AutocorrelationInWeather

Dengkui Tang

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1 Compute the appropriate correlation coefficient between successive years and store it.

1.1 Load the data from "KeyWestAnnualMeanTemperature.RData"

```
KWAMT = load("../data/KeyWestAnnualMeanTemperature.RData")
```

1.2 Read and store data for each column(Year,Temp)

```
year=ats$Year
temp=ats$Temp
```

1.3 Calculate(cor())

```
result=cor(temp1,temp2)
```

2 Repeat this calculation 10000 times by - randomly permuting the time series, and then recalculating the correlation coefficient for each randomly permuted year sequence and storing it

2.1 Disorganize "Temp" (use the sample function)

```
ts=sample(temp)
```

2.2 Calculate(the same as 1.c)

```
ts1=ts[-1]
ts2=ts[-length(ts)]
```

2.3 Loop 10000 times and draw a diagram

```
i=1
while(i<=10000){
    Tresult[[i]]<-cor(ts1,ts2)
}
hist(Tresult)
```

3 Calculate what fraction of the correlation coefficients from the previous step were greater than that from step1.

3.1 Create a vector

```
Greater<-vector()
```

3.2 Use an "if" to judge whether it is greater than "result", and add it into "Greater".

```
if(Tresult[[i]]>result){
    Greater[[j]]<-Tresult[[i]]
    j=j+1
}
```

3.3 judge whether "Greater" is empty or not

```
if(length(Greater)>0){
    print(length(Greater)/10000)
}else{
    print("No greater value.")
}
```