodity prices (particularly sheep and lamb). The resulting simulation results and percentile indicators are intended to reflect the combined impacts of annual climate and commodity price variability."

– Taken from *Australian Bureau of Agricultural and Resource Economics and Sciences (2024)*

Data files

Simulation output data are saved as multilayer NetCDF files, which are named using following convention:

f<farm year>.c<climate year>.p<price year>.t<technology year>.nc

where:

- *<farm year>* = Financial year of farm business data is used in simulations.
- *<climate year>* = Financial year of climate data is used in simulations.
- *<price year>* = Financial year of output and input prices used in simulations.
- *<technology year>* = Financial year of farm 'technology' (equal to farm year in all simulations) Here financial years are referred to by the closing calendar year (*e.g.*, 2022 = 1 July 2021 to 30 June 2022).

– Taken from *Australian Bureau of Agricultural and Resource Economics and Sciences (2024)*

Data layers

The data layers from the downloaded NetCDF files are described in Table 2 as seen in *Australian Bureau of Agricultural and Resource Economics and Sciences (2024).*

Following is a copy of Table 2 for your convenience, please refer to the full document for all methods and metadata.

Layer	Unit	Description
farmno	-	Row index and column index of the grid cell in the form of YYYXXX

A_barley_hat_ha	-	Proportion of total farm area planted to barley
A_oilseeds_hat_ha	-	Proportion of total farm area planted to canola
A_sorghum_hat_ha	-	Proportion of total farm area planted to sorghum
A_total_cropped_ha	-	Proportion of total farm area planted to crops
A_wheat_hat_ha	-	Proportion of total farm area planted to wheat
C_chem_hat_ha	$/ha	Expenditure on crop and pasture chemicals per hectare
C_fert_hat_ha	$/ha	Expenditure on fertiliser per hectare
C_fodder_hat_ha	$/ha	Expenditure on fodder per hectare
C_fuel_hat_ha	$/ha	Expenditure on fuel, oil and grease per hectare
C_total_hat_ha	$/ha	Total cash costs per hectare
FBP_fci_hat_ha	$/ha	Farm cash income per hectare
FBP_fbp_hat_ha	$/ha	Farm business profit per hectare, cash income adjusted for family labour, depreciatio
FBP_pfe_hat_ha	$/ha	Profit at full equity per hectare
H_barley_dot_hat	t/ha	Barley yield (production per hectare planted)
H_oilseeds_dot_hat	t/ha	Oilseeds yield (production per hectare planted)
H_sorghum_dot_hat	t/ha	Sorghum yield (production per hectare planted)
H_wheat_dot_hat	t/ha	Wheat yield (production per hectare planted)
Q_barley_hat_ha	t/ha	Barley sold per hectare (total farm area)
Q_beef_hat_ha	Number/ha	Beef number sold per hectare
Q_lamb_hat_ha	Number/ha	Prime lamb number sold per hectare
Q_oilseeds_hat_ha	t/ha	Canola sold per hectare (total farm area)
Q_sheep_hat_ha	Number/ha	Sheep number sold per hectare
Q_sorghum_hat_ha	t/ha	Sorghum sold per hectare (total farm area)
Q_wheat_hat_ha	t/ha	Wheat sold per hectare (total farm area)
R_barley_hat_ha	$/ha	Barley gross receipts per hectare
R_beef_hat_ha	$/ha	Beef cattle receipts per hectare
R_lamb_hat_ha	$/ha	Prime lamb net receipts per hectare
R_oilseeds_hat_ha	$/ha	Receipts for oilseeds this FY for oilseeds sold this FY or in previous FYs per hectare
R_sheep_hat_ha	$/ha	Sheep gross receipts per hectare
R_sorghum_hat_ha	$/ha	Sorghum gross receipts per hectare
R_total_hat_ha	$/ha	Total farm receipts per hectare
R_wheat_hat_ha	$/ha	Wheat gross receipts per hectare
S_beef_births_hat_ha	Number/ha	Beef cattle births per hectare
S_beef_cl_hat_ha	Number/ha	Beef cattle on hand per hectare on 30 June
S_beef_deaths_hat_ha	Number/ha	Beef cattle deaths per hectare
S_sheep_births_hat_ha	Number/ha	Sheep births per hectare
S_sheep_cl_hat_ha	Number/ha	Sheep on hand per hectare on 30 June
S_sheep_deaths_hat_ha	Number/ha	Sheep deaths per hectare
S_wheat_cl_hat_ha	t/ha	Wheat on hand per hectare on 30 June
farmland_per_cell	ha	Indicative area of farmland in the grid cell

References

Australian gridded farm data, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, July 2024, doi:10.25814/7n6zev41. CC BY 4.0.

N. Hughes, W.Y. Soh, C. Boult, K. Lawson, *Defining drought from the perspective of Australian farmers*, Climate Risk Management, Volume 35, 2022, 100420, ISSN 2212-0963, doi:10.1016/j.crm.2022.100420.

See Also

Other AGFD: `read_agfd_dt()`, `read_agfd_terra()`, `read_agfd_tidync()`

Examples

```
agfd_stars <- read_agfd_stars()

head(agfd_stars)

plot(agfd_stars[[1]])
```

`read_agfd_terra` *Read ABARES' "Australian Gridded Farm Data" (AGFD) NCDF Files with terra*

Description

Read "Australian Gridded Farm Data", (AGFD), as a `terra::rast()` object.

Usage

```
read_agfd_terra(yyyy = 1991:2023, fixed_prices = TRUE, x = NULL)
```

Arguments

`yyyy`	Returns only data for the specified year or years for climate data (fixed prices) or the years for historical climate and prices depending upon the setting of `fixed_prices`. Note that this will still download the entire data set, that cannot be avoided, but will only return the requested year(s) in your R session. Valid years are from 1991 to 2023 inclusive.
`fixed_prices`	Download historical climate and prices or historical climate and fixed prices as described in (Hughes *et al.* 2022). Defaults to `TRUE` and downloads the data with historical climate and fixed prices "to isolate the effects of climate variability on financial incomes for broadacre farm businesses" (ABARES 2024). Using `TRUE` will download simulations where global output and input price indexes are fixed at values from the most recently completed financial year.
`x`	A file path providing the file with the data to be imported. The file is assumed to be unarchived (*i.e.*, still zipped). This function does not provide any checking whether this function is the proper function for the provided file. Defaults to `NULL`, assuming that the file will be downloaded in the active R session.

