Package 'SoilSaltIndex'

Type Package

Title Soil Salinity Indices Generation using Satellite Data

Version 0.1.0

Depends R(>= 2.10)

Suggests knitr, rmarkdown, testthat (>= 3.0.0)

Description The developed function generates soil salinity indices using satellite data, utilizing multiple spectral bands such as Blue, Green, Red, Near-Infrared (NIR),
and Shortwave Infrared (SWIR1, SWIR2). It computes 24 different salinity indices crucial for monitoring and analyzing salt-affected soils efficiently.
For more details see, Rani, et al. (2022). <DOI:10.1007/s12517-022-09682-3>. One of the key features of the developed function is its flexibility.
Users can provide any combination of the required spectral bands, and the function will automatically calculate only the relevant indices based on the available data.
This dynamic capability ensures that users can maximize the utility of their data without the need for all spectral bands, making the package versatile and user-friendly.
Outputs are provided as GeoTIFF file format, facilitating easy integration with GIS workflows.

License GPL (>= 2.0)

Encoding UTF-8

Imports raster, sp

RoxygenNote 7.2.3

VignetteBuilder knitr

NeedsCompilation no

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Description

Generation of Soil Salinity Indices using Satellite Data

Usage

```
Soil_Salinity_Indices(
  B = NULL,
  G = NULL,
  R = NULL,
  NIR = NULL,
  SW1 = NULL,
  SW2 = NULL
)
```

Arguments

B	Raster layer representing the Blue band (default NULL)
G	Raster layer representing the Green band (default NULL)
R	Raster layer representing the Red band (default NULL)
NIR	Raster layer representing the Near-Infrared band (default NULL)
SW1	Raster layer representing the Shortwave Infrared band 1 (default NULL)
SW2	Raster layer representing the Shortwave Infrared band 2 (default NULL)

Value

RasterStack of relevant salinity indices based on available input bands

References

1. Rani, A., Kumar, N., Sinha, N. K., & Kumar, J. (2022). Identification of salt-affected soils using remote sensing data through random forest technique: a case study from India. Arabian Journal of Geosciences, 15(5), 381.<DOI:10.1007/s12517-022-09682-3> 2. Kumar et al. (2023). SpatGRID:Spatial Grid Generation from Longitude and Latitude List. R package version 0.1.0.

Examples

```
library(SoilSaltIndex)
library (raster)
# Example usage:
B <- raster::raster(system.file("extdata", "Blue.tif", package = "SoilSaltIndex"))
G <- raster::raster(system.file("extdata", "Green.tif", package = "SoilSaltIndex"))
R <- raster::raster(system.file("extdata", "Red.tif", package = "SoilSaltIndex"))
```

```
NIR <- raster::raster(system.file("extdata", "NIR.tif", package = "SoilSaltIndex"))
SW1 <- raster::raster(system.file("extdata", "SWIR1.tif", package = "SoilSaltIndex"))
SW2 <- raster::raster(system.file("extdata", "SWIR2.tif", package = "SoilSaltIndex"))
Salt_Index <- Soil_Salinity_Indices(B=B, G=G, R=R, NIR=NIR, SW1=SW1, SW2=SW2)
Salt_Index <- Soil_Salinity_Indices(SW1=SW1, SW2=SW2)
Salt_Index <- Soil_Salinity_Indices(B=B, G=G, R=R, NIR=NIR)
```

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