Diversity Indexes

User Manual

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Table of Contents

code

1 compute_indexes module

compute_indexes.**compute_indexes_**(*polygons*, *src*, *output_dir*, *output_name*)

This function orchestrate the use of the indexes functions (defined in indexes_func.py)

Parameters

- **polygons** – Vectorial data read by geopandas/shapely
- **src** – raster data read by rasterio
- **output_dir** – the directory in which to save the output vectorial data (the code get it from the .json param file)
- **output_name** – the name of the output layer (the code get it from the .json param file)

Returns

nothing but save the vectorial data as shapefile in the output directory

2 indexes_func module

indexes_func.**calc_contag**(*masked*)

Calculate the contagion index of a mask. This is based on the proportion of the patches in the mask divided by the total area

Parameters

masked – The mask to calculate the contagion index for

Returns

The contagion index of the mask as a function of the area of the image and the proportion

indexes_func.**calc_edge_diversity_index**(*edges*, *src*)

Calculate the diversity index for the edges of the polygon.

Parameters

- **edges** – A multilinestring shapely to be used for processing.
- **src** – the Landcover raster read by rasterio

Returns

Diversity Index of the polygon

indexes_func.**calc_edges**(*polygon*)

Compute edges of a polygon

Parameters
polygon – a shapely polygon projected in a geographical coordinate system (meter unit)

Returns
a linestring representing the contours of the original polygon

indexes_func.**calc_iji**(*masked*)

Calculate the number of neighboring pixels with different landcover classes. This is used to calculate the i. i. d.

Parameters
masked – the Landcover raster read by rasterio

Returns
The number of neighboring pixels with different landcover classes in the grid as a 1x1 np

indexes_func.**calc_ldi**(*masked*)

Calculate the LDI of a set of cells. This is a measure of how much the cell is in the data set but not the area of the cell that is used to calculate the distance between the cell and its neighboring cells

Parameters
masked – A 2D NumPy array with shape (nb_cells num_cells)

Returns
An LDI value between 0 and 1 (inclusive). The value is calculated as the standard deviation divided by the mean

indexes_func.**calc_lsi**(*masked*)

Calculate LSI for a landcover raster. This is based on the proportion of pixels in each row and column that have landcover.

Parameters
masked – The landcover raster to calculate lsi for.

Returns
The LSI for the raster as a 1 - (var (row) + var (column))

indexes_func.**calc_most_common_landcover_class**(*edges*, *src*)

Calculate the most common landcover class for a shapely Polygon. This is used to calculate the most frequently used landcover class for a shapely Polygon

Parameters

- **edges** – A multilinestring shapely to be used for processing.
- **src** – the Landcover raster read by rasterio

Returns
A tuple containing the mode and the number of pixels

indexes_func.**calc_neg_buf_edges**(*polygon*)

Calculate a negative buffer and compute the corresponding linestring. It handles the risk that the negative buffer returns multipolygons (on which LineString() function doesn't work)

Parameters
polygon – The shapely Polygon to be negatively buffered

Return:
a Linestring corresponding to the edges of the original polygon minus the size of the buffer

indexes_func.**calc_pci**(*masked*)

Calculate the PCI for a set of images. This is based on the number of patches and perimeter

Parameters
masked – Masked image to calculate the PCI for

Returns
The PCI for the image as a function of the number of patches and perimeter (float

indexes_func.**calc_pri**(*masked*)

Calculate pri for landcover. This is based on the number of patches and total area for each class

Parameters
masked – numpy array of landcover classes

Returns
pri for landcover in range 0.. 1 where 0 is no patches and 1 is

indexes_func.**count_landcover_patches**(*masked*)

Count the patches (defined as contiguous cells having the same digital number) in a landcover raster

Parameters
raster – An array

Returns
The number of patches in the raster

3 main module

main.**main**()

main function used to launch the processing. It's kept without parameters for now because it may be amended with parameters like an administrative divisions list so that it may be parallelized using multiprocessing

Python Module Index

Index

C

I

M