Details

From the ABARES website: "The Australian Gridded Farm Data (AGFD) are a set of national scale maps containing simulated data on historical broadacre farm business outcomes including farm profitability on an 0.05-degree (approximately 5 km) grid.
These data have been produced by ABARES as part of the ongoing Australian Agricultural Drought Indicator (AADI) project (previously known as the Drought Early Warning System Project) and were derived using ABARES *farmpredict* model, which in turn is based on ABARES Agricultural and Grazing Industries Survey (AAGIS) data.
Australian Agricultural Drought Indicator (AADI) project (previously known as the Drought Early Warning System Project) and were derived using ABARES *farmpredict* model, which in turn is based on ABARES Agricultural and Grazing Industries Survey (AAGIS) data.
These maps provide estimates of farm business profit, revenue, costs and production by location (grid cell) and year for the period 1990-91 to 2022-23. The data do not include actual observed outcomes but rather model predicted outcomes for representative or 'typical' broadacre farm businesses at each location considering likely farm characteristics and prevailing weather conditions and commodity prices."
– ABARES, 2024-11-25

If you have not already downloaded the files, both sets of data are large in file size, *i.e.*, >1GB, and will require time to download.

Value

A list of **terra** `SpatRaster` objects of the "Australian Gridded Farm Data" with the NetCDF objects' names as "year_yyyy".

Model scenarios

Historical Climate (fixed prices):

The Historical Climate (fixed prices) scenario is similar to that described in Hughes *et al.* (2022) and is intended to isolate the effects of climate variability on financial incomes for broadacre farm businesses. In these simulations, global output and input price indexes are fixed at values from the most recently completed financial year. However, in these scenarios the spread between domestic and global grain (wheat, barley and sorghum) prices, along with Australian fodder prices are allowed to vary in response to climate data (to capture domestic increases in grain and fodder prices in drought years, see Hughes *et al.* 2022). A 33-year historical climate sequence (including historical simulated crop and pasture data from the AADI project) is simulated for each grid cell (1990-91 to 2022-23).

Historical Climate and Prices:

As part of the AADI project an additional scenario was developed accounting for changes in both climate conditions and output and input prices (*i.e.*, global commodity market variability). In this historical climate and prices scenario the 33-year reference period allows for variation in both historical climate conditions and historical prices. For this scenario, historical price indexes were de-trended, to account for consistent long-term trends in some real commodity prices (particularly sheep and lamb). The resulting simulation results and percentile indicators are intended to reflect the combined impacts of annual climate and commodity price variability."

– Taken from *Australian Bureau of Agricultural and Resource Economics and Sciences (2024)*

Data files

Simulation output data are saved as multilayer NetCDF files, which are named using following convention:

f<farm year>.c<climate year>.p<price year>.t<technology year>.nc

where:

- *<farm year>* = Financial year of farm business data is used in simulations.
- *<climate year>* = Financial year of climate data is used in simulations.
- *<price year>* = Financial year of output and input prices used in simulations.
- *<technology year>* = Financial year of farm 'technology' (equal to farm year in all simulations) Here financial years are referred to by the closing calendar year (*e.g.*, 2022 = 1 July 2021 to 30 June 2022).

– Taken from *Australian Bureau of Agricultural and Resource Economics and Sciences (2024)*

Data layers

The data layers from the downloaded NetCDF files are described in Table 2 as seen in *Australian Bureau of Agricultural and Resource Economics and Sciences (2024).*

Following is a copy of Table 2 for your convenience, please refer to the full document for all methods and metadata.

Layer	Unit	Description
farmno	-	Row index and column index of the grid cell in the form of YYYXXX
A_barley_hat_ha	-	Proportion of total farm area planted to barley
A_oilseeds_hat_ha	-	Proportion of total farm area planted to canola
A_sorghum_hat_ha	-	Proportion of total farm area planted to sorghum
A_total_cropped_ha	-	Proportion of total farm area planted to crops
A_wheat_hat_ha	-	Proportion of total farm area planted to wheat
C_chem_hat_ha	$/ha	Expenditure on crop and pasture chemicals per hectare
C_fert_hat_ha	$/ha	Expenditure on fertiliser per hectare
C_fodder_hat_ha	$/ha	Expenditure on fodder per hectare
C_fuel_hat_ha	$/ha	Expenditure on fuel, oil and grease per hectare
C_total_hat_ha	$/ha	Total cash costs per hectare
FBP_fci_hat_ha	$/ha	Farm cash income per hectare
FBP_fbp_hat_ha	$/ha	Farm business profit per hectare, cash income adjusted for family labour, depreciatio
FBP_pfe_hat_ha	$/ha	Profit at full equity per hectare
H_barley_dot_hat	t/ha	Barley yield (production per hectare planted)
H_oilseeds_dot_hat	t/ha	Oilseeds yield (production per hectare planted)
H_sorghum_dot_hat	t/ha	Sorghum yield (production per hectare planted)
H_wheat_dot_hat	t/ha	Wheat yield (production per hectare planted)
Q_barley_hat_ha	t/ha	Barley sold per hectare (total farm area)
Q_beef_hat_ha	Number/ha	Beef number sold per hectare
Q_lamb_hat_ha	Number/ha	Prime lamb number sold per hectare
Q_oilseeds_hat_ha	t/ha	Canola sold per hectare (total farm area)
Q_sheep_hat_ha	Number/ha	Sheep number sold per hectare
Q_sorghum_hat_ha	t/ha	Sorghum sold per hectare (total farm area)

Q_wheat_hat_ha	t/ha	Wheat sold per hectare (total farm area)
R_barley_hat_ha	$/ha	Barley gross receipts per hectare
R_beef_hat_ha	$/ha	Beef cattle receipts per hectare
R_lamb_hat_ha	$/ha	Prime lamb net receipts per hectare
R_oilseeds_hat_ha	$/ha	Receipts for oilseeds this FY for oilseeds sold this FY or in previous FYs per hectare
R_sheep_hat_ha	$/ha	Sheep gross receipts per hectare
R_sorghum_hat_ha	$/ha	Sorghum gross receipts per hectare
R_total_hat_ha	$/ha	Total farm receipts per hectare
R_wheat_hat_ha	$/ha	Wheat gross receipts per hectare
S_beef_births_hat_ha	Number/ha	Beef cattle births per hectare
S_beef_cl_hat_ha	Number/ha	Beef cattle on hand per hectare on 30 June
S_beef_deaths_hat_ha	Number/ha	Beef cattle deaths per hectare
S_sheep_births_hat_ha	Number/ha	Sheep births per hectare
S_sheep_cl_hat_ha	Number/ha	Sheep on hand per hectare on 30 June
S_sheep_deaths_hat_ha	Number/ha	Sheep deaths per hectare
S_wheat_cl_hat_ha	t/ha	Wheat on hand per hectare on 30 June
farmland_per_cell	ha	Indicative area of farmland in the grid cell

References

Australian gridded farm data, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, July 2024, doi:10.25814/7n6zev41. CC BY 4.0.

