bincor

Anna Urbala

11 maja 2020

BINCOR: An R package for Estimatingthe Correlation between Two UnevenlySpaced Time Series

by Josue M. Polanco-Martinez, Martin A. Medina-Elizalde, Maria Fernanda Sanchez Goni, ManfredMudelsee

Link

```
# Load the package
library(BINCOR)
# Load the time series under analysis: Example 1 and Figure 1 (ENSO vs. NHSST)
data(ENSO)
data(NHSST)
# Compute the binned time series though our bin_cor function
bincor.tmp <- bin_cor(ENSO.dat, NHSST.dat, FLAGTAU=3, "output_ENSO_NHSST.tmp")
```

```
## Hi!, option 3: taub <- -dist_XY / log(a_XY_est) [Eq. 7.47 & 7.48 (Mudelsee 2010 & 2014)]
## Testing the number of bins: taub= 3.506606  Nb= 44
```

```
binnedts   <- bincor.tmp$Binned_time_series
# Applying our plot_ts function
# "Screen"
plot_ts(ENSO.dat, NHSST.dat, binnedts[,1:2], binnedts[,c(1,3)], "ENSO-Nino3","SST NH Mean", colts1=1, c
```

```
## NULL
```

Wykresy zbliżone. Niestety znowu proporcje zależą od ustawień.

```
# Load packages
library(BINCOR)
library(pracma)
# Load the time series under analysis: Example 1 and Figure 2 (ENSO vs. NHSST)
data(ENSO)
data(NHSST)
# Compute the binned time series though our bin_cor function
bincor.tmp <- bin_cor(ENSO.dat, NHSST.dat, FLAGTAU=3, "output_ENSO_NHSST.tmp")
```

```
## Hi!, option 3: taub <- -dist_XY / log(a_XY_est) [Eq. 7.47 & 7.48 (Mudelsee 2010 & 2014)]
## Testing the number of bins: taub= 3.506606  Nb= 44
```

```
binnedts   <- bincor.tmp$Binned_time_series
# Compute the scatterplot by means of our function cor_ts
# PDF format (scatterplot) and Pearson
cor_ts(binnedts[,1:2], binnedts[,c(1,3)], "ENSO-Nino3", "SST NH Mean",KoCM="pearson", rmltrd="y", devic
```

```
## The binned pearson's correlation coefficient is 0.5298 [0.2764; 0.7143]
```

```
##
##  Pearson's product-moment correlation
##
## data:  c(detrend(bints1[, 2])) and c(detrend(bints2[, 2]))
## t = 4.0485, df = 42, p-value = 0.0002169
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.2764058 0.7143330
## sample estimates:
##       cor
## 0.5298102
```

ok

```
# Load the package
library(BINCOR)
library(pracma)
# Load the time series under analysis: Example 2 and Figure 6
data(MD04_2845_siteID31)
data(MD95_2039_siteID32)
# Compute the binned time series though our bin_cor function
bincor.tmp <- bin_cor(ID31.dat, ID32.dat, FLAGTAU=3, "salida_ACER_ABRUPT.tmp")
```

```
## Hi!, option 3: taub <- -dist_XY / log(a_XY_est) [Eq. 7.47 & 7.48 (Mudelsee 2010 & 2014)]
## Testing the number of bins: taub= 1220.358  Nb= 43
```

```
binnedts   <- bincor.tmp$Binned_time_series
# To avoid NA values
bin_ts1 <- na.omit(bincor.tmp$Binned_time_series[,1:2])
bin_ts2 <- na.omit(bincor.tmp$Binned_time_series[,c(1,3)])
# Applying our plot_ts function
# PDF format
plot_ts(ID31.dat, ID32.dat, bin_ts1, bin_ts2, "MD04-2845 (Temp. forest)","MD95-2039 (Temp. forest )", c
```

```
## NULL
```

delikatna różnica w proporcjach, inne odległości punktów od osi

```
# Load packages
library(BINCOR)
library(pracma)
# Load the time series under analysis: Example 2 and Figure 7 (ID31 vs. ID32)data(MD04_2845_siteID31)
data(MD95_2039_siteID32)
# Compute the binned time series though our bin_cor function
bincor.tmp <- bin_cor(ID31.dat, ID32.dat, FLAGTAU=3, "salida_ACER_ABRUPT.tmp")
```

```
## Hi!, option 3: taub <- -dist_XY / log(a_XY_est) [Eq. 7.47 & 7.48 (Mudelsee 2010 & 2014)]
## Testing the number of bins: taub= 1220.358  Nb= 43
```

```
binnedts   <- bincor.tmp$Binned_time_series
# To avoid NA values
bin_ts1 <- na.omit(bincor.tmp$Binned_time_series[,1:2])
bin_ts2 <- na.omit(bincor.tmp$Binned_time_series[,c(1,3)])
# Applying our ccf_ts function
# PDF format
ccf_acf <- ccf_ts(bin_ts1, bin_ts2, RedL=TRUE, rmltrd="y", device="pdf", Hpdf=6,Wpdf=9, resfig=300, ofi
```

ok

Problemy

- czasem inne proporcje

Podsumowanie

Kategoria	Ocena
Dostęp do zewnętrznych zasobów	➖➖➖➖➖
Kompatybilność z nowszymi wersjami	➕➕➕➕➕
Kwestie graficzne/estetyczne	➕➕➕➕✖
Brak problemów przy dodatkowej konfiguracji	➖➖➖➖➖
Odporność na wpływ losowości	➖➖➖➖➖
Dostępność kodów źródłowych	➕➕➕➕➕

Session info

```
## R version 3.6.3 (2020-02-29)
## Platform: x86_64-pc-linux-gnu (64-bit)
## Running under: Debian GNU/Linux 9 (stretch)
##
## Matrix products: default
## BLAS:   /usr/lib/openblas-base/libblas.so.3
## LAPACK: /usr/lib/libopenblasp-r0.2.19.so
##
## locale:
##  [1] LC_CTYPE=pl_PL.UTF-8       LC_NUMERIC=C
##  [3] LC_TIME=pl_PL.UTF-8        LC_COLLATE=pl_PL.UTF-8
##  [5] LC_MONETARY=pl_PL.UTF-8    LC_MESSAGES=pl_PL.UTF-8
##  [7] LC_PAPER=pl_PL.UTF-8       LC_NAME=C
##  [9] LC_ADDRESS=C               LC_TELEPHONE=C
## [11] LC_MEASUREMENT=pl_PL.UTF-8 LC_IDENTIFICATION=C
##
## attached base packages:
## [1] stats     graphics  grDevices utils     datasets  methods   base
##
## other attached packages:
## [1] pracma_2.2.9 BINCOR_0.2.0
##
## loaded via a namespace (and not attached):
##  [1] Rcpp_1.0.4.6     codetools_0.2-16 digest_0.6.25    magrittr_1.5
##  [5] evaluate_0.14    icon_0.1.0       rlang_0.4.5      stringi_1.4.6
##  [9] rmarkdown_2.1    tools_3.6.3      stringr_1.4.0    xfun_0.13
## [13] yaml_2.2.1       compiler_3.6.3   htmltools_0.4.0  knitr_1.28
```