Package ‘phenomap’

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Title Projecting Satellite-Derived Phenology in Space
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Depends R (>= 3.4.0)
Imports dplyr, phenex, plyr, raster, stringr, rgdal, doParallel
Description This tool projects annual phenology metrics and long-term phenology trends, following methodologies described in John (2016) <https://etda.libraries.psu.edu/catalog/13521clj5135>.
License GPL-3
URL https://github.com/JepsonNomad/phenomap
BugReports https://github.com/JepsonNomad/phenomap/issues
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mapPheno

Convert a series of raster files to a single phenology raster.

Description

Convert a series of raster files to a single phenology raster.

Usage

mapPheno(File_List = NA, PhenoFactor = NA, phase = NA, threshold = NA, year = NA, NDVI = NA, VIQ = NA, DOY = NA, PR = NA, SnowExtent = NA, parallel = FALSE, n.cores = NA, verbose = FALSE)

Arguments

File_List List of raster files
PhenoFactor Character string; type of dataset to analyze (e.g., "VI", "Snow")
phase Character string; name of phenophase to be measured (e.g., "greenup", "snowmelt", "senescence" or other arguments passed to phenex::phenophase())
threshold Float threshold GWI value to be projected. Use only for VI option.
year Integer Year (YYYY)
NDVI Integer Band number of NDVI band in raster files
VIQ Integer Band number of VI Quality layer in raster files
DOY Integer Band number of Composite Day of Year layer in raster files
PR Integer Band Number of PR layer in raster files
SnowExtent Integer Band number of Maximum_Snow_Extent in raster files
parallel TRUE or FALSE (Default = FALSE) if TRUE, use parallel backend through plyr::aaply
n.cores Integer number of cores to be used for parallel processing (only use if parallel = TRUE)
verbose TRUE or FALSE (Default = FALSE)

Value

Raster object with extent = extent(raster(File_List)[1]) and CRS = crs(raster(File_List)[1]). Digital numbers are expressed as Day of Year.

Examples

## Not run:
Sample.Greenup <- mapPheno(File_List = File_List, PhenoFactor = PhenoFactor, phase = phase, threshold = threshold, year = year,
mapTrend

Convert a series of phenology raster files to a single long-term trend raster.

## Usage

```r
mapTrend(File_List, Year_List, parallel = FALSE, n.cores = NULL, verbose = FALSE)
```

## Arguments

- **File_List**: List of phenology raster files (i.e. those produced in `mapPheno`)
- **Year_List**: Vector of Integer Year (YYYY) with length > 5
- **parallel**: TRUE or FALSE (Default = FALSE) if TRUE, use parallel backend through `plyr::aaply`
- **n.cores**: Integer number of cores to be used for parallel processing (only use if parallel = TRUE)
- **verbose**: TRUE or FALSE (Default = FALSE)

## Value

Raster object with extent=extent(raster(File_List)[1]) and CRS = crs(raster(File_List)[1]). Layer 1 is the slope estimate of the linear model relating green-up timing (Day of Year) to time (Year). Layer 2 is the p-value of the slope estimate. Layer 3 is the standard error of the slope estimate. Layer 4 is the r-squared value for the linear model.

## Examples

```r
## Not run:

fpath <- system.file("extdata", package="phenomap")
File_List.Trend <- paste(fpath, list.files(path = fpath, pattern=c("Sample_Greenup_")), sep="/"

Year_List <- 2011:2016 # Tell it what years you're using
n.cores <- 4 # Set up parallel computing```
phenotrend <- mapTrend(
  File_List = File_List.Trend,
  Year_List = Year_List,
  parallel = TRUE,
  n.cores = n.cores,
  verbose = TRUE)

## End(Not run)
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