N. Hughes, W.Y. Soh, C. Boult, K. Lawson, *Defining drought from the perspective of Australian farmers*, Climate Risk Management, Volume 35, 2022, 100420, ISSN 2212-0963, doi:10.1016/j.crm.2022.100420.

See Also

Other AGFD: `read_agfd_dt()`, `read_agfd_stars()`, `read_agfd_tidync()`

Examples

```
agfd_terra <- read_agfd_terra()

head(agfd_terra)

# `plot()` is rexported from the `terra` package
plot(agfd_terra[[1]][[1]])
```

`read_agfd_tidync` *Read ABARES' "Australian Gridded Farm Data" (AGFD) NCDF Files with tidync*

Description

Read "Australian Gridded Farm Data", (AGFD), as a list of `tidync::tidync()` objects.

Usage

```
read_agfd_tidync(yyyy = 1991:2023, fixed_prices = TRUE, x = NULL)
```

Arguments

`yyyy`	Returns only data for the specified year or years for climate data (fixed prices) or the years for historical climate and prices depending upon the setting of `fixed_prices`. Note that this will still download the entire data set, that cannot be avoided, but will only return the requested year(s) in your R session. Valid years are from 1991 to 2023 inclusive.
`fixed_prices`	Download historical climate and prices or historical climate and fixed prices as described in (Hughes *et al.* 2022). Defaults to `TRUE` and downloads the data with historical climate and fixed prices "to isolate the effects of climate variability on financial incomes for broadacre farm businesses" (ABARES 2024). Using `TRUE` will download simulations where global output and input price indexes are fixed at values from the most recently completed financial year.
`x`	A file path providing the file with the data to be imported. The file is assumed to be unarchived (*i.e.*, still zipped). This function does not provide any checking whether this function is the proper function for the provided file. Defaults to `NULL`, assuming that the file will be downloaded in the active R session.

Details

From the ABARES website: "The Australian Gridded Farm Data (AGFD) are a set of national scale maps containing simulated data on historical broadacre farm business outcomes including farm profitability on an 0.05-degree (approximately 5 km) grid.
These data have been produced by ABARES as part of the ongoing Australian Agricultural Drought Indicator (AADI) project (previously known as the Drought Early Warning System Project) and were derived using ABARES *farmpredict* model, which in turn is based on ABARES Agricultural and Grazing Industries Survey (AAGIS) data.
Australian Agricultural Drought Indicator (AADI) project (previously known as the Drought Early Warning System Project) and were derived using ABARES *farmpredict* model, which in turn is based on ABARES Agricultural and Grazing Industries Survey (AAGIS) data.
These maps provide estimates of farm business profit, revenue, costs and production by location (grid cell) and year for the period 1990-91 to 2022-23. The data do not include actual observed outcomes but rather model predicted outcomes for representative or 'typical' broadacre farm businesses at each location considering likely farm characteristics and prevailing weather conditions and commodity prices."
– ABARES, 2024-11-25

If you have not already downloaded the files, both sets of data are large in file size, *i.e.*, >1GB, and will require time to download.

Value

A list of **tidync** objects of the "Australian Gridded Farm Data" with the NetCDF objects' names as "year_yyyy".

Model scenarios

Historical Climate (fixed prices):

The Historical Climate (fixed prices) scenario is similar to that described in Hughes *et al.* (2022) and is intended to isolate the effects of climate variability on financial incomes for broadacre farm businesses. In these simulations, global output and input price indexes are fixed at values from the most recently completed financial year. However, in these scenarios the spread between domestic and global grain (wheat, barley and sorghum) prices, along with Australian fodder prices are allowed to vary in response to climate data (to capture domestic increases in grain and fodder prices in drought years, see Hughes *et al.* 2022). A 33-year historical climate sequence (including historical simulated crop and pasture data from the AADI project) is simulated for each grid cell (1990-91 to 2022-23).

Historical Climate and Prices:

As part of the AADI project an additional scenario was developed accounting for changes in both climate conditions and output and input prices (*i.e.*, global commodity market variability). In this historical climate and prices scenario the 33-year reference period allows for variation in both historical climate conditions and historical prices. For this scenario, historical price indexes were de-trended, to account for consistent long-term trends in some real commodity prices (particularly sheep and lamb). The resulting simulation results and percentile indicators are intended to reflect the combined impacts of annual climate and commodity price variability."

– Taken from *Australian Bureau of Agricultural and Resource Economics and Sciences (2024)*

Data files

Simulation output data are saved as multilayer NetCDF files, which are named using following convention:

f<farm year>.c<climate year>.p<price year>.t<technology year>.nc

where:

- *<farm year>* = Financial year of farm business data is used in simulations.
- *<climate year>* = Financial year of climate data is used in simulations.
- *<price year>* = Financial year of output and input prices used in simulations.
- *<technology year>* = Financial year of farm 'technology' (equal to farm year in all simulations) Here financial years are referred to by the closing calendar year (*e.g.*, 2022 = 1 July 2021 to 30 June 2022).

– Taken from *Australian Bureau of Agricultural and Resource Economics and Sciences (2024)*

Data layers

The data layers from the downloaded NetCDF files are described in Table 2 as seen in *Australian Bureau of Agricultural and Resource Economics and Sciences (2024).*

Following is a copy of Table 2 for your convenience, please refer to the full document for all methods and metadata.

