Package: gdalblock (via r-universe)

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Title Block-Based Access to GDAL Raster Datasets

Version 0.1.0

Description Provides an S7 class for block-based (tiled) access to raster datasets via GDAL. Wraps 'gdalraster' to expose block structure and efficient block-level reading.

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Contents

`block_bbox` *Get block bounding box*

Description

Get block bounding box

Usage

```
block_bbox(x, ...)
```

Arguments

`x`	A `block` object.
`i`	Block column index (0-based).
`j`	Block row index (0-based).

Value

Numeric vector c(xmin, ymin, xmax, ymax).

`block_data` *Get block metadata as data frame*

Description

Get block metadata as data frame

Usage

```
block_data(x, ...)
```

Arguments

`x`	A `block` object.
`...`	Ignored.
`i`	Block column indices (0-based). If NULL, all columns.
`j`	Block row indices (0-based). If NULL, all rows.

Value

A data.frame with columns: i, j, xoff, yoff, xsize, ysize, xmin, ymin, xmax, ymax, and geometry (wk::rct).

Examples

```
## Not run:
b <- block("/path/to/raster.tif")
block_data(b)              # all blocks with full metadata
block_data(b, 0:2, 0:2)    # subset

## End(Not run)
```

---

block_dim *Get block dimensions*

Description

Get block dimensions

Usage

```
block_dim(x, ...)
```

Arguments

x	A block object.
i	Block column index (0-based).
j	Block row index (0-based).

Value

Integer vector c(ncol, nrow).

---

block_index *Get block pixel/line index*

Description

Get block pixel/line index

Usage

```
block_index(x, ...)
```

Arguments

x	A block object.
i	Block column index (0-based).
j	Block row index (0-based).

Value

Integer vector c(xoff, yoff, xsize, ysize).

---

block_rct *Get block rectangles as wk::rct*

Description

Get block rectangles as wk::rct

Usage

```
block_rct(x, ...)
```

Arguments

x	A block object.
...	Ignored.
i	Block column indices (0-based). If NULL, all columns.
j	Block row indices (0-based). If NULL, all rows.

Value

A wk::rct vector of block extents with CRS.

Examples

```
## Not run:
b <- block("/path/to/raster.tif")
block_rct(b)              # all blocks
block_rct(b, 0, 0)        # single block
block_rct(b, 0:3, 0:2)    # grid of blocks
plot(block_rct(b))        # wk plotting

## End(Not run)
```

blocks_in_bbox *Find blocks intersecting a bounding box*

Description

Find blocks intersecting a bounding box

Usage

```
blocks_in_bbox(x, ...)
```

Arguments

x	A block object.
...	Ignored.
bbox	Numeric vector c(xmin, ymin, xmax, ymax).
data	If TRUE, return full block_data(). If FALSE (default), return wk::rct.

Value

A wk::rct vector or data.frame of intersecting blocks.

Examples

```
## Not run:
b <- block("/path/to/raster.tif")
blocks_in_bbox(b, c(100, 200, 500, 600))
blocks_in_bbox(b, c(100, 200, 500, 600), data = TRUE)

## End(Not run)
```

blocks_in_ext *Find blocks intersecting an extent*

Description

Find blocks intersecting an extent

Usage

```
blocks_in_ext(x, ...)
```

Arguments

x	A block object.
...	Ignored.
ext	Numeric vector c(xmin, xmax, ymin, ymax).
data	If TRUE, return full block_data(). If FALSE (default), return wk::rct.

Value

A wk::rct vector or data.frame of intersecting blocks.

Examples

```
## Not run:
b <- block("/path/to/raster.tif")
blocks_in_ext(b, c(100, 500, 200, 600))

## End(Not run)
```

---

plot_block *Plot blocks*

Description

Draw rectangles for specified blocks on a new or existing plot.

Usage

```
plot_block(x, ...)
```

Arguments

x	A block object.
...	Additional arguments passed to wk::wk_plot().
i	Block column indices (0-based). If NULL, all columns.
j	Block row indices (0-based). If NULL, all rows.
add	Logical; if TRUE, add to existing plot. Default FALSE.

Value

Invisibly returns the wk::rct of plotted blocks.

Examples

```
## Not run:
b <- block("/path/to/raster.tif")
plot_block(b)                          # all blocks
plot_block(b, 0:2, 0:1, col = "lightblue")

## End(Not run)
```

---

plot_block_bbox *Plot blocks within a bounding box*

Description

Draw rectangles for all blocks that intersect a bounding box.

Usage

```
plot_block_bbox(x, ...)
```

Arguments

x	A block object.
...	Additional arguments passed to wk::wk_plot() for block rectangles.
bbox	Numeric vector c(xmin, ymin, xmax, ymax).
add	Logical; if TRUE, add to existing plot. Default FALSE.
plot_bbox	Logical; if TRUE, also draw the query bbox. Default TRUE.
bbox_args	List of arguments passed to graphics::rect() for the bbox rectangle.

Value

Invisibly returns a list with rct (wk::rct) and data (data.frame).

---

plot_block_ext *Plot blocks within an extent*

Description

Draw rectangles for all blocks that intersect an extent. Uses extent-style coordinate ordering (xmin, xmax, ymin, ymax).

Usage

```
plot_block_ext(x, ...)
```

Arguments

x	A block object.
...	Additional arguments passed to wk::wk_plot() for block rectangles.
ext	Numeric vector c(xmin, xmax, ymin, ymax).
add	Logical; if TRUE, add to existing plot. Default FALSE.
plot_ext	Logical; if TRUE, also draw the query extent. Default TRUE.
ext_args	List of arguments passed to graphics::rect() for the extent rectangle.

Value

Invisibly returns a list with rct (wk::rct) and data (data.frame).

---

read_block *block S7 Class*

Description

An S7 class for block-based access to GDAL raster datasets.

Usage

```
read_block(x, ...)
```

Arguments

x	A block object.
dsn	A dataset description (file path, URL, or any GDAL-supported URI).
i	Block column index (0-based).
j	Block row index (0-based).
band	Band number (1-based, default 1).

Details

The block class wraps a gdalraster::GDALRaster object and provides convenient access to the block (tile) structure of the dataset.

Properties:

Access properties using @:

- dsn: The dataset description/URI
- bbox: Bounding box as c(xmin, ymin, xmax, ymax)
- dimension: Dimensions as c(ncol, nrow, nbands)
- crs: Coordinate reference system (WKT string)
- nbands: Number of bands

- `datatype`: Character vector of data types per band
- `res`: Resolution as c(xres, yres)
- `blocksize`: Standard block size as c(width, height)
- `nblocks`: Number of blocks as c(nx, ny)
- `blocks`: List with block structure details

Methods:

- `read_block(x, i, j, band)`: Read block data as matrix
- `block_dim(x, i, j)`: Get block dimensions
- `block_bbox(x, i, j)`: Get block bounding box
- `block_index(x, i, j)`: Get pixel/line offsets
- `block_rct(x, i, j)`: Get blocks as wk::rct
- `block_data(x, i, j)`: Get blocks as data.frame with full metadata
- `blocks_in_bbox(x, bbox)`: Find blocks intersecting a bbox
- `blocks_in_ext(x, ext)`: Find blocks intersecting an extent

Value

A `block` object.

A matrix of raster values.

Examples

```
## Not run:
b <- block("/path/to/raster.tif")
b@dimension
b@blocksize
read_block(b, 0, 0)
plot(block_rct(b))

## End(Not run)
Read a block of raster data
```

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