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 throughplyr::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.
mapTrend

Examples

```r
## Not run:
Sample.Greenup <- mapPheno(File_List = File_List, PhenoFactor = PhenoFactor,
                            phase = phase, threshold = threshold, year = year,
                            NDVI = NDVI, VIQ = VIQ, DOY = DOY, PR = PR,
                            SnowExtent = SnowExtent,
                            parallel = parallel, n.cores = n.cores,
                            verbose = verbose)

## End(Not run)
```

mapTrend

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

Description

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

## not run:

```r
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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