Layer	Unit	Description
farmno	-	Row index and column index of the grid cell in the form of YYYXXX

A_barley_hat_ha	-	Proportion of total farm area planted to barley
A_oilseeds_hat_ha	-	Proportion of total farm area planted to canola
A_sorghum_hat_ha	-	Proportion of total farm area planted to sorghum
A_total_cropped_ha	-	Proportion of total farm area planted to crops
A_wheat_hat_ha	-	Proportion of total farm area planted to wheat
C_chem_hat_ha	$/ha	Expenditure on crop and pasture chemicals per hectare
C_fert_hat_ha	$/ha	Expenditure on fertiliser per hectare
C_fodder_hat_ha	$/ha	Expenditure on fodder per hectare
C_fuel_hat_ha	$/ha	Expenditure on fuel, oil and grease per hectare
C_total_hat_ha	$/ha	Total cash costs per hectare
FBP_fci_hat_ha	$/ha	Farm cash income per hectare
FBP_fbp_hat_ha	$/ha	Farm business profit per hectare, cash income adjusted for family labour, depreciatio
FBP_pfe_hat_ha	$/ha	Profit at full equity per hectare
H_barley_dot_hat	t/ha	Barley yield (production per hectare planted)
H_oilseeds_dot_hat	t/ha	Oilseeds yield (production per hectare planted)
H_sorghum_dot_hat	t/ha	Sorghum yield (production per hectare planted)
H_wheat_dot_hat	t/ha	Wheat yield (production per hectare planted)
Q_barley_hat_ha	t/ha	Barley sold per hectare (total farm area)
Q_beef_hat_ha	Number/ha	Beef number sold per hectare
Q_lamb_hat_ha	Number/ha	Prime lamb number sold per hectare
Q_oilseeds_hat_ha	t/ha	Canola sold per hectare (total farm area)
Q_sheep_hat_ha	Number/ha	Sheep number sold per hectare
Q_sorghum_hat_ha	t/ha	Sorghum sold per hectare (total farm area)
Q_wheat_hat_ha	t/ha	Wheat sold per hectare (total farm area)
R_barley_hat_ha	$/ha	Barley gross receipts per hectare
R_beef_hat_ha	$/ha	Beef cattle receipts per hectare
R_lamb_hat_ha	$/ha	Prime lamb net receipts per hectare
R_oilseeds_hat_ha	$/ha	Receipts for oilseeds this FY for oilseeds sold this FY or in previous FYs per hectare
R_sheep_hat_ha	$/ha	Sheep gross receipts per hectare
R_sorghum_hat_ha	$/ha	Sorghum gross receipts per hectare
R_total_hat_ha	$/ha	Total farm receipts per hectare
R_wheat_hat_ha	$/ha	Wheat gross receipts per hectare
S_beef_births_hat_ha	Number/ha	Beef cattle births per hectare
S_beef_cl_hat_ha	Number/ha	Beef cattle on hand per hectare on 30 June
S_beef_deaths_hat_ha	Number/ha	Beef cattle deaths per hectare
S_sheep_births_hat_ha	Number/ha	Sheep births per hectare
S_sheep_cl_hat_ha	Number/ha	Sheep on hand per hectare on 30 June
S_sheep_deaths_hat_ha	Number/ha	Sheep deaths per hectare
S_wheat_cl_hat_ha	t/ha	Wheat on hand per hectare on 30 June
farmland_per_cell	ha	Indicative area of farmland in the grid cell

References

Australian gridded farm data, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, July 2024, doi:10.25814/7n6zev41. CC BY 4.0.

N. Hughes, W.Y. Soh, C. Boult, K. Lawson, *Defining drought from the perspective of Australian farmers*, Climate Risk Management, Volume 35, 2022, 100420, ISSN 2212-0963, doi:10.1016/j.crm.2022.100420.

See Also

Other AGFD: `read_agfd_dt()`, `read_agfd_stars()`, `read_agfd_terra()`

Examples

```
agfd_tnc <- read_agfd_tidync()

head(agfd_tnc)
```

`read_clum_commodities` *Read ABARES' Catchment Scale "Land Use of Australia" Commodities Shapefile*

Description

Download (if desired) catchment level land use commodity data shapefile and import it into your active R session after correcting invalid geometries.

Usage

```
read_clum_commodities(x = NULL)
```

Arguments

x	A file path providing the file with the data to be imported. The file is assumed to be unarchived (*i.e.*, still zipped). This function does not provide any checking whether this function is the proper function for the provided file. Defaults to `NULL`, assuming that the file will be downloaded in the active R session.

Value

An `sf::sf()` object.

Source

doi:10.25814/zfjzjt75

References

ABARES 2024, Catchment Scale Land Use of Australia – Update December 2023 version 2, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, June, CC BY 4.0, DOI: doi:10.25814/2w2pph98.

Examples

```
clum_commodities <- read_clum_commodities()

clum_commodities
```

`read_clum_stars` *Read ABARES' Catchment Scale "Land Use of Australia" Data Using Stars*

Description

Download and import catchment scale "Land Use of Australia" GeoTIFFs as a **stars** object.

Usage

```
read_clum_stars(data_set = "clum_50m_2023_v2", x = NULL, ...)
```

Arguments

`data_set`	A string value indicating the data desired for download. One of: **clum_50m_2023_v2** Catchment Scale Land Use of Australia – Update December 2023 version 2 **scale_date_update** Catchment Scale Land Use of Australia - Date and Scale of Mapping .
`x`	A file path providing the file with the data to be imported. The file is assumed to be unarchived (*i.e.*, still zipped). This function does not provide any checking whether this function is the proper function for the provided file. Defaults to `NULL`, assuming that the file will be downloaded in the active R session.
`...`	Additional arguments passed to `stars::read_stars()`, for *e.g.*, `RAT` if you wish to set the active category when loading any of the available GeoTIFF files that are encoded with a raster attribute table.

Details

From the ABARES documentation "The Catchment Scale Land Use of Australia – Update December 2023 version 2 dataset is the national compilation of catchment scale land use data available for Australia (CLUM), as at December 2023. It replaces the Catchment Scale Land Use of Australia – Update December 2020. It is a seamless raster dataset that combines land use data for all state and territory jurisdictions, compiled at a resolution of 50 metres by 50 metres. The CLUM data shows a single dominant land use for a given area, based on the primary management objective of the land manager (as identified by state and territory agencies). Land use is classified according to the Australian Land Use and Management Classification version 8. It has been compiled from vector land use datasets collected as part of state and territory mapping programs and other authoritative sources, through the Australian Collaborative Land Use and Management Program. Catchment

scale land use data was produced by combining land tenure and other types of land use information including, fine-scale satellite data, ancillary datasets, and information collected in the field. The date of mapping (2008 to 2023) and scale of mapping (1:5,000 to 1:250,000) vary, reflecting the source data, capture date and scale. Date and scale of mapping are provided in supporting datasets." – ABARES, 2024-06-27

Value

a **stars** object that may be one or many layers depending upon the requested data set.

