Package 'ibeemd'

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Type Package

Title Irregular-lattice based ensemble empirical mode decomposition

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Depends R (>= 2.11.0), fields, deldir, rgeos, sp, spdep

Suggests rgdal

Description A data-driven and adaptive hierarchical-scale decomposition method for irregular-lattice field (represented by polygons).

License GPL (>= 2.0)

NeedsCompilation no

Repository CRAN

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R topics documented:

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iBEEMD   *Scale decomposition for polygon data.*

Description

Similar to 2-dimensional wavelet decomposition, for a given irrelular-lattice field represented by spatial polygons dataframe, the method decompose the field into different scales and a global trend component by EEMD method. The scale components are also called also called intrinsic mode functions (IMFs), which represent different scale information in the spatial field.

Usage

```
iBEEMD(spPolysDf, valueField = names(spPolysDf)[1], nMaxIMF = 10, tolSift = 0.05,
neemd = 1000, wnsd = 0.05, fmodel = "thinplate", fig = TRUE)
```

Arguments

spPolysDf	a SpatialPolygonsDataFrame object.
valueField	a field name that stores value.
nMaxIMF	maximum number of components to be decomposed.
tolSift	sift tolerence, a small number.
neemd	number of EEMD iterations, a large number can make a stable result.
wnsd	standard deviation of added noise; it is a ratio to the standard deviation of above data.
fmodel	surface fitting function ("thinplate", "gaussian", "cubic", "multiquadric").
fig	whether plot decomposed results.

Value

A SpatialPolygonsDataFrame with original value, decomposed imfs and global trend.

References

Hu, M.-G. and J.-F. Wang, et al. A hierarchical-scale decomposition method for irregular lattice field. Computers & Geosciences, submitted.

Huang, N. E. and Z. Shen, et al. The empirical mode decomposition and the Hilbert spectrum for nonlinear and non-stationary time series analysis. Proceedings of The Royal Society A - Mathematical, Physical & Engineering Sciences, 1998, 454(1971): 903-995.

Examples

```
## Not run:
library(rgdal)

# polygon data
mydata <- system.file("extdata/simu.shp", package = "ibeemd")

layer <- basename(mydata)
layer <- substr(layer, 1, nchar(layer)-4)
mydataDf <- readOGR(dsn=mydata, layer=layer)
#spplot(mydataDf)

rslt <- iBEEMD(
spPolysDf = mydataDf,
valueField = "value",
nMaxIMF = 10,
tolSift = 0.05,
neemd = 500,
wnsd = 0.05,
```

```
    fmodel = "thinplate",
    fig = TRUE)

## End(Not run)
#spplot(rslt)
```

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