Note

The raster will load with the default category for each data set, but you can specify a different category to use by passing the RAT argument through the .... To see which categories are available, please refer to the metadata for these data. The PDF can be accessed in your default PDF viewer by using `view_nlum_metadata_pdf()`.

Source

doi:10.25814/2w2pph98.

References

ABARES 2024, Catchment Scale Land Use of Australia – Update December 2023 version 2, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, June, CC BY 4.0, DOI: doi:10.25814/2w2pph98.

See Also

Other clum: `read_clum_terra()`

Examples

```
clum_stars <- read_clum_stars(data_set = "clum_50m_2023_v2")

clum_stars

plot(clum_stars)
```

`read_clum_terra` *Read ABARES' Catchment Scale "Land Use of Australia" GeoTIFFs Using terra*

Description

Download and import catchment scale "Land Use of Australia" GeoTIFFs using **terra** as a categorical `terra::rast()` object.

Usage

```
read_clum_terra(data_set = "clum_50m_2023_v2", x = NULL, ...)
```

Arguments

data_set	A string value indicating the data desired for download. One of: **clum_50m_2023_v2** Catchment Scale Land Use of Australia – Update December 2023 version 2 **scale_date_update** Catchment Scale Land Use of Australia - Date and Scale of Mapping .
x	A file path providing the file with the data to be imported. The file is assumed to be unarchived (*i.e.*, still zipped). This function does not provide any checking whether this function is the proper function for the provided file. Defaults to NULL, assuming that the file will be downloaded in the active R session.
...	Additional arguments passed to terra::rast().

Details

From the ABARES documentation "The Catchment Scale Land Use of Australia – Update December 2023 version 2 dataset is the national compilation of catchment scale land use data available for Australia (CLUM), as at December 2023. It replaces the Catchment Scale Land Use of Australia – Update December 2020. It is a seamless raster dataset that combines land use data for all state and territory jurisdictions, compiled at a resolution of 50 metres by 50 metres. The CLUM data shows a single dominant land use for a given area, based on the primary management objective of the land manager (as identified by state and territory agencies). Land use is classified according to the Australian Land Use and Management Classification version 8. It has been compiled from vector land use datasets collected as part of state and territory mapping programs and other authoritative sources, through the Australian Collaborative Land Use and Management Program. Catchment scale land use data was produced by combining land tenure and other types of land use information including, fine-scale satellite data, ancillary datasets, and information collected in the field. The date of mapping (2008 to 2023) and scale of mapping (1:5,000 to 1:250,000) vary, reflecting the source data, capture date and scale. Date and scale of mapping are provided in supporting datasets." – ABARES, 2024-06-27

Value

A **terra** SpatRaster object that may be one or many layers depending upon the requested data set.

Active categories

The catchment scale land use data set is a categorical raster with many categories. The raster will load with the default category for each data set, but you can specify a different category to use through terra::activeCat() after loading. To see which categories are available, please refer to the metadata for these data. The PDF can be accessed in your default web browser by using view_clum_metadata_pdf().

Map colours

Where ABARES has provided a style guide, it will be applied by default to the raster object. Not all GeoTiff files have a colour guide available.

Source

doi:10.25814/2w2pph98

References

ABARES 2024, Catchment Scale Land Use of Australia – Update December 2023 version 2, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, June, CC BY 4.0, DOI: doi:10.25814/2w2pph98

See Also

Other clum: `read_clum_stars()`

Examples

```
clum_terra <- read_clum_terra(data_set = "clum_50m_2023_v2")

clum_terra

plot(clum_terra)
```

---

read_estimates_by_performance_category

Read ABARES' "Estimates by Performance Category" Data

Description

Fetches and imports ABARES estimates by performance category data.

Usage

```
read_estimates_by_performance_category(x = NULL)

read_est_by_perf_cat(x = NULL)
```

Arguments

x	A file path providing the file with the data to be imported. The file is assumed to be unarchived (*i.e.*, still zipped). This function does not provide any checking whether this function is the proper function for the provided file. Defaults to NULL, assuming that the file will be downloaded in the active R session.

Value

A data.table::data.table() object.

Note

Columns are renamed for consistency with other ABARES products serviced in this package using a snake_case format and ordered consistently.

Source

()https://www.agriculture.gov.au/sites/default/files/documents/fdp-BySize-ByPerformance.csv.

References

https://www.agriculture.gov.au/abares/data/farm-data-portal#data-download.

See Also

Other Estimates: read_estimates_by_size(), read_historical_national_estimates(), read_historical_regional
read_historical_state_estimates()

Examples

```
read_estimates_by_performance_category()

# or shorter
read_est_by_perf_cat()
```

---

read_estimates_by_size

Read ABARES' "Estimates by Size"

Description

Fetches and imports ABARES estimates by size data.

Usage

```
read_estimates_by_size(x = NULL)

read_est_by_size(x = NULL)
```

Arguments

x	A file path providing the file with the data to be imported. The file is assumed to be unarchived (*i.e.*, still zipped). This function does not provide any checking whether this function is the proper function for the provided file. Defaults to NULL, assuming that the file will be downloaded in the active R session.

Value

A data.table::data.table() object with the Variable field as the key.

Note

Columns are renamed for consistency with other ABARES products serviced in this package using a snake_case format and ordered consistently.

Source

https://www.agriculture.gov.au/sites/default/files/documents/fdp-national-historical.csv.

References

https://www.agriculture.gov.au/abares/data/farm-data-portal#data-download.

See Also

Other Estimates: read_estimates_by_performance_category(), read_historical_national_estimates(), read_historical_regional_estimates(), read_historical_state_estimates()

Examples

```
read_estimates_by_size()

# or shorter
read_est_by_size()
```

---

read_historical_forecast_database

Read ABARES' "Historical Forecast Database"

Description

Fetches and imports ABARES "Historical Forecast Database" performance data.

Usage

```
read_historical_forecast_database(x = NULL)

read_historical_forecast(x = NULL)
```

Arguments

x	A file path providing the file with the data to be imported. The file is assumed to be unarchived locally. This function does not provide any checking whether this function is the proper function for the provided file. Defaults to NULL, assuming that the file will be downloaded in the active R session.

Value

A data.table::data.table() object.

Data Dictionary

The resulting object will contain the following fields.

Field	Description
Commodity	Broad description of commodity (includes the Australian dollar)
Estimate_type	Broad grouping of estimate by theme *e.g.*, animal numbers, area, production, price, export and volume
Estimate_description	Detailed description of each series.
Unit	Measurement unit of series. *e.g.*, kt, $m, $/t.
Region	Relevant region for each series. "World" denotes relevant international market.
Year_Issued	Year that forecast was originally issued.
Month_issued	Month that forecast was originally issued.
Year_Issued_FY	Australian financial year (July-June) that forecast was originally issued.
Forecast_Year_FY	Australian financial year (July-June) for which the forecast was issued. Where forecast year is earlier t
Forecast_Value	Forecast as originally issued.
Actual_Value	Actual outcome observed. Note that historical time series can be revised. Latest available data at time

Note

Columns are renamed for consistency with other ABARES products serviced in this package using a snake_case format and ordered consistently.

The "Month_issued" column is converted from a character string to a numeric value representing the month of year, *e.g.*, "March" is converted to 3.

Source

https://daff.ent.sirsidynix.net.au/client/en_AU/search/asset/1031941/0.

References

https://www.agriculture.gov.au/abares/research-topics/agricultural-outlook/historical-forecasts#:~:text=About%20the%20historical%20agricultural%20forecast,relevant%20to%20Australian%20agricultural%20markets.

Examples

```
read_historical_forecast_database()

# or shorter
read_historical_forecast()
```

`read_historical_national_estimates`
Read ABARES' "Historical National Estimates"

Description

Fetches and imports ABARES "Historical National Estimates" data.

Usage

```
read_historical_national_estimates(x = NULL)

read_hist_nat_est(x = NULL)
```

Arguments

`x`	A file path providing the file with the data to be imported. The file is assumed to be unarchived (*i.e.*, still zipped). This function does not provide any checking whether this function is the proper function for the provided file. Defaults to `NULL`, assuming that the file will be downloaded in the active R session.

Value

A `data.table::data.table()` object with the `Variable` field as the key.

Note

Columns are renamed for consistency with other ABARES products serviced in this package using a snake_case format and ordered consistently.

Source

https://www.agriculture.gov.au/sites/default/files/documents/fdp-national-historical.csv.

References

https://www.agriculture.gov.au/abares/data/farm-data-portal#data-download.

See Also

Other Estimates: read_estimates_by_performance_category(), read_estimates_by_size(), read_historical_regional_estimates(), read_historical_state_estimates()

Examples

```
read_historical_national_estimates()

# or shorter
read_hist_nat_est()
```

---

read_historical_regional_estimates

Read ABARES' "Historical Regional Estimates"

Description

Fetches and imports ABARES "Historical Regional Estimates" data.

Usage

```
read_historical_regional_estimates(x = NULL)

read_hist_reg_est(x = NULL)
```

Arguments

x	A file path providing the file with the data to be imported. The file is assumed to be unarchived (*i.e.*, still zipped). This function does not provide any checking whether this function is the proper function for the provided file. Defaults to NULL, assuming that the file will be downloaded in the active R session.

Value

A data.table::data.table() object with the Variable field as the key.

Note

Columns are renamed for consistency with other ABARES products serviced in this package using a snake_case format and ordered consistently.

Source

https://www.agriculture.gov.au/sites/default/files/documents/fdp-regional-historical.csv.

References

https://www.agriculture.gov.au/abares/data/farm-data-portal#data-download.

See Also

Other Estimates: read_estimates_by_performance_category(), read_estimates_by_size(), read_historical_national_estimates(), read_historical_state_estimates()

Examples

```
read_historical_regional_estimates()

# or shorter
read_hist_reg_est()
```

---

read_historical_state_estimates

Read ABARES' "Historical State Estimates"

Description

Fetches and imports ABARES "Historical State Estimates" data.

Usage

```
read_historical_state_estimates(x = NULL)

read_hist_st_est(x = NULL)
```

Arguments

x	A file path providing the file with the data to be imported. The file is assumed to be unarchived (*i.e.*, still zipped). This function does not provide any checking whether this function is the proper function for the provided file. Defaults to NULL, assuming that the file will be downloaded in the active R session.

Value

A data.table::data.table() object with the Variable field as the key.

Note

Columns are renamed for consistency with other ABARES products serviced in this package using a snake_case format and ordered consistently.

Source

https://www.agriculture.gov.au/sites/default/files/documents/fdp-state-historical.csv.

References

https://www.agriculture.gov.au/abares/data/farm-data-portal#data-download.

See Also

Other Estimates: read_estimates_by_performance_category(), read_estimates_by_size(), read_historical_national_estimates(), read_historical_regional_estimates()

Examples

```
read_historical_state_estimates()

# or shorter
read_hist_st_est()
```

---

read_nlum_stars *Read ABARES' National Scale "Land Use of Australia" Data Using stars*

Description

Download and import national scale "Land Use of Australia v7" GeoTIFFs as a **stars** object.

Usage

```
read_nlum_stars(data_set = NULL, x = NULL, ...)
```

Arguments

data_set	A string value indicating the GeoTIFF desired for download. One of:

Y201011 Land use of Australia 2010–11

Y201516 Land use of Australia 2015–16

Y202021 Land use of Australia 2020–21

C201121 Land use of Australia change

T201011 Land use of Australia 2010–11 thematic layers

T201516 Land use of Australia 2015–16 thematic layers

T202021 Land use of Australia 2020–21 thematic layers

P201011 Land use of Australia 2010–11 agricultural commodities probability grids

P201516 Land use of Australia 2015–16 agricultural commodities probability grids

P202021 Land use of Australia 2020–21 agricultural commodities probability grids

. This argument is ignored if `x` is provided.

`x` A character string of a file path to a local zip file that has been downloaded outside of R that contains the NLUM data. This argument is ignored if `data_set` is provided.

`...` Additional arguments passed to `stars::read_stars()`, for *e.g.*, `RAT` if you wish to set the active category when loading any of the available GeoTIFF files that are encoded with a raster attribute table.

Details

From the ABARES website: "The *Land use of Australia 2010–11 to 2020–21* data package consists of seamless continental rasters that present land use at national scale for 2010–11, 2015–16 and 2020–21 and the associated change between each target period. Non-agricultural land uses are mapped using 7 thematic layers, derived from existing datasets provided by state and territory jurisdictions and external agencies. These 7 layers are: protected areas, topographic features, land tenure, forest type, catchment scale land use, urban boundaries, and stock routes. The agricultural land uses are based on the Australian Bureau of Statistics' 2010–11, 2015–16 and 2020–21 agricultural census data; with spatial distributions modelled using Terra Moderate Resolution Imaging Spectroradiometer (MODIS) satellite imagery and training data, assisted by spatial constraint layers for cultivation, horticulture, and irrigation. Land use is specified according to the Australian Land Use and Management (ALUM) Classification version 8. The same method is applied to all target periods using representative national datasets for each period, where available. All rasters are in GeoTIFF format with geographic coordinates in Geocentric Datum of Australian 1994 (GDA94) and a 0.002197 degree (~250 metre) cell size. The *Land use of Australia 2010–11 to 2020–21* data package is a product of the Australian Collaborative Land Use and Management Program. This data package replaces the Land use of Australia 2010–11 to 2015–16 data package, with updates to these time periods." – ABARES, 2024-11-28

Value

a **stars** object that may be one or many layers depending upon the requested data set.

proj

Which should you choose? If you need accurate area calculations (*e.g.*, hectares of land use), use Albers. If you just need global compatibility or want to overlay with other lat/long datasets, use Geographic.

Note

The raster will load with the default category for each data set, but you can specify a different category to use by passing the `RAT` argument through the `...`. To see which categories are available, please refer to the metadata for these data. The PDF can be accessed in your default PDF viewer by using `view_nlum_metadata_pdf()`.

Source

Y201011 https://www.agriculture.gov.au/sites/default/files/documents/NLUM_v7_250_ALUMV8_2010_11_alb_package_20241128.zip

Y201516 https://www.agriculture.gov.au/sites/default/files/documents/NLUM_v7_250_ALUMV8_2015_16_alb_package_20241128.zip

Y202021 https://www.agriculture.gov.au/sites/default/files/documents/NLUM_v7_250_ALUMV8_2020_21_alb_package_20241128.zip

C201021 https://www.agriculture.gov.au/sites/default/files/documents/NLUM_v7_250_CHANGE_SIMP_2011_to_2021_alb_package_20241128.zip

T201011 https://www.agriculture.gov.au/sites/default/files/documents/NLUM_v7_250_INPUTS_2010_11_geo_package_20241128.zip

T201516 https://www.agriculture.gov.au/sites/default/files/documents/NLUM_v7_250_INPUTS_2015_16_geo_package_20241128.zip

T202021 https://www.agriculture.gov.au/sites/default/files/documents/NLUM_v7_250_INPUTS_2020_21_geo_package_20241128.zip

P201011 https://www.agriculture.gov.au/sites/default/files/documents/NLUM_v7_250_AgProbabilitySurfaces_2010_11_geo_package_20241128.zip

P201516 https://www.agriculture.gov.au/sites/default/files/documents/NLUM_v7_250_AgProbabilitySurfaces_2015_16_geo_package_20241128.zip

P202021 https://www.agriculture.gov.au/sites/default/files/documents/NLUM_v7_250_AgProbabilitySurfaces_2020_21_geo_package_20241128.zip

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References

ABARES 2024, Land use of Australia 2010–11 to 2020–21, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, November, CC BY 4.0. doi:10.25814/w175xh85

See Also

Other nlum: `read_nlum_terra()`, `view_clum_metadata_pdf()`, `view_nlum_metadata_pdf()`

Examples

```
nlum_stars <- read_nlum_stars("Y202021")

nlum_stars

plot(nlum_stars)
```

`read_nlum_terra` *Read ABARES' National Scale "Land Use of Australia" Data Using terra*

Description

Download and import national scale "Land Use of Australia v7" GeoTIFFs as categorical `terra::rast()` objects.

Usage

```
read_nlum_terra(data_set = NULL, x = NULL, ...)
```

Arguments

`data_set`	A string value indicating the GeoTIFF desired for download. One of: **Y201011** Land use of Australia 2010–11 **Y201516** Land use of Australia 2015–16 **Y202021** Land use of Australia 2020–21 **C201121** Land use of Australia change **T201011** Land use of Australia 2010–11 thematic layers **T201516** Land use of Australia 2015–16 thematic layers **T202021** Land use of Australia 2020–21 thematic layers **P201011** Land use of Australia 2010–11 agricultural commodities probability grids **P201516** Land use of Australia 2015–16 agricultural commodities probability grids **P202021** Land use of Australia 2020–21 agricultural commodities probability grids . This argument is ignored if `x` is provided.
`x`	A character string of a file path to a local zip file that has been downloaded outside of R that contains the NLUM data. This argument is ignored if `data_set` is provided.
`...`	Other arguments passed to `terra::rast()`.

Details

From the ABARES website: "The *Land use of Australia 2010–11 to 2020–21* data package consists of seamless continental rasters that present land use at national scale for 2010–11, 2015–16 and 2020–21 and the associated change between each target period. Non-agricultural land uses are mapped using 7 thematic layers, derived from existing datasets provided by state and territory jurisdictions and external agencies. These 7 layers are: protected areas, topographic features, land tenure, forest type, catchment scale land use, urban boundaries, and stock routes. The agricultural land uses are based on the Australian Bureau of Statistics' 2010–11, 2015–16 and 2020–21 agricultural census data; with spatial distributions modelled using Terra Moderate Resolution Imaging

Spectroradiometer (MODIS) satellite imagery and training data, assisted by spatial constraint layers for cultivation, horticulture, and irrigation. Land use is specified according to the Australian Land Use and Management (ALUM) Classification version 8. The same method is applied to all target periods using representative national datasets for each period, where available. All rasters are in GeoTIFF format with geographic coordinates in Geocentric Datum of Australian 1994 (GDA94) and a 0.002197 degree (~250 metre) cell size. The *Land use of Australia 2010–11 to 2020–21* data package is a product of the Australian Collaborative Land Use and Management Program. This data package replaces the Land use of Australia 2010–11 to 2015–16 data package, with updates to these time periods." – ABARES, 2024-11-28

Value

A **terra** `SpatRaster` object that may be one or many layers depending upon the requested data set.

Note

The raster will load with the default category for each data set, but you can specify a different category to use through `terra::activeCat()`. To see which categories are available, please refer to the metadata for these data. The PDF can be accessed in your default web browser by using `view_nlum_metadata_pdf()`.

Source

Y201011 https://www.agriculture.gov.au/sites/default/files/documents/NLUM_v7_250_ALUMV8_2010_11_alb_package_20241128.zip

Y201516 https://www.agriculture.gov.au/sites/default/files/documents/NLUM_v7_250_ALUMV8_2015_16_alb_package_20241128.zip

Y202021 https://www.agriculture.gov.au/sites/default/files/documents/NLUM_v7_250_ALUMV8_2020_21_alb_package_20241128.zip

C201021 https://www.agriculture.gov.au/sites/default/files/documents/NLUM_v7_250_CHANGE_SIMP_2011_to_2021_alb_package_20241128.zip

T201011 https://www.agriculture.gov.au/sites/default/files/documents/NLUM_v7_250_INPUTS_2010_11_geo_package_20241128.zip

T201516 https://www.agriculture.gov.au/sites/default/files/documents/NLUM_v7_250_INPUTS_2015_16_geo_package_20241128.zip

T202021 https://www.agriculture.gov.au/sites/default/files/documents/NLUM_v7_250_INPUTS_2020_21_geo_package_20241128.zip

P201011 https://www.agriculture.gov.au/sites/default/files/documents/NLUM_v7_250_AgProbabilitySurfaces_2010_11_geo_package_20241128.zip

P201516 https://www.agriculture.gov.au/sites/default/files/documents/NLUM_v7_250_AgProbabilitySurfaces_2015_16_geo_package_20241128.zip

P202021 https://www.agriculture.gov.au/sites/default/files/documents/NLUM_v7_250_AgProbabilitySurfaces_2020_21_geo_package_20241128.zip

.

References

ABARES 2024, Land use of Australia 2010–11 to 2020–21, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, November, CC BY 4.0. doi:10.25814/w175xh85.

See Also

Other nlum: `read_nlum_stars()`, `view_clum_metadata_pdf()`, `view_nlum_metadata_pdf()`

Examples

```
nlum_terra <- read_nlum_terra(data_set = "Y202021")

nlum_terra

plot(nlum_terra)
```

`read_topsoil_thickness_stars`

Read ABARES' "Soil Thickness for Australian Areas of Intensive Agriculture of Layer 1" with stars

---

Description

Read "Soil Thickness for Australian Areas of Intensive Agriculture of Layer 1" data as a **stars** object.

Usage

```
read_topsoil_thickness_stars(x = NULL, ...)
```

Arguments

`x`	A file path providing the file with the data to be imported. The file is assumed to be unarchived (*i.e.*, still zipped). This function does not provide any checking whether this function is the proper function for the provided file. Defaults to `NULL`, assuming that the file will be downloaded in the active R session.
`...`	Additional arguments passed to `stars::st_as_stars()`, for *e.g.*, `att` if you wished to set the active category.

Value

A **stars** object of the "Soil Thickness for Australian Areas of Intensive Agriculture of Layer 1".

Note

This function converts a `terra::rast()` object internally rather than reading directly from a file.

Source

https://anrdl-integration-web-catalog-saxfirxkxt.s3-ap-southeast-2.amazonaws.com/warehouse/staiar9cl__059/staiar9cl__05911a01eg_geo___.zip.

References

https://data.agriculture.gov.au/geonetwork/srv/eng/catalog.search#/metadata/faa9f157-8e17-4b23-b6a7

See Also

Other topsoil thickness: `print_topsoil_thickness_metadata()`, `read_topsoil_thickness_terra()`

Examples

```
st_stars <- read_topsoil_thickness_stars()

plot(st_stars)
```

---

read_topsoil_thickness_terra

Read ABARES' "Soil Thickness for Australian Areas of Intensive Agriculture of Layer 1" with terra

---

Description

Read "Soil Thickness for Australian Areas of Intensive Agriculture of Layer 1" as a `terra::rast()` object.

Usage

```
read_topsoil_thickness_terra(x = NULL, ...)
```

Arguments

x	A file path providing the file with the data to be imported. The file is assumed to be unarchived (*i.e.*, still zipped). This function does not provide any checking whether this function is the proper function for the provided file. Defaults to `NULL`, assuming that the file will be downloaded in the active R session.
...	Additional arguments passed to `terra::rast()`.

Value

A `terra::rast()` object of the "Soil Thickness for Australian Areas of Intensive Agriculture of Layer 1".

Source

https://anrdl-integration-web-catalog-saxfirxkxt.s3-ap-southeast-2.amazonaws.com/warehouse/staiar9cl__059/staiar9cl__05911a01eg_geo___.zip.

References

https://data.agriculture.gov.au/geonetwork/srv/eng/catalog.search#/metadata/faa9f157-8e17-4b23-b6a7

See Also

Other topsoil thickness: `print_topsoil_thickness_metadata()`, `read_topsoil_thickness_stars()`

Examples

```
st_terra <- read_topsoil_thickness_terra()

# terra::plot() is reexported for convenience
plot(st_terra)
```

`view_clum_metadata_pdf` *Displays the PDF Metadata for ABARES' "Catchment Land Use" (CLUM) Raster Files in a Native Viewer*

Description

Each "Catchment Land Use" (CLUM) raster file comes with a PDF of metadata. This function will open and display that file using the native PDF viewer for any system with a graphical user interface and PDF viewer configured. If the file does not exist locally, it will be fetched and displayed.

Usage

```
view_clum_metadata_pdf(commodities = FALSE)
```

Arguments

`commodities`	A `Boolean` value that indicates whether to download the catchment land scale use metadata for commodities. Defaults to `FALSE`, downloading the "Catchment Land Scale Use Metadata".

Value

An invisible `NULL`. Called for its side-effects, opens the system's native PDF viewer to display the requested metadata PDF document.

Source

CLUM Metadata https://www.agriculture.gov.au/sites/default/files/documents/CLUM_DescriptiveMetadata_December20

CLUM Commodities Metadata https://www.agriculture.gov.au/sites/default/files/documents/CLUMC_DescriptiveMetada

See Also

Other nlum: `read_nlum_stars()`, `read_nlum_terra()`, `view_nlum_metadata_pdf()`

Examples

```
view_clum_metadata_pdf()
```

`view_nlum_metadata_pdf`

Displays PDF Metadata for ABARES' "National Land Use" (NLUM) Raster Files in a Native Viewer

---

Description

Each National Land Use (NLUM) raster file comes with a PDF of metadata. This function will open and display that file using the native PDF viewer for any system with a graphical user interface and PDF viewer configured. If the file does not exist locally, it will be fetched and displayed.

Usage

```
view_nlum_metadata_pdf()
```

Value

An invisible `NULL`. Called for its side-effects, opens the system's native PDF viewer to display the requested metadata PDF document.

See Also

Other nlum: `read_nlum_stars()`, `read_nlum_terra()`, `view_clum_metadata_pdf()`

Examples

```
view_nlum_metadata_pdf()